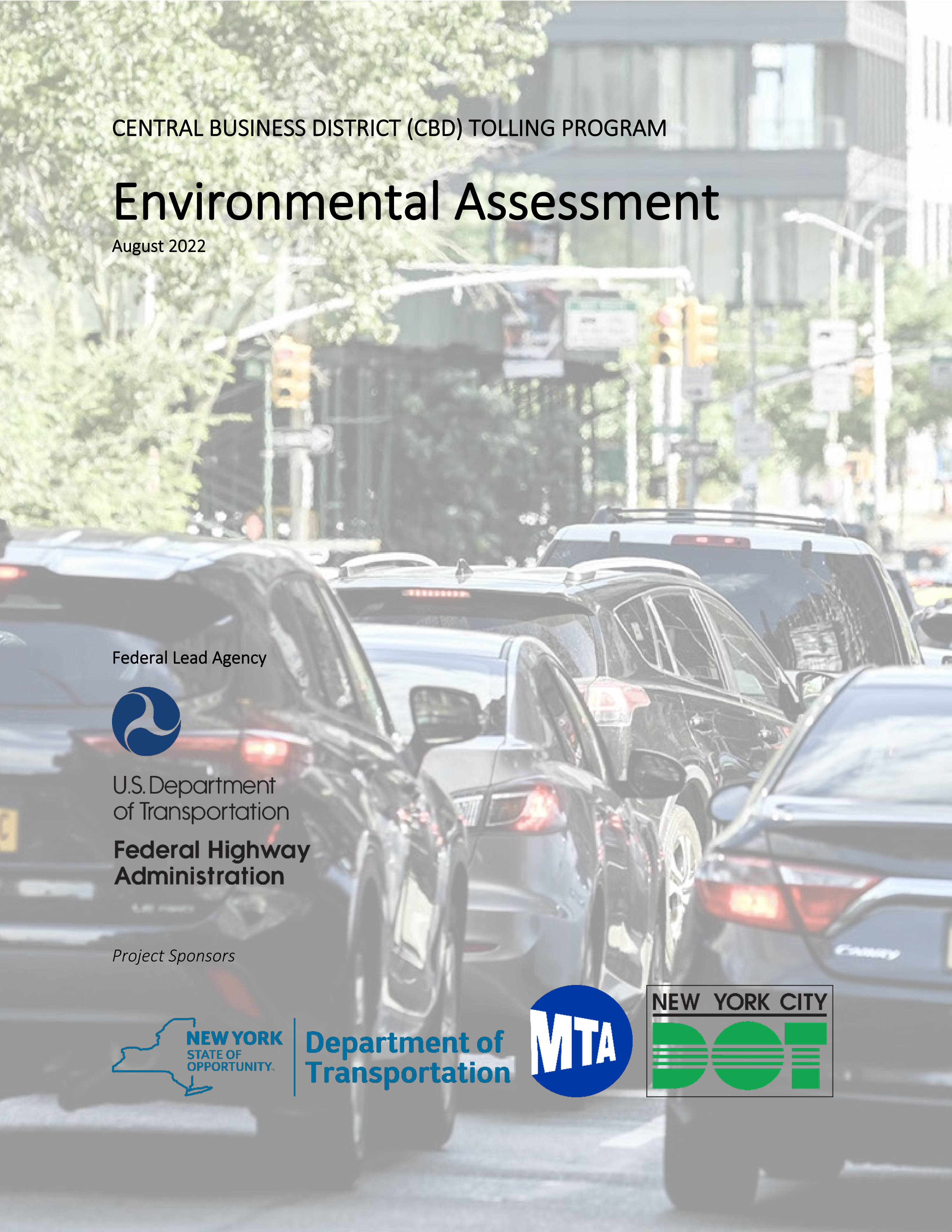

CENTRAL BUSINESS DISTRICT (CBD) TOLLING PROGRAM

Environmental Assessment

August 2022

Federal Lead Agency

U.S. Department of Transportation

Federal Highway Administration

Project Sponsors

NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

MTA

NEW YORK CITY DOT

Environmental Assessment
for
Central Business District (CBD) Tolling Program
Manhattan, New York

Submitted Pursuant to 42 U.S.C. 4332(2)(c), 23 U.S.C. 138, and 49 U.S.C. 303

by

U.S. Department of Transportation, Federal Highway Administration (FHWA)

Triborough Bridge and Tunnel Authority (TBTA)[1]

New York State Department of Transportation (NYSDOT)

New York City Department of Transportation (NYCDOT)

This Environmental Assessment (EA) and potential Section 4(f) *de minimis* finding documents the social, economic, and environmental effects of the Central Business District (CBD) Tolling Program (the "Project") in New York County, New York, and surrounding areas of New York City and New York State, New Jersey, and Connecticut.[2] This EA was prepared consistent with the Council on Environmental Quality's National Environmental Policy Act regulations, as codified in 40 Code of Federal Regulations (CFR) Parts 1500–1508 and 23 CFR 771.

The Manhattan CBD is the commercial center of a 28-county region that surrounds and includes New York City. The growth in New York City's population and employment, particularly within the Manhattan CBD, has increased traffic congestion and delays, slowing travel and jeopardizing the vitality of the area. The Project purpose is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into the FHWA Value Pricing Pilot Program.

After careful consideration of a range of alternatives, FHWA and the Project Sponsors (comprising TBTA, NYSDOT, and NYCDOT) have studied the No Action Alternative and the CBD Tolling Alternative for the Project. The Project Sponsors recommend the CBD Tolling Alternative for the Project.

This document is available for public review and comment. There will be six opportunities to participate in public hearings (described in Chapter 18, "Agency Coordination and Public Participation"). Comments will be received until the end of the comment period on September 9, 2022, after which time the FHWA will issue a statement of findings for the Project.

Richard J. Marquis
Division Administrator
Federal Highway Administration, NY Division

7/29/2022
Date

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1 TBTA is an affiliate of the Metropolitan Transportation Authority (MTA)

2 As defined for this Project, the 28-county region includes:

- New York City counties (Bronx, Kings [Brooklyn], New York [Manhattan], Queens, and Richmond [Staten Island])
- Long Island counties (Nassau and Suffolk)
- New York counties North of New York City (Dutchess, Orange, Putnam, Rockland, and Westchester)
- New Jersey counties (Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren)
- Connecticut counties (Fairfield and New Haven)

7/29/2022

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Comments Due By: September 9, 2022

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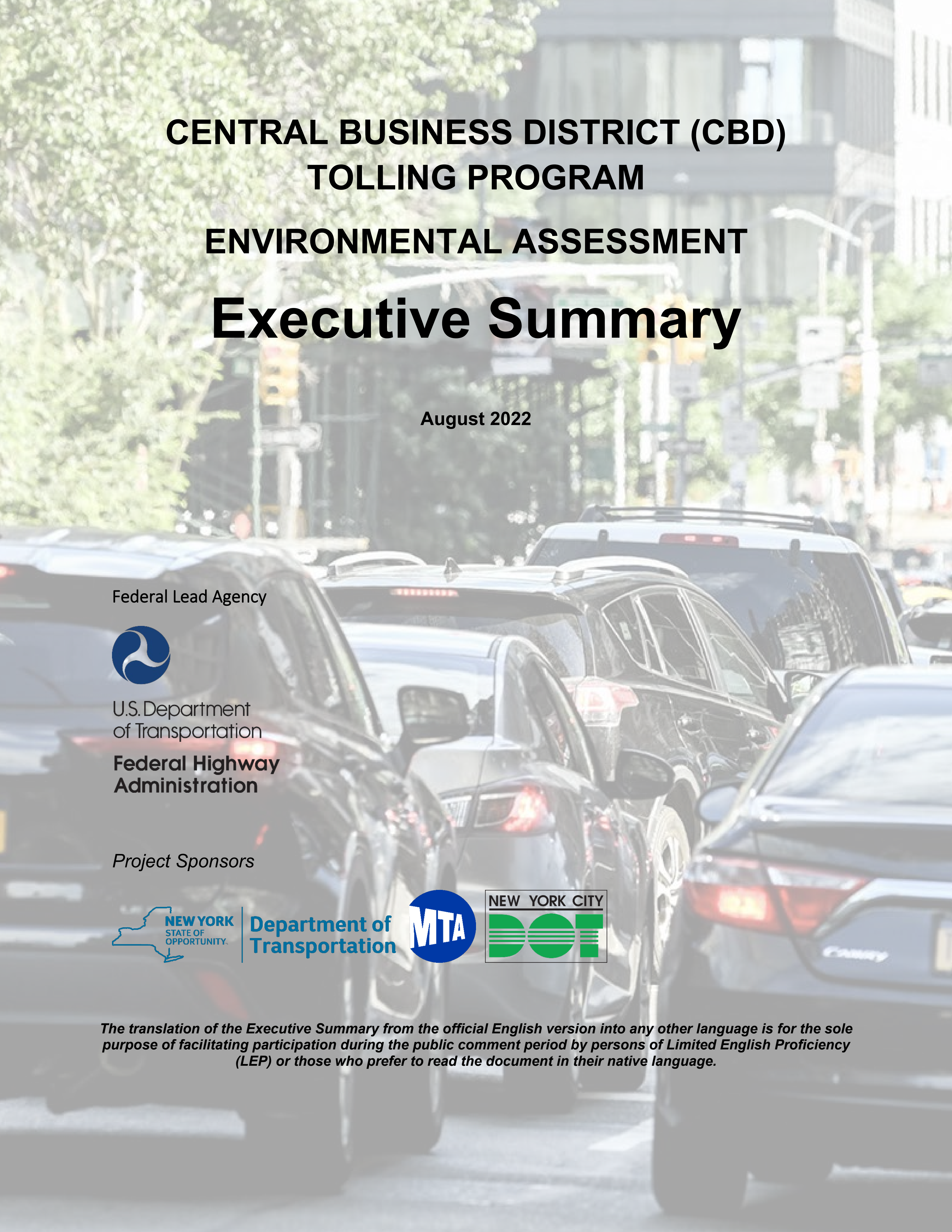
Abbreviations, Acronyms, and Initialisms

AADT ... Annual Average Daily Traffic
AASHTO ... Association of State Highway and Transportation Officials
ACM ... Asbestos-Containing Materials
ACS ... American Community Survey
ADA ... Americans with Disabilities Act
APE ... Area of Potential Effects
ATR ... Automatic Traffic Recorder
AVE ... Area of Visual Effect
BD ... Central Business District
BPM ... Best Practice Model
BQE ... Brooklyn-Queens Expressway
Btu ... British thermal units
CAA ... Clean Air Act
CBD ... Central Business District
CEQR ... City Environmental Quality Review
CFR ... Code of Federal Regulations
CH_4 ... Methane
CHASP ... Construction Health and Safety Plan
CO ... Carbon Monoxide
CO_2 ... Carbon Dioxide
CO_2e ... CO_2 Equivalents
CRIS ... Cultural Resource Information System
CTPP ... Census Transportation Planning Package
dB(A) ... A-weighted decibels
EA ... Environmental Assessment
ECL ... Environmental Conservation Law
EFH ... Essential Fish Habitat
EIS ... Environmental Impact Statement
EJ ... Environmental Justice
EPA ... U.S. Environmental Protection Agency
ESA ... Endangered Species Act
ESA ... East Side Access
FCA ... Fare Control Area
FDR Drive ... Franklin D. Roosevelt Drive
FHV ... For-Hire Vehicle
FHWA ... Federal Highway Administration
fpm ... feet per minute
GHG ... Greenhouse Gas
GWBBS ... George Washington Bridge Bus Station
GWP ... Global Warming Potential
HCS ... Highway Capacity Software
HEI ... Health Effects Institute
HEET ... High Entry/Exit Turnstyle
HOT ... High-Occupancy Toll

HOV .... High-Occupancy Vehicle
JFK Airport .... John F. Kennedy Airport
LEP .... Limited English Proficiency
LIRR .... Long Island Rail Road
LN .... Late Night
LOS .... Level of Service
LPC .... New York City Landmarks Preservation Commission
LWCFA .... Land and Water Conservation Fund Act
MD .... Midday
Metro-North .... Metro-North Railroad
MOVES .... (USEPA) Motor Vehicle Emission Simulator
mph .... miles per hour
MPO .... Metropolitan Planning Organization
MSAT .... Mobile Source Air Toxics
MTA .... Metropolitan Transportation Authority
N_2O .... Nitrous Oxide
NAAQS .... National Ambient Air Quality Standards
NAICS .... North American Industry Classification System
NEPA .... National Environmental Policy Act
NHL .... National Historic Landmark
NHPA .... National Historic Preservation Act
NICE .... Nassau Inter-County Express
NJ TRANSIT .... New Jersey Transit Corporation
NJTPA .... North Jersey Transportation Planning Authority
NMFS .... National Marine Fisheries Service
NO_2 .... Nitrogen Dioxide
NPS .... National Park Service
NR .... National Register of Historic Places
NRHP .... National Register of Historic Places
NTP .... Non-Toll Pricing
NWI .... National Wetlands Inventory
NYC Parks .... New York City Department of Parks and Recreation
NYCCAS .... New York City Community Air Survey
NYCDCP .... New York City Department of City Planning
NYCDOE .... New York City Department of Education
NYCDOT .... New York City Department of Transportation
NYCHD .... New York City Historic District
NYCL .... New York City Landmark and New York City Scenic Landmark
NYCRR .... New York Codes, Rules, and Regulations
NYCT .... New York City Transit
NYMTC .... New York Metropolitan Transportation Council
NYPD .... New York City Police Department
NYSDEC .... New York State Department of Environmental Conservation
NYSDOP .... New York Statewide Digital Orthoimagery Program
NYSDOT .... New York State Department of Transportation
O_3 .... Ozone
OSHA .... Occupational Safety and Health Administration
PABT .... Port Authority Bus Terminal

PAH .... Polycyclic Aromatic Hydrocarbon
PANYNJ .... Port Authority of New York and New Jersey
PATH .... Port Authority Trans-Hudson
Pb .... Lead
pc/mi/ln .... passenger cars per mile per lane (density)
PCB .... Polychlorinated Biphenyl
PCE .... Passenger Car Equivalent
PFAC .... Program, Finance and Administration Committee
$PM_{2.5}$ and PM_{10} .... Particulate Matter (2.5 microns and 10 microns)
ppb .... parts per billion
ppm .... parts per million
RFK Bridge .... Robert F. Kennedy Bridge
SBS .... Select Bus Service
SEQRA .... State Environmental Quality Review Act
SFP .... Square Feet per Pedestrian
SHPO .... State Historic Preservation Office
SIE .... Staten Island Expressway
SIP .... State Implementation Plan
SO_2 .... Sulfur Dioxide
SOC .... Standard Occupational Classification
TAZ .... Traffic Analysis Zones
TBTA .... Triborough Bridge and Tunnel Authority
TDM .... Transportation Demand Management
TEM .... The Environmental Manual
TIP .... Transportation Improvement Program
Title VI .... Title VI of the Civil Rights Act of 1964
TLC .... New York City Taxi and Limousine Commission
UPARRA .... Urban Park and Recreation Recovery Act
USACE .... U.S. Army Corps of Engineers
USC .... United States Code
USDOT .... U.S. Department of Transportation
USEPA .... U.S. Environmental Protection Agency
USFWS .... U.S. Fish and Wildlife Service
v/c ratio .... volume-to-capacity ratio
VCE .... Vertical Circulation Element
VIA .... Visual Impact Assessment
VMT .... Vehicle-Miles Traveled
VPPP .... Value Pricing Pilot Program
XBL .... Exclusive Bus Lane
$\mu g/m^3$ .... micrograms per cubic meter of air



CENTRAL BUSINESS DISTRICT (CBD) TOLLING PROGRAM

ENVIRONMENTAL ASSESSMENT

Executive Summary

August 2022

Federal Lead Agency

U.S. Department of Transportation

Federal Highway Administration

Project Sponsors

NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

MTA

NEW YORK CITY DOT

The translation of the Executive Summary from the official English version into any other language is for the sole purpose of facilitating participation during the public comment period by persons of Limited English Proficiency (LEP) or those who prefer to read the document in their native language.

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The Executive Summary of the Environmental Assessment (EA) for the Central Business District (CBD) Tolling Program (the Project) presents a high-level summary of the Project, which includes

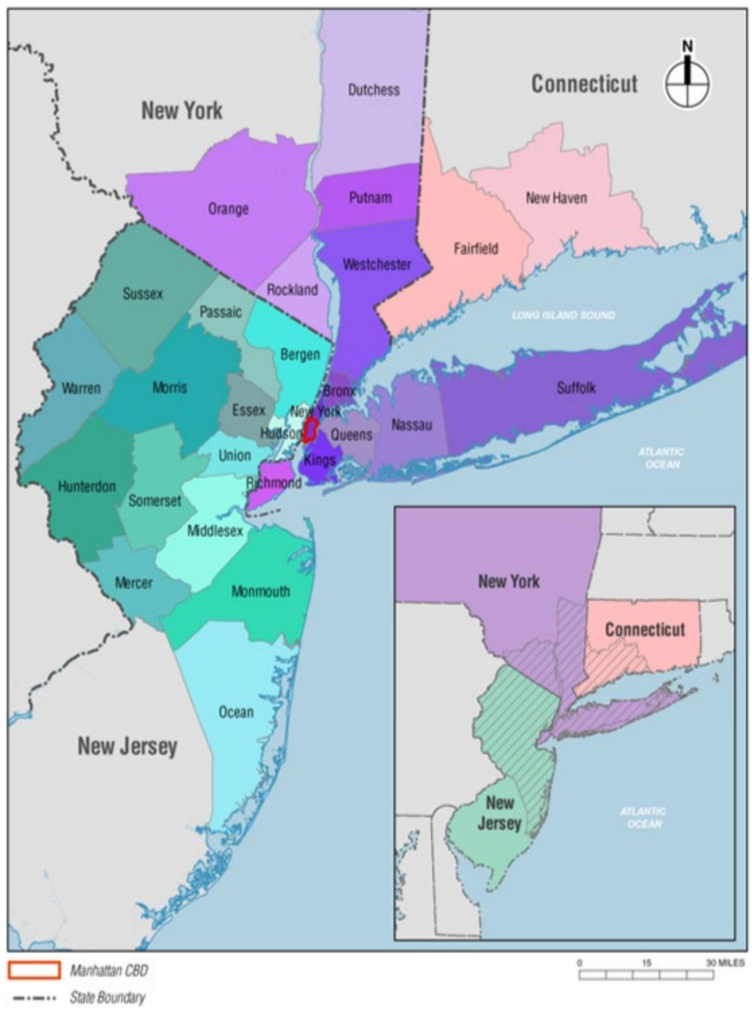
- The Purpose, Need, and Objectives of the Project
- The Alternatives
- Project Effects
- Key Findings

Additional details related to the information in this Executive Summary may be found in the relevant chapters and appendices of the EA.

WHAT IS THE CENTRAL BUSINESS DISTRICT TOLLING PROGRAM?

The Triborough Bridge and Tunnel Authority (TBTA) – an affiliate of the Metropolitan Transportation Authority (MTA) – the New York State Department of Transportation (NYSDOT), and the New York City Department of Transportation (NYCDOT) (collectively, the Project Sponsors) are proposing the **Central Business District (CBD) Tolling Program** (the Project). The Project, a type of congestion pricing, would toll vehicles that enter or remain in the Manhattan CBD in order to reduce traffic congestion and generate revenue to fund $15 billion to improve subway, bus, and commuter rail systems in MTA's 2020–2024 Capital Plan or successor plans.

Figure ES-1. The 28-County Region Study Area



Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway

Where is the Project proposed?

The Manhattan CBD consists of the geographic area of Manhattan south of and inclusive of 60th Street, not including the Franklin D. Roosevelt (FDR) Drive and the West Side Highway/Route 9A, the Battery Park Underpass and any surface roadway portion of the Hugh L. Carey Tunnel that connects to West Street (the West Side Highway/Route 9A).

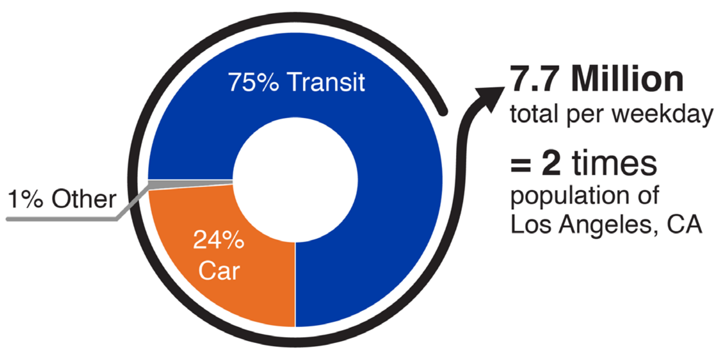
The Manhattan CBD is the commercial center of a large metropolitan region of 28 counties in New York, New Jersey, and Connecticut that surrounds and includes New York City (**Figure ES-1**). Together these 28 counties are home to 22.2 million residents and more than 10.7 million jobs, making it the largest and most economically significant metropolitan region in the United States.

New York City alone contains roughly 4.6 million (43 percent) of the region's jobs and 8.4 million (38 percent) of the region's population.[1] The Manhattan CBD hosts 1.5 million jobs, 450 million square feet of office space, and more than 617,000 residents.[2] It is also a regional and national destination for commerce, entertainment, and tourism. **Chapter 1, "Introduction"** provides more information about the Project's setting.

How do people and goods get to and move around in the Manhattan CBD today?

Manhattan is connected to the rest of the region by twenty vehicular bridges and tunnels, the nation's three largest commuter railroads, the largest subway system, and two of the five largest bus transit systems in the United States,[3] as well as public and private ferry service, and tram service. Much of the public transportation operates 24 hours per day/7 days per week/365 days per year. **Chapter 4, "Transportation," Subchapter 4B, "Transportation: Highways and Local Intersections," and Subchapter 4C, "Transportation: Transit"** provide detail on the region's highway, roadway, and transit systems.

Figure ES-2. People Entering Manhattan CBD (by mode)



Source: NYMTC Hub Bound Travel Data Report, 2019

People traveling to the Manhattan CBD arrive by public transportation (rail, subway, bus, tram, ferry, and paratransit), walk or ride a bicycle, or travel by passenger car, taxi, for-hire vehicle (FHV), or truck. Public transportation is used by most people to enter the Manhattan CBD, both for work and for leisure. According to the New York Metropolitan Transportation Council (NYMTC) *Hub Bound Travel Data Report*, approximately 7,665,000 people entered and exited the Manhattan CBD on an average weekday in 2019, nearly twice the population of Los Angeles, California (**Figure ES-2**).[4] Seventy-five percent of these trips were made by transit, but an estimated 1,856,000 (24 percent) were made by car, taxi, van, or truck.[5]

Where will the benefits and effects of the Project occur?

The 28-county metropolitan region is the main catchment area for trips to and from the Manhattan CBD. The Project would affect travel patterns within the Manhattan CBD and in other parts of the region. Travel patterns change more intensely when approaching and within the Manhattan CBD. To assess beneficial and adverse effects of the Project, the EA uses a combination of the regional 28-county study area and several local study areas. The local study areas change according to the issue being explored for effects. For example, the local study area used to assess the visual effects associated with installation of tolling infrastructure and tolling system equipment is much smaller than the local study area to assess air quality changes. Additional discussion of these study areas is provided in **Chapter 3, "Environmental Analysis Framework,"** and in each chapter throughout the EA.

What is an Environmental Assessment (EA) and why is it needed for this Project?

Before a Federal agency makes a decision, the National Environmental Policy Act (NEPA) requires the Federal agency to understand and disclose the environmental effects of the action. An EA (40 CFR §1506.1(h)) is performed to ensure Federal agencies consider the environmental impacts of their actions in the decision-making process (40 CFR §1500.1(a)). For a proposed action that is not likely to have significant effects, or when the significance of the effect is unknown (40 CFR §1501.5), the EA aids in determining the significance of the adverse effects. If the adverse effects are not significant or can be mitigated below significant levels, the Federal agency may issue a Finding of No Significant Impact (FONSI) (40 CFR §1501.6). If there are significant effects that cannot be mitigated, the Federal agency must develop an Environmental Impact Statement (EIS) leading to a Record of Decision (ROD).

The Value Pricing Pilot Program (VPPP) and National Environmental Policy Act (NEPA)

Established by the U.S. Congress as the Congestion Pricing Pilot Program in 1991, and renamed in 1998, the VPPP aims to demonstrate whether and to what extent congestion pricing strategies can reduce congestion, while also exploring the effects of these strategies on "driver behavior, traffic volumes, transit ridership, air quality and availability of funds for transportation programs."

Enacted in 1970, NEPA requires that Federal agencies assess the environmental effects of their proposed actions before making decisions. Providing approval to the Project under the VPPP would be an action by FHWA and is, therefore, subject to NEPA.

Sources:
FHWA. "Value Pricing Pilot Program." https://ops.fhwa.dot.gov/congestionpricing/value_pricing/index.htm
United States Environmental Protection Agency. "What is the National Environmental Policy Act." https://www.epa.gov/nepa/what-national-environmental-policy-act

Some roadways within the Manhattan CBD are part of the National Highway System and some have been improved with funding from the Federal government. In order to toll these roadways, the Project Sponsors need approval from U.S. Department of Transportation's Federal Highway Administration (FHWA), in this case through their Value Pricing Pilot Program (VPPP). When FHWA reviews a project sponsor's application to the VPPP with the intention of taking an action, it must comply with NEPA.

FHWA, as the lead Federal agency for the NEPA process, determined that an EA is the appropriate class of action for this Project as the Project's goals result primarily in operational changes, with very little physical impacts on the existing environment. The approach to reducing congestion in the Manhattan CBD lends itself to beneficial effects on air quality and quality of life.

FHWA recognizes that the Project could have effects on environmental justice populations. As a result, FHWA requested that the NEPA process include enhanced public outreach and coordination with Federal and state resource agencies.

WHY IS THE CBD TOLLING PROGRAM BEING CONSIDERED?

Traffic congestion has been a problem in the Manhattan CBD for many years,[6] and has been one of New York City's most challenging policy problems for generations. As the regional population and commerce have grown, traffic has snarled with such regularity over the years that a new word was created to describe it: gridlock.[7]

NYCDOT, MTA, and other transportation agencies have implemented programs to reduce congestion, and improve transit, pedestrian, and bicycle accessibility in and to the Manhattan CBD. NYCDOT has repurposed curbside parking to establish bicycle lanes and increased pedestrian space with sidewalk and corner bump outs. It has also converted curbside lanes and general-purpose traffic lanes to dedicated bus lanes on certain Manhattan avenues and east–west, crosstown streets.

Additionally, MTA and other transit agencies offer reduced transit fares for the elderly, disabled, and school-aged children, and in early 2022, MTA implemented fare capping as part of its new fare system rollout (OMNY), which allows free, unlimited rides to customers the rest of the week once they have spent $33 (the same as taking 12 trips). Many employers participate in a Federal program that allows employees to use pre-tax dollars to pay for transit, and many companies have adopted flexible work schedules, including options to work remotely.

Figure ES-3. Most Congested Urban Areas (2021)

United States
1. New York, NY
2. Chicago, IL
3. Philadelphia, PA
4. Boston, MA
5. Miami, FL

Source: INRIX, 2021

Despite these traffic-reduction initiatives, and despite the existence of the country's most extensive and robust public transit network, traffic congestion persists. In 2020 and 2021, New York City's traffic congestion ranked worst among the cities in the United States (**Figure ES-3**).[8]

State and City of New York officials and stakeholder and advocacy groups have conducted multiple studies over the past 45 years to determine the most effective way to address congestion in the Manhattan CBD. These studies overwhelmingly pointed to congestion pricing, or introduction of tolls based on traffic levels, as the most effective tool. **Chapter 2, "Project Alternatives," and Appendix 2A, "Project Alternatives: Previous Studies and Concepts Considered,"** provide more information about other alternatives and these earlier studies.

PROJECT PURPOSE, NEED, AND OBJECTIVES

The Project purpose is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into FHWA's VPPP.

Why do we need to reduce traffic congestion?

Low travel speeds and unreliable travel times to, from, and within the Manhattan CBD increase commute and travel times for vehicles using the roadways, erode worker productivity, reduce bus and paratransit service quality, raise the cost of deliveries and the overall cost of doing business, and delay emergency vehicles. Thus, there is a need to reduce vehicle congestion in the Manhattan CBD to improve the reliability and efficiency of the transportation system.

Why do we need money for transit investment?

> ***"The only way to end traffic jams in Manhattan and the approaches to it is by making public transportation better."***
> *Regional Plan Association, Regional Plan News, No. 82, February 1966*

Transit is critical to New York City's overall economy, and to the region's residents, workers, and visitors, and continued investment in transit is necessary to ensure ongoing mobility and accessibility.

In 2019, MTA subways served 1.7 billion passengers and MTA buses carried 677.6 million passengers, providing access to employment, healthcare, education and the full range of services and entertainment options available throughout New York City. The 10 busiest subway stations in the MTA system are in the Manhattan CBD, and two of the 10 busiest MTA bus routes are in or serve the Manhattan CBD.[9] The Long Island Rail Road and Metro-North Railroad were the busiest commuter rail systems in the United States in 2019, and Penn Station New York and Grand Central Terminal, both within the Manhattan CBD, are the two busiest passenger rail stations in North America.[10]

Congestion by the Numbers

Cost of Congestion: 102 hours of lost time; nearly $1,595 per year per driver in the New York City region.*

Travel Speeds: Decreased 22% in the Manhattan CBD, from 9.1 miles per hour (mph) to 7.1 mph between 2010 and 2019.**

FHV Registrations: Tripled in New York City, from fewer than 40,000 to more than 120,000 between 2010 and 2019. Due to the effects of the COVID-19 pandemic and the city's continued cap on FHV registrations, the number of FHVs making trips fell to 70,000 by April 2022.†

Local Bus Speeds: Declined 28% in the Manhattan CBD since 2010. The average speed of Select Bus Service (New York City Transit's bus rapid transit service) routes in Manhattan are 19% slower than Select Bus Service routes in other boroughs.††

Sources:

* INRIX 2021 Global Traffic Scorecard. https://inrix.com/scorecard-city/?city=New%20York%20City%20NY&index=5)

** NYCDOT. August 2019. New York City Mobility Report. https://www1.nyc.gov/html/dot/downloads/pdf/mobility-report-print-2019.pdf.

† New York City Taxi and Limousine Commission and NYCDOT. June 2019. *Improving Efficiency and Managing Growth in New York's For-Hire Vehicle Sector*; NYC TLC FHV trip data.

†† NYCDOT. August 2019. New York City Mobility Report. https://www1.nyc.gov/html/dot/downloads/pdf/mobility-report-print-2019.pdf; New York City Transit analysis.

MTA employs approximately 70,000 people, making it one of the largest individual employers in New York State (and larger than many small cities). Through its capital spending, MTA annually injects billions of dollars into the local economy, both through major infrastructure projects and day-to-day operations and maintenance programs, indirectly supporting thousands of additional jobs far beyond its direct employment.[11]

Beginning in 2017, MTA's operating agencies engaged in projects to address some root causes of declining service that had begun in 2010 and implemented improvements to commuter rail and subway infrastructure. As documented in MTA's 2020–2024 Capital Program, these projects resulted in substantial reductions in delay and improvements in on-time performance.[12]

Elements of MTA's commuter rail and subway system are more than 100 years old, and essential capital needs remain to ensure a state of good repair and to bring MTA's transit and rail assets into the 21st century. The 2020–2024 Capital Program is intended to "build on these achievements, ensuring that the improvements put in place will be sustainable for years to come."[13] The program identifies $52.0 billion of investments[14] in the region's subways, buses, and commuter railroads. The following are key tenets of the 2020–2024 Capital Program.

- Investing to improve reliability
- Committing to environmental sustainability
- Building an accessible transit system for all New Yorkers
- Easing congestion and creating growth
- Improving safety and customer service through technology[15]

What are the Project objectives?

FHWA and the Project Sponsors have established the following objectives to further refine the Project purpose and address the needs described above.

- Reduce daily vehicle-miles traveled (VMT) within the Manhattan CBD by at least 5 percent
- Reduce the number of vehicles entering the Manhattan CBD daily by at least 10 percent
- Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for the MTA Capital Program
- Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the MTA Reform and Traffic Mobility Act[16]

WHAT ARE THE PROJECT ALTERNATIVES?

FHWA and the Project Sponsors screened a number of preliminary alternatives against the Project purpose, need, and three of the four objectives (**Table ES-1**). **Chapter 2, "Project Alternatives,"** provides this analysis in further detail. The CBD Tolling Alternative is the alternative that meets the purpose, need and three objectives of the Project. Thus, for the purposes of this EA, there are two alternatives:

- **No Action Alternative**, which would not implement a vehicular tolling program in the Manhattan CBD

- **CBD Tolling Alternative (Action Alternative)**, which would implement a vehicular tolling program in the Manhattan CBD

Although the No Action Alternative does not meet the Project purpose and objectives, NEPA regulations require that it be evaluated and serve as the baseline condition against which the potential effects of the CBD Tolling Alternative are evaluated.

No Action Alternative

The No Action Alternative assumes the following existing policies and programs would continue and a number of planned initiatives would be implemented, including:

- A cap on the number of FHV licenses in New York City would remain.
- The two-way, protected bicycle lanes on the Brooklyn Bridge, implemented by NYCDOT in fall 2021, would remain.[17]
- NYCDOT would continue the current configuration of two lanes in each direction between Atlantic Avenue and the Brooklyn Bridge on the Brooklyn-Queens Expressway; it would initiate repairs to the bridges and structures between Atlantic Avenue and Sands Street.[18]
- NYCDOT would convert a traffic lane to a pedestrian walkway on the Ed Koch Queensboro Bridge lower level, and the existing shared-use path on the north side of the lower level would be used only for bicycles.
- TBTA and the Port Authority of New York and New Jersey (PANYNJ) would continue tolling at their bridges and tunnels, while the East River Bridges and Harlem River Bridges would remain untolled. **Chapter 1, "Introduction,"** provides more information on current tolls.
- MTA would continue to implement transit and rail improvement projects in its 2020–2024 Capital Program, based on the funding available. **Appendix 4A.1, Table 4A.1-3,** provides information on recent transit and rail improvement projects included in the EA analysis.
- NYCDOT and other New York City agencies would continue programs established in response to the COVID-19 pandemic, including the closure of certain sections of streets to vehicular traffic ("Open Streets") and the use of curbside parking lanes for outdoor dining ("Open Restaurants").
- NYCDOT would continue to develop bicycle and bus infrastructure including new bicycle and bus lanes.[19] **Chapter 4E, "Transportation: Pedestrians and Bicycles,"** provides further information on recently implemented and planned bicycle improvements.

Table ES-1. Results of Preliminary Alternatives Screening[1]

ALTERNATIVE	PURPOSE AND NEED: Reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements	OBJECTIVE 1: Reduce daily vehicle-miles traveled (VMT) within the Manhattan CBD Criterion: Reduce by 5% (relative to No Action)	OBJECTIVE 2: Reduce the number of vehicles entering the Manhattan CBD daily Criterion: Reduce by 10% (relative to No Action)	OBJECTIVE 3: Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for MTA's Capital Program
NA-1: No Action	Does not meet	Does not meet	Does not meet	Does not meet
NTP-1: Parking pricing strategies	Does not meet	Does not meet (see note 2)	Does not meet	Does not meet (see note 2)
T-1: Pricing on full roadways: Raise tolls or implement variable tolls on existing toll facilities	Does not meet	Does not meet (see note 3)	Does not meet (see note 3)	Does not meet
T-2: Pricing on full roadways: Toll East and Harlem River bridges	Does not meet (see note 4)	Meets	Meets	Does not meet (see note 4)
T-3: High-occupancy toll (HOT) lanes	Does not meet (see note 5)	Does not meet	Does not meet	Does not meet (see note 5)
T-4: Zone-based pricing: CBD Tolling Program	Meets	Meets	Meets	Meets
O-1: Parking pricing: Reduce government-issued parking permits	Does not meet	Meets	Meets	Does not meet
O-2: Provide additional taxi stands to reduce cruising	Does not meet	Does not meet (see note 6)	Does not meet	Does not meet
O-3: Create incentives for teleworking	Does not meet	Does not meet	Does not meet (see note 7)	Does not meet
O-4: Ration license plates	Does not meet	Meets	Meets	Does not meet
O-5: Mandatory carpooling	Does not meet	Meets	Meets	Does not meet
O-6: Truck time-of-day delivery restrictions	Does not meet	Does not meet (see note 8)	Does not meet (see note 8)	Does not meet

Notes for Table ES-1

[1] Screening was based on a variety of prior studies and documents, including the following: New York City Traffic Congestion Mitigation Commission, "Congestion Mitigation Strategies: Alternatives to the City's Plan" (December 10, 2007); and "Report to the Traffic Congestion Mitigation Commission & Recommended Implementation Plan" (January 31, 2008), and its appendices, including Cambridge Systematics, Inc., "Technical Memorandum: Telecommuting Incentives," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007); Cambridge Systematics, Inc., "Technical Memorandum: Night Delivery Incentives," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007); Cambridge Systematics, Inc., "Technical Memorandum: Congestion Reduction Policies Involving Taxis," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007); Cambridge Systematics, Inc., "Technical Memorandum: Increase Cost of Parking in the Manhattan Central Business District (CBD)," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007).

[2] For NTP-1: VMT reduction was estimated at substantially less than 1 percent. Further, there is no law or agreement in place between the City of New York and MTA that would direct the revenue generated from this alternative to MTA to support the Capital Program.

[3] For T-1: This alternative would generate revenue, but the annual net revenues would not be sufficient to fund $15 billion for capital projects for MTA's Capital Program. The revenue as well as reduction in VMT and number of vehicles with this alternative depends on how high the toll is raised and whether tolls are increased only on Triborough Bridge and Tunnel Authority (TBTA) facilities or both TBTA and Port Authority of New York and New Jersey facilities. However, with some crossings remaining untolled, traffic would divert to untolled facilities, thereby reducing the revenue and not reducing traffic. Further, this alternative would not target congestion in the Manhattan CBD, given that a number of free entry points to the Manhattan CBD would remain available.

[4] For T-2: Earlier studies showed this alternative would reduce congestion and could raise toll revenues equivalent to project objectives. However, there is no law or agreement in place between the City of New York and MTA that would direct the revenue to MTA to support the Capital Program.

[5] For T-3: HOT Lanes can be effective revenue generators, but their ability to reduce congestion and raise enough revenue to meet the target is limited due to the availability of free lanes on the same highway.

[6] For O-2: Provision of additional taxi stands would have no effect on the number of taxis entering the Manhattan CBD and would not necessarily reduce VMT since taxis would need to travel back to a taxi stand after discharging customers. Further, this alternative would not broadly address VMT for all vehicles, nor would it reduce the number of vehicles entering the Manhattan CBD.

[7] For O-3: Earlier studies concluded that this alternative would reduce New York City commute trips by less than two percent. Recent experience with the COVID-19 pandemic has supported that conclusion. As the region returns to normal business activities, following large-scale, full-time teleworking, many office workers are continuing to telework, but traffic levels are returning to close to pre-COVID-19 pandemic levels (for more information, see **Chapter 1, "Introduction," Section 1.4.1**). With such minimal impact, even combining this alternative with others like NTP-1 or O-2 would not yield congestion reductions and new revenue to meet the project's purpose, need and objectives.

[8] For O-6: To be successful, truck time-of-day restrictions would require receivers to be open and willing to receive the vehicles in overnight hours. Further, depending upon how the restrictions are implemented, some large trucks might instead send multiple small trucks, thereby increasing vehicle numbers and VMT.

CBD Tolling Alternative (Action Alternative)

The CBD Tolling Alternative would toll vehicles entering or remaining in the Manhattan CBD. Noncommercial passenger vehicles entering the CBD would be tolled once per day. Vehicles that remain in the Manhattan CBD are vehicles that are detected leaving, but not detected entering the same day. Given that they were detected leaving, they must have driven through the Manhattan CBD and, therefore, remained some portion of the day. Noncommercial passenger vehicles would be tolled no more than once a day. There would be exemptions for qualifying vehicles transporting a person with disabilities and qualifying authorized emergency vehicles.

Residents whose primary residence is inside the Manhattan CBD and whose New York State adjusted gross income is less than $60,000 would be eligible for a New York State tax credit equal to the amount of Manhattan CBD tolls paid during the taxable year.

The toll amount would be variable, with higher tolls charged during peak periods when congestion is greater. Because the effects are closely related to the toll structure, the CBD Tolling Alternative evaluated a range of toll structures in defined tolling scenarios. In most of these tolling scenarios, the toll rates for different types of vehicles, like delivery trucks, are different than the toll rates for noncommercial passenger vehicles.

Beneficial and Adverse Effects: What is important to know about the tolling scenarios in the CBD Tolling Alternative?

A decision on the actual toll structure will occur after the EA is completed. A Traffic Mobility Review Board (TMRB) will be established to develop recommendations on toll rates, exemptions, crossing credits applied against the CBD toll for tolls paid on other toll tunnels or bridges, and/or discounts. For the EA, to explore the range of effects that could occur with the CBD Tolling Alternative, the Project Sponsors initially developed six tolling scenarios (A–F). Each scenario includes different combinations of crossing credits, potential discounts (in the form of caps), and exemptions (**Table ES-2**). After the early public outreach, and given concerns expressed regarding diversions of truck traffic, a seventh scenario (G) was added to avoid some of these traffic effects. **Chapter 2, "Project Alternatives,"** provides more detail on each scenario while **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"** and **Subchapter 4B, "Transportation: Highways and Local Intersections,"** provides more information on traffic effects.

How and When Would I be Tolled?

Below are some examples of when and how the toll would be applied.

- A car drives into the Manhattan CBD on Monday morning and leaves Monday evening before midnight. It would be detected when it enters and when it leaves the Manhattan CBD. Because passenger vehicles would be charged only once daily, a single toll would be charged.
- A car drives into the Manhattan CBD on Monday, and parks until it leaves on Wednesday. It would be charged entering on Monday and for remaining when it drove through the Manhattan CBD on Wednesday to leave. It would not be charged when it was parked the full 24-hours on Tuesday.
- A car makes two round trips into the Manhattan CBD on the same day. It would be charged a single toll, because passenger vehicles would be charged only once daily.
- A car is parked all week within the Manhattan CBD and then leaves the Manhattan CBD for a day trip on Saturday, returning before midnight. The car would be detected leaving (remaining) and entering the Manhattan CBD on the same day. Because passenger vehicles would be charged only once daily, a single toll would be charged on Saturday.
- A car is parked all week within the Manhattan CBD and then leaves the Manhattan CBD on Friday and returns on Monday. The car would be detected leaving (remaining) on Friday and entering when it returns on Monday. It would receive a charge on Friday for remaining and on Monday for entering. It would not be charged any other days when it was parked the entire day in the Manhattan CBD, nor the days when it was away.

Table ES-2. Tolling Scenarios Evaluated for the CBD Tolling Alternative

PARAMETER[1]	SCENARIO A Base Plan	SCENARIO B Base Plan with Caps and Exemptions	SCENARIO C Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO D High Crossing Credits for Vehicles Using Tunnels to Access the CBD	SCENARIO E High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO F High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO G Base Plan with Same Tolls for All Vehicle Classes
Time Periods[2]							
Peak: Weekdays	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 10 a.m.; 4 p.m. to 8 p.m.	6 a.m. to 8 p.m.
Peak: Weekends	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.
Off Peak: Weekdays	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	10 a.m. to 4 p.m.	8 p.m. to 10 p.m.
Overnight: Weekdays	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	8 p.m. to 6 a.m.	10 p.m. to 6 a.m.
Overnight Weekends	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.
Potential Crossing Credits							
Credit Toward the CBD Toll for Tolls Paid at the Queens-Midtown, Hugh L. Carey, Lincoln, Holland Tunnels	No	No	Yes	Yes	Yes	Yes	No
Credit Toward the CBD Toll for Tolls Paid at the Robert F. Kennedy, Henry Hudson, George Washington Bridges	No	No	No	No	No	Yes	No
Potential Exemptions and Limits (Caps) on Number of Tolls per Day							
Cars, motorcycles, commercial vans	Once per day	Once per day	Once per day	Once per day	Once per day	Once per day	Once per day
Taxis	No cap	Once per day	Exempt	No cap	Exempt	Once per day	No cap
FHVs	No cap	Once per day	Three times per day	No cap	Three times per day	Once per day	No cap
Small and large trucks	No cap	Twice per day	No cap	No cap	No cap	Once per day	No cap
Buses	No cap	Exempt	No cap	No cap	Transit buses–Exempt No cap on others	Exempt	No cap
Approximate Toll Rate Assumed[3]							
Peak	$9	$10	$14	$19	$23	$23	$12
Off Peak	$7	$8	$11	$14	$17	$17	$9
Overnight	$5	$5	$7	$10	$12	$12	$7

1 The parameters in this table were assumed for modeling purposes to evaluate the range of potential effects that would result from implementation of the CBD Tolling Alternative. Actual toll rates, potential credits, exemptions and/or discounts, and the time of day when toll rates would apply would be determined by the TBTA Board after recommendations are made by the Traffic Mobility Review Board. **Appendix 2E, "Project Alternatives: Definition of Tolling Scenarios,"** provides more detailed information on the rates, potential crossing credits, exemptions, and/or discounts assumed for each tolling scenario.

2 Tolls would be higher during peak periods when traffic is greatest. These would be set forth by TBTA in the final toll schedule. All tolling scenarios include a higher toll on designated "Gridlock Alert" days, although the modeling conducted for the Project did not reflect this higher toll since it considers typical days rather than days with unusually high traffic levels.

3 Toll rates are for autos, commercial vans, and motorcycles using E-ZPass and are rounded. For all tolling scenarios, different rates would apply for vehicles not using E-ZPass; for Tolling Scenarios A through F, different vehicle classes would pay different tolls (see **Appendix 2E, "Definition of Tolling Scenarios"**). The peak E-ZPass rate (rounded) range across tolling scenarios for small trucks would be $12-$65; for large trucks, the range would be $12-$82.

There are several components to the toll structure, but the most important factor in the magnitude and distribution of effects from the Project is the toll rate. Overall, the Project would result in a congestion benefit both regionally and within the Manhattan CBD. On a local level, depending on the toll structure, near and adjacent to the Manhattan CBD there would be increases or decreases in traffic volumes as vehicles divert to other routes to avoid the toll. **Table ES-4** provides additional information regarding these effects and proposed mitigations. The following trends are important to understand:

- All the tolling scenarios would reduce traffic entering the Manhattan CBD.
- All the tolling scenarios would have an overall net benefit in congestion reduction for the region.
- Adding discounts, crossing credits, and exemptions would require that the overall toll rates increase, leading to more congestion reduction.
- Higher toll rates would reduce traffic, and increase transit ridership entering the Manhattan CBD.
- Higher toll rates would increase traffic diversions as drivers avoid the toll. This would lead to less traffic in the Manhattan CBD, and changes in traffic patterns outside of the CBD, with both increases and decreases of traffic in localized locations elsewhere.
- Crossing credits, which would credit some of the amount drivers pay for TBTA or PANYNJ tolls against the CBD toll, would bring the total costs of different routes into the CBD closer to parity and therefore change the degree to which, and balance of where, traffic reductions occur.
    - ❖ Tolling scenarios with crossing credits would have less effect on reducing traffic entering the Manhattan CBD from Queens, and much less effect on reducing traffic entering from New Jersey than tolling scenarios without crossing credits. Tolling scenarios with crossing credits would lead to greater decreases in traffic entering from north of 60th Street and Brooklyn.
    - ❖ Crossing credits would encourage some drivers to shift from the currently-free East River Bridges to TBTA's tolled tunnels. As a result, traffic would increase at the Queens-Midtown Tunnel and the Hugh L. Carey Tunnel, resulting in more traffic on the Long Island Expressway and a shift of traffic along the Gowanus Expressway from the BQE to the Hugh Carey Tunnel, as well as increases in traffic on the local streets in Manhattan that feed traffic to and from these tunnels.

In addition to the toll rate and crossing credits, several other factors play a role in generating beneficial and adverse effects.

Truck Toll Price. Unlike cars, trucks cannot shift to a different mode (e.g., transit). For trucks traveling through the CBD en route to their final destination, their only alternative to paying the toll is to not make the trip or divert around the Manhattan CBD. Similar to the general traffic, increased tolls decrease truck traffic entering the Manhattan CBD. Truck diversion increases with increases in the toll (similar to general traffic). In particular, trucks would divert to routes on highways in Staten Island and in the South Bronx.

Public Outreach Response

In response to concerns raised during the early Public Outreach related to increased truck traffic on the Cross Bronx Expressway and the fact that trucks do not have an alternate mode of travel to avoid the toll, Scenario G was added. This scenario charges the same toll rate for cars and trucks and significantly reduces truck diversions in the South Bronx and Staten Island. See **Chapter 4A, "Regional Transportation Effects and Modeling."**

Time of Day. Reducing the toll in the overnight period would reduce diversions to alternative routes, lessening effects outside the Manhattan CBD and encouraging delivery vehicles to shift to the less-congested overnight period. Though not as substantial with this lower overnight charge, traffic reductions would still occur.

HOW DOES THE ACTION ALTERNATIVE MEET THE PROJECT OBJECTIVES?

FHWA will consider the No Action and the CBD Tolling Alternative (Action Alternative) as a whole, while being mindful that the Action Alternative includes a range of potential tolling scenarios. **Table ES-3** summarizes how the No Action and the Action Alternative meet the Project purpose, needs, and objectives.

Table ES-3. Comparison of Evaluation Results for the No Action and CBD Tolling Alternatives

SCREENING CRITERION	NO ACTION ALTERNATIVE	CBD TOLLING (ACTION) ALTERNATIVE
Purpose and Need: Reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements	DOES NOT MEET	MEETS
Objective 1: Reduce daily vehicle-miles traveled (VMT) within the Manhattan CBD Criterion: Reduce by 5% (relative to No Action)	DOES NOT MEET	MEETS
Daily VMT reduction (2023)	0%	7.1% - 9.2%
Objective 2: Reduce the number of vehicles entering the Manhattan CBD daily Criterion: Reduce by 10% (relative to No Action)	DOES NOT MEET	MEETS
Daily vehicle reduction (2023)	0%	15.4% - 19.9%
Objective 3: Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for MTA's Capital Program	DOES NOT MEET	MEETS[1]
Net revenue to support MTA's Capital Program[2]	$0	$1.02 billion - $1.48 billion
Objective 4: Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the "MTA Reform and Traffic Mobility Act"	DOES NOT MEET	MEETS

1 Although Tolling Scenario B would not meet Objective 3 with the toll rates identified and assessed in this Environmental Assessment (EA), additional analysis was conducted to demonstrate that it would meet this objective with a higher toll rate; the resulting VMT reduction and revenue for that modified scenario would fall within the range of the other scenarios presented. **Chapter 16, "Summary of Effects,"** provides more information on the modified Tolling Scenario B.

2 The net revenue needed to fund $15 billion depends on a number of economic factors, including but not limited to interest rates and term. For the purposes of this EA, the modeling assumes the Project should provide at least $1 billion annually in total net revenue, which would be invested or bonded to generate sufficient funds. The net revenue values provided in this table are rounded and based on Project modeling.

As described in the EA, the TBTA Board would adopt a final toll structure, including toll rates and any crossing credits, discounts, and/or exemptions, informed by recommendations made by the Traffic Mobility Review Board and following a public hearing in accordance with the State Administrative Procedure Act.

What are the effects of the Project?

This EA analyzes 18 resource areas. **Figure ES-4** identifies those where there would be only beneficial or no adverse effects from the Project, and those areas that have identified potential adverse effects that will be mitigated. In the case of potential adverse effects, some of these adverse effects would only occur in certain tolling scenarios. **Table ES-4** provides more detail on which tolling scenarios would result in beneficial or adverse effects, and to what degree. Each respective chapter provides additional description and discussion.

Figure ES-4. Resource Areas and Effects Assessed in the EA

Areas with Only Beneficial or No Adverse Effects	Areas with Potential Adverse Effects
Transportation: Regional Transportation Transportation: Parking Social Conditions: Population Social Conditions: Neighborhood Character Social Conditions: Public Policy Economic Conditions Energy Parks and Recreational Resources Historical and Cultural Resources Visual Resources Air Quality Energy Noise Natural Resources Hazardous Waste/Contaminated Materials Construction Effects	Transportation: Highways and Intersections Transportation: Transit Transportation: Pedestrians and Bicycles Environmental Justice

What are the effects of the Project on environmental justice populations?

Some of the Project effects occur in certain locations, so attention was given to whether these effects occurred broadly across the region or population, or whether they affect communities or populations of those who are low-income or historically underrepresented (environmental justice communities or populations). the following paragraphs provide additional explanation about related beneficial or adverse effects.

Reduced traffic would benefit all drivers traveling to and near the Manhattan CBD, including environmental justice populations, by improving travel times, reducing vehicle operating costs, and improving safety. The Project would also improve regional air quality, and most environmental justice populations who live in the Manhattan CBD would experience lower localized pollutant emissions due to reduced traffic. Additional benefits are described in **Chapter 17, "Environmental Justice."**

Low-Income Drivers. The cost of the new CBD toll would not be predominantly borne by low-income drivers. However, for low-income drivers who have no viable alternative to reach the Manhattan CBD other than private vehicle, the effect of that cost would be more burdensome because the cost of the toll would consume a larger percentage of their available income. Thus, the adverse effect on low-income drivers associated with the cost of the new toll would constitute a disproportionately high and adverse effect.

Taxis and FHVs. The New York City Taxi & Limousine Commission (TLC) requires that passengers reimburse the taxi driver for any toll costs during the trip; when no passengers are in the vehicle, drivers pay the toll today as part of the cost of doing business. TLC has also published rules that govern the high-volume class of FHVs (Uber and Lyft) and require that FHV services collect and remit to the TLC information on the itemized fare for the trips charged to the passengers, including the fare, toll, taxes and gratuities.

Any charge implemented by the CBD Tolling Program would likely follow the existing framework. Thus, when present, the customer would be responsible for paying the tolls and the final receipt would be itemized to show this. If no customer is present, the vehicle would be charged like a passenger vehicle, unless exempted or capped.

To address the high and disproportionate adverse effects on low-income drivers who feel they must still drive, the Project Sponsors will institute the following mitigations and enhancements.

MITIGATIONS

The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) to ensure availability of documentation needed for drivers eligible for the NYS tax credit.

TBTA will post information related to the tax credit on the project website, with a link to the appropriate location on the NYS DTF website to guide eligible drivers to information on claiming the credit.

TBTA will eliminate the $10 E-ZPass tag deposit fee for customers without credit card backup.

TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-load balance), refill their accounts with cash at participating retail locations, and discount plans already in place, about which they may not be aware.

TBTA will provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware.

The Project Sponsors commit to establishing an Environmental Justice Community Group that would meet on a bi-annual basis, with the first meeting six months after implementation, to share updated data and analysis and listen to potential concerns.

ENHANCEMENT

NYC's buses serve a greater share of low-income and minority households compared to other modes of transportation, including subways. MTA developed an approach which combines considerations of equity and air quality to identify Equity Priority Areas for its bus network redesigns. Equity Priority Areas are used to target improvements and investments to promote equity and access to opportunities in these transit-dependent, historically marginalized and underserved areas to promote equitable transportation and access to opportunities. The recently implemented bus network redesigns in Staten Island and the Bronx have been well-received. Network redesigns in Queens and Brooklyn are progressing. TBTA commits to working with MTA NYCT to address areas identified in the EA where bus service could be improved as the Brooklyn and Manhattan Bus Network Redesigns move forward.

Several tolling scenarios include exemptions or discounts (in the form of caps) on the number of trips that can be charged for taxis and/or FHVs. Exemptions and caps decrease the toll burden on taxi/FHV drivers, while increasing the toll rate for other drivers to meet the Project's congestion and revenue objectives. If taxis and FHVs are charged for each trip, the demand for their service would decline, particularly in New York City, reducing trips and better meeting the Project objectives, but creating new direct costs and/or potential job insecurity. Because many New York City taxi and FHV drivers identify as part of an environmental justice population, this would result in disproportionately high and adverse effects. **Table ES-4** provides information on the magnitude of these effects.

To address disproportionately high and adverse effects for New York City taxi and/or FHV drivers, the Project Sponsors will institute the following mitigation if a tolling scenario is implemented with tolls of more than once per day for their vehicles:

MITIGATION

The Project Sponsors commit to working with the appropriate city and state agencies so that when passengers are present, they pay the toll, rather than the driver.

TBTA will work with NYCT to institute an Employment Resource Coordination Program to connect drivers experiencing job insecurity with a direct pathway to licensing, training and job placement with MTA or its affiliated vendors at no cost to the drivers (the $60-$70 fee for a bus operator's exam would be waived, and the $10 fee for a commercial driver's license test would be reimbursed). This program will include resources and information on how to become a driver with MTA's paratransit carriers or a bus or train operator.

For those who may not want a commercial driver's license, TBTA will coordinate with MTA and NYCT to submit a request to the Federal Transit Administration (FTA) for a pilot program for consideration that will increase eligibility of taxi and FHV drivers to use their vehicles to provide paratransit trips. This will increase work opportunities for roughly 140,000 TLC-licensed drivers and improve service quality for the nearly 170,000 paratransit customers eligible for paratransit service. Drivers wishing to be part of Access-A-Ride's broker program would still need to meet broker driving training, including training to work with people with disabilities. The 6-month pilot program could begin ahead of implementation of the Project and would include data collection to measure progress and test the pilot program against a set of key performance indicators. MTA would produce a report to summarize the pilot program performance after six months for evaluation by MTA, FTA, and TLC. Should the pilot show progress towards success, MTA would propose that the pilot continue for a full year. If the pilot shows success after one year, the MTA, FTA, and TLC may discuss extending the pilot, making the program permanent, or discontinuing the pilot and return to existing policy.

How has the public been involved?

The Project Sponsors have implemented a robust public and agency outreach plan to solicit input from residents, businesses, Federal/regional/state/local agencies, across the 28-county study area. Information about the Project and the process was conveyed via the Project website, a Project Fact Sheet, social media, direct email, and multiple print media outlets. During the early Outreach period, 10 virtual public outreach and 9 environmental justice webinar sessions were held, for a total of 19 sessions. Real-time answers were provided to those who submitted written factual, technical and logistical questions related to the Project and process. The webinars, which remain available for viewing, were streamed live on YouTube, and recordings were subsequently posted on YouTube for on-demand viewing. As of February 2022, there were over 14,000 views of these recordings, combined. Meeting attendees were asked to fill out an optional survey; of the 309 responses received, roughly one-third identified themselves as minority. During the EA comment period, six virtual hearings will be held.

To encourage meaningful engagement with environmental justice populations, FHWA and the Project Sponsors also provided smaller meetings in the form of a technical advisory group and a stakeholder working group.

Environmental Justice Technical Advisory Group. FHWA and the Project Sponsors invited community leaders and advocacy group representatives with knowledge of and experience with environmental justice populations to participate. Thirty-seven groups were invited, of which 16 groups accepted, and 14 groups have participated in one or more of the meetings to date. The Environmental Justice Technical Advisory Group met three times prior to the publication of this EA and will meet during the EA comment period.

Environmental Justice Stakeholder Working Group. During the early outreach, individuals from populations throughout the study area were able to request participation or suggest others as participants in this group by using a form on the Project website or by contacting the Project Sponsors. All twenty-seven people who were nominated or expressed interested in participating were invited to join the Working Group, and 22 individuals attended one or both meetings. This group met twice prior to the publication of this EA and will meet again during the EA comment period.

In both groups, the agendas were largely driven by the participants while the Project Sponsors listened and provided answers to questions. The discussions during these sessions, along with the comments heard during the public outreach and environmental justice webinars, led the Project Sponsors to undertake additional analyses and develop additional mitigation measures.

Environmental Justice Outreach Response

As an independent action, MTA is currently transitioning its fleet to zero-emission buses. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed a new Environmental Justice Scoring framework to actively incorporate these priorities in the deployment phasing process of the transition.

Based on feedback received during the outreach conducted for the CBD Tolling Program and concerns raised by members of environmental justice communities, MTA is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which will begin later in 2022. This independent effort by MTA is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.

Table ES-4. Summary of Benefits and Effects for the CBD Tolling Alternative with Comparison of Tolling Scenarios

EA CHAPTER/ ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO A	B	C	D	E	F	G	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
4A – Transportation: Regional Transportation Effects and Modeling	Vehicle Volumes	Decreases in daily vehicle trips to Manhattan CBD overall. Some diversions to different crossings to Manhattan CBD or around the Manhattan CBD altogether, depending on tolling scenario. As traffic, including truck trips, increase on some circumferential highways, simultaneously there is a reduction in traffic on other highway segments to the CBD. Diversions would increase or decrease traffic volumes at local intersections near the Manhattan CBD crossings. Overall decrease in vehicle-miles traveled (VMT) in the Manhattan CBD and region overall in all tolling scenarios and some shift from vehicle to transit mode.	Crossing locations to Manhattan CBD	% Increase or decrease in daily vehicles entering the Manhattan CBD relative to No Action Alternative	-15%	-16%	-17%	-19%	-20%	-18%	-17%	No	**No mitigation needed.** Beneficial effects
	Auto Journeys to Manhattan CBD		Manhattan CBD	% Increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-5%	-5%	-7%	-9%	-11%	-10%	-6%	No	**No mitigation needed.** Beneficial effects
				Absolute increase or decrease in daily worker auto trips to Manhattan CBD relative to No Action Alternative	-12,571	-12,883	-17,408	-24,017	-27,471	-24,433	-14,578		
	Truck Trips Through Manhattan CBD		Manhattan CBD	Increase or decrease in daily truck trips through Manhattan CBD (without origin or destination in the CBD) relative to No Action Alternative	-4,645 (-55%)	-5,695 (-59%)	-5,253 (-63%)	-5,687 (-68%)	-6,604 (-79%)	-6,784 (-81%)	-6,567 (-21%)	No	**No mitigation needed.** Beneficial effects
	Transit Journeys		Manhattan CBD	% Increase or decrease in daily Manhattan CBD-related transit journeys relative to No Action Alternative	+1 to +3%							No	**No mitigation needed.** No adverse effects
	Traffic Results		Manhattan CBD	% Increase or decrease in daily VMT relative to No Action Alternative	-9% to -7%							No	**No mitigation needed.** Beneficial effects in the Manhattan CBD, New York City (non-CBD), north of New York City, and Connecticut; although there would be VMT increases in Long Island and New Jersey, the effects would not be adverse.
			NYC (non-Manhattan CBD)		-1 to 0%								
			New York north of NYC		-1% to 0%								
			Long Island		Less than (+) 0.2% change								
			New Jersey		Less than (+) 0.2% change								
			Connecticut		Less than (+) 0.2% change								

EA CHAPTER/ ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4B – Transportation: Highways and Local Intersections	Traffic–Highway Segments	The introduction of the CBD Tolling Program may produce increased congestion on highway segments approaching on circumferential roadways used to avoid Manhattan CBD tolls, resulting in increased delays and queues in midday and PM peak hours on certain segments in some tolling scenarios: Westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel (midday) Approaches to westbound George Washington Bridge on I-95 (midday) Southbound and northbound FDR Drive between East 10th Street and Brooklyn Bridge (PM) Other locations will see an associated decrease in congestion particularly on routes approaching the Manhattan CBD.	10 highway segments (AM)	Highway segments with increased delays and queues in peak hours that would result in adverse effects	0 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D)							Yes	**Mitigation needed.** The Project Sponsors will implement a monitoring plan prior to implementation with post-implementation data collected approximately three months after the start of operations and including thresholds for effects; if the thresholds are reached or crossed, the Project Sponsors will implement Transportation Demand Management (TDM) measures, such as ramp metering, motorist information, signage at all identified highway locations with adverse effects upon implementation of the Project. Post-implementation, the Project Sponsors will monitor effects and, if needed, TBTA will modify the toll rates, crossing credits, exemptions, and/or discounts to reduce adverse effects.
			10 highway segments (midday)		2 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
			10 highway segments (PM)		1 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
	Intersections	Shifts in traffic patterns, with increases in traffic at some locations and decreases at other locations, would change conditions at some local intersections within and near the Manhattan CBD. Of the 102 intersections analyzed, most intersections would see reductions in delay. Potential adverse effects on four local intersections in Manhattan: Trinity Place and Edgar Street (midday); East 36th Street and Second Avenue (midday); East 37th Street and Third Avenue (midday); East 125th Street and Second Avenue (AM, PM)	**363 locations (All day)**	Number of instances of intersections with an increase in volumes of 50 or more vehicles in the peak hours.	**9**	**10**	**24**	**50**	**48**	**50**	**10**	Yes	**Mitigation needed.** The Project Sponsors will monitor those intersections where adverse effects were identified and implement appropriate signal timing adjustments to mitigate the effect, per NYCDOT's normal practice. **Enhancement** Refer to the overall enhancement on monitoring at the end of this table.
			102 locations (AM)		2	2	3	3	3	3	2		
			102 locations (midday)		1	2	4	16	16	17	0		
			102 locations (PM)		1	1	1	10	9	9	1		
			57 locations (overnight)		5	5	16	21	20	21	5		
			4 locations	Locations with potential adverse effects that would be addressed with signal timing adjustments	0	0	0	4	4	4	0		
4C – Transportation: Transit	Transit Systems	The Project would generate a dedicated revenue source for investment in the transit system. Transit ridership would increase by 1 to 2 percent systemwide for travel to and from the Manhattan CBD, because some people would shift to transit rather than driving. Increases in transit ridership would not result in adverse effects on line-haul capacity on any transit routes.	New York City Transit	% Increase or decrease in total daily transit ridership systemwide	1.5% to 2.1%							No	**No mitigation needed.** No adverse effects
			PATH		0.8% to 2.0%								
			Long Island Rail Road		0.6% to 2.0%								
			Metro-North Railroad		0.6% to 1.9%								
			NJ TRANSIT commuter rail		0.3% to 2.3%								
			MTA/NYCT Buses		1.3% to 1.6%								
			NJ TRANSIT Bus		0.5% to 1.1%								
			Other buses (suburban and private operators)		0.0% to 0.9%								
			Ferries (Staten Island Ferry, NYC Ferry, NY Waterway, Seastreak)		2.5% to 3.5%								
			Roosevelt Island Tram		1.7% to 4.1%								

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4C – Transportation: Transit (Cont'd)	Bus System Effects	Decreases in traffic volumes within the Manhattan CBD and near the 60th Street boundary of the Manhattan CBD would reduce the roadway congestion that adversely affects bus operations, facilitating more reliable, faster bus trips.	Manhattan local buses	% Increase or decrease at maximum passenger load point	Increases of 0.5% to 1.2%							No	**No mitigation needed.** No adverse effects
			Bronx express buses		-1.6% to 2.2%								
			Queens local and express buses (via Ed Koch Queensboro Bridge)		2.0% to 2.8%								
			Queens express buses (via Queens-Midtown Tunnel)		-1.3% to 4.1%								
			Brooklyn local and express buses		1.3% to 2.6%								
			Staten Island express routes (via Brooklyn)		3.7% to 4.5%								
			Staten Island express routes (via NJ)		1.0% to 2.8%								
			NJ/West of Hudson buses (via Holland Tunnel)		-1.4% to 1.4%								
			NJ/West of Hudson buses (via Lincoln Tunnel)		0.4% to 1.5%								
	Transit Elements	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations: — Hoboken Terminal, Hoboken, NJ PATH station — Times Sq-42 St/42 St-Port Authority Bus Terminal subway station in the Manhattan CBD (N, Q, R, W, and S; Nos. 1, 2, 3, and 7; and A, C, E lines) — Flushing-Main St subway station, Queens (No. 7 line) — 14th Street-Union Square subway station in the Manhattan CBD (Nos. 4, 5, and 6; and L, N, Q, R, W lines) — Court Square subway station, Queens (No. 7 and E, G, M lines)	Hoboken Terminal–PATH station (NJ) Stair 01/02	Net passenger increases or at stair in the peak hour	45	72	122	164	240	205	139	Yes	**Mitigation needed for Tolling Scenarios E and F.** TBTA will coordinate with NJ TRANSIT and PANYNJ to monitor pedestrian volumes on Stair 01/02 one month prior to commencing tolling operations to establish a baseline, and two months after Project operations begin. If a comparison of Stair 01/02 passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 205, then TBTA will coordinate with NJ TRANSIT and PANYNJ to implement improved signage and wayfinding to divert some people from Stair 01/02, and supplemental personnel if needed.
			42 St-Times Square–subway station (Manhattan) Stair ML6/ML8 connecting mezzanine to uptown 1/2/3 lines subway platform	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	59%	68%	82%	100%	82%	56%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to remove the center handrail and standardize the riser, so that the stair meets code without the hand rail. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.

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4C – Transportation: Transit (Cont'd)	Transit Elements (Cont'd)	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations (cont'd)	Flushing-Main St subway station (Queens)–Escalator E456 connecting street to mezzanine level	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	116%	91%	108%	116%	100%	133%	72%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the speed from 100 feet per minute (fpm) to 120 fpm.
			Union Sq subway station (Manhattan)–Escalator E219 connecting the L subway line platform to the Nos. 4/5/6 line mezzanine	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	82%	87%	102%	100%	95%	61%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the escalator speed from 100 fpm to 120 fpm.
			Court Sq subway station (Queens)–Stair P2/P4 to Manhattan-bound No. 7 line	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	98%	90%	102%	104%	100%	117%	97%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to construct a new stair from the northern end of the No. 7 platform to the street. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.
4D – Transportation: Parking	Parking Conditions	All tolling scenarios would result in a reduction in parking demand within the Manhattan CBD of a similar magnitude to the reduction in auto trips into the Manhattan CBD. With a shift from driving to transit, there would be increased parking demand at subway and commuter rail stations and park-and-ride facilities outside the Manhattan CBD.	Manhattan CBD	Narrative	Reduction in parking demand due to reduction in auto trips to CBD							No	**No mitigation needed.** Beneficial effects
			Transit facilities	Narrative	Small changes in parking demand at transit facilities, corresponding to increased commuter rail and subway ridership							No	**No mitigation needed**. No adverse effects
4E – Transportation: Pedestrians and Bicycles	Pedestrian Circulation	Increased pedestrian activity on sidewalks outside transit hubs because of increased transit use. At all but one location in the Manhattan CBD (Herald Square/Penn Station), the increase in transit riders would not generate enough new pedestrians to adversely affect pedestrian circulation in the station area. Outside the Manhattan CBD, transit usage at individual stations would not increase enough to adversely affect pedestrian conditions on nearby sidewalks, crosswalks, or corners.	Herald Square/Penn Station NY	Sidewalks, corners, and crosswalks with pedestrian volumes above threshold in AM / PM peak periods	Adverse effects on pedestrian circulation at one sidewalk segment and two crosswalks							Yes	**Mitigation needed.** The Project Sponsors will implement a monitoring plan at this location. The plan will include a baseline, specific timing, and a threshold for additional action. If that threshold is reached, the Project Sponsors will increase pedestrian space on sidewalks and crosswalks via physical widening and/or removing or relocating obstructions.

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4E – Transportation: Pedestrians and Bicycles (Cont'd)	Bicycles	Small increases in bicycle trips near transit hubs and as a travel mode	Manhattan CBD	Narrative	Small increases in bicycle trips near transit hubs with highest increases in pedestrian trip share							No	**No mitigation needed.** No adverse effects
			Outside Manhattan CBD	Narrative	Some shifts from automobile to bicycles							No	**No mitigation needed.** No adverse effects
	Safety	No adverse effects	Overall	Narrative	No substantial increases in pedestrian volumes or increased safety concerns, including at existing identified high-crash locations. Overall, fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety.							No	**No mitigation needed.** No adverse effects
5A – Social Conditions: Population	Benefits	Benefits in and near the Manhattan CBD	28-county study area	Narrative	Benefits in and near the Manhattan CBD related to travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety, reduced air pollutant emissions, and predictable funding source for transit improvements. This would positively affect community connections and access to employment, education, healthcare, and recreation for residents.							No	**No mitigation needed.** Beneficial effects
	Community Cohesion	Changes to travel patterns, including increased use of transit, resulting from new toll	28-county study area	Narrative	Changes to travel patterns, including increased use of transit, as a result of the Project would not adversely affect community cohesion or make it more difficult for people to connect with others in their community, given the extensive transit network connecting to the Manhattan CBD and the small change in trips predicted.							No	**No mitigation needed.** No adverse effects (see "Environmental Justice" below for mitigation related to increased costs for low-income drivers).
	Indirect Displacement	No notable changes in socioeconomic conditions or cost of living so as to induce potential involuntary displacement of residents	Manhattan CBD	Narrative	The Project would not result in the potential for indirect (involuntary) residential displacement. It would not result in substantial changes to market conditions so as to lead to changes in housing prices, given that real estate values in the Manhattan CBD are already high and the many factors that affect each household's decisions about where to live. In addition, low-income residents of the CBD would not experience a notable increase in the cost of living as a result of the Project because of the lack of change in housing costs, the many housing units protected through New York's rent-control, rent-stabilization, and other similar programs, the tax credit available to CBD residents with incomes of up to $60,000, and the conclusion that the cost of goods would not increase as a result of the Project (see "Economic Conditions" below).							No	**No mitigation needed.** No adverse effects
	Community Facilities and Services	Increased cost for community facilities and service providers in the Manhattan CBD, their employees who drive, and clientele who drive from outside the CBD	Manhattan CBD	Narrative	The Project would increase costs for community service providers that operate vehicles into and out of the Manhattan CBD and for people who travel by vehicle to community facilities and services in the Manhattan CBD, as well as residents of the CBD and employees of community facilities who use vehicles to travel to community facilities outside the CBD. Given the wide range of travel options other than driving, the cost for users to drive to community facilities and services would not constitute an adverse effect on community facilities and services.							No	**No mitigation needed.** No adverse effects

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5A – Social Conditions: Population (Cont'd)	Effects on Vulnerable Social Groups	Benefits to vulnerable social groups from new funding for MTA Capital Program	28-county study area	Narrative	The Project would benefit certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and non-driver populations by creating a funding source for the MTA 2020–2024 Capital Program (and subsequent capital programs and by reducing congestion in the Manhattan CBD). Elderly individuals would benefit from the travel-time and reliability improvements to bus service with the CBD Tolling Alternative, as bus passengers tend to be older than riders on other forms of transit, such as the subway and, as described above, bus passengers in the Manhattan CBD would benefit from travel-time savings due to the decrease in congestion. People over the age of 65 with a qualifying disability receive a reduced fare on MTA subways and buses, and elderly individuals with a qualifying disability can also receive MTA's paratransit service, including taxis and FHVs operating on behalf of MTA to transport paratransit users. Elderly people with disabilities and low-income individuals who drive to the Manhattan CBD would be entitled to the same mitigation and enhancements proposed for low-income and disabled populations, in general. Other elderly individuals who drive to the Manhattan CBD would pay the toll.							No	**No mitigation needed.** No adverse effects
	Access to Employment	Increased cost for small number of people who drive to work	28-county study area	Narrative	Decrease in work trips by driving modes to and within the Manhattan CBD, with an offsetting increase in transit ridership. Those who would drive despite the CBD toll would do so based on the need or convenience of driving and would benefit from the reduced congestion in the Manhattan CBD. Negligible effect (less than 0.1%) on travel to employment within the Manhattan CBD and reverse-commuting from the CBD due to the wide range of transit options available and the small number of commuters who drive today.							No	**No mitigation needed.** No adverse effects
5B – Social Conditions: Neighborhood Character		No notable change in neighborhood character	Manhattan CBD	Narrative	The changes in traffic patterns on local streets are unlikely to change the defining elements of the neighborhood character of the Manhattan CBD.							No	**No mitigation needed.** No adverse effects
			Area near 60th Street Manhattan CBD boundary	Narrative	Changes in parking demand near the 60th Street CBD boundary (including increases just north of 60th Street and decreases just to the south) would not create a climate of disinvestment that could lead to adverse effects on neighborhood character nor alter the defining elements of the neighborhood character of this area.							No	**No mitigation needed.** No adverse effects
5C – Social Conditions: Public Policy		No effect	28-county study area	Narrative	The Project would be consistent with regional transportation plans and other public policies in place for the regional study area and the Manhattan CBD.							No	**No mitigation needed.** No adverse effects
6 – Economic Conditions	Benefits	Regional economic benefits	28-county study area	Narrative	Economic benefit through congestion relief in terms of travel-time savings and travel-time reliability improvements, which would increase productivity and utility, as well as safety improvements and reduced vehicle operating costs associated with reductions in congestion.							No	**No mitigation needed.** Beneficial effects
	Economic Effects of Toll Costs	Cost of new toll for workers and businesses in the CBD that rely on vehicles	Manhattan CBD	Narrative	No adverse effects to any particular industry or occupational category in the Manhattan CBD. Given the high level of transit access in the CBD and high percentage of transit share, the toll would affect only a small percentage of the overall workforce. This would not adversely affect operations of businesses in the Manhattan CBD or the viability of any business types, including the taxi/FHV industry.							No	**No mitigation needed.** No adverse effects
	Price of Goods	Cost of new toll would not result in changes in the cost of most consumer goods	Manhattan CBD	Narrative	Unlikely to result in meaningful change in cost for most consumer goods. Any cost increase associated with the new toll in the CBD Tolling Alternative that would be passed along to receiving businesses would be distributed among several customers per toll charge (since trucks make multiple deliveries) especially for businesses, including small businesses and micro-businesses, receiving smaller deliveries. This would minimize the cost to any individual business. Some commodity sectors (construction materials, electronics, beverages) are more prone to increases due to less competition within delivery market.							No	**No mitigation needed.** No adverse effects

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6 – Economic Conditions (Cont'd)	Taxi and FHV Industry	Depending on the tolling scenario, the toll could reduce taxi and FHV revenues due to a reduction in taxi/FHV VMT with passengers within the CBD. While this could adversely affect individual drivers (see "Environmental Justice" below), the industry would remain viable overall.	28-county study area	Net change in daily taxi/FHV VMT regionwide	-126,993 (-2.9%)	-14,028 (-0.3%)	-73,413 (-1.7%)	-217,477 (-5.0%)	-116,065 (-2.7%)	-4,888 (-1.0%)	-137,815 (-3.2%)	No	**No mitigation needed.** No adverse effects (see "Environmental Justice" below for mitigation related to effects on taxi and FHV drivers).
				Net change in daily taxi/FHV VMT in the CBD	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)		
	Local Economic Effects	Changes in parking demand near the 60th Street CBD boundary	Area near 60th Street Manhattan CBD boundary	Narrative	Changes in parking demand near the 60th Street Manhattan CBD boundary (including increases just north of 60th Street and decreases just to the south) could jeopardize the viability of one or more parking facilities in the area south of 60th Street but would not create a climate of disinvestment that could lead to adverse effects on neighborhood character.							No	**No mitigation needed.** No adverse effects
7 – Parks and Recreational Resources		New tolling infrastructure, tolling system equipment, and signage in the southern portion of Central Park	Manhattan CBD	Narrative	The Project would replace four existing streetlight poles at three detection locations in Central Park near 59th Street and on two adjacent sidewalks outside the park's wall. These poles would be in the same locations as existing poles and would not reduce the amount of park space or affect the features and activities of the park. The Project would also place tolling infrastructure beneath the structure of the High Line, outside the park area atop the High Line structure. FHWA through the public involvement process is soliciting public input related to the Project's effects on these parks (see **Chapter 19, "Section 4(f) Evaluation"**).							No	**No mitigation needed.** Refer to **Chapter 7, "Parks and Recreational Resources,"** for a listing of measures to avoid adverse effects to parks.
8 – Historic and Cultural Resources		New tolling infrastructure and tolling system equipment on or near historic properties	45 historic properties within the Project's Area of Potential Effects (APE)	Narrative	Based on a review of the Project in accordance with Section 106 of the National Historic Preservation Act, FHWA has determined that the Project would have No Adverse Effect on historic properties and the State Historic Preservation Office has concurred.							No	**No mitigation needed.** Refer to **Chapter 8, "Historic and Cultural Resources,"** for a listing of measures to avoid adverse effects to historic properties.
9 – Visual Resources		Changes in visual environment resulting from new tolling infrastructure and tolling system equipment	Area of visual effect	Narrative	Infrastructure and equipment would be similar in form to streetlight poles, sign poles, or similar structures already in use throughout New York City. Cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light. The Project would have a neutral effect on viewer groups and no adverse effect on visual resources							No	**No mitigation needed.** No adverse effects

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10 – Air Quality		Increases or decreases in emissions related to truck traffic diversions	Cross Bronx Expressway at Macombs Road, Bronx, NY	Increase or decrease in Annual Average Daily Trips (AADT)	3,901	3,996	2,056	1,766	3,757	2,188	3,255	No	**No mitigation needed.** No adverse effects **Enhancements** **1.** Refer to the overall enhancement on monitoring at the end of this table. **2.** NYCDOT will coordinate to expand the existing network of sensors to monitor priority locations, and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring is necessary. **3.** MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which will begin later in 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.
				Increase or decrease in daily number of trucks	509	704	170	510	378	536	50		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
			I-95, Bergen County, NJ	Increase or decrease in AADT	9,843	11,459	7,980	5,003	7,078	5,842	12,506	No	
				Increase or decrease in daily number of trucks	801	955	729	631	696	637	-236		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
			RFK Bridge, NY	Increase or decrease in AADT	18,742	19,440	19,860	19,932	20,465	20,391	21,006	No	
				Increase or decrease in daily number of trucks	2,257	2,423	2,820	3,479	4,116	3,045	432		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		

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11 – Energy		Reductions in regional energy consumption	28-county study area	Narrative	Reductions in regional VMT would reduce energy consumption							No	**No mitigation needed.** Beneficial effects
12 – Noise		Imperceptible increases or decreases in noise levels resulting from changes in traffic volumes	Bridge and tunnel crossings	Narrative	The maximum noise level increases (2.9 dB(A)), which were predicted adjacent to the Queens-Midtown Tunnel in Tolling Scenario D, would not be perceptible.							No	**No mitigation needed**. No adverse effects **Enhancement** Refer to the overall enhancement on monitoring at the end of this table.
			Local streets	Narrative	Tolling Scenario C was used to assess noise level changes in Downtown Brooklyn, Tolling Scenario D was used at all other locations assessed. The maximum predicted noise level increases (2.5 dB(A)), which were at Trinity Place and Edgar Street, would not be perceptible. There was no predicted increase in noise levels in the Downtown Brooklyn locations.							No	
13 – Natural Resources		Construction activities to install tolling infrastructure near natural resources	Sites of tolling infrastructure and tolling system equipment locations	Narrative	No effects on surface waters, wetlands, or floodplains. Potential effects on stormwater and ecological resources will be managed through construction commitments. The Project is consistent with coastal zone policies.							No	Refer to **Chapter 13, "Natural Resources,"** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.
14 – Hazardous Waste		Potential for disturbance of existing contaminated or hazardous materials during construction	Sites of tolling infrastructure and tolling system equipment locations	Narrative	Soil disturbance during construction and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain asbestos-containing materials, lead-based paint, or other hazardous substances. Potential effects will be managed through construction commitments.							No	Refer to **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials,"** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.
15 – Construction Effects		Potential disruption related to construction for installation of tolling infrastructure	Sites of tolling infrastructure and tolling system equipment locations	Narrative	Temporary disruptions to traffic and pedestrian patterns, and noise from construction activities, with a duration of less than one year overall, and approximately two weeks at any given location. These effects will be managed through construction commitments.							No	Refer to **Chapter 15, "Construction Effects,"** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.

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17 – Environmental Justice	Potential disproportionately high and adverse effects on low-income drivers	The increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD who do not have an alternative transportation mode for reaching the Manhattan CBD.	28-county study area	Narrative	The increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD in all tolling scenarios.							Yes	**Mitigation needed.** The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) to ensure availability of documentation needed for drivers eligible for the NYS tax credit. TBTA will post information related to the tax credit on the Project website, with a link to the appropriate location on the NYS DTF website to guide eligible drivers to information on claiming the credit. TBTA will eliminate the $10 refundable deposit currently required for E-ZPass customers who do not have a credit card linked to their account, and which is sometimes a barrier to access. TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-load balance), refill their accounts with cash at participating retail locations, and discount plans already in place, about which they may not be aware. TBTA will coordinate with MTA to provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware. The Project Sponsors commit to establishing an Environmental Justice Community Group that would meet on a bi-annual basis, with the first meeting six months after Project implementation, to share updated data and analysis and hear about potential concerns.

EA CHAPTER/ ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
17 – Environmental Justice (Cont'd)	Potential disproportionately high and adverse effects on taxi and FHV drivers	A potential disproportionately high and adverse effect would occur to taxi and FHV drivers in New York City, who largely identify as minority populations, in tolling scenarios that toll their vehicles more than once a day. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers, it would also occur in Tolling Scenarios C and E. The adverse effect would be related to the cost of the new CBD toll and the reduction of VMT for taxis and FHVs, which would result in a decrease in revenues that could lead to losses in employment.	New York City	Narrative	Potential adverse effect would occur in Tolling Scenarios A, D, and G, which would not have caps or exemptions for taxis and FHV drivers.							Yes	**Mitigation needed for New York City taxi and/or FHV drivers if a tolling scenario is implemented with tolls of more than once per day for their vehicles.** The Project Sponsors will work with the appropriate city and state agencies so that when passengers are present, they pay the toll, rather than the driver. TBTA will work with MTA NYCT to institute an Employment Resource Coordination Program to connect drivers experiencing job insecurity with a direct pathway to licensing, training, and job placement with MTA or its affiliated vendors at no cost to the drivers. For those who may not want a commercial driver's license, TBTA will coordinate with MTA NYCT to submit a request to the Federal Transit Administration for a pilot program that will help increase eligibility of taxi and FHV drivers to use their vehicles to provide paratransit trips, and will implement this program if approved.
				Change in daily taxi/FHV VMT with passengers in the CBD relative to No Action Alternative: Scenarios included in EA	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)		
				Net change in daily taxi/FHV trips to CBD relative to scenarios included in EA: Additional analysis to assess effects of caps or exemptions	Tolls capped at 1x / Day: +2%	—	—	Tolls capped at 1x / Day: +3% Exempt: +50%	—	—	Tolls capped at 1x / Day: +2%		

OVERALL PROJECT ENHANCEMENT. The Project Sponsors commit to ongoing monitoring and reporting of potential effects on the Project, including for example, traffic entering the CBD, vehicle-miles traveled in the CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent possible. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed.

WHAT ARE THE PROJECT'S EFFECTS TO SECTION 4(f) PROPERTIES?

Section 4(f) of the U.S. Department of Transportation Act of 1966 (now 49 USC Section 303 and 23 USC Section 138) prohibits USDOT agencies, including FHWA, from approving any program or project that requires the "use" of any publicly owned parkland, recreation area, or wildlife and waterfowl refuge; or any land from a publicly or privately owned historic site of national, state, or local significance (collectively, Section 4(f) resources), unless: (1) there is no feasible and prudent avoidance alternative to the use of the land, and the action includes all possible planning to minimize harm to the Section 4(f) resource; or (2) the agency determines that the use of the property will have a *de minimis* impact.

A project uses a Section 4(f) property if it:

- Permanently incorporates land from the Section 4(f) property into a transportation facility;
- Temporarily occupies land that is part of a Section 4(f) property, such as during construction; or
- Results in a "constructive" use of the Section 4(f) property, where there is no permanent incorporation or temporary occupancy of land, but the proximity impacts (e.g., visual and noise) of a project are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired.

A *de minimis* impact involves the use of Section 4(f) property that is generally minor in nature and results in no adverse effect to a historic site and no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

FHWA evaluated the Project's potential effects on Section 4(f) properties and determined that the CBD Tolling Alternative would not result in any use of Section 4(f) properties other than Central Park and the High Line for the following reasons:

- Central Park: Tolling system equipment is proposed on four poles at three detection locations on park roadways just inside the park near 59th Street. The equipment would be mounted on poles, replacing existing poles in the same locations and would prevent authorized vehicles from using the park to enter the Manhattan CBD without paying the toll. Because the Project Sponsors must have continued access to the poles for maintenance, FHWA intends to make a finding that the CBD Tolling Alternative would result in a *de minimis* impact on Central Park.

- High Line: The CBD Tolling Alternative would attach tolling system equipment to the High Line, a former railroad viaduct that now has a linear park on the former trackbed.[20] The tolling system equipment would be mounted beneath the trackbed structure on a metal pipe, bolted to the existing girders of the viaduct. No tolling infrastructure or tolling system equipment would be within or visible from the publicly accessible parkland that is atop the High Line. Because the Project Sponsors require permanent access to the tolling equipment attached to the underside of the High Line, FHWA intends to make a finding that the CBD Tolling Alternative would result in a *de minimis* impact on the High Line.

FHWA intends to make a finding that the CBD Tolling Alternative would result in a *de minimis* impact on Central Park and the High Line, and the officials with jurisdiction over these resources have concurred with this finding and the New York State Historic Preservation Office has concurred with FHWA's determination that there would be no adverse effect on Central Park as a historic property. FHWA will consider any public input on its proposed finding during the public review period for this EA. **Chapter 19, "Section 4(f) Evaluation,"** provides further detail and support of this finding.

ENDNOTES

[1] U.S. Census Bureau. American Community Survey, 2015-2019; U.S. Census Bureau, 2012–2016 Census Transportation Planning Package.

[2] U.S. Census Bureau, 2012–2016 Census Transportation Planning Package; New York State Comptroller. 2017. New York City's Office Market report; U.S. Census Bureau. American Community Survey, 2015 to 2019.

[3] American Public Transportation Association. *2021 Public Transportation Fact Book*, Table 10. https://www.apta.com/wp-content/uploads/APTA-2021-Fact-Book.pdf

[4] As of July 1, 2021, the estimated population of Los Angeles was 3,849,297. U.S. Census Bureau. Quickfacts. https://www.census.gov/quickfacts/fact/table/losangelescitycalifornia,losangelescountycalifornia,CA/PST045221.

[5] New York Metropolitan Transportation Council. January 2021. *Hub Bound Travel Data Report 2019.* Transit includes subway, commuter rail, bus, ferry, and tram. NYMTC relies on passenger, vehicle, and bicycle counts to prepare the hub bound data, and these counts include work and non-work trips. Therefore, percentages of travel by mode vary from census data. https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

[6] As defined by the MTA Reform and Traffic Mobility Act, the Manhattan CBD consists of the geographic area of Manhattan south of and inclusive of 60th Street to the extent practicable but does not include the Franklin D. Roosevelt (FDR) Drive and the West Side Highway/Route 9A, including the Battery Park Underpass and any surface roadway portion of the Hugh L. Carey Tunnel that connects to West Street (the West Side Highway/Route 9A).

[7] Merrian-Webster, "How did 'gridlock' move so quickly? https://www.merriam-webster.com/words-at-play/the-history-of-gridlock.

[8] INRIX 2021 Global Traffic Scorecard. https://inrix.com/scorecard-city/?city=New%20York%20City%20NY&index=5.

[9] MTA Subway and Bus Ridership for 2019. https://new.mta.info/coronavirus/ridership. Bus ridership reflects the total annual reported numbers for New York City Transit and MTA Bus Company.

[10] American Public Transportation Association. *2021 Public Transportation Fact Book*, Table 10. https://www.apta.com/wp-content/uploads/APTA-2021-Fact-Book.pdf; American Public Transit Association. "Public Transportation Ridership Report: Fourth Quarter 2021." https://www.apta.com/wp-content/uploads/2021-Q4-Ridership-APTA.pdf.

[11] Ernst & Young, LLP, *Economic impacts of the Metropolitan Transportation Authority's 2020-2024 Capital Investment Strategy.* Prepared for The Partnership of New York City. March 2019. https://pfnyc.org/wp-content/uploads/2020/01/MTA-Capital-Plan-2020-24-Econ-Impacts.pdf.

[12] MTA. October 1, 2019. *2020–2024 Capital Program: Executive Summary*. https://new.mta.info/sites/default/files/2019-09/MTA%202020-2024%20Capital%20Program%20-%20Executive%20Summary.pdf.

[13] Ibid.

[14] This reflects the portion of the capital program for transit improvements; it includes an additional $254 million for other transit projects not identified here, as well as a December 2021 amendment that increased the transit- and rail-related portion of the program by $535 million. The full capital program, including non-transit improvements, includes $55.3 billion in projects.

[15] MTA. October 1, 2019. *2020–2024 Capital Program: Executive Summary*. https://new.mta.info/sites/default/files/2019-09/MTA%202020-2024%20Capital%20Program%20-%20Executive%20Summary.pdf.

[16] In April 2019, the legislature passed the MTA Reform and Traffic Mobility Act that authorized TBTA to design, develop, build and operate the Project. Among the provisions, the Act requires that a Traffic Mobility Review Board (TMRB) be established to make recommendations on the toll rates as well as to develop recommendations on crossing credits, exemptions, or discounts. Refer to **Appendix 2B, "Project Alternatives: MTA Reform and Traffic Mobility Act**."

[17] The travel demand modeling conducted for this EA and described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** included the bicycle lanes as part of the No Action Alternative but not the existing condition.
[18] Ibid.
[19] New bicycle lanes and bus lanes were incorporated in the transportation modeling conducted for this EA and described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** as appropriate.
[20] The High Line is also a historic property (i.e., eligible for listing on the National Register), but is exempt from consideration as a Section 4(f) resource as a historic property as a former railroad property (23 CFR 774.13).

1. Introduction

1.1 OVERVIEW

Traffic congestion has been a problem in the Manhattan Central Business District (Manhattan CBD) for many years.[1] While traffic in the Manhattan CBD decreased during the height of the COVID-19 pandemic, volumes have nearly reached pre-pandemic levels and congestion has returned to Manhattan's streets.[2] Indeed, in 2020 and 2021, New York City's traffic congestion ranked worst among United States cities, with last-mile speeds in the Manhattan CBD of only 12 mph (**Figure 1-1**).[3, 4] At the same time, and as a way to further reduce congestion, the modernization of the Metropolitan Transportation Authority's (MTA's) commuter rail, subway, and bus network is necessary to create a faster, more accessible, and more reliable transportation network for the New York City region's residents, commuters, and visitors.

Figure 1-1. Most Congested Urban Areas (2021)

United States
1. New York, NY
2. Chicago, IL
3. Philadelphia, PA
4. Boston, MA
5. Miami, FL

Source: INRIX, 2021

State and City of New York officials and stakeholder and advocacy groups have conducted multiple studies over the past 45 years to determine the most effective way to address congestion in the Manhattan CBD. These studies overwhelmingly pointed to congestion pricing, or introduction of tolls or fees for drivers, as the most effective tool.[5] Many studies also identified congestion pricing as a means to generate funds for transit investments in MTA's network. A study by the Lund University Center for Sustainability Studies in Sweden confirms these conclusions, finding that a congestion charge is a highly effective means to reduce vehicular congestion, especially in combination with strategies for parking and traffic control; car sharing; and programs to discount transit for work, school, or personal trips.[6]

The New York City Department of Transportation (NYCDOT), MTA, and other transportation agencies have implemented programs to increase mobility and improve accessibility in the Manhattan CBD by nonvehicular modes and to reduce vehicular congestion. Private companies have collaborated with NYCDOT to establish car-share, scooter-share, and bicycle-share programs. NYCDOT has repurposed

1 As defined by the MTA Reform and Traffic Mobility Act ("Traffic Mobility Act"), the Manhattan CBD consists of the geographic area of Manhattan south of and inclusive of 60th Street to the extent practicable but does not include the Franklin D. Roosevelt (FDR) Drive and the West Side Highway/Route 9A, including the Battery Park Underpass and any surface roadway portion of the Hugh L. Carey Tunnel that connects to West Street (the West Side Highway/Route 9A).

2 Metropolitan Transportation Authority Day-by-Day Ridership Numbers. https://new.mta.info/coronavirus/ridership.

3 INRIX 2020 Global Traffic Scorecard. https://inrix.com/press-releases/2020-traffic-scorecard-us/.

4 INRIX 2021 Global Traffic Scorecard. https://inrix.com/scorecard-city/?city=New%20York%20City%20NY&index=5.

5 Refer to **Appendix 2A, "Project Alternatives: Previous Studies and Concepts Considered,"** for a description of studies and congestion pricing proposals prepared since 1973.

6 Von Arnold, Cecilia. April 26, 2022. "The most effective ways of reducing car traffic," Lund University Center for Sustainability Studies. https://www.lucsus.lu.se/article/most-effective-ways-reducing-car-traffic.

curbside parking to establish bicycle lanes and to increase pedestrian space with sidewalk and corner bump outs. It has also converted curbside lanes and general-purpose traffic lanes to dedicated bus lanes on certain Manhattan avenues and east–west, crosstown streets. Additionally, MTA and other transit agencies offer reduced transit fares for the elderly, disabled, and school-aged children, and in early 2022, MTA implemented Fare Capping as part of its new fare system roll out (OMNY), which allows free, unlimited rides to customers the rest of the week once they have spent $33 (the same as taking 12 trips). Many employers participate in a Federal program that allows employees a tax-free deduction for money used to purchase transit fares, and many companies have adopted flexible work schedules, including options to work remotely. Despite these various initiatives that should reduce vehicular traffic in the Manhattan CBD, and despite the existence in this region of the three largest commuter railroads in the United States, the largest bus system, and the largest subway system (the latter two of which operate 24 hours a day, 7 days a week, every day of the year), congestion persists.

Therefore, the Triborough Bridge and Tunnel Authority (TBTA), an affiliate of MTA; the New York State Department of Transportation (NYSDOT); and NYCDOT (collectively, the Project Sponsors) are proposing a program, known as the Central Business District Tolling Program (CBD Tolling Program or the Project), to address congestion.[7] The Project purpose is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into the Federal Highway Administration's (FHWA's) Value Pricing Pilot Program (VPPP). The Project would address the need to reduce vehicle congestion in the Manhattan CBD and create a new local, recurring funding source for MTA's capital projects.

The Project Sponsors are seeking approval of the Project from FHWA under its VPPP, which is a program "intended to demonstrate whether and to what extent roadway congestion may be reduced through application of congestion pricing strategies, and the magnitude of the impact of such strategies on driver behavior, traffic volumes, transit ridership, air quality and availability of funds for transportation programs."[8] Through this program, FHWA can provide tolling authority to state, regional, or local governments to implement congestion pricing.[9] Such approval is sought because certain streets within the Manhattan CBD are part of the National Highway System (**Figure 1-2**) and, in some instances, have been improved with Federal funding through FHWA. When FHWA reviews a Project Sponsor's application to the VPPP, it must evaluate the potential effects of the proposed action in accordance with the National Environmental Policy Act (NEPA).

7 In April 2019, New York State enacted the Traffic Mobility Act, authorizing TBTA to establish the CBD Tolling Program. For more information see **Appendix 2B, "Project Alternatives: MTA Reform and Traffic Mobility Act."**

8 Federal Highway Administration (FHWA). "Value Pricing Pilot Program." https://ops.fhwa.dot.gov/congestionpricing/value_pricing/index.htm.

9 Ibid.

Figure 1-2. Manhattan CBD, National Highway System Arterials, and Routes into the Manhattan CBD

* As defined by the MTA Reform and Traffic Mobility Act, the Manhattan CBD includes the geographic area in the borough of Manhattan south of and inclusive of 60th Street to the extent practicable but shall not include the FDR Drive and New York State Route 9A/West Side Highway, including the Battery Park underpass and any surface roadway portion of the Hugh L. Carey Tunnel connecting to West Street.

Source: ArcGIS Online, https://www.arcgis.com/index.html.

FHWA, in consultation with the Project Sponsors, has prepared this Environmental Assessment (EA) in accordance with NEPA and the NEPA implementing regulations promulgated by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500 through 1508 and 1515 through 1518) and FHWA (23 CFR Part 771). FHWA is serving as the lead Federal agency for the NEPA review. The Project is being progressed as a NEPA Class III (EA) action under 23 CFR Part 771. NEPA Class III actions are those in which the significance of the environmental impact is not clearly established. This EA has been prepared to determine if the Project is likely to have a significant impact on the built and natural environment, thereby requiring the preparation of an Environmental Impact Statement.

1.2 PROJECT SETTING

New York City is the center of a large metropolitan region that includes portions of three states: New York, New Jersey, and Connecticut. The metropolitan region is the largest in the United States, with 22.2 million people and more than 10.7 million jobs. Within this region, New York City is the economic hub, with roughly 4.6 million (43 percent) of the region's jobs and 8.4 million (38 percent) of the region's population.[10, 11] For this study, the New York region comprises 28 counties, consisting of 12 counties in New York State (including the 5 counties that form New York City), 14 counties in New Jersey, and 2 counties in Connecticut.[12] **Figure 1-3** shows the regional study area.

Although New York City and the metropolitan region are home to multiple commercial districts, the traditional center for economic activity has been and continues to be Manhattan, particularly the commercial districts in Midtown (generally the area between 14th and 59th Streets) and Lower Manhattan (generally the area south of Canal Street). As defined for this Project, the Manhattan CBD consists of the geographic area of Manhattan south of and inclusive of 60th Street to the extent practicable but does not include the Franklin D. Roosevelt (FDR) Drive and the West Side Highway/Route 9A, including the Battery Park Underpass and any surface roadway portion of the Hugh L. Carey Tunnel that connects to West Street (the West Side Highway/Route 9A) (see **Figure 1-2**).

10 U.S. Census Bureau. American Community Survey, 2015–2019.

11 U.S. Census Bureau, 2012–2016 Census Transportation Planning Package.

12 The 28-county regional study area consists of Bronx, Dutchess, Kings (Brooklyn), Nassau, New York (Manhattan), Orange, Putnam, Queens, Richmond (Staten Island), Rockland, Suffolk, and Westchester Counties in New York; Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren Counties in New Jersey; and Fairfield and New Haven Counties in Connecticut.

Figure 1-3. Regional Study Area

Source: ArcGIS Online, https://www.arcgis.com/index.html.

1.2.1 Regional Development Patterns

An island, Manhattan is separated from New Jersey by the Hudson River, from Brooklyn and Queens by the East River, from the Bronx by the Harlem River, and from Staten Island by New York Harbor. The Manhattan CBD is characterized by the following:

- Its skyline
- Cultural destinations (e.g., Theater District, World Trade Center Memorial and Museum, and Museum of Modern Art)
- Financial institutions (e.g., Wall Street and Midtown's business districts)
- Shopping districts (e.g., Fifth Avenue and Herald Square)
- Colleges and universities (e.g., New York University, The New School, the Fashion Institute of Technology)

The Manhattan CBD is not only a destination for business and commerce, but also home to about 617,000 residents.[13] Many residents of the Manhattan CBD live in mid-rise and high-rise apartment buildings; there are also several neighborhoods with lower density loft buildings, townhouses, rowhouses, and tenement housing such as Soho, Greenwich Village, the East Village, Chelsea, and Hell's Kitchen.

Upper Manhattan is more residential in character than the Manhattan CBD. The Upper West Side and Upper East Side neighborhoods border the Manhattan CBD as does Central Park. Like the Manhattan CBD, Upper Manhattan is characterized by a mix of land uses, although more residential and institutional uses are present in Upper Manhattan than the Manhattan CBD. Upper Manhattan also contains large public parks of a scale not found in the Manhattan CBD, including Central Park, Riverside Park, Morningside Park, and Highbridge Park.

Queens and Brooklyn, part of New York City and the largest boroughs in terms of land mass, are across the East River. While the neighborhoods in these boroughs are generally not as dense as Manhattan, some areas include substantial high-rise development (e.g., Long Island City, Downtown Brooklyn), and most neighborhoods are urban in character with mid-rise apartment buildings, brownstones, townhouses, and single-family houses on small lots. These boroughs are home to important transportation and entertainment destinations for the region (e.g., John F. Kennedy and LaGuardia Airports, Barclays Center, Citi Field, U.S. Tennis Center, Belmont Park, Coney Island). Nassau and Suffolk Counties, which are typically referred to as Long Island, lie east of Queens.

Toward the north, the Bronx is one of the most densely populated and poorest counties in the United States. Neighborhoods nearest Manhattan tend to have mid-rise to high-rise apartment buildings, and areas more distant from Manhattan and along the Hudson River tend to have single-family housing. Entertainment, educational, and cultural institutions in the Bronx include Yankee Stadium, the New York

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13 U.S. Census Bureau. American Community Survey, 2015–2019.

Botanical Garden, Bronx Zoo, and Fordham University. The Bronx has several large industrial and warehousing areas, and it is crossed by many interstate highways and arterial roadways that carry heavy volumes of traffic, including trucks. Westchester County borders the Bronx to its north.

Geographically isolated from the rest of New York City, Staten Island is the smallest borough in terms of population. It has much lower population density than the other boroughs of New York City, and its residential and commercial development patterns are characteristic of the suburbs. No roadway connects Staten Island and the Manhattan CBD so drivers from Staten Island must travel through Brooklyn or New Jersey to reach Manhattan.

Hudson County, New Jersey, contains multiple cities, such as Hoboken, Jersey City, and West New York. These cities have development patterns similar to the Bronx, Brooklyn, and Queens with a mix of high-rise and mid-rise housing, including apartment towers, townhouses, brownstones, and rowhouses. Jersey City has a large business district that includes several office towers along its Hudson River waterfront.

The New York City metropolitan region has a long development history and has diverse settlement patterns and housing stock. The counties that lie beyond the five boroughs of New York City and Hudson County, New Jersey, have small, long-established towns with urbanized town centers that have grown to include suburban subdivision developments. There are smaller cities with densely developed downtown areas, high- and mid-rise multifamily housing, and single-family houses on small lots (e.g., Bridgeport, Connecticut; Great Neck, Long Island; Newark, New Jersey; and White Plains, New York) and waterfront communities that were established as recreational retreats but have become year-round communities. Farms and small rural communities are near the farther extents of the regional study area.

1.2.2 Traveling to the Manhattan CBD

The New York metropolitan region has a robust transit network, with the largest subway and bus systems and the three largest commuter rail systems in the United States.[14] Indeed, the transit network is unparalleled in many cities with respect to the number of routes and types and frequency of service. The Manhattan CBD is the hub for much of this network and people can arrive via the following options:[15]

- The New York metropolitan area's three commuter rail systems:
  - Long Island Rail Road (LIRR) provides service connecting Brooklyn, Queens, Nassau, Suffolk, and Penn Station New York. LIRR will also soon provide service to the new Grand Central Madison terminal.
  - Metro-North Railroad (Metro-North) provides service connecting Grand Central Terminal and Manhattan north of 125th Street, the Bronx, Westchester, Putnam, and Dutchess Counties in New York State (east of Hudson), and southwestern Connecticut. Through agreement with NJ TRANSIT,

[14] American Public Transit Association (APTA). "Public Transportation Ridership Report: Fourth Quarter 2021." https://www.apta.com/wp-content/uploads/2021-Q4-Ridership-APTA.pdf.

[15] A limited number of people also arrive by helicopter at one of three heliports in Manhattan and by seaplane using the Midtown Skyport on the East River.

Metro-North also provides service connecting Orange and Rockland Counties (west of Hudson) with Penn Station New York.

– NJ TRANSIT connects the New Jersey counties and Penn Station New York or Hoboken Terminal in New Jersey, from which passengers can take the Port Authority Trans-Hudson (PATH) train to multiple stations in Manhattan CBD.

- The New York City subway consists of 28 routes that operate in Bronx, Brooklyn, Manhattan, and Queens in New York City. Twenty-five subway routes traverse or terminate in the Manhattan CBD. Most routes that traverse the Manhattan CBD have multiple stations in the area, serving commuters to the Manhattan CBD and local trips for its residents. Several subway stations in the Manhattan CBD are interchange points between subway routes.
- The New York region has a vast bus network. The Manhattan CBD is served by commuter buses operated by transit agencies and private companies, providing service between neighborhoods in the New York City boroughs and suburban counties and the Manhattan CBD. Many bus routes terminate at the Port Authority Bus Terminal in Midtown Manhattan. Multiple express/Select Bus Service and local bus routes operate along the north–south avenues and east–west streets within the Manhattan CBD.
- A tram operates between Roosevelt Island and Manhattan.
- The City of New York and private companies operate ferry service to the Manhattan CBD. Ferry routes to Manhattan operate from the Bronx, Brooklyn, Queens, and Staten Island in New York City and Bergen, Hudson, and Monmouth Counties in New Jersey. The primary ferry terminals in Manhattan are located at West 39th Street and East 34th Street in Midtown Manhattan and Battery Park City and Wall Street/Pier 11 in Lower Manhattan.
- MTA provides on-demand, point-to-point paratransit service for qualifying individuals.

Refer to **Subchapter 4C, "Transportation: Transit,"** for more detailed information about the region's transit systems.

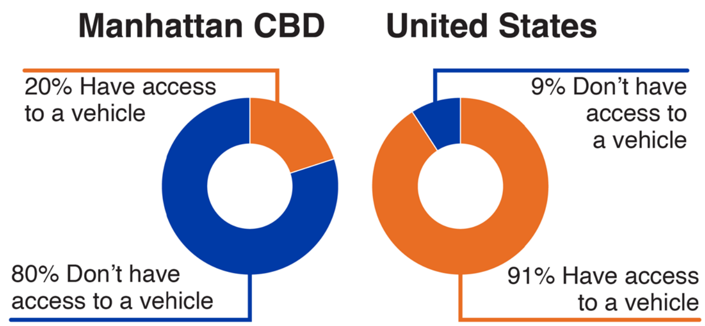
People may also reach the Manhattan CBD on foot or by bicycle. The north–south avenues that cross 60th Street have sidewalks, and bicycle lanes are available on Amsterdam Avenue, Columbus Avenue, Central Park West, Second Avenue, and First Avenue. Shared-use bicycle and pedestrian paths also run along the Hudson and East Rivers. From Brooklyn and Queens, people may cross the Ed Koch Queensboro, Williamsburg, Manhattan, and Brooklyn Bridges by bicycle or on foot. There is no direct bicycle or pedestrian access between New Jersey and the Manhattan CBD since pedestrians are prohibited from the tunnel crossings.[16]

[16] Pedestrians and bicyclists are permitted to cross the George Washington Bridge and can reach the Manhattan CBD using the Hudson River Greenway or one of Manhattan's north–south avenues.

1.2.3 Traveling within the Manhattan CBD

The Manhattan CBD has a long development history, beginning before the advent of the automobile and rapidly expanding before the predominance of the automobile. Thus, options other than private automobiles are available to travel around the Manhattan CBD. As noted previously, numerous subway and bus routes serve the Manhattan CBD, and there is a network of bicycle lanes and a widely available bicycle-share program. The Manhattan CBD is very walkable with sidewalks on both sides of most streets, with mostly signalized intersections that have crosswalks and pedestrian signals, and with many destinations near each other that are easily accessible by foot.

Figure 1-4. Vehicle Access (Manhattan CBD compared to United States)



Sources: Census Transportation Planning Package, American Community Survey 2012-2016

Because most businesses do not offer on-site, free parking and it can be difficult to find curbside parking, driving within the Manhattan CBD is not typical except for commercial deliveries. Indeed, 80 percent of Manhattan CBD residents do not own or have ready access to a vehicle (**Figure 1-4.**).[17] Taxis and for-hire vehicles (FHVs) provide point-to-point service within the Manhattan CBD and are convenient for trips that would otherwise involve multiple transit routes and modes or a long walk (e.g., crosstown trips between the east and west sides of Manhattan).[18] However, trips by taxi or FHVs (a category that includes taxis and app-based services) may be costly. Therefore, many people use the subway, buses, or bicycles to make their longer local trips within the Manhattan CBD. Walking is the typical choice for shorter trips or even longer trips that would otherwise involve multiple transit modes or transfers.

1.2.4 Commuting to the Manhattan CBD

According to 2012–2016 Census Transportation Planning Package (CTPP) data, nearly 10.7 million people have their place of employment in the regional study area. While the Manhattan CBD is the traditional economic hub of the region, many residents of the region do not work in or regularly travel to the Manhattan CBD. In total, approximately 1.5 million people work in the Manhattan CBD, and approximately 1,262,400 of those workers commute to the Manhattan CBD from outside the CBD. Approximately 65 percent of those commuters are from New York City, 8 percent are from Long Island, 7 percent are from

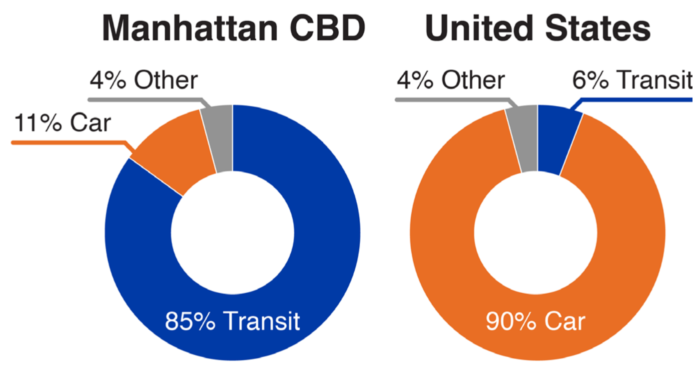
[17] These data are from the CTPP data product based on the 2012–2016 American Community Survey. The CTPP provides custom tables describing residence, workplace, and trips from home to work. The U.S. Census Bureau has not updated the CTPP to reflect more recent American Community Survey data.

[18] While taxis are sometimes considered a type of for-hire vehicle, for the purposes of this EA, they are treated separately.

New York counties north of New York City, 18 percent are from New Jersey, and 2 percent are from Connecticut (see **Figure 1-6** on the following page).

According to 2012–2016 CTPP data, 85 percent of workers who commute to the Manhattan CBD take public transportation to travel to work and 11 percent (approximately 142,500 workers) drive to work. The remaining 4 percent travel by bicycle, walking, motorcycle, and taxi and FHV. This level of commuting by public transportation is much higher than in the United States overall, where most people commute to work by car (**Figure 1-5**).

Figure 1-5. Travel Modes to Work (Manhattan CBD compared to United States)



Sources: Census Transportation Planning Package, American Community Survey 2012-2016

1.3 PROJECT PURPOSE

The Project purpose is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into FHWA's VPPP.

1.4 PROJECT NEEDS

1.4.1 The Need to Reduce Vehicle Congestion in the Manhattan CBD

The Manhattan CBD is the commercial center of a 28-county region that surrounds and includes New York City. Within nine square miles, the Manhattan CBD houses 1.5 million jobs, 450 million square feet of office space, and more than 617,000 residents.[19, 20, 21] It is also a regional and national destination for commerce, entertainment, and tourism, and the economic hub of the New York City region. The New York City region's population has grown by 5 percent since 2000 and is expected to continue to grow, with the population projected to exceed 25 million by 2045. New York City's population is projected to surpass 9 million by 2045.[22]

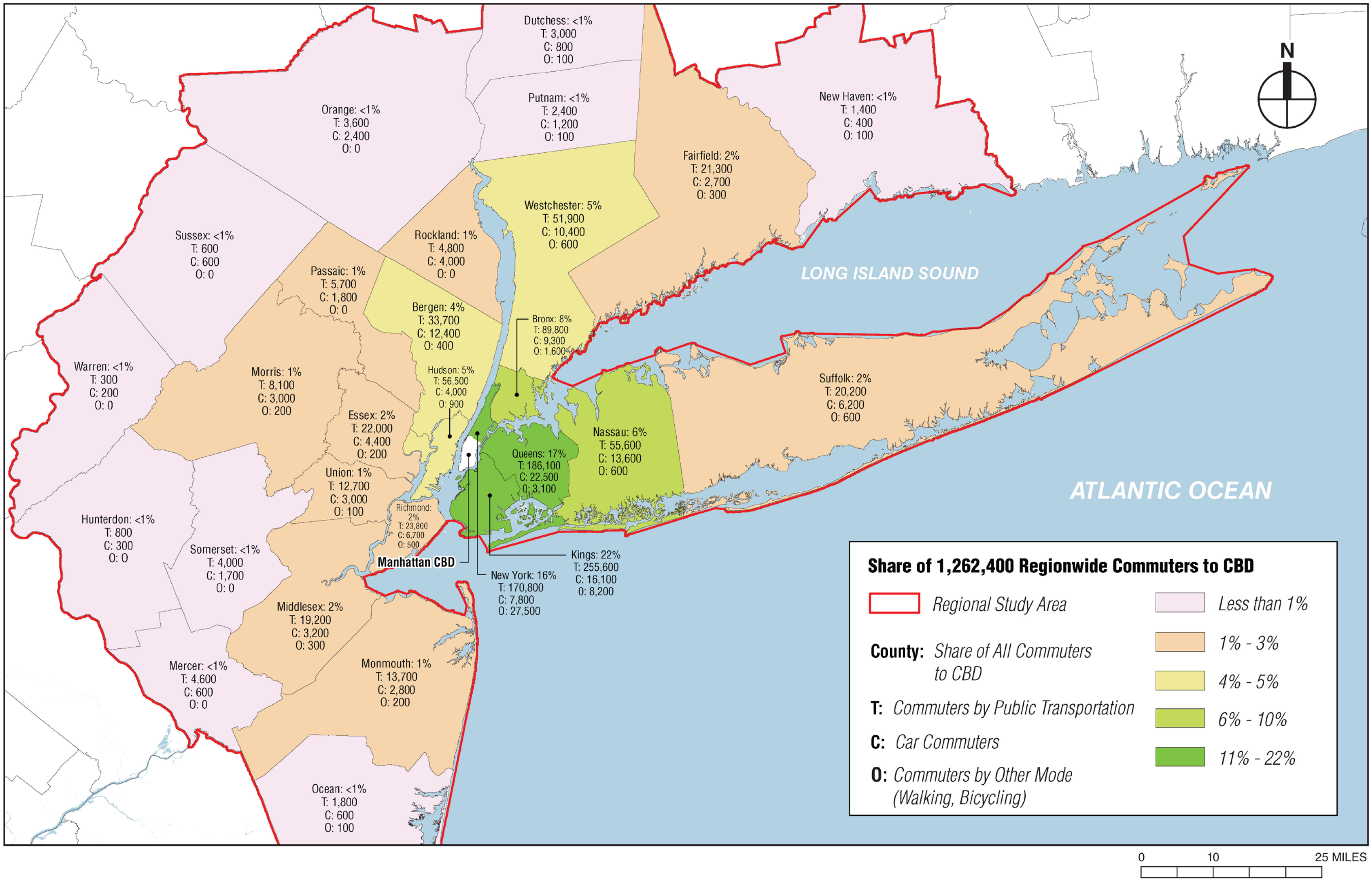
19 U.S. Census Bureau, 2012–2016 Census Transportation Planning Package.

20 New York State Comptroller. 2017. New York City's Office Market report.

21 U.S. Census Bureau. American Community Survey, 2015–2019 Estimates.

22 New York Metropolitan Transportation Council (NYMTC). 2015. 2050 Socioeconomic and Demographic Forecasts. https://www.nymtc.org/DATA-AND-MODELING/SED-Forecasts/2050-Forecasts.

Figure 1-6. Manhattan CBD Work Commuters: Origin



Source: U.S. Census Bureau. Census Transportation Planning Package, 2012–2016 Estimate.

The growth in New York City's population and employment, particularly within the Manhattan CBD, has increased traffic congestion and delays, slowing travel and jeopardizing the vitality of the area. A 2018 study by the Partnership for New York City (a local business group) stated that "traffic congestion will be a $100 billion drag on the New York metro area economy over the next five years." It cited the Manhattan CBD as the primary source of traffic congestion in the region and reported that excess congestion had increased by 53 percent since it began studying the issue in 2006.[23]

This congestion makes travel a challenge as well. NYCDOT's *New York City Mobility Report* found that the Manhattan CBD had the highest concentration of slow-moving buses in the entire city during the average weekday PM peak period (4 p.m. to 6 p.m.), with speeds between 5 mph and 6 mph.[24] This is substantially slower than the average citywide bus speed of 7.58 mph.[25]

According to FHWA, "congestion usually relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower—sometimes much slower—than normal or 'free-flow' speeds. Congestion often means stopped or stop-and-go traffic."[26] FHWA identifies several typical causes of traffic congestion: physical bottlenecks; construction work zones; traffic incidents, such as crashes and disabled vehicles; inclement weather; special events that create a surge in traffic or create detours; day-to-day variability in traffic flows; and insufficient intersection capacity, sometimes related to nonoptimized traffic signals. Of these, FHWA cites bottlenecks as the greatest source of congestion.[27] Given that Manhattan is an island, with limited opportunity to increase the roadway capacity within or leading to and from it, the principal means to address congestion caused by bottlenecks is to reduce demand or the number of vehicles that drive into and out of Manhattan.

Congestion by the Numbers

Cost of Congestion: 102 hours of lost time; nearly $1,595 per year per driver in the New York City region.*

Travel Speeds: Decreased 22 percent in the Manhattan CBD, from 9.1 miles per hour (mph) to 7.1 mph between 2010 and 2019.**

FHV Registrations: Tripled in New York City, from fewer than 40,000 to more than 120,000 between 2010 and 2019. Due to the effects of the COVID-19 pandemic and the city's continued cap on FHV registrations, the number of FHVs making trips fell to 70,000 by April 2022.†

Local Bus Speeds: Declined 28 percent in the Manhattan CBD since 2010. The average speed of Select Bus Service (New York City Transit's bus rapid transit service) routes in Manhattan are 19 percent slower than Select Bus Service routes in other boroughs.††

Sources

* INRIX 2021 Global Traffic Scorecard. https://inrix.com/scorecard-city/?city=New%20York%20City%20NY&index=5).

** NYCDOT. August 2019. New York City Mobility Report. https://www1.nyc.gov/html/dot/downloads/pdf/mobility-report-print-2019.pdf.

† New York City Taxi and Limousine Commission and NYCDOT. June 2019. *Improving Efficiency and Managing Growth in New York's For-Hire Vehicle Sector*; NYC TLC FHV trip data.

†† NYCDOT. August 2019. New York City Mobility Report. https://www1.nyc.gov/html/dot/downloads/pdf/mobility-report-print-2019.pdf; New York City Transit analysis.

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23 Partnership for New York City. January 2018. "$100 Billion Cost of Traffic Congestion in Metro New York". https://pfnyc.org/wp-content/uploads/2020/01/2018-01-Congestion-Pricing.pdf.

24 New York City Department of Transportation (NYCDOT). August 2019. *New York City Mobility Report*. https://www1.nyc.gov/html/dot/downloads/pdf/mobility-report-print-2019.pdf.

25 Ibid.

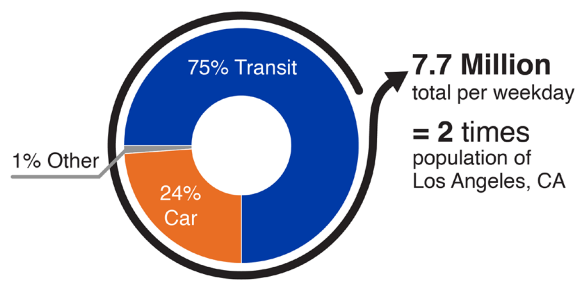
26 FHWA. 2020. *Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation*. https://ops.fhwa.dot.gov/congestion_report/executive_summary.htm.

27 Ibid.

> **The Impact of the COVID-19 Pandemic**
>
> In March 2020, in response to the COVID-19 pandemic public health emergency, then New York State Governor Andrew Cuomo issued executive orders that required most nonessential businesses to close, suspended in-person instruction at public schools and universities, and required residents of New York State to remain home except for essential activities. The governors of New Jersey and Connecticut imposed similar restrictions and consequently, the volume of trips to the Manhattan CBD by all travel modes dropped precipitously.
>
> By summer 2021, emergency restrictions were suspended or expired, and many businesses and attractions in the Manhattan CBD reopened. While many office workers continue to work remotely, others have returned to offices or work locations on part-time or full-time schedules.
>
> Weekday MTA subway, bus, and rail ridership remains roughly 35 to 45 percent lower than pre-COVID-19 pandemic levels. However, vehicle crossings at TBTA bridges and tunnels are only about 2 to 3 percent lower than in 2019. As activity is returning to pre-COVID-19 pandemic conditions, so is traffic congestion.
>
> **Source**
> Metropolitan Transportation Authority Day-by-Day Ridership Numbers. https://new.mta.info/coronavirus/ridership

The New York Metropolitan Transportation Council (NYMTC) prepares an annual report on commuting statistics into the Manhattan CBD, known as the *Hub Bound Travel Data Report*. The *Hub Bound Travel Data Report 2019* shows that approximately 7,665,000 people entered and exited the Manhattan CBD on an average weekday, which is about twice the population of Los Angeles, California (**Figure 1-7**).[28] Most (75 percent) of those people entered and exited via transit, but an estimated 1,856,000 (24 percent) people entered and exited by vehicle (auto, taxi, van, and truck). NYMTC notes that the daily vehicle trips increased in 2019 compared to 2018.[29] This translates to more vehicles entering and exiting the Manhattan CBD each day than the entire population of Phoenix, Arizona.[30]

Figure 1-7. People Entering Manhattan CBD (by mode)



Source: NYMTC Hub Bound Travel Data Report, 2019

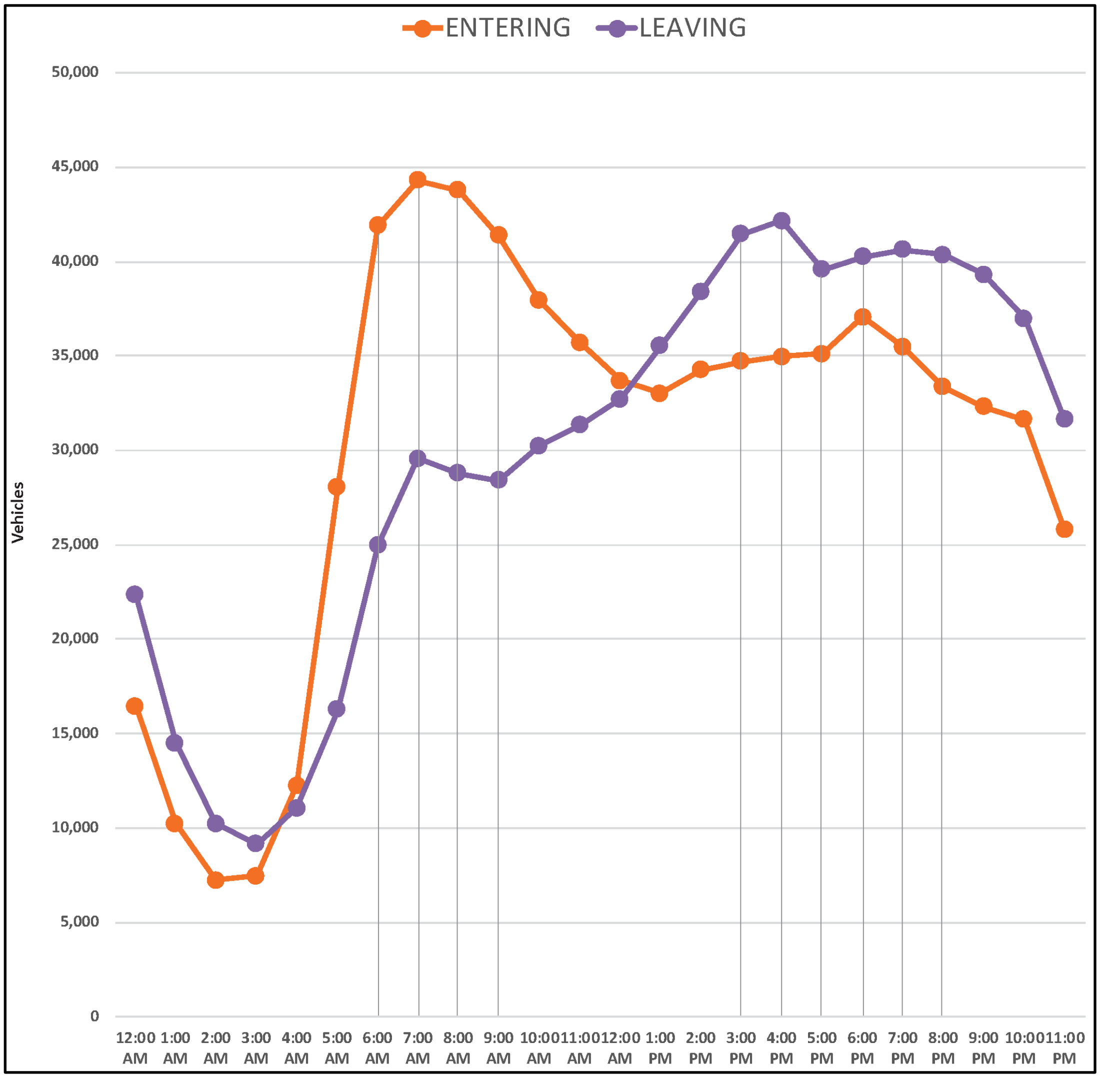
The number of vehicles within the Manhattan CBD builds throughout the day and evening, peaking in the middle of the day and ending in the late-night hours. Between 6:00 a.m. and 10:00 a.m., approximately 40,000 or more private vehicles enter the Manhattan CBD each hour (**Figure 1-8**). While some vehicles leave the Manhattan CBD during that time, they do not offset the accumulation of inbound vehicles. The trend does not reverse until around 12:00 p.m., when the number of outbound vehicles starts to exceed the number of inbound vehicles, though the variation is much smaller than in the morning.

28 As of July 1, 2021, the estimated population of Los Angeles was 3,849,297. U.S. Census Bureau. Quickfacts. https://www.census.gov/quickfacts/fact/table/losangelescitycalifornia,losangelescountycalifornia,CA/PST045221.

29 NYMTC. January 2021. *Hub Bound Travel Data Report 2019.* Transit includes subway, commuter rail, bus, ferry, and tram. NYMTC relies on passenger, vehicle, and bicycle counts to prepare the hub bound data, and these counts include work and nonwork trips. Therefore, percentages of travel by mode vary from census data. https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

30 As of July 1, 2021, the estimated population of Phoenix was 1,624,589. U.S. Census Bureau. Quickfacts. https://www.census.gov/quickfacts/phoenixcityarizona.

Figure 1-8. Private Vehicles Entering and Exiting the Manhattan CBD on an Average Weekday



Source: New York Metropolitan Transportation Council. January 2020. *Hub Bound Travel Data Report 2019*.

1.4.1.1 Evidence of Congestion

NYMTC's *Congestion Management Process Status Report* is an annual study of congestion in the New York metropolitan region that reports on the extent of congestion and its effects. The data come from national and local sources and reveal that New York City, and Manhattan in particular, is prone to higher congestion than most urbanized areas in the United States.

One of the well-known ways to demonstrate congestion, used in this report and measured across the country by the Texas A&M Transportation Institute, is the Travel Time Index, which represents the average additional time required during peak times compared to times of light traffic. If the time required during free-flow travel and peak times is the same, the Travel Time Index value is 1.0. The New York metropolitan region has a Travel Time Index value of 1.35; in essence, it takes 35 percent longer on average to make a trip in the region during peak period than in free-flow conditions.[31]

Despite the reliance on transit, Manhattan still has a much higher Travel Time Index value than the overall metropolitan region: 1.84 in the morning peak period and 2.07 in the evening peak period.[32, 33] For a 20-minute trip in Manhattan, this translates to drivers having to assume it could take more than twice that time on average during the evening hours—this is time wasted on a regular basis because of congestion.

The Travel Time Index helps explain the average changes in travel time resulting from congestion. In the New York metropolitan region, not only is there ongoing, recurrent congestion, but there is also a wide range of variability, especially in congested periods.

Another way to look at congestion is through NYMTC's Travel-Time Reliability indicator. Again, a ratio that is close to 1.0 demonstrates little variability throughout the day and from day to day. A higher number means travel time is more unpredictable, while a lower number means it is more predictable. In Manhattan, the daily level of travel-time reliability for all vehicle modes is 1.65 and for trucks it is 2.67, reflecting widely variable, and therefore unpredictable, travel times.[34]

How Long Will My Trip Take?

When an area is prone to traffic congestion, travelers must add travel time or they risk being late to their destination.

This added time is compounded if the congestion is not just recurring, but also unreliable, with wide variability during the day, and from day to day. Drivers must plan for both regular congestion due to traffic volumes, and for the likelihood that there could be even more congestion as a result of weather, construction, or an incident. This additional time for the trip adds up significantly, especially in Manhattan.

Every day, drivers in Manhattan need to assume that the time they need for what should be a 20-minute trip could take them up to 87.2 minutes.

Source:
New York Metropolitan Transportation Council. September 2021. *2021 Congestion Management Process Status Report.* https://www.nymtc.org/Portals/0/Pdf/CMP%20Status%20Report/2021%20CMP/NYMTC_CMP_Adopted_Report.pdf?ver=gfVbMzvLLqXENvn1jNkOhg%3d%3d

Finally, NYMTC also uses a Planning Time Index that represents the additional amount of time that drivers need to allow to reach their destination under most conditions. In Manhattan, to arrive at a destination on time, drivers regularly need to assume that their trip could take more than four times what it would during free-flow periods.[35]

NYCDOT, MTA, and other transportation agencies have implemented programs to increase mobility and improve accessibility in the Manhattan CBD by nonvehicular modes and to reduce vehicular congestion

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31 NYMTC. 2021. *Congestion Management Process Status Report*. September 9, 2021. https://www.nymtc.org/Portals/0/Pdf/CMP%20Status%20Report/2021%20CMP/NYMTC_CMP_Adopted_Report.pdf?ver=gfVbMzvLLqXENvn1jNkOhg%3d%3d.

32 Ibid.

33 The Manhattan CBD generates a substantial number of trips to the island and contributes greatly to the overall indicator; thus, it is a useful, if understated, indicator for the Manhattan CBD.

34 NYMTC. September 2021. *2021 Congestion Management Process Status Report*. https://www.nymtc.org/Portals/0/Pdf/CMP%20Status%20Report/2021%20CMP/NYMTC_CMP_Adopted_Report.pdf?ver=gfVbMzvLLqXENvn1jNkOhg%3d%3d.

35 Ibid.

(see **Section 1.1**). Despite these various initiatives that should reduce vehicular traffic in the Manhattan CBD, congestion persists.

The low travel speeds and unreliable travel times to, from, and within the Manhattan CBD increase auto commute times, erode worker productivity, reduce bus and paratransit service quality, raise the cost of deliveries and the overall cost of doing business, and delay emergency vehicles (**Figure 1-9**).

Figure 1-9. Typically Congested Streets in Lower Manhattan During the Evening Rush (Summer 2022)

Source: MTA

1.4.2 The Need to Create a New Local, Recurring Funding Source for MTA's Capital Projects

In the past five decades, state and city officials along with other stakeholder groups have studied various concepts for addressing traffic congestion in the Manhattan CBD. Sustained investment in public transportation is one strategy consistently identified in those studies.

The importance of transit to New York City's overall economy cannot be overstated. As the primary mode of travel to the Manhattan CBD, continued investment in transit is critical to mobility and accessibility of the Manhattan CBD and the region. More than 75 percent of all trips, and 85 percent of commuter trips, into the Manhattan CBD are made by bus, subway, commuter rail, or ferry.[36, 37] MTA subways served 1.7 billion passengers in 2019, and MTA buses carried 677.6 million passengers, providing access to employment, healthcare, education and the full range of services and entertainment options available throughout New York. The 10 busiest subway stations in the MTA system are in the Manhattan CBD, and two of the 10 busiest MTA bus routes are in or serve the Manhattan CBD.[38] LIRR and Metro-North were the busiest commuter rail systems in the United States in terms of average weekday ridership in 2021.[39] MTA alone employs approximately 70,000 people (making it one of the largest individual employers in New York State, and larger than the population of many small cities). Through its capital spending, MTA annually

36 NYMTC. January 2021. *Hub Bound Travel Data Report 2019*. https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

37 U.S. Census Bureau, 2012–2016 Census Transportation Planning Package.

38 Metropolitan Transportation Authority Subway and Bus Ridership for 2019. https://new.mta.info/coronavirus/ridership. Bus ridership reflects the total annual reported numbers for New York City Transit and MTA Bus Company.

39 APTA. "Public Transportation Ridership Report: Fourth Quarter 2021." https://www.apta.com/wp-content/uploads/2021-Q4-Ridership-APTA.pdf.

injects billions of dollars into the local economy both through major infrastructure projects and day-to-day operations and maintenance programs, indirectly supporting thousands of additional jobs.

Although there was high demand for service, the reliability of MTA's commuter rail, subway, and bus system declined beginning in 2010.[40] MTA documented commuter rail, subway, and bus service delays, which received much public attention.[41] Beginning in 2017, MTA's operating agencies engaged in projects to address some root causes of declining service and implemented improvements to commuter rail and subway infrastructure. As documented in MTA's 2020–2024 Capital Program, these projects resulted in substantial reductions in delay and improvements in on-time performance.[42]

Notwithstanding these improvements, elements of MTA's commuter rail and subway system are more than 100 years old, and essential capital needs remain to ensure a state of good repair and to bring MTA's transit and rail assets into the 21st century. The 2020–2024 Capital Program is intended to "build on these achievements, ensuring that the improvements put in place will be sustainable for years to come."[43] The program identifies $52.0 billion of investments[44] in the region's subways, buses, and commuter railroads. Key tenets of the 2020–2024 Capital Program include the following:

- Investing to improve reliability
- Committing to environmental sustainability
- Building an accessible transit system for all New Yorkers
- Easing congestion and creating growth
- Improving safety and customer service through technology[45]

The continued modernization of MTA's commuter rail, subway, and bus network is necessary to create a faster, more accessible, and more reliable transportation network for the New York City region's residents, commuters, and visitors. The MTA 2020–2024 Capital Program calls for extensive improvements throughout the MTA integrated transportation network. While some capital projects will expand the system, many others will ensure the long-term viability of current assets to address the deficiencies described previously.

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40 MTA New York City Transit. September 23, 2011. *Evaluation of 2010 Service Reductions*. http://web.mta.info/mta/news/books/docs/NYCT_2010_Service_Reduction_Evaluation.pdf.

41 Adrienne LaFrance. July 13, 2017. *The Atlantic*, "The Awful Decline of the New York City Subway System." https://www.theatlantic.com/technology/archive/2017/07/when-did-new-york-citys-subway-get-so-bad/533502/.

42 Metropolitan Transportation Authority (MTA). October 1, 2019. *2020–2024 Capital Program: Executive Summary*. https://new.mta.info/sites/default/files/2019-09/MTA%202020-2024%20Capital%20Program%20-%20Executive%20Summary.pdf.

43 Ibid.

44 This reflects the portion of the capital program that will fund transit improvements; it includes an additional $254 million for other transit projects not identified here, as well as a December 2021 amendment that increased the transit- and rail-related portion of the program by $535 million. The full capital program, including non-transit improvements, includes $55.3 billion in projects.

45 Metropolitan Transportation Authority. October 1, 2019. *2020–2024 Capital Program: Executive Summary*. https://new.mta.info/sites/default/files/2019-09/MTA%202020-2024%20Capital%20Program%20-%20Executive%20Summary.pdf.

MTA draws funding from several sources. MTA-controlled revenues include commuter rail, subway, and bus fares, and tolls at TBTA crossings; state and local subsidies that include dedicated state taxes (e.g., petroleum business taxes, sales tax, payroll mobility tax, motor vehicle registration and license fees, taxi and FHV fees, real estate transaction taxes on both residential and commercial properties); and station maintenance payments. The Federal government supports MTA transit and commuter capital projects through formula grants, full-funding grant agreements, and other funding programs, primarily through the Federal Transit Administration and the Federal Railroad Administration.

MTA uses these funds to make long-range capital improvements to the system's infrastructure, to expand the system, and to operate its integrated transportation network. However, there is a history of gaps in funding when economic conditions reduce the tax base; when the Federal, state, or local governments reduce subsidies; and when the cost of needed transit improvements exceeds the available funding.

Existing funding sources are insufficient to pay for the transit improvement and modernization projects identified in the MTA 2020–2024 Capital Program and subsequent capital programs that are needed for subway, bus, and commuter rail services. The New York State Legislature passed the MTA Reform and Traffic Mobility Act to provide stable and reliable funding to repair and revitalize the regional transit system.[46]

1.5 PROJECT OBJECTIVES

FHWA and the Project Sponsors have established the following objectives to further refine the Project purpose and address the needs described above:

- Reduce daily vehicle-miles traveled (VMT) within the Manhattan CBD.
- Reduce the number of vehicles entering the Manhattan CBD daily.
- Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for the MTA Capital Program.
- Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the "MTA Reform and Traffic Mobility Act."[47]

[46] Consolidated Laws of the State of New York, Vehicle and Traffic, Title 8, Article 44-C Sections 1701 through 1706.

[47] Refer to **Appendix 2B, "Project Alternatives: MTA Reform and Traffic Mobility Act**."

1.6 PROJECT SCHEDULE

Table 1-1 shows anticipated milestone dates for Project implementation.

Table 1-1. Project Schedule

ACTIVITY/MILESTONE	ANTICIPATED DATE
Early public engagement*	Fall 2021
Publication of Environmental Assessment (EA)	August 2022
Public review of EA, including public hearing and acceptance of public comments on the EA	August–September 2022
Federal Highway Administration decision	January 2023
Project Implementation ("Go Live")	November 2023

* Refer to **Chapter 18, "Agency Coordination and Public Participation."**

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2. Project Alternatives

2.1 INTRODUCTION

NEPA requires Federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[1] The NEPA regulations promulgated by the Council on Environmental Quality in 2022 at 40 Code of Federal Regulations (CFR) Parts 1500–1508 require that EAs include a discussion of alternatives as required by NEPA (40 CFR Section 1502.14(b)). This chapter describes the previous studies and concepts that were considered prior to 2019 to address congestion in the Manhattan CBD, the preliminary alternatives that FHWA and the Project Sponsors assessed for the CBD Tolling Program (the Project), and the screening evaluation of these preliminary alternatives. Following that discussion, **Section 2.4** of this chapter provides information on the two alternatives that are evaluated in detail in this EA: the No Action Alternative and the CBD Tolling Alternative.

2.2 PREVIOUS STUDIES AND CONCEPTS CONSIDERED

For many years, State and City of New York officials and stakeholder and advocacy groups have identified traffic congestion in Manhattan as a concern that adversely affects the economy, environment, quality of life, and public health of New York City and the region. Many of these groups also identified a need for an ongoing, reliable source of funding for MTA. Consequently, there have been a number of studies to identify concepts for addressing the congestion, including introducing tolls. These studies include the following:

- Local congestion management measures as part of New York State's State Implementation Plan to comply with the Federal Clean Air Act (1973), which included tolls on the bridges across the East River and Harlem River to reduce vehicular traffic[2]
- PlaNYC (2007), a long-term plan for New York City proposed by Mayor Bloomberg that included a congestion pricing proposal for the area of Manhattan south of 86th Street[3]
- New York City Traffic Congestion Mitigation Commission Study (2008), which recommended a modified version of the PlaNYC concept, with the northern boundary of the tolling zone at 60th Street so that

[1] 42 United States Code (USC) 4321 Section 102(E).

[2] Plan prepared by then-New York State Governor Nelson Rockefeller and then-New York City Mayor John Lindsay for submission to the U.S. Environmental Protection Agency.

[3] The City of New York, Mayor Michael R. Bloomberg. *PlaNYC: A Greener, Greater New York*. April 2007. http://www.nyc.gov/html/planyc/downloads/pdf/publications/full_report_2007.pdf. See p. 88.

the new toll would apply to more intra-Manhattan trips, thereby further reducing congestion and increasing revenue potential[4]

- Move NY Fair Plan (2015), a plan proposed by a citizens' group that involved tolling the area of Manhattan south of 60th Street and adjusting tolls elsewhere in New York City[5]
- Fix NYC Advisory Panel (2018), which recommended a tolling program for the area of Manhattan south of 60th Street as well as other measures to address congestion[6]
- Metropolitan Transportation Sustainability Advisory Workgroup (2018), which focused on actions to improve the region's transportation system, including addressing traffic congestion and identifying sources of sustainable funding for the region's public transit system, and recommended congestion pricing for the area of Manhattan south of 60th Street[7]

Appendix 2A, "Project Alternatives: Previous Studies and Concepts Considered," provides more information on these previous studies, including copies of each report cited.

2.3 PRELIMINARY ALTERNATIVES AND THEIR CONSISTENCY WITH THE PROJECT'S PURPOSE AND OBJECTIVES

FHWA oversees projects throughout the United States that are intended to reduce congestion through "congestion pricing." FHWA's website notes that "Congestion pricing recognizes that trips have different values at different times and places and for different individuals. Faced with premium charges during periods of peak demand, road users are encouraged to eliminate lower-valued trips, take them at a different time, or choose alternative routes or transport modes where available."[8]

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4 The New York City Traffic Congestion Mitigation Commission was a 17-member body appointed by the governor based on recommendations from the New York City mayor and leaders in the New York State Assembly, New York State Senate, and New York City Council. The chair of the commission was Marc V. Shaw, who had previously served as a Deputy Mayor of New York City and Executive Director of MTA. https://www.dot.ny.gov/programs/congestion_mitigation_commission.
New York City Traffic Congestion Mitigation Commission. *Report to the Traffic Congestion Mitigation Commission & Recommended Implementation Plan*. January 31, 2008.
https://www.dot.ny.gov/programs/congestion_mitigation_commission/final-recommendation.

5 Move New York is a coalition of stakeholders representing business associations, trade unions, religious and civic leaders, transportation and environmental advocates, good-governance organizations, and elected officials. The group is led by Alex Matthiessen, president of an environmental consulting firm; Sam Schwartz, PE, the founder of a traffic engineering firm; and Eduardo Castell, a political advisor. Move NY. *Move New York Fair Plan.* February 2015.

6 Then-New York State Governor Andrew M. Cuomo created this panel in October 2017, consisting of community representatives, government officials, and business leaders from across the New York City region. Fix NYC Advisory Panel. *Fix NYC Advisory Panel Report.* January 2018.

7 The New York State Legislature created this workgroup, chaired by Kathryn Wylde, President and CEO of the Partnership for New York, and comprising government officials, transportation professionals, and representatives of business and commuter interest groups, as part of the fiscal year 2019 New York State budget. Metropolitan Transportation Sustainability Advisory Workgroup. Metropolitan Transportation Sustainability Advisory Workgroup Report. December 2018.
https://pfnyc.org/wp-content/uploads/2018/12/2018-12-Metropolitan-Transportation-Sustainability-Advisory-Workgroup-Report.pdf.

8 https://ops.fhwa.dot.gov/congestionpricing/index.htm.

Congestion pricing strategies can involve projects that use tolls to manage congestion as well as projects that do not involve tolls. Such strategies include the following:[9]

- **High-Occupancy Toll (HOT) Lanes** involve designating lanes on highways for high-occupancy vehicles only and allowing vehicles with fewer people than required to pay a toll to use the lane. This strategy provides an uncongested alternative for travelers who carpool or pay the toll, and may reduce congestion in the remaining lanes.
- **Express Toll Lanes** are similar to HOT lanes and involve providing a lane designated for vehicles that pay a toll. Tolling is variable to allow effective time-of-day tolling.
- **Pricing on Full Roadways** involves the use of variable tolls on highways, bridges, and/or tunnels to reduce congestion during peak periods.
- **Zone-Based Pricing, including Cordon and Area Pricing** involves either variable or fixed charges to drive within or into a congested area within a city. This type of project has been successfully implemented in London, Stockholm, and Singapore.
- **Regionwide Pricing** involves pricing at several locations in a region.
- **Parking Pricing** consists of parking policies to influence the decision to drive, including variable pricing of curbside parking, commuter parking taxes, and employer incentive programs that offer employees cash rather than the use of employer-provided parking.
- **Priced Vehicle Sharing and Dynamic Ridesharing** involve setting up a ridesharing system, typically by a commercial vendor, to allow customers to use a vehicle only when needed and without owning a car.
- **Pay as You Drive (Making Vehicle Use Costs Variable)** involves a range of different approaches to correlate charges associated with operating a vehicle to the miles driven, thus providing an incentive to drive less.

In consideration of these potential strategies, and in light of the purpose, need, and objectives for this Project, FHWA and the Project Sponsors evaluated the 12 preliminary alternatives described in **Table 2-1**, which included multiple proposals for congestion management described in **Section 2.2** and **Appendix 2A, "Project Alternatives: Previous Studies and Concepts Considered."** One of the alternatives evaluated is the introduction of a vehicular tolling program consistent with the 2019 New York State legislation entitled the MTA Reform and Traffic Mobility Act (Traffic Mobility Act), the program known as the CBD Tolling Program.

9 https://ops.fhwa.dot.gov/congestionpricing/cp_what_is.htm.

Table 2-1. Preliminary Alternatives Considered

TYPE OF ALTERNATIVE	ALTERNATIVE	DESCRIPTION
No Action Alternative Required by NEPA as the benchmark to which the build alternative(s) are compared	NA-1: No Action	The No Action Alternative would not implement a vehicular tolling program to reduce traffic congestion in the Manhattan CBD. The No Action Alternative would not meet the Project purpose and objectives; NEPA regulations require that it be evaluated and serve as the baseline condition against which the potential effects of the build alternative (i.e., the CBD Tolling Alternative) are evaluated. Under the No Action Alternative, existing policies and programs would continue, and planned transportation, policy, and development initiatives that are independent of the CBD Tolling Program would be implemented.
Non-Toll Pricing (NTP) Alternatives Alternatives that use types of pricing mechanisms other than tolling	NTP-1: Parking pricing strategies	This alternative would take one or more of several forms, including elimination of the resident exemption for the parking tax or raising of the tax, increased rates for metered on-street parking, and/or introduction of an overnight on-street parking fee.
Toll (T) Alternatives Alternatives that use different types of tolling mechanisms	T-1: Pricing on full roadways: Raise tolls or implement variable tolls on existing toll facilities	This alternative would raise tolls or implement variable tolls on existing toll facilities.
	T-2: Pricing on full roadways: Toll East and Harlem River bridges	This alternative would establish a toll on the currently untolled East River and Harlem River crossings to Manhattan.
	T-3: High-occupancy toll (HOT) lanes	This alternative would create HOT lanes for passenger cars on major crossings into Manhattan and highways leading to the Manhattan CBD.
	T-4: Zone-based pricing: CBD Tolling Program	This alternative would toll vehicles entering or remaining in the Manhattan CBD, south of and inclusive of 60th Street, excluding the West Side Highway/Route 9A and the Franklin D. Roosevelt (FDR) Drive.
Other (O) Alternatives Alternatives that use methods other than pricing or tolling to reduce congestion	O-1: Parking pricing: Reduce government-issued parking permits	This alternative would reduce the number of permits that provide free on-street parking for government employees commuting to jobs in Manhattan.
	O-2: Provide additional taxi stands to reduce cruising	This alternative would provide additional taxi stands and require that passengers be picked up at designated taxi stands.
	O-3: Create incentives for teleworking	This alternative would create incentives for teleworking to reduce the number of trips made to the Manhattan CBD.
	O-4: Ration license plates	This alternative would prohibit vehicles from entering the Manhattan CBD on certain days based on license plate number.
	O-5: Mandatory carpooling	This alternative would prohibit single-occupant vehicles from entering Manhattan south of 60th Street weekdays, 6 a.m. to 10 a.m.
	O-6: Truck time-of-day restrictions	This alternative would restrict trucks to overnight deliveries.

FHWA and the Project Sponsors used the Project purpose, need, and three of the four objectives presented in **Chapter 1, "Introduction,"** to conduct a screening evaluation of the preliminary alternatives, so as to establish a reasonable range of alternatives for further study, consistent with NEPA requirements. Given the importance of congestion reduction, the first two objectives relate to the need to reduce congestion while the third objective ties to creating a funding source for capital improvements. Together, the objectives used for screening were as follows:

- Objective 1: Reduce daily vehicle-miles traveled (VMT) within the Manhattan CBD.
- Objective 2: Reduce the number of vehicles entering the Manhattan CBD daily.
- Objective 3: Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for the MTA Capital Program.

FHWA and the Project Sponsors did not use the fourth Project goal, "Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the 'MTA Reform and Traffic Mobility Act'" for screening of alternatives.

If, through the screening evaluation, FHWA and the Project Sponsors determined that a preliminary alternative would not meet one or more of the three Project objectives used for screening, they dismissed that alternative from further consideration as an alternative that is not reasonable. As noted in **Table 2-2**, the Project Sponsors established quantitative criteria consistent with the evaluation results for best-performing options in prior proposals,[10] for determining the consistency of preliminary alternatives with the two congestion-related Project objectives.

- For Objective 1, the evaluation used a reduction of 5 percent relative to the No Action Alternative as the quantitative screening criterion because it represents a meaningful reduction in VMT. Since VMT incorporates the number of vehicles as well as the distance they travel, changes in VMT would be smaller than changes in the number of vehicles.
- For Objective 2, the evaluation used a reduction of 10 percent relative to the No Action Alternative as the quantitative screening criterion because it represents a meaningful reduction in the number of vehicles. As noted, the reduction in the number of vehicles is expected to be larger than the reduction in VMT.

As shown in **Table 2-2**, and the explanatory notes below it, only Alternative T-4 (Zone-based pricing through the CBD Tolling Program) would meet the purpose for the Project and the screening criteria tied to the objectives. Consequently, Alternative T-4, the CBD Tolling Program, is the only reasonable build alternative and the only build alternative evaluated in detail in this EA.

[10] See, for example, The City of New York, Mayor Michael R. Bloomberg. *PlaNYC: A Greener, Greater New York*. April 2007. http://www.nyc.gov/html/planyc/downloads/pdf/publications/full_report_2007.pdf and New York City Traffic Congestion Mitigation Commission. *Report to the Traffic Congestion Mitigation Commission & Recommended Implementation Plan*. January 31, 2008.

Table 2-2. Results of Preliminary Alternatives Screening[1]

ALTERNATIVE	PURPOSE AND NEED: Reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements	OBJECTIVE 1: Reduce daily VMT within the Manhattan CBD Criterion: Reduce by 5% (relative to No Action)	OBJECTIVE 2: Reduce the number of vehicles entering the Manhattan CBD daily Criterion: Reduce by 10% (relative to No Action)	OBJECTIVE 3: Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for MTA's Capital Program
NA-1: No Action	Does not meet	Does not meet	Does not meet	Does not meet
NTP-1: Parking pricing strategies	Does not meet	Does not meet (see note 2)	Does not meet	Does not meet (see note 2)
T-1: Pricing on full roadways: Raise tolls or implement variable tolls on existing toll facilities	Does not meet	Does not meet (see note 3)	Does not meet (see note 3)	Does not meet
T-2: Pricing on full roadways: Toll East and Harlem River bridges	Does not meet (see note 4)	Meets	Meets	Does not meet (see note 4)
T-3: High-occupancy toll (HOT) lanes	Does not meet (see note 5)	Does not meet	Does not meet	Does not meet (see note 5)
T-4: Zone-based pricing: CBD Tolling Program	Meets	Meets	Meets	Meets
O-1: Parking pricing: Reduce government-issued parking permits	Does not meet	Meets	Meets	Does not meet
O-2: Provide additional taxi stands to reduce cruising	Does not meet	Does not meet (see note 6)	Does not meet	Does not meet
O-3: Create incentives for teleworking	Does not meet	Does not meet	Does not meet (see note 7)	Does not meet
O-4: Ration license plates	Does not meet	Meets	Meets	Does not meet
O-5: Mandatory carpooling	Does not meet	Meets	Meets	Does not meet
O-6: Truck time-of-day delivery restrictions	Does not meet	Does not meet (see note 8)	Does not meet (see note 8)	Does not meet

Notes for Table 2-2

1 Screening was based on a variety of prior studies and documents, including the following: New York City Traffic Congestion Mitigation Commission, "Congestion Mitigation Strategies: Alternatives to the City's Plan" (December 10, 2007); and "Report to the Traffic Congestion Mitigation Commission & Recommended Implementation Plan" (January 31, 2008), and its appendices, including Cambridge Systematics, Inc., "Technical Memorandum: Telecommuting Incentives," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007); Cambridge Systematics, Inc., "Technical Memorandum: Night Delivery Incentives," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007); Cambridge Systematics, Inc., "Technical Memorandum: Congestion Reduction Policies Involving Taxis," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007); Cambridge Systematics, Inc., "Technical Memorandum: Increase Cost of Parking in the Manhattan Central Business District (CBD)," prepared for New York City Economic Development Corporation and New York City Department of Transportation (December 10, 2007).

2 For NTP-1: VMT reduction was estimated at substantially less than 1 percent. Further, there is no law or agreement in place between the City of New York and MTA that would direct the revenue generated from this alternative to MTA to support the Capital Program.

3 For T-1: This alternative would generate revenue, but the annual net revenues would not be sufficient to fund $15 billion for capital projects for MTA's Capital Program. The revenue as well as reduction in VMT and number of vehicles with this alternative depends on how high the toll is raised and whether tolls are increased only on TBTA facilities or both TBTA and Port Authority of New York and New Jersey facilities. However, with some crossings remaining untolled, traffic would divert to untolled facilities, thereby reducing the revenue and not reducing traffic. Further, this alternative would not target congestion in the Manhattan CBD, given that a number of free entry points to the Manhattan CBD would remain available.

4 For T-2: Earlier studies showed this alternative would reduce congestion and could raise toll revenues equivalent to Project objectives. However, there is no law or agreement in place between the City of New York and MTA that would direct the revenue to MTA to support the Capital Program.

5 For T-3: HOT Lanes can be effective revenue generators, but their ability to reduce congestion and raise enough revenue to meet the target is limited due to the availability of free lanes on the same highway.

6 For O-2: Provision of additional taxi stands would have no effect on the number of taxis entering the Manhattan CBD and would not necessarily reduce VMT since taxis would need to travel back to a taxi stand after discharging customers. Further, this alternative would not broadly address VMT for all vehicles, nor would it reduce the number of vehicles entering the Manhattan CBD.

7 For O-3: Earlier studies concluded that this alternative would reduce New York City commute trips by less than 2 percent. Recent experience with the COVID-19 pandemic has supported that conclusion. As the region returns to normal business activities, following large-scale, full-time teleworking, many office workers are continuing to telework, but traffic levels are returning to close to pre-COVID-19 pandemic levels (for more information, see **Chapter 1, "Introduction," Section 1.4.1**). With such minimal impact, even combining this alternative with others like NTP-1 or O-2 would not yield congestion reductions and new revenue to meet the Project's purpose, need and objectives.

8 For O-6: To be successful, truck time-of-day restrictions would require receivers to be open and willing to receive the vehicles in overnight hours. Further, depending upon how the restrictions are implemented, some large trucks might instead send multiple small trucks, thereby increasing vehicle numbers and VMT.

2.4 DESCRIPTION OF ALTERNATIVES STUDIED IN DETAIL IN THIS ENVIRONMENTAL ASSESSMENT

NEPA regulations require that the No Action Alternative be evaluated and serve as the baseline condition against which the potential effects of the build alternative are assessed. Thus, this EA evaluates two alternatives: the No Action Alternative (in which the CBD Tolling Program is not implemented) and the CBD Tolling Alternative (in which a congestion pricing program consistent with the Traffic Mobility Act, the CBD Tolling Program, is implemented).

2.4.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program to reduce traffic congestion in the Manhattan CBD.

Under the No Action Alternative, existing policies and programs would continue and proposed initiatives would be implemented. Some of the notable measures include the following:

- The current cap on the number of FHV licenses in New York City would remain in effect.
- The two-way, protected bicycle lanes that NYCDOT implemented in fall 2021 on the Brooklyn Bridge would remain. These bicycle lanes replaced one inbound traffic lane. With the bicycle lanes in place, the upper-level shared-use path would be only for pedestrian use.[11]
- At the Ed Koch Queensboro Bridge, NYCDOT would convert a traffic lane to a pedestrian walkway on the bridge's lower level, and the existing shared-use path on the north side of the lower level would be only for bicycle use.
- NYCDOT would continue the configuration it implemented in August 2021 for the Brooklyn-Queens Expressway, which reduced the highway from three lanes to two lanes in each direction between Atlantic Avenue and the Brooklyn Bridge, and would initiate repairs to the roadway's bridges and structures between Atlantic Avenue and Sands Street.[12]
- The Port Authority of New York and New Jersey (PANYNJ) would implement "open-road" cashless tolling at the George Washington Bridge and Lincoln Tunnel, in which tolls are collected using overhead readers, with no toll booths or attendants.
- MTA would continue to implement transit improvement projects in its 2020–2024 Capital Program, based on the amount of funding available.
- NYCDOT and other New York City agencies would continue programs established as part of the public response to the COVID-19 pandemic to improve accessibility to open spaces. This includes the closure of certain sections of streets to vehicular traffic ("Open Streets") and the use of curbside parking lanes for outdoor dining ("Open Restaurants").

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[11] The travel demand modeling conducted for this EA and described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** included the bicycle lanes as part of the No Action Alternative but not the existing condition.

[12] Ibid.

- NYCDOT would continue to develop bicycle and bus infrastructure including new bicycle and bus lanes.[13]

With the No Action Alternative, existing tolls at bridges and tunnels connecting to Manhattan that are managed by TBTA and the PANYNJ would remain in effect. (See **Chapter 4, "Transportation," Section 4.1** for more information on current tolls.) In the No Action Alternative, East River and Harlem River crossings—most of which are under the control of NYCDOT—would remain untolled.

2.4.2 CBD Tolling Alternative

2.4.2.1 Overview

The CBD Tolling Alternative would implement a vehicular tolling program to reduce traffic congestion in the Manhattan CBD, consistent with the Traffic Mobility Act.[14] After covering Project-related capital and operating expenses, the revenue collected would fund projects in the MTA 2020–2024 Capital Program and successor capital programs.

The Manhattan CBD consists of the geographic area of Manhattan south and inclusive of 60th Street, but not including Franklin D. Roosevelt Drive (FDR Drive), West Side Highway/Route 9A, the Battery Park Underpass, and any surface roadway portion of the Hugh L. Carey Tunnel connecting to West Street (the West Side Highway/Route 9A). With the CBD Tolling Alternative, TBTA would toll vehicles entering or remaining in the Manhattan CBD via a cashless tolling system. The toll would apply to all registered vehicles (i.e., those with license plates) with the exception of qualifying vehicles transporting persons with disabilities and qualifying authorized emergency vehicles.[15, 16] Passenger vehicles would be tolled no more than once a day.[17] Vehicles that "remain" in the Manhattan CBD are vehicles that are detected when leaving, but were not detected entering in the same day. Given that they were detected leaving, they must have driven through the Manhattan CBD to get to the detection point, and therefore "remained" in it during a portion of the day. These vehicles would be charged that day for remaining in the Manhattan CBD.

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13 New bicycle lanes and bus lanes were incorporated in the transportation modeling conducted for this EA and described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** as appropriate.

14 The Traffic Mobility Act amended portions of certain New York State laws, including the Vehicle and Traffic Law, the Public Authorities Law, and the Tax Law. **Appendix 2B, "Project Alternatives: MTA Reform and Traffic Mobility Act,"** provides the amended text of those laws.

15 Qualifying authorized emergency vehicle is defined in Consolidated Laws of the State of New York, Vehicle and Traffic Law, Title 1, Article 1 Section 101. As currently designed, qualifying vehicles transporting persons with disabilities include vehicles with government-issued disability license plates and fleet vehicles owned or operated by organizations and used exclusively to provide transportation to people with disabilities.

16 The toll would not apply to vehicles that are not subject to registration requirements, such as bicycles, electric scooters, bicycles with electric assist ("e-bikes").

17 Passenger vehicle is defined by Consolidated Laws of the State of New York, Vehicle and Traffic Law, Title 4, Article 14 Section 401(6).

Examples of how tolls would be applied for passenger vehicles include the following:

- If a passenger vehicle enters the Manhattan CBD on Monday morning and leaves Monday evening prior to midnight, it would be detected when it enters and when it leaves the Manhattan CBD. Because passenger vehicles would be charged only once daily, a single toll would be charged.
- If a passenger vehicle enters the Manhattan CBD on Monday and is parked until it leaves on Wednesday, it would be charged upon entering on Monday and for remaining when it drove through the Manhattan CBD on Wednesday to leave. This vehicle would not be charged when it was parked the full 24-hour period on Tuesday.
- If a passenger vehicle makes two round trips into the Manhattan CBD on the same day, it would be charged a single toll, because passenger vehicles would be charged only once daily.
- If a passenger vehicle is parked all week within the Manhattan CBD (for example, a vehicle owned by a resident of the Manhattan CBD) and then leaves the Manhattan CBD for a day trip on Saturday, the vehicle would be detected leaving (remaining) and re-entering the Manhattan CBD on the same day. Because passenger vehicles would be charged only once daily, a single toll would be charged on Saturday.
- If a passenger vehicle is parked all week within the Manhattan CBD (for example, a vehicle owned by a resident of the Manhattan CBD or a visitor to the Manhattan CBD) and then leaves the Manhattan CBD on Friday and returns on Monday, the vehicle would be identified as having remained on Friday since it was detected leaving; it would be identified as entering when it returns on Monday. It would receive a charge on Friday for remaining and on Monday for entering the Manhattan CBD. It would not be charged any other days when parked the entire day in the Manhattan CBD, nor the days when away.

Residents whose primary residence is inside the Manhattan CBD and whose New York adjusted gross income for the taxable year is less than $60,000 would be entitled to a New York State tax credit equal to the aggregate amount of Manhattan CBD tolls paid during the taxable year.[18] Residents of the Manhattan CBD with New York adjusted gross income of $60,000 or higher would not be eligible for the tax credit.

The toll amount would vary by time of day, with higher tolls charged during peak periods when congestion is greater. The specific amounts of the tolls have not yet been determined, as discussed later in this chapter. In addition, certain types of vehicles would be exempt from the toll, and some vehicles that already pay tolls on crossings to and from the Manhattan CBD could receive crossing credits.

Consistent with the Traffic Mobility Act, the annual net revenues from the CBD Tolling Program would be sufficient to support a $15 billion investment in the MTA Capital Program. MTA would use the net revenue

18 Consolidated Laws of the State of New York, Tax Law, Article 22, Section 606 (jjj).

generated by the CBD Tolling Program to fund transit and commuter rail projects in the MTA 2020–2024 Capital Program and successor programs.[19] The funds would be allocated as follows:

- 80 percent to New York City subways and buses (New York City Transit, Staten Island Rapid Transit Operating Authority, and MTA Bus Company)
- 10 percent to Metro-North Railroad
- 10 percent to Long Island Rail Road

The MTA Capital Program is the culmination of MTA's regular evaluation of the condition of its assets and its analysis of regional transportation needs and future travel demands. These assessments support the long-range capital planning process and lead to investment strategies that address safety, state of good repair, and capacity needs. Investments in MTA's integrated transportation network would improve system reliability and accessibility, which would in turn attract new riders and further reduce vehicle demand for road capacity in and connecting to the Manhattan CBD.

To help define the CBD Tolling Program, the Traffic Mobility Act requires the TBTA Board to establish a Traffic Mobility Review Board with six members representing the region who have experience in public finance, transportation, mass transit, or management. The Traffic Mobility Review Board would recommend to the TBTA Board the toll amounts and toll structure, such as crossing credits, discounts, and/or exemptions for existing tolls paid on bridges and tunnels.[20] The variable pricing structure could vary by time of day, day of week, and day of year and could be different for different types of vehicles. Informed by the Traffic Mobility Review Board 's recommendation, the TBTA Board would approve and adopt a final toll structure following a public hearing in accordance with the State Administrative Procedure Act. The adopted TBTA plan would specify any crossing credits, discounts, and/or exemptions for tolls paid on bridges and tunnels; credits, discounts, and/or exemptions for taxis and/or FHVs, which are already subject to surcharges pursuant to the Public Authorities Law; and any other additional potential crossing credits, discounts, and/or exemptions.[21]

The Traffic Mobility Review Board's recommendation would be informed by the results of this EA and a Traffic Study, and would consider such factors as traffic patterns, operating costs, public impact, and environmental impacts, including, but not limited to, air quality and emissions trends. The analysis in this EA is intended to identify the potential effects that may result from implementing the CBD Tolling Alternative, including any potential crossing credits, discounts, and/or exemptions. Therefore, this EA considers a range of tolling scenarios with different attributes to identify the range of effects that may occur.

Following implementation of the Manhattan CBD toll, the City of New York would prepare a study of the effects of the CBD Tolling Program on parking within and around the Manhattan CBD. Consistent with the

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19 Net revenue refers to the balance of tolls, fees, and other revenues derived from the CBD Tolling Program, after payment of operating, administration, and other necessary expenses of TBTA, that are properly allocable to the CBD Tolling Program.

20 In April 2018 the State of New York imposed a congestion surcharge on taxis and FHV trips that begin in, end in, or pass through Manhattan south of 96th Street. The Traffic Mobility Act requires the Traffic Mobility Review Board to examine potential CBD toll crossing credits, discounts, or exemptions for taxis and FHVs. The travel demand modeling conducted for this EA assumes that the taxi and FHV surcharge established by 2018 legislation will remain in effect with the CBD Tolling Alternative.

21 Consolidated Laws of the State of New York, Public Authorities Law, Article 5, Title 11 Section 1270-i.

Traffic Mobility Act, this study must be completed 18 months after toll collection commences. In addition, following implementation of the CBD Tolling Program, TBTA, in consultation with NYCDOT, would report on the effects of the CBD Tolling Program on traffic operations, taxi and FHV usage, mass transit usage, and air quality. TBTA and NYCDOT would report on these effects one year after tolling implementation and every two years thereafter.

2.4.2.2 Tolling Infrastructure and Tolling System Equipment

The CBD Tolling Alternative would include tolling infrastructure and tolling system equipment to detect vehicles. This would include poles and mast arms, similar to those used for streetlights and traffic lights today; tolling system equipment housed in enclosures; and signage similar in size and character to signs already present throughout Manhattan. Tolling system equipment would include reader and meter cabinets and cameras. Consistent with the Traffic Mobility Act, TBTA and NYCDOT have entered into a Memorandum of Understanding for coordinating the planning and design and, should the CBD Tolling Alternative be selected, the installation, construction, and maintenance of the Project's tolling infrastructure, including signage (see **Appendix 2C, "Project Alternatives: Memorandum of Understanding Between TBTA and NYCDOT"**). The following sections describe proposed locations for the tolling infrastructure and tolling system equipment and the types of infrastructure and equipment.

Location of Tolling Infrastructure and Tolling System Equipment

The new tolling system would include detection points to identify all vehicles entering or leaving the Manhattan CBD as well as verification points at certain locations along the West Side Highway/Route 9A and the FDR Drive.[22] The poles for the CBD Tolling Alternative would be within the existing transportation right-of-way and would typically be at locations where standard poles are currently installed or would replace existing poles with new poles that are up to about 20 feet from the existing poles. In some locations, new poles would be installed where no poles currently exist. Where appropriate, tolling system equipment would be mounted on existing infrastructure (e.g., under pedestrian walkways and existing overhead sign infrastructure). At the Hugh L. Carey Tunnel and Queens-Midtown Tunnel, the existing tolling equipment would be used.

Based on preliminary design, tolling infrastructure and tolling system equipment would be installed at the following locations, with a total of 120 detection points:

- Near the 60th Street boundary to the Manhattan CBD, generally between 60th and 61st Streets, on all southbound and northbound roadways. This would include detection points close to 59th Street on the three access roads in Central Park that connect to 59th Street (Central Park South).
- At the exits from and entrances to all East River bridges (Brooklyn Bridge, Manhattan Bridge, Williamsburg Bridge, Ed Koch Queensboro Bridge, other than the ramp to 62nd Street) and tunnels under the jurisdiction of the PANYNJ (the Holland and Lincoln Tunnels) that connect to the Manhattan

[22] Tolls would be charged for entering or remaining in the Manhattan CBD; detection points at exit locations would aid in identifying vehicles that have remained in the Manhattan CBD. Verification points along the West Side Highway/Route 9A and FDR Drive would be used to ensure that vehicles that remain on these roadways without entering the Manhattan CBD do not pay a toll.

CBD. This would include detection points on the ramps leading to and from the bridges and tunnels as well as detection points on the East River bridge structures over land. At the TBTA tunnels that connect to the Manhattan CBD (Hugh L. Carey Tunnel and Queens-Midtown Tunnel), existing open-road tolling infrastructure would be used.

- Along the FDR Drive and the West Side Highway/Route 9A to identify vehicles that travel along those routes without entering the Manhattan CBD. These highway detection points would also aid in identifying vehicles that travel to locations on the east side of the FDR Drive (e.g., the Waterside apartment complex) and on the west side of the West Side Highway/Route 9A (e.g., Battery Park City or Hudson River Park) so that those vehicles are tolled.

Figure 2-1 illustrates the general locations where vehicles would pay the toll. **Figure 2-2a through Figure 2-2j** show in more detail the specific locations proposed for tolling infrastructure and tolling system equipment based on the preliminary design.

Types of Tolling Infrastructure and Tolling System Equipment

At each detection point, cameras and E-ZPass readers would be installed on tolling infrastructure in an arrangement that would allow capture of vehicle information from all traffic lanes. The proposed tolling system equipment would be clustered into single enclosures to reduce its visual impact. These enclosures would house the license plate reader cameras, illuminators, and antenna in a single unit comparable in size and mass to traffic control devices currently used throughout the area of visual effect. The cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without the need for visible light.

Different tolling infrastructure would be used, depending on location, to minimize the Project footprint and reflect the existing setting. Based on preliminary design, this would include the following:

- **Modified NYCDOT M-2A poles at the curbside.** NYCDOT uses octagonal poles (M-2A poles) throughout New York City for traffic signals and streetlights. The CBD Tolling Alternative would install new poles that are similar in appearance to standard M-2A poles but would be larger in diameter (potentially up to 14 inches in diameter rather than 8.5 inches) to meet the critical structural performance requirements for mast-arm configurations. The modified M-2A poles would have larger foundations than a standard M-2A pole. From these poles, a new mast arm (similar to the mast arms that support traffic signals throughout New York City) would extend 20 to 50 feet over the roadway with tolling system equipment mounted on it. If an existing pole also supports a streetlight, then a streetlight would be provided on the replacement pole as well. The tolling system equipment mounted on mast arms would collect vehicle information from multiple lanes beneath the mast arm.
- **"Side fires" at the curbside.** In certain locations, tolling system equipment would be mounted on a standard M2-A pole without a mast arm, referred to as a "side fire." The side-fire equipment would collect vehicle information from a single lane. Typically, this would occur at locations where a mast arm would be on one side of the street and a side fire on the other side of the street to allow full coverage of all lanes of the street.

Figure 2-1. General Locations of New Tolls for Vehicles Accessing the Manhattan CBD

Manhattan CBD (as defined by the MTA Reform and Traffic Mobility Act)

Vehicular Entry Point

Vehicular Entry Point: Authorized Vehicles Only

New toll for vehicles entering the Manhattan CBD at this crossing (locations shown are schematic and do not represent the specific location of new tolling infrastructure)

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

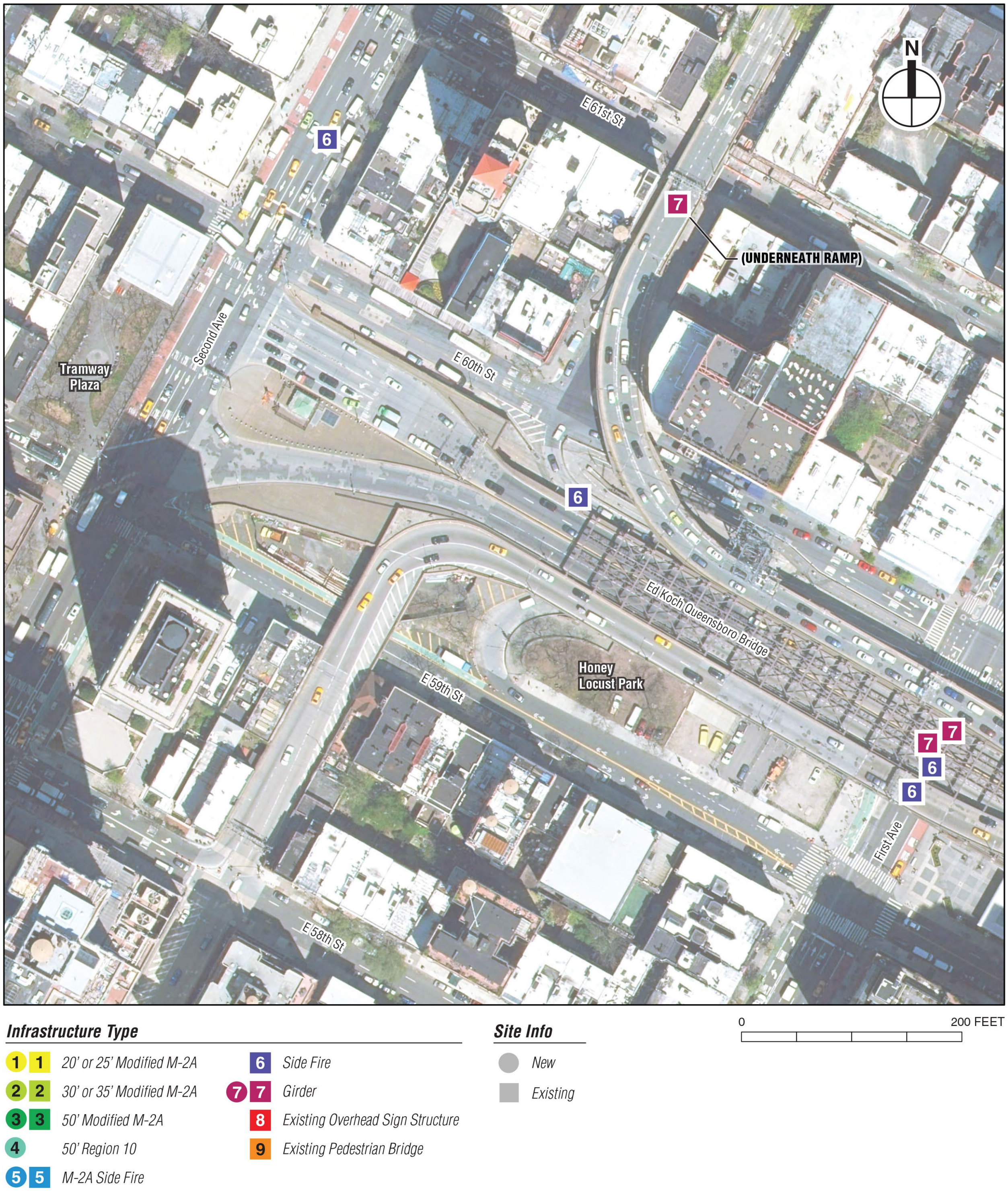
Figure 2-2a. Proposed Location of Tolling Infrastructure and Tolling System Equipment: Key Map

Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; New York City Department of City Planning, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 2-2b. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: West Side Highway/Route 9A and FDR Drive

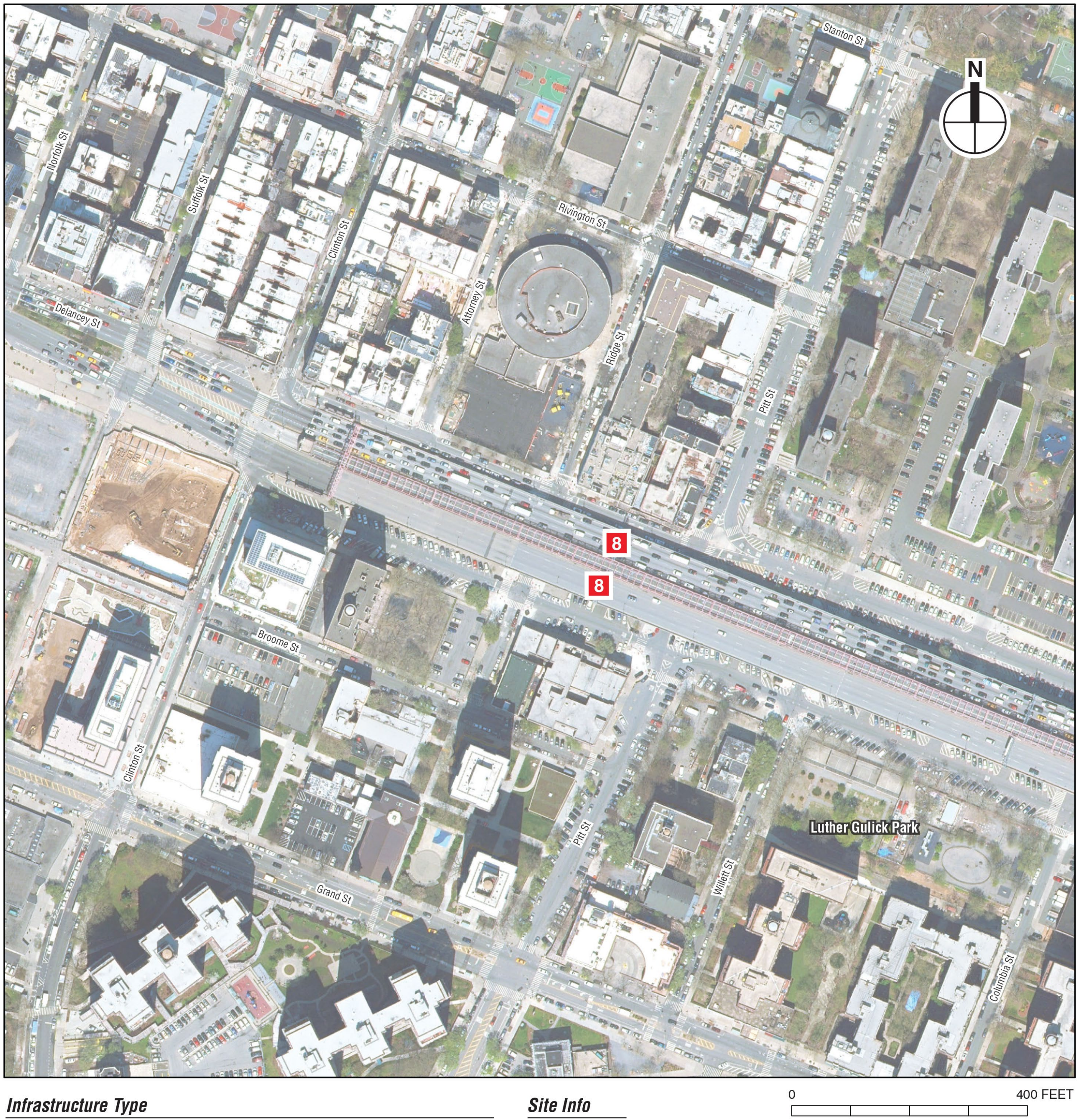
Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2c. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Ed Koch Queensboro Bridge



Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2d. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Williamsburg Bridge



Infrastructure Type

1 1	*20' or 25' Modified M-2A*	6	*Side Fire*
2 2	*30' or 35' Modified M-2A*	7 7	*Girder*
3 3	*50' Modified M-2A*	8	*Existing Overhead Sign Structure*
4	*50' Region 10*	9	*Existing Pedestrian Bridge*
5 5	*M-2A Side Fire*		

Site Info

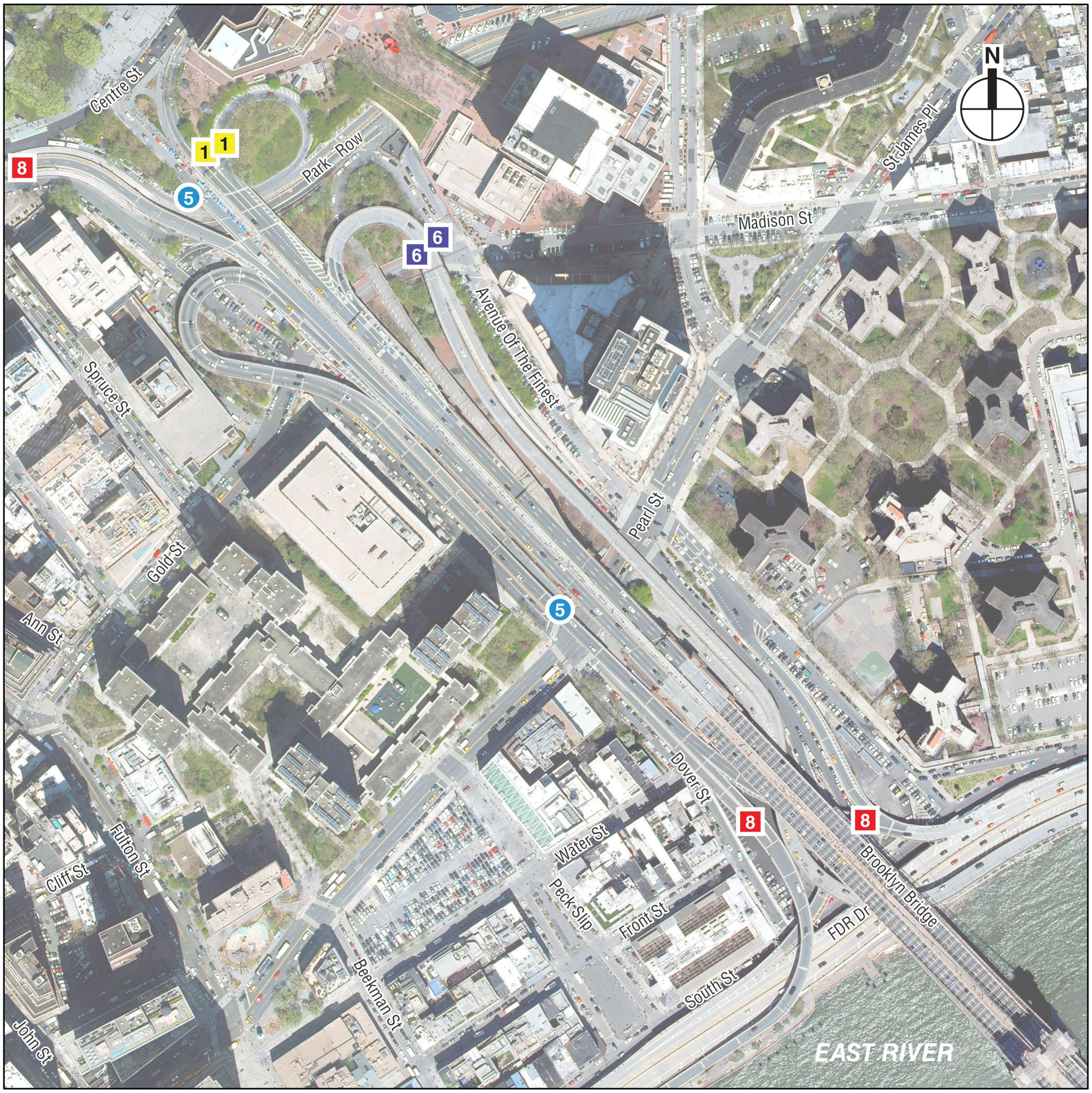
- *New*
- *Existing*

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2e. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Manhattan Bridge

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2f. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Brooklyn Bridge



Infrastructure Type

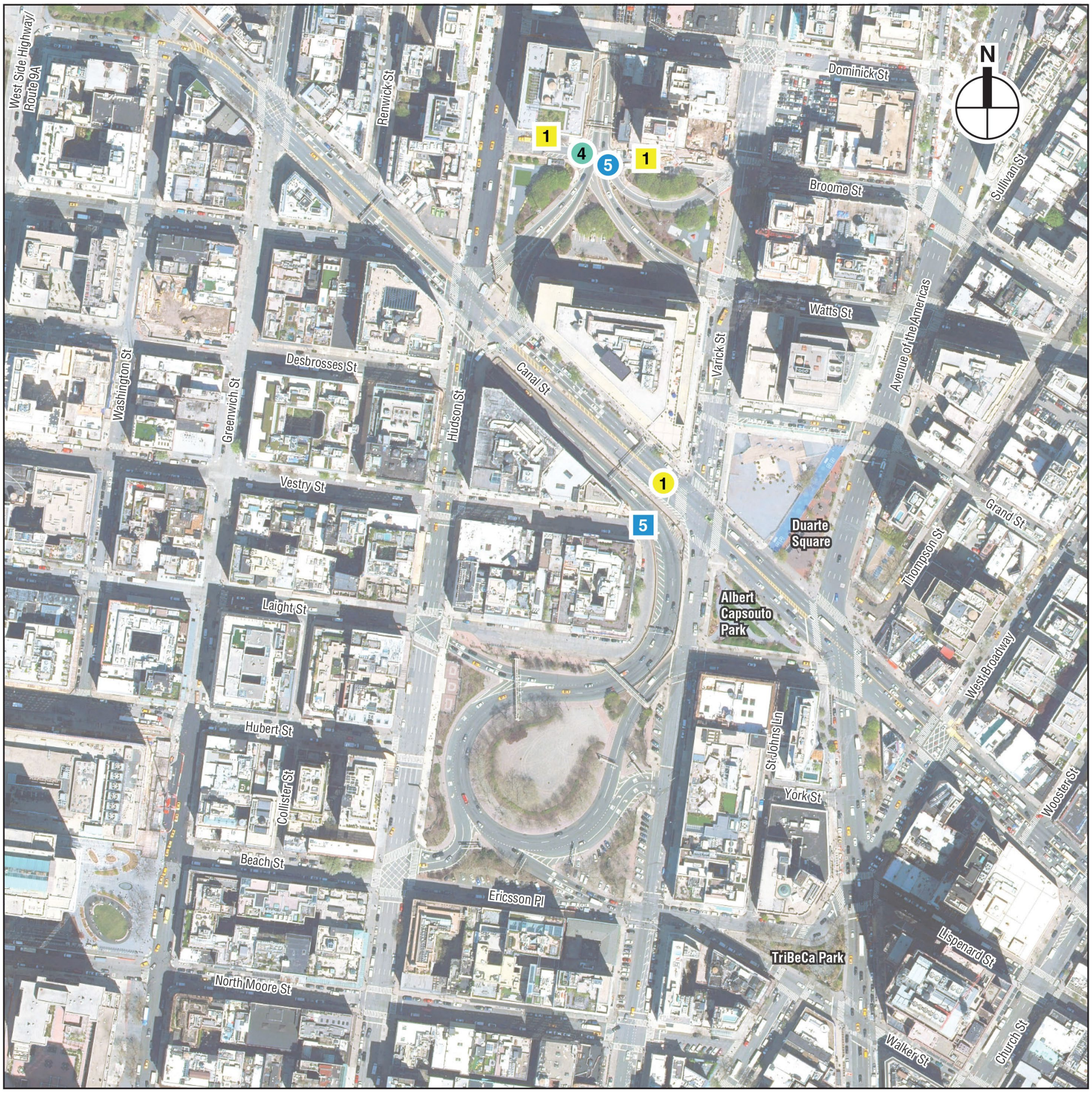
- 1 1 20' or 25' Modified M-2A
- 2 2 30' or 35' Modified M-2A
- 3 3 50' Modified M-2A
- 4 50' Region 10
- 5 5 M-2A Side Fire
- 6 Side Fire
- 7 7 Girder
- 8 Existing Overhead Sign Structure
- 9 Existing Pedestrian Bridge

Site Info

- New
- Existing

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2g. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Holland Tunnel



0 400 FEET

Infrastructure Type

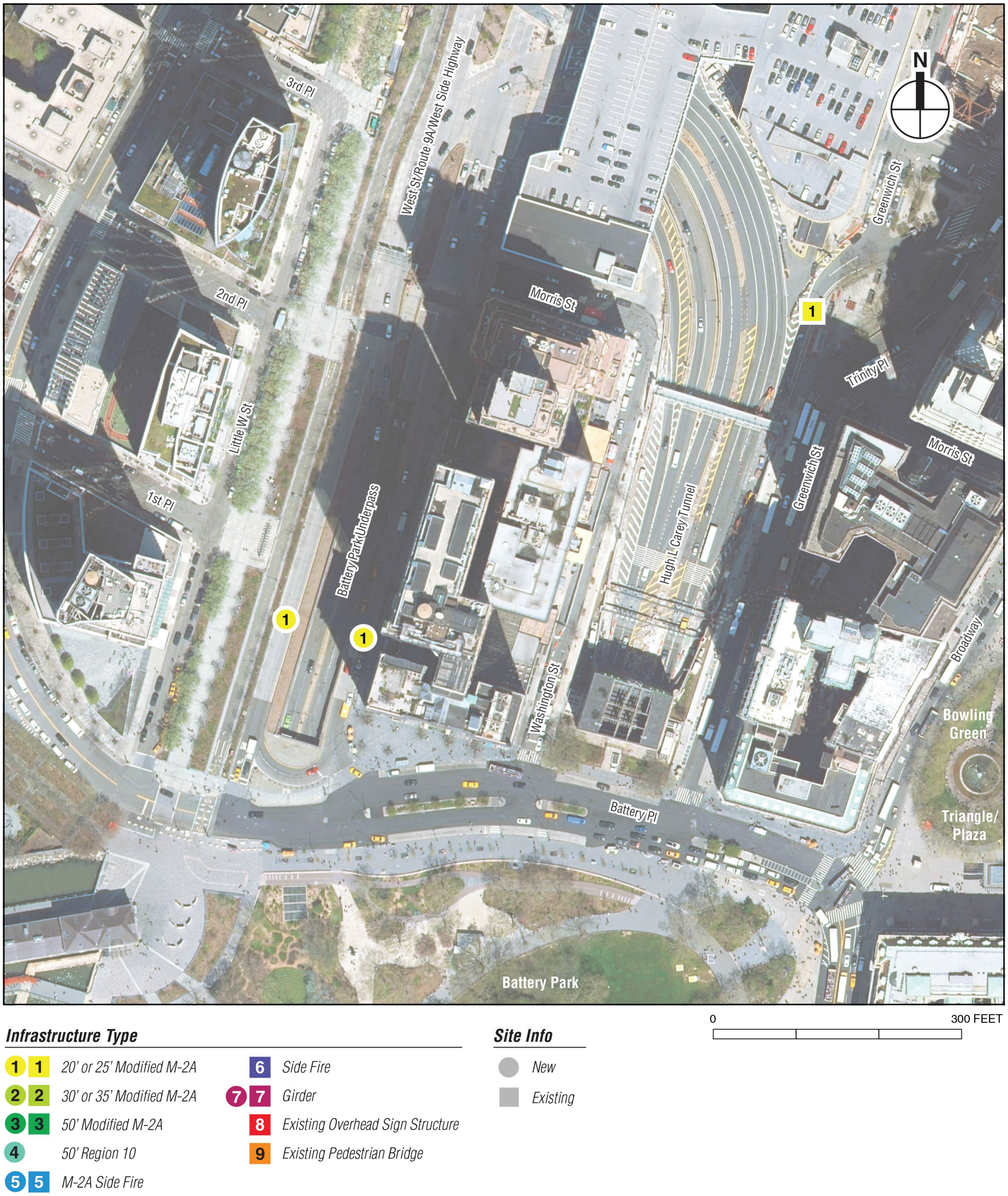
- 1 1 — 20' or 25' Modified M-2A
- 2 2 — 30' or 35' Modified M-2A
- 3 3 — 50' Modified M-2A
- 4 — 50' Region 10
- 5 5 — M-2A Side Fire
- 6 — Side Fire
- 7 7 — Girder
- 8 — Existing Overhead Sign Structure
- 9 — Existing Pedestrian Bridge

Site Info

- New
- Existing

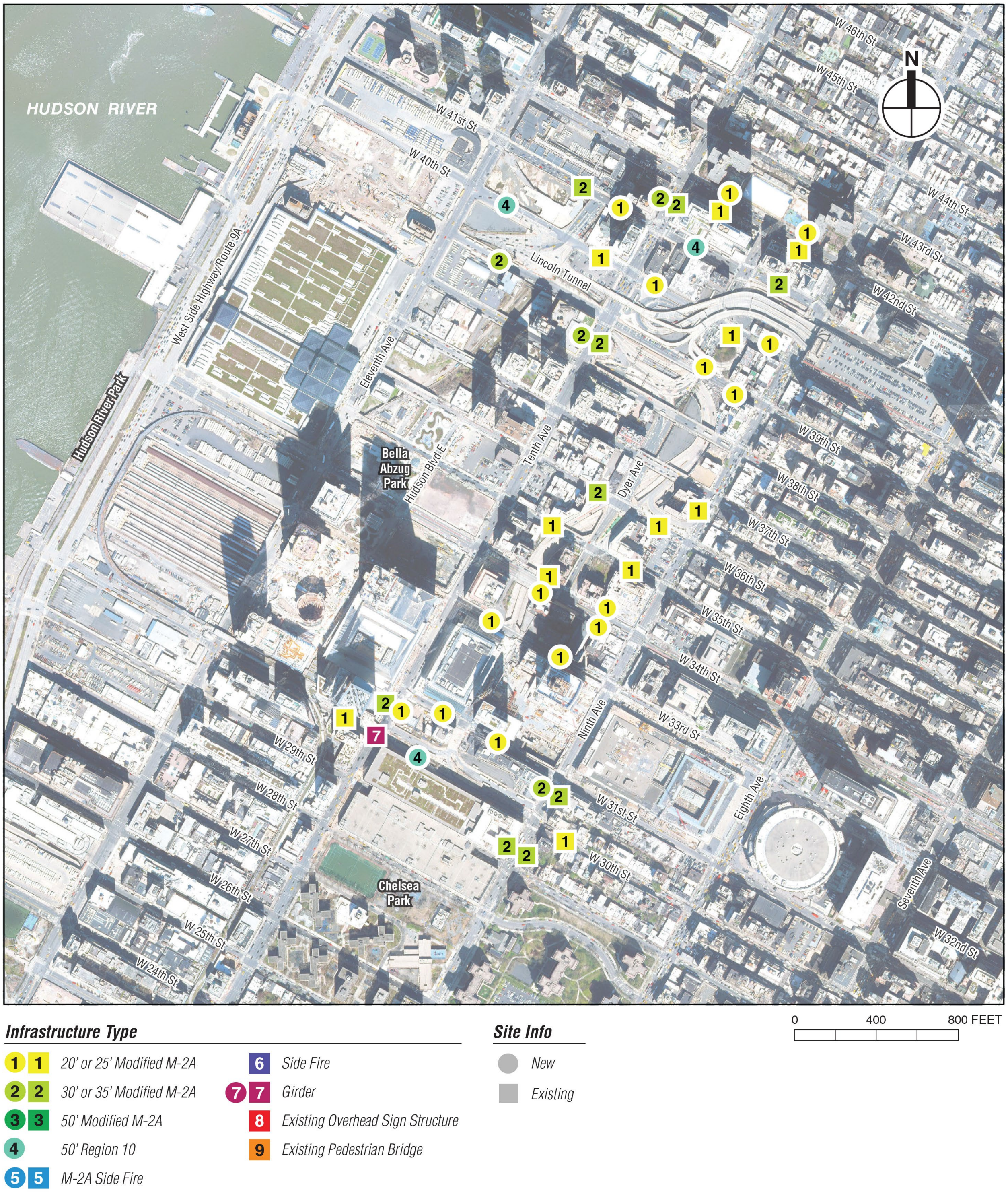
Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2h. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Battery Park Underpass and Hugh L. Carey Tunnel



Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2i. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Lincoln Tunnel



Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 2-2j. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: 60th Street

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000–2018. http://gis.ny.gov/gateway/mg/index.html.

- **Equipment mounted on existing overhead sign structures and pedestrian bridges.** Along the West Side Highway/Route 9A and the FDR Drive, detection points would be mounted on existing overhead sign structures and pedestrian bridges. Some overhead structures would be strengthened to carry the additional load.
- **Equipment mounted on existing bridge and tunnel structures.** On the Brooklyn Bridge, Manhattan Bridge, Williamsburg Bridge, and Ed Koch Queensboro Bridge, and potentially at the Lincoln and Holland Tunnels, tolling system equipment would be mounted to existing overhead sign structures and/or existing structural elements (e.g., girders, walls) of the structures. In addition, on the Manhattan Bridge, a new overhead steel girder that supports the tolling system equipment would span two existing bridge columns to support tolling system equipment above the inner roadway lanes, while poles and mast arms would capture traffic on the outer roadways. Tolling infrastructure and tolling system equipment would also be mounted directly on the structural elements of the Ed Koch Queensboro Bridge and could also be mounted on structural elements at the Lincoln Tunnel. At the Brooklyn Bridge, two replacement poles and one new pole would be installed close to, but not on, the bridge structure.
- **Existing open-road tolling equipment at TBTA tunnels.** At the TBTA tunnels that connect to the Manhattan CBD (Hugh L. Carey Tunnel and Queens-Midtown Tunnel), existing open-road tolling infrastructure would be used.
- **Portable equipment mounted on movable trailers.** This equipment, potentially up to 70 square feet in size, could be parked in the curb lane at detection points to supplement the permanent detection equipment if needed on a temporary basis. It would include an emergency generator to provide power to the equipment.

The tolling infrastructure and tolling system equipment would use existing or new underground connections to utility and communications networks to receive power and system connectivity.

The Project Sponsors are coordinating with PANYNJ regarding potential use of property controlled by PANYNJ associated with the Lincoln and Holland Tunnels for tolling infrastructure and tolling system equipment. This would allow the Project Sponsors to eliminate several detection points on local streets near the Lincoln and Holland Tunnels. This EA evaluates detector point locations on local streets near the Lincoln and Holland Tunnels as well as on PANYNJ property.

The tolling infrastructure and tolling system equipment have been designed to minimize their visual impact, by using existing infrastructure as much as possible and coordinating the appearance of new infrastructure and equipment with the existing street furniture palette. The color of poles, cabinets, and tolling system equipment would be consistent and would match existing light pole colors. Supports, fasteners, and other hardware would also be designed to be minimally visible. In all cases, the Project Sponsors would avoid the removal of street trees for pole placement to the maximum extent feasible and practicable. In addition, the Project Sponsors have selected locations for the tolling infrastructure and tolling system equipment to minimize their potential for adverse effect on nearby historic properties, including the bridges and tunnels that connect to the Manhattan CBD. **Figure 2-3** illustrates the proposed tolling infrastructure and tolling system equipment. In addition, illustrations in **Appendix 9, "Visual Resources,"** provide comparison views for the No Action Alternative and CBD Tolling Alternative in selected locations proposed for new tolling infrastructure, tolling system equipment, and tolling signage.

Signage

In addition to the tolling infrastructure and tolling system equipment, the CBD Tolling Alternative would include signage on local streets outside the Manhattan CBD to advise drivers of the toll before they enter the Manhattan CBD, and within the Manhattan CBD to advise drivers before they exit the zone. These signs would be similar in size and nature to existing signs already in place and would be mounted on standard signposts on local streets and on existing infrastructure where feasible.

The type, sequence, and quantity of signs would differ depending on the location. **Appendix 2D, "Project Alternatives: CBD Tolling Program Signage,"** provides maps illustrating potential locations for signage and depictions of the types of signs, based on preliminary design. This information would be further refined during, and additional signs or signs in different locations may be required as a result of, final design.

The following text describes the signage that would be included with the CBD Tolling Alternative, based on location (see **Appendix 2D, Figure 2D**):

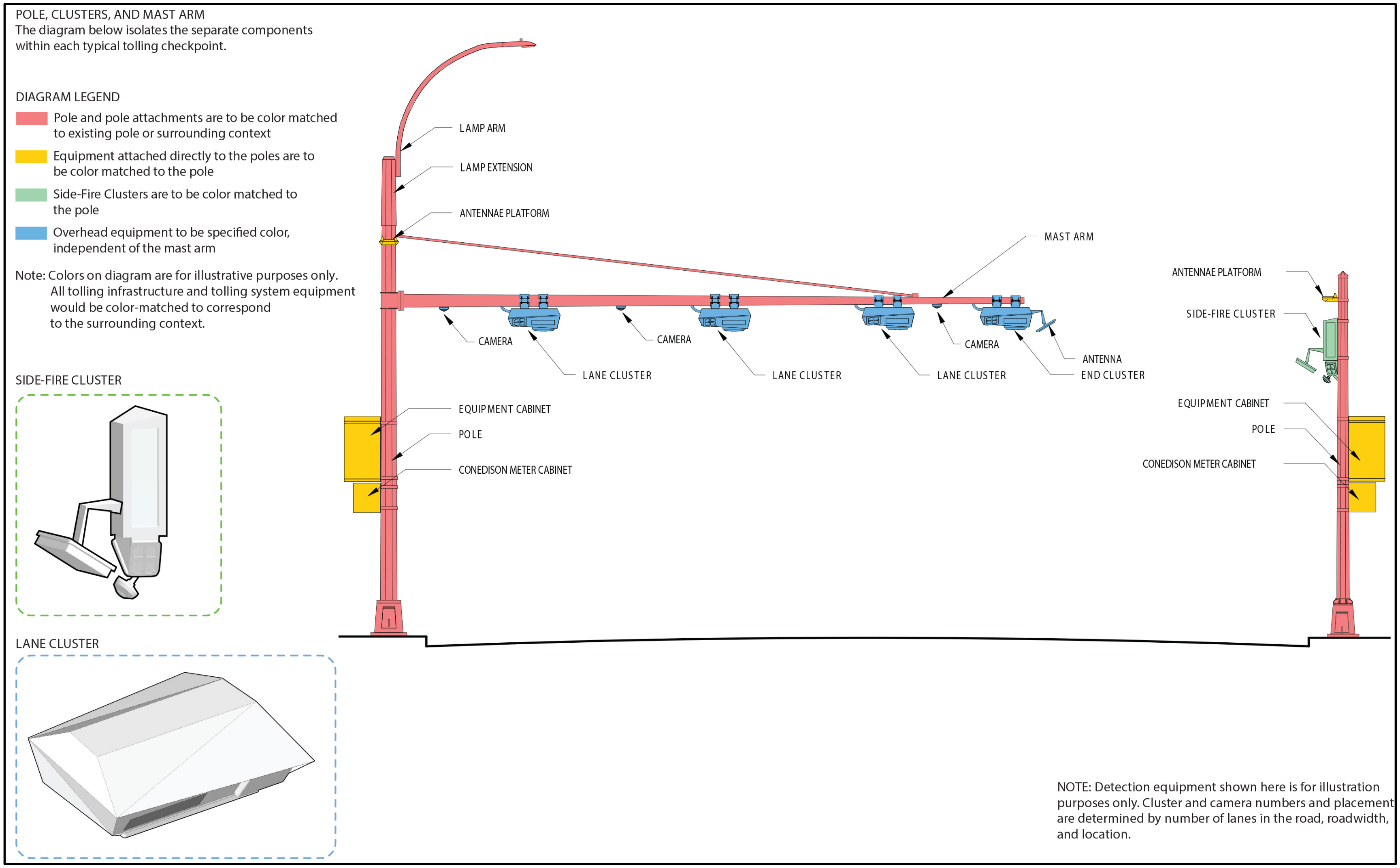
- **Approach to 60th Street/Exits Across 60th Street.** For vehicles driving southbound on the avenues approaching 60th Street, signs would provide notice of the toll at 96th Street, 72nd Street, and 66th Street. An example of these signs is shown in **Appendix 2D, Figure 2D-2**. The signs would be located on existing infrastructure where practicable and on new signposts as needed. Wider streets would have signs on both sides of the street. Thus, each southbound approach to 60th Street would have three to six signs between approximately 96th and 66th Streets, depending on the width of the street.

  Signs would also be located along southbound avenues close to the CBD boundary, generally between 62nd Street and 60th Street. **Appendix 2D, Figure 2D-3**, illustrates typical signage in this area. Signs would also notify drivers in vehicles driving east and west across 61st Street, as shown in **Appendix 2D, Figure 2D-3**. There would be approximately nine signs close to 60th Street for each southbound approach.

  Within the Manhattan CBD, there would be "end toll zone" signs on northbound avenues close to the 60th Street boundary. Each northbound approach would have approximately two "end toll zone" signs.

  These signs on local streets would range in size from 30 inches by 24 inches to 48 inches by 35 inches.

Figure 2-3. Typical Tolling Infrastructure and Tolling System Equipment



Source: TransCore, Parsons, Dattner Architects

- **FDR Drive and West Side Highway/Route 9A.** Signage would notify drivers of the toll at locations along the FDR Drive and the West Side Highway/Route 9A near exits from those highways. (As noted earlier, drivers who use these highways would not be subject to the toll; the toll would apply once they enter the Manhattan CBD from the highway.) To reduce the number of signs at each exit from these highways into the Manhattan CBD, signage with maximum toll rates would be placed only at locations on the highways at the limits of the zone (e.g., on the West Side Highway/Route 9A near 60th Street, on the West Side Highway/Route 9A and at the exit of the Hugh L. Carey Tunnel).

  Appendix 2D, Figure 2D-4, shows a typical entry and exit from the FDR Drive into the Manhattan CBD. Upon approach to the CBD boundary, drivers would typically see four signs. An "end toll zone" sign would be located at all entrances to the FDR Drive from the Manhattan CBD, indicating to the driver that they are exiting the zone and entering an excluded roadway.

  Appendix 2D, "Project Alternatives: CBD Tolling Program Signage," Figure 2D-5, shows the signage at a typical West Side Highway/Route 9A intersection with the local street grid.

  Signs along the FDR Drive and the West Side Highway/Route 9A would range in size from 30 inches by 24 inches to 54 inches by 36 inches.

- **Brooklyn, Queens, and New Jersey Approaches.** For drivers entering the Manhattan CBD using an East River crossing from Brooklyn or Queens, signs along the highways leading to these crossings would notify drivers of the toll. A typical sequence is shown in **Appendix 2D, Figure 2D-6.** Existing signs would be modified to add necessary toll information where practicable. Following this typical signage sequence, there would be approximately 10 to 20 signs on the approach to each crossing, depending on the unique conditions of each highway approach.

  There would also be signs on the Manhattan CBD side of these crossings indicating the start of the CBD for westbound traffic and the end of the CBD for eastbound traffic. The number of signs in these areas would vary based on the structure and layout of the ramps for these crossings.

  For crossings between New Jersey and the Manhattan CBD, signage in New Jersey would follow a similar signage pattern and would use existing infrastructure to the greatest extent practicable. Signage in this area would be coordinated with the appropriate local jurisdictions during final design.

- **Central Park.** While public vehicular traffic is not permitted in Central Park, authorized vehicles (e.g., emergency response vehicles, park maintenance, park administration, vendors, and contractors) may use the roads when necessary. Two new signposts would be added within Central Park to notify drivers of entry into the CBD if they exit the park onto 59th Street. These signs would be on West Drive, a one-way southbound road, and next to the southbound lane of East Drive approaching Grand Army Plaza. **Appendix 2D, Figure 2D-7,** illustrates the two signs that would be installed at each of these approaches. The "begin toll zone" sign would be 30 inches by 24 inches and the "max toll rate" sign would be 36 inches by 36 inches. The signs would be affixed to a standard signpost that is approximately 3.5 inches by 2 inches in cross section at approximately 7 feet in height.

2.4.2.3 Logical Termini

The joint NEPA regulations of FHWA, the Federal Transit Administration, and the Federal Railroad Administration (23 CFR Section 771.111(f)) require that actions evaluated under NEPA must "connect logical termini and be of sufficient length to address environmental matters on a broad scope." Logical termini are defined as rational end points both for a transportation improvement and for a review of the environmental effects. This requirement in the regulations ensures that NEPA evaluations consider a full project, without dividing it into separate pieces so as to change the conclusions about the action's environmental effects. The CBD Tolling Alternative described in this chapter and evaluated in subsequent chapters of this EA satisfies this requirement.

The CBD Tolling Alternative described in this chapter and evaluated in the EA encompasses all locations where tolling infrastructure and tolling system equipment would be installed as well as the entire Manhattan CBD, which would be subject to the new toll. In addition, the CBD Tolling Alternative could affect travel in a larger area than the Manhattan CBD; therefore, this EA considers the effects of the Project on a regional study area consisting of 28 counties that include New York City and the surrounding area. The 28-county area encompasses the area where most trips to and from the Manhattan CBD originate and/or terminate and is large enough to include any area where effects of the CBD Tolling Alternative could occur and where mitigation could be required because of the CBD Tolling Alternative. See also **Chapter 3, "Environmental Analysis Framework,"** for a discussion of the 28-county regional study area.

2.4.2.4 Tolling Scenarios for Environmental Review

This EA includes evaluation of multiple tolling scenarios within the CBD Tolling Alternative to identify the range of potential effects that could occur from implementing the Project. If the TBTA Board adopts a toll schedule structure that has substantially different attributes from those examined in this EA, the Project Sponsors would review these changes with FHWA and other resource agencies, as appropriate, and identify a course of action to assess and document the changes in accordance with NEPA prior to implementation of the Project.

As described in the following subsections, all tolling scenarios have some features in common, including variable tolling, in which toll rates are higher during peak periods when congestion is greatest. All tolling scenarios also include a higher toll on designated "Gridlock Alert" days[23] when congestion is higher than during typical peak periods.

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[23] NYCDOT designates the busiest traffic days of the year as Gridlock Alert days and, to address the traffic congestion that occurs then, requests that travelers in New York City consider walking, biking, or taking public transportation whenever possible on Gridlock Alert days. Gridlock Alert days are designated in advance based on past traffic data and include select days in the November-December holiday period as well as days (typically in September) when the United Nations General Assembly is in session. In 2021, there were 19 designated Gridlock Alert days. https://portal.311.nyc.gov/article/?kanumber=KA-02759. In advance of and during Gridlock Alert days, NYCDOT provides messages on roadways throughout the city warning drivers of the Gridlock Alert day and the potential for severe congestion.

The amount of any higher toll for Gridlock Alert days has not yet been determined, and the transportation modeling conducted for this Project and described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** did not include modeling of a higher toll on Gridlock Alert days because it considered typical days rather than days with unusually high traffic levels.

The tolling scenarios vary in their assumptions about other factors, such as the amount of the toll for different types of vehicles, the times tolls would be imposed, exemptions from tolling, crossing credits for tolls paid on other toll tunnels or bridges,[24] and discounts in the form of "caps" on the number of tolls per 24-hour period to be applied to different types of vehicles. To meet the Project objective of creating a funding source for capital improvements and generating sufficient annual net revenues to fund $15 billion for capital projects for the MTA Capital Program, tolling scenarios that provide crossing credits, discounts, and/or exemptions have a higher toll value than those without these elements.

In all tolling scenarios, vehicles using E-ZPass would be subject to lower toll rates than those without E-ZPass that pay via the Tolls by Mail program. In addition, with the exception of one tolling scenario in which all vehicles would be charged the same toll rate, the remainder of the tolling scenarios would apply different toll rates to different classes of vehicles—with autos, motorcycles, and commercial vans subject to the lowest rate and large trucks to the highest rate.

Table 2-3 provides a summary of the similarities and differences among the tolling scenarios, and **Appendix 2E, "Project Alternatives: Definition of Tolling Scenarios,"** provides more detail on toll rates.

Tolling Scenario A – Base Plan

Tolling Scenario A, which would have the lowest toll rates of any of the tolling scenarios evaluated, represents the basic tolling program described in the Traffic Mobility Act without any modifications that might be recommended by the Traffic Mobility Review Board and adopted by TBTA.

In Tolling Scenario A, vehicles accessing the Manhattan CBD using TBTA and PANYNJ CBD crossings would pay the tolls for the TBTA or PANYNJ crossing—as they do today—and the Manhattan CBD toll; vehicles using a crossing into the Manhattan CBD that is untolled today (i.e., the Brooklyn, Manhattan, Williamsburg, and Ed Koch Queensboro Bridges) would pay only the Manhattan CBD toll. As with existing conditions, which include a mix of untolled and tolled river crossings, some drivers would choose crossings based on their lower cost even if that route were less direct or slower.

As with all the scenarios, autos, commercial vans, and motorcycles would be charged a Manhattan CBD toll no more than once per day. Taxis, FHVs, buses, and small or large trucks would pay the toll each time they access the Manhattan CBD (see **Table 2-3**). The tolls in this tolling scenario would vary by the following time periods:

- A peak period from 6 a.m. to 8 p.m. on weekdays and 10 a.m. to 10 p.m. on weekends
- An off-peak period from 8 p.m. to 10 p.m. on weekdays
- An overnight period from 10 p.m. to 6 a.m. on weekdays and 10 p.m. to 10 a.m. on weekends

[24] These credits are referred to in this EA as "crossing credits" and are a credit against the Manhattan CBD toll for tolls paid on TBTA and PANYNJ facilities connecting to the Manhattan CBD or Manhattan. Crossing credits have the potential to rationalize existing traffic imbalances between the tolled and untolled East River crossings, which lead to excess vehicle travel and congestion as motorists travel out of their way to avoid a toll (known as "bridge shopping"). However, providing crossing credits for currently tolled facilities would require increases to the toll amount to meet the Project objective related to revenue, and would affect traffic patterns by increasing or decreasing traffic in other localized locations as described in this EA.

Table 2-3. Tolling Scenarios Evaluated for the CBD Tolling Alternative

PARAMETER[1]	SCENARIO A Base Plan	SCENARIO B Base Plan with Caps and Exemptions	SCENARIO C Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO D High Crossing Credits for Vehicles Using Tunnels to Access the CBD	SCENARIO E High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO F High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO G Base Plan with Same Tolls for All Vehicle Classes
Time Periods[2]							
Peak: Weekdays	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 8 p.m.	6 a.m. to 10 a.m.; 4 p.m. to 8 p.m.	6 a.m. to 8 p.m.
Peak: Weekends	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.	10 a.m. to 10 p.m.
Off Peak: Weekdays	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	8 p.m. to 10 p.m.	10 a.m. to 4 p.m.	8 p.m. to 10 p.m.
Overnight: Weekdays	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	10 p.m. to 6 a.m.	8 p.m. to 6 a.m.	10 p.m. to 6 a.m.
Overnight Weekends	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.	10 p.m. to 10 a.m.
Potential Crossing Credits							
Credit Toward CBD Toll for Tolls Paid at the Queens-Midtown, Hugh L. Carey, Lincoln, Holland Tunnels	No	No	Yes	Yes	Yes	Yes	No
Credit Toward CBD Toll for Tolls Paid at the Robert F. Kennedy, Henry Hudson, George Washington Bridges	No	No	No	No	No	Yes	No
Potential Exemptions and Limits (Caps) on Number of Tolls per Day							
Autos, motorcycles, and commercial vans	Once per day	Once per day	Once per day	Once per day	Once per day	Once per day	Once per day
Taxis	No cap	Once per day	Exempt	No cap	Exempt	Once per day	No cap
FHVs	No cap	Once per day	Three times per day	No cap	Three times per day	Once per day	No cap
Small and large trucks	No cap	Twice per day	No cap	No cap	No cap	Once per day	No cap
Buses	No cap	Exempt	No cap	No cap	Transit buses – Exempt No cap on other buses	Exempt	No cap
Approximate Toll Rate Assumed[3]							
Peak	$9	$10	$14	$19	$23	$23	$12
Off Peak	$7	$8	$11	$14	$17	$17	$9
Overnight	$5	$5	$7	$10	$12	$12	$7

1 The parameters in this table were assumed for modeling purposes to evaluate the range of potential effects that would result from implementation of the CBD Tolling Alternative. Actual toll rates, potential credits, exemptions, and/or discounts, and the time of day when the toll rates would apply would be determined by the TBTA Board after recommendations are made by the Traffic Mobility Review Board. **Appendix 2E, "Project Alternatives: Definition of Tolling Scenarios,"** provides more detailed information on the rates, potential crossing credits, exemptions, and/or discounts assumed for each tolling scenario.

2 Tolls would be higher during peak periods when traffic is greatest. These would be set forth by TBTA in the final toll schedule. All tolling scenarios include a higher toll on designated "Gridlock Alert" days, although the modeling conducted for the Project did not reflect this higher toll since it considers typical days rather than days with unusually high traffic levels.

3 Toll rates are for autos, commercial vans, and motorcycles using E-ZPass and are rounded. For all tolling scenarios, different rates would apply for vehicles not using E-ZPass; for Tolling Scenarios A through F, different vehicle classes would pay different tolls (see **Appendix 2E, "Definition of Tolling Scenarios"**). The peak E-ZPass rate (rounded) range across tolling scenarios for small trucks would be $12–$65; for large trucks, the range would be $12–$82.

Tolling Scenario B – Base Plan with Caps and Exemptions

Tolling Scenario B is largely the same as Tolling Scenario A, but it adds caps on the number of times small and large trucks would pay up to two times each day (**Table 2-3**), and buses would be exempt from the Manhattan CBD toll. The tolls in this tolling scenario would vary by the same time periods as Tolling Scenario A. Given the caps on tolls and exemptions, the toll rates for Tolling Scenario B would be higher.

Based on the modeling conducted for the Project, Tolling Scenario B would not meet the Project's objective related to raising revenue for the MTA Capital Program with the toll rates identified in this EA. Tolling Scenario B was included in the analyses to provide consideration of a tolling scenario with lower toll rates and substantial caps and exemptions, which was a combination repeatedly requested by the public during development of this EA. An additional variation of the original Tolling Scenario B was modeled with toll rates that are 30 percent higher than the original Tolling Scenario B for all vehicle classes across all time periods, which would meet the revenue objective.

Tolling Scenario C – Low Crossing Credits for Vehicles Using Tunnels to Access the Manhattan CBD, with Some Caps and Exemptions

In Tolling Scenario C, vehicles with E-ZPass that access the Manhattan CBD using the four tunnel crossings (Hugh L. Carey Tunnel, Queens-Midtown Tunnel, Holland Tunnel and Lincoln Tunnel) would receive a crossing credit toward the Manhattan CBD toll. The crossing credits would flatten the cost differential for Manhattan-bound traffic between the inbound Queens-Midtown and Hugh L. Carey Tunnels and the East River bridges, to reduce so-called "bridge shopping" that occurs when drivers choose their route into the Manhattan CBD based on cost, rather than time. Vehicles without E-ZPass would not receive any crossing credits.

With Tolling Scenario C, taxis would be exempt from the Manhattan CBD toll, and FHVs would pay the Manhattan CBD toll no more than three times each day (**Table 2-3**). Buses and small and large trucks would pay the Manhattan CBD toll for all trips each day. The tolls in this tolling scenario would vary based on the same time periods as Tolling Scenarios A and B.

Given the crossing credits, caps, and exemptions, the toll rates for Tolling Scenario C would be higher than Tolling Scenarios A and B; it would have lower toll rates than Tolling Scenarios D, E, and F (which have higher crossing credits).

Tolling Scenario D – High Crossing Credits for Vehicles Using Tunnels to Access the Manhattan CBD

Tolling Scenario D would be similar to Tolling Scenario C, but with no caps or exemptions and a higher crossing credit toward the Manhattan CBD toll for all vehicles with E-ZPass that access the Manhattan CBD using the four tunnel crossings. The higher crossing credit would further flatten the cost differential for drivers who pay a two-way toll at TBTA tunnels or the higher tolls at the PANYNJ tunnels.

With Tolling Scenario D, taxis, FHVs, buses, and small and large trucks would pay the Manhattan CBD toll for all trips each day (**Table 2-3**). The tolls in this tolling scenario would vary based on the same time periods as Tolling Scenario A.

Given the higher crossing credits, the toll rates for Tolling Scenario D would be higher than Tolling Scenarios A, B, and C and lower than Tolling Scenarios E and F.

Tolling Scenario E – High Crossing Credits for Vehicles Using Tunnels to Access the Manhattan CBD, with Some Caps and Exemptions

Tolling Scenario E would have the same crossing credits as Tolling Scenario D, but would also have some caps and exemptions. As in Scenario C, taxis and FHVs would have a cap of no more than three Manhattan CBD tolls each day (Table 2-3). Transit buses would be exempt while non-transit buses (including privately operated bus services and jitneys) and small and large trucks would pay the Manhattan CBD toll each time they access the Manhattan CBD. The tolls in this tolling scenario would vary based on the same time periods as Tolling Scenario A.

Given the high crossing credits, caps on tolls, and exemptions, the toll rates for Tolling Scenario E would be higher than any of the other tolling scenarios except Tolling Scenario F; notably, while the auto toll rates would be the same as Tolling Scenario F, truck and bus tolling rates would be lower.

Tolling Scenario F – High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the Manhattan CBD, with Some Caps and Exemptions

Tolling Scenario F would provide a crossing credit toward the CBD toll for all vehicles with E-ZPass that access the Manhattan CBD and use a tolled crossing to access Manhattan. While Tolling Scenarios C, D, and E would provide crossing credits for Manhattan CBD crossings, Tolling Scenario F would also provide crossing credits for the TBTA Robert F. Kennedy Bridge and Henry Hudson Bridge and the PANYNJ George Washington Bridge. This credit would be the same as in Tolling Scenarios D and E and higher than in Tolling Scenario C. This would flatten the cost differential that would occur in other tolling scenarios between drivers who access the Manhattan CBD via a Manhattan CBD crossing and those who use a crossing outside the Manhattan CBD, to reduce the effects of drivers selecting their crossing and route to and from the Manhattan CBD based on toll costs rather than other factors, such as travel time or distance.

With Tolling Scenario F, taxis and FHVs would be charged a CBD toll once per day (Table 2-3), and buses would be exempt, while small and large trucks would pay the Manhattan CBD toll each time they access the Manhattan CBD. Importantly, the peak, off-peak, and overnight time periods would differ from the other tolling scenarios:

- The peak period would be 6 a.m. to 10 a.m. and 4 p.m. to 8 p.m. on weekdays and 10 a.m. to 10 p.m. on weekends.
- The off-peak period would be 10 a.m. to 4 p.m. on weekdays.
- The overnight period would be 8 p.m. to 6 a.m. on weekdays and 10 p.m. to 10 a.m. on weekends.

Given the high crossing credits, caps on tolls, and exemptions, the toll rates, Tolling Scenario F would have the same Manhattan CBD toll rates for autos as Tolling Scenario E, but higher truck and bus toll rates.

Tolling Scenario G – Base Plan with Same Tolls for All Vehicle Classes

Following completion of a preliminary analysis of Tolling Scenarios A through F, and in response to concerns raised during early public outreach for the Project, the Project Sponsors identified a potential modification to the Base Plan (Tolling Scenario A) that would reduce the number of trucks that would divert around the Manhattan CBD, particularly those diverting to the South Bronx and Staten Island. This modification, Tolling Scenario G, would apply the same toll rates to all vehicle classes instead of charging higher rates small and large trucks and buses (Table 2-3). As with Tolling Scenario A, there would be no crossing credits in Tolling Scenario G, and taxis, FHVs, buses, and small or large trucks would pay the Manhattan CBD toll each time they access the Manhattan CBD.

In addition, a variation of Tolling Scenario G was modeled to test the impact of adding a one-charge-per-day cap to taxis and FHVs. Given this cap, toll rates for other vehicles would be approximately 10 percent higher than in original Tolling Scenario G.

2.4.2.5 Discussion of Effects of Individual Components of Tolling Scenarios

The most important factor in the magnitude and distribution of Project effects is the toll rate. Overall, the CBD Tolling Alternative would reduce congestion regionally and within the Manhattan CBD. On a local level, near and adjacent to the Manhattan CBD, depending on the toll structure, there would be localized increases and decreases resulting from vehicles diverting to avoid the CBD toll. When considering the effects of various parameters other than the toll rate—such as crossing credits, peak periods, and exemptions and caps for taxis and FHVs or other vehicles—it is important to understand that these would not be applied in isolation from changes in the toll rate. One of the four objectives of the Project is to create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for the MTA Capital Program. As a result, the more vehicles that are given crossing credits, exemptions, etc., the higher the toll must be to ensure sufficient revenues are generated, which in turn would lead to additional diversions and other resultant effects.

The modeling conducted for the Project demonstrates that all the tolling scenarios would reduce traffic entering the Manhattan CBD, and there would be an overall net benefit in congestion reduction for the region as well. As more discounts, crossing credits, and exemptions are provided, the toll rate would increase, aiding in congestion reduction, but increasing the cost for each driver. Tolling scenarios with higher toll rates (e.g., Tolling Scenarios D, E, and F) would have greater reductions in traffic entering the Manhattan CBD compared to those with lower toll rates, as well as more increases in transit ridership. As the toll rate increases, more traffic diversions would occur as drivers try to avoid the toll, leading to less traffic in the Manhattan CBD, but localized increases elsewhere.

Crossing credits, which reduce the toll amount paid in the Manhattan CBD for drivers who use certain tolled tunnels or bridges, would change the locations where traffic reductions would occur. Tolling scenarios with crossing credits (i.e., Tolling Scenarios C, D, E, and F) would have less effect on reducing traffic entering the Manhattan CBD from Queens, and much less effect on reducing traffic entering from New Jersey than tolling scenarios without crossing credits (i.e., Tolling Scenarios A, B, and G). With higher crossing credits (e.g., Tolling Scenarios E and F), more traffic would occur at the Queens-Midtown Tunnel and the Hugh L.

Carey Tunnel, resulting in more traffic on the Long Island Expressway and a shift of traffic along the Gowanus Expressway from the Brooklyn-Queens Expressway (BQE) to the Hugh L. Carey Tunnel as well as increases in traffic on the local streets in Manhattan that connect to and from these tunnels.

Additional discussion of these effects follows:

- **Toll Price** – Compared to the No Action Alternative, when a toll for drivers entering or remaining in the Manhattan CBD is introduced, the following would occur:
  - Traffic in the Manhattan CBD – Reductions in both the total VMT and the total number of vehicles within the Manhattan CBD. Broadly speaking, without other variables, as the toll increases, greater reductions in vehicles in the Manhattan CBD and VMT would occur. In addition, traffic-related air emissions and noise in the Manhattan CBD would also decrease because of lower VMT and vehicles in the Manhattan CBD.
  - Traffic Regionally – Model results indicate that overall VMT and traffic levels would also be reduced regionally with the introduction of the Manhattan CBD toll, albeit at a lower level than within the Manhattan CBD. The reduction of Manhattan CBD traffic would typically occur as the result of one of two decisions by drivers with respect to paying the toll:
    - Drivers choosing to switch to a public transit option; or
    - Drivers choosing to divert around the Manhattan CBD via the regional highway network.
  - While reduced traffic would occur on a regional basis, providing regional improvements in air quality and noise, some specific routes would experience increases in the number of vehicles and VMT due to diversion of traffic. Tolling Scenarios A, B, and G would result in reduced traffic volumes at all Manhattan CBD crossings but some increase in traffic along circumferential routes that would avoid the Manhattan CBD tolls. Tolling Scenario C, D, E, and F would lead to higher traffic diversions and potential localized traffic effects at the Queens-Midtown Tunnel and Hugh L. Carey Tunnel, as well as higher traffic volumes along circumferential routes along the Cross Bronx Expressway and the Staten Island Expressway. All tolling scenarios would result in an increase in traffic along the FDR Drive between East 10th Street and the Brooklyn Bridge.
  - In essence, as the toll rate increases, reductions in both the number of total vehicles and total VMT would occur, but the increased rate of vehicles diverting around the Manhattan CBD would limit the overall regional improvements.
- **Truck Toll Price** – Across all tolling scenarios, the total number of large- and medium-truck trips within the 28-county regional study area would remain relatively consistent. However, because trucks do not have an alternative mode available, the only means for avoiding the Manhattan CBD toll would be to divert around the Manhattan CBD, leading to localized increases and decreases in truck traffic, the magnitude of which varies by scenario. Large trucks, in particular, would be affected by whether the CBD toll rates are lower, higher, or similar to tolls on the TBTA bridge and tunnel facilities that provide connections to the Manhattan CBD. Thus, the truck toll price, which was modeled at two to three times

the amount of the auto toll in Scenarios A through F, and the same as the auto toll in Scenario G, is included as a separate parameter to allow a better understanding of the effects of the Project on this vehicle class.

With increasing toll rates, the number of trucks within the Manhattan CBD would decline, but diversions would increase. Given that some Hudson River, East River, and Harlem River crossings, as well as the New York State parkway network, have vehicle height restrictions, these truck diversions would be concentrated for the most part on the regional expressway system, in particular the Cross Bronx Expressway, Long Island Expressway, Brooklyn-Queens Expressway, and Staten Island Expressway.

For the Manhattan CBD specifically, increasing the truck toll rates would result in a reduction in truck through-trips, those truck trips with an origin or destination within the Manhattan CBD would not be as affected.

The lowest toll rate for trucks would result in fewer truck diversions; however, this would also have the lowest reduction in the number of trucks entering the Manhattan CBD and the smallest improvements in associated traffic congestion, air quality, and noise within the Manhattan CBD.

In response to concerns raised during early public outreach regarding the inability of trucks to switch to transit for their trips and the potential for truck diversions, especially to the Cross Bronx Expressway, Tolling Scenario G was added to demonstrate that truck diversions and associated traffic and air quality effects would decrease as the truck toll is priced lower (in this case, the same as the passenger vehicle toll).

- Crossing Credits – Tolling Scenarios C, D, and E would provide crossing credits to drivers who are already paying a toll to enter the Manhattan CBD at TBTA and PANYNJ tunnels. (Tolling Scenario C would provide a lower credit; Tolling Scenarios D and E a higher credit.) Tolling Scenario F would extend these crossing credits to the George Washington, Henry Hudson, and Robert F. Kennedy Bridges.

  With each of these tolling scenarios, there would be an increase in the toll to meet the Project's revenue objective.

  Given that increased crossing credits would come with higher tolls, truck diversions would also increase, resulting in noticeable reductions of truck through trips in the Manhattan CBD, but localized increases outside the Manhattan CBD.

  With increasing crossing credits, higher vehicle volumes and VMT would occur at currently tolled entrance points to the Manhattan CBD, especially the Queens-Midtown Tunnel and the Hugh L. Carey Tunnel, resulting in more traffic on the Long Island Expressway and a shift of traffic along the Gowanus Expressway from the BQE to the Hugh L. Carey Tunnel, as well as increases in traffic on the local Manhattan streets that connect to these tunnels.

  Higher crossing credits would lead to a larger mode shift from auto to transit for drivers entering the Manhattan CBD. Those tolling scenarios with the highest crossing credits would also have the highest mode shifts to transit outside of New York City, with increased ridership on commuter rail services and PATH.

- **Time of Day** – The effect of variable tolling at different times of the day is also considered.

  Particularly in the overnight period, reducing the toll rate on trucks and other vehicles would reduce the diversion to alternative routes and limit increases to traffic on circumferential routes. This would reduce the overall vehicle and VMT improvement in the Manhattan CBD when compared with other tolling scenarios, although these reduced benefits would occur for the time period when congestion is less of a concern.

  Previous studies have shown that while trucks are unlikely to shift their travel time, for private vehicles such options would be limited for the most part for Tolling Scenarios A through E, where the peak period would extend from 6 a.m. to 8 p.m. Tolling Scenario F would instead have two distinct peak periods, an AM peak (6 a.m. to 10 a.m.) and a PM peak (4 p.m. to 8 p.m.). A small portion of drivers would shift to enter the Manhattan CBD to the period of 5:30 a.m. to 6:00 a.m. in all tolling scenarios.

- **Exemptions and Caps for Taxis and FHVs** – As noted previously, while passenger vehicles may be charged only once daily, other vehicles may be charged each time they enter or remain in the Manhattan CBD. Several tolling scenarios include an option to provide caps to the number of times tolls would be charged for taxis and/or FHVs and/or exemptions for taxis and/or FHVs. The more exemptions and caps provided, the higher tolls need to be to meet the Project's congestion and revenue objectives. However, if taxis and FHVs are charged for each trip, the demand for their service would decline, as would the number of trips they make.

  Introducing caps or exemptions for taxis and/or FHVs would increase the number of vehicles and VMT within the Manhattan CBD relative to Tolling Scenario A, which would have no such caps or exemptions.

  Including an exemption for taxis would result in an increase in taxi mode share relative even to cases where taxis are capped at once per day; however, this would also result in an associated increase in VMT and vehicles.

  As with all the other variables, the more exemptions and caps provided, the higher the tolls would have to be to meet the revenue objective. Conversely, fewer (or no) exemptions and caps on taxis and FHVs would result in a lower toll and less demand for taxis and FHV trips into and out of the Manhattan CBD, which would reduce the number of vehicles and VMT in the Manhattan CBD.

2.5 PREFERRED ALTERNATIVE

FHWA and the Project Sponsors have identified the CBD Tolling Alternative as the Preferred Alternative for the Project. The CBD Tolling Alternative would meet the Project purpose, which is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into the FHWA's Value Pricing Pilot Program. The CBD Tolling Alternative would also meet all four objectives identified for the Project (see **Chapter 1, "Introduction"**), as well as the screening criteria FHWA and the Project Sponsors used in the assessment of preliminary alternatives discussed in **Section 2.3**.

Table 2-4 illustrates how the CBD Tolling Alternative would meet the Project objectives and the specific evaluation criteria that FHWA and the Project Sponsors used in assessing preliminary alternatives and Table 2-5 provides more detail comparing the results for each of the tolling scenarios within the CBD Tolling Alternative. Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling," provides more information on the transportation-related effects of the tolling scenarios. In addition, Chapter 16, "Summary of Effects," compares the effects of the tolling scenarios and provides information on additional tolling scenarios considered but not evaluated in detail in this EA.

A preferred tolling scenario within the CBD Tolling Alternative has not been identified, though the analyses in this EA afford an understanding of how, if warranted, the toll schedule can be structured to avoid adverse effects. As described previously, the TBTA Board would adopt a final toll schedule, including toll rates and any crossing credits, discounts, and/or exemptions informed by recommendations made by the Traffic Mobility Review Board and following a public hearing in accordance with the State Administrative Procedure Act.

The selected alternative for the Project will be identified in the FHWA's decision document in consideration of comments received throughout the environmental review process, including those received on this EA and from the public outreach.

Table 2-4. Comparison of Evaluation Results for the No Action and CBD Tolling Alternatives

SCREENING CRITERION	N0 ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE
Purpose and Need: Reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements	Does not meet	Meets
Objective 1: Reduce daily VMT within the Manhattan CBD Criterion: Reduce by 5% (relative to No Action)	Does not meet	Meets
Daily VMT reduction (2023)	*0%*	*7.1%-9.2%*
Objective 2: Reduce the number of vehicles entering the Manhattan CBD daily Criterion: Reduce by 10% (relative to No Action)	Does not meet	Meets
Daily vehicle reduction (2023)	*0.0%*	*15.4%-19.9%*
Objective 3: Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for MTA's Capital Program	Does not meet	Meets [1]
Net revenue to support MTA's Capital Program [2]	*$0*	*$1.02 billion - $1.48 billion*
Objective 4: Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the "MTA Reform and Traffic Mobility Act"	Does not meet	Meets

1 Although Tolling Scenario B would not meet Objective 3 with the toll rates identified and assessed in this EA, additional analysis was conducted to demonstrate that it would meet this objective with a higher toll rate; the resulting VMT reduction and revenue for that modified scenario would fall within the range of the other scenarios presented. **Chapter 16, "Summary of Effects,"** provides more information on the modified Tolling Scenario B.

2 The net revenue needed to fund $15 billion depends on a number of economic factors, including but not limited to interest rates and term. For the purposes of this EA, the modeling assumes the Project should provide at least $1 billion annually in total net revenue, which would be invested or bonded to generate sufficient funds. The net revenue values provided in this table are rounded and based on Project modeling.

Table 2-5. Comparison of Evaluation Results for CBD Tolling Alternative Tolling Scenarios

SCREENING CRITERION	SCENARIO A Base Plan	SCENARIO B Base Plan with Caps and Exemptions	SCENARIO C Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO D High Crossing Credits for Vehicles Using Tunnels to Access the CBD	SCENARIO E High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO F High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions	SCENARIO G Base Plan with Same Tolls for All Vehicle Classes
Purpose and Need: Reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Objective 1: Reduce daily VMT within the Manhattan CBD Criterion: Reduce by 5% (relative to No Action)	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Daily VMT reduction (2023)	7.8%	7.6%	8.0%	8.7%	9.2%	7.1%	8.4%
Objective 2: Reduce the number of vehicles entering the Manhattan CBD daily Criterion: Reduce by 10% (relative to No Action)	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Daily vehicle reduction (2023)	15.4%	15.7%	17.3%	18.7%	19.9%	18.3%	16%
Objective 3: Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for MTA's Capital Program	Meets	Does not meet[1]	Meets	Meets	Meets	Meets	Meets
Net revenue to support MTA's Capital Program [2]	$1.06 billion	$830 million	$1.10 billion	$1.34 billion	$1.48 billion	$1.02 billion	$1.10 billion
Objective 4: Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the "MTA Reform and Traffic Mobility Act"	Meets	Meets	Meets	Meets	Meets	Meets	Meets

1 Although Tolling Scenario B would not meet Objective 3 with the toll rates identified and assessed in this EA, additional analysis was conducted to demonstrate that it would meet this objective with a slightly higher toll rate and the resulting VMT reduction and revenue for that modified scenario would fall within the range of the other scenarios presented. **Chapter 16, "Summary of Effects,"** provides more information on the modified Tolling Scenario B. it would meet this objective with a modified toll rate, while continuing to meet the other objectives.

2 The net revenue needed to fund $15 billion depends on a number of economic factors, including but not limited to interest rates and term. For the purposes of this EA, the modeling assumes the Project should provide at least $1 billion annually in total net revenue, which would be invested or bonded to generate sufficient funds. The net revenue values provided in this table are rounded and based on Project modeling.

3. Environmental Analysis Framework

3.1 FEDERAL APPROVALS AND CLASS OF ACTION

The CBD Tolling Program is classified as a NEPA Class III EA action in accordance with 23 Code of Federal Regulations (CFR Section 771.115). NEPA Class III actions are those in which the significance of the environmental impact is not clearly established. This EA has been prepared to determine whether the Project is likely to have a significant impact and requires the preparation of an Environmental Impact Statement.

3.2 COORDINATION WITH FEDERAL AND STATE RESOURCE AGENCIES

FHWA and the Project Sponsors have sought the expertise of and/or information from the following Federal and New York State agencies in preparing this EA:

- U.S. Federal Transit Administration (FTA)
- U.S. Environmental Protection Agency (USEPA)
- U.S. National Park Service (NPS)
- New York State Department of Environmental Conservation (NYSDEC)
- New York State Department of State (NYSDOS)
- New York State Historic Preservation Office at the New York State Office of Parks, Recreation and Historic Preservation (OPRHP or SHPO)

FHWA and the Project Sponsors coordinated with these agencies about their areas of expertise with respect to methodologies for documenting environmental conditions and assessing effects. The Project Sponsors also coordinated with New York City agencies about potential effects on resources under their jurisdiction, including the New York City Department of Parks and Recreation, the New York City Department of Environmental Protection, and the New York City Landmarks Preservation Commission. There have been and will continue to be meetings with the agencies during this NEPA review. The recommendations of these agencies have been considered and incorporated into this EA, as appropriate.

FHWA has also coordinated with Federally recognized Native American tribes, and FHWA and the Project Sponsors coordinated with transportation agencies from throughout the New York City region. The Project Sponsors also conducted extensive outreach to environmental justice (minority and low-income) populations in the regional study area. (Refer to **Chapter 18, "Agency Coordination and Public Participation,"** for more information about agency participation in the NEPA process.)

3.3 ANALYSIS FRAMEWORK

This EA describes the potential environmental effects of the CBD Tolling Alternative compared to the No Action Alternative. This environmental analysis complies with FHWA's *Environmental Impact and Related Procedures* (23 CFR Part 771) and applicable Federal guidance and procedures, including FHWA guidance provided in its environmental review toolkit.[1] Although the MTA Reform and Traffic Mobility Act exempts the Project from the environmental review procedures of the New York State Environmental Quality Review Act and New York City Environmental Quality Review, NYSDOT's *The Environmental Manual* and New York City's *City Environmental Quality Review Technical Manual* (*CEQR Technical Manual*) were used for certain analyses because these are widely accepted methodologies for environmental studies in New York State and New York City, respectively.[2, 3]

NYSDOT and the New York City Mayor's Office of Environmental Coordination oversee *The Environmental Manual* and the *CEQR Technical Manual*, respectively. Both are updated regularly to reflect changes in regulations or to incorporate new or modified methodologies that reflect experience gained through environmental reviews and real-world conditions. Updates to these documents are undertaken in consultation with other New York State and New York City agencies, including the following:

- New York State Department of Environmental Conservation (NYSDEC)
- OPRHP and SHPO
- MTA
- New York City Department of City Planning (NYCDCP)
- New York City Department of Environmental Protection
- NYCDOT
- New York City Landmarks Preservation Commission

Each chapter of this EA identifies the methodology used for the analysis presented in the chapter.

The 2021 *CEQR Technical Manual*, issued in December 2021, establishes that the lead agency should consider whether supplemental analysis to reflect an updated methodology of the 2021 *CEQR Technical Manual* should be undertaken, taking into account as necessary the scheduled timing of completion of environmental review under the applicable approval process. Based on the timing of completion of analyses and scheduled public and agency review, the 2020 *CEQR Technical Manual* is used as the basis for this EA.

1 https://www.environment.fhwa.dot.gov.

2 NYSDOT. *The Environmental Manual.* https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm.

3 The 2021 *CEQR Technical Manual*, issued in December 2021, establishes that the lead agency should consider whether supplemental analysis to reflect an updated methodology of the *CEQR Technical Manual* should be undertaken, taking into account as necessary the scheduled timing of completion of environmental review under the applicable approval process. Based on the timing of completion of analyses and scheduled public and agency review, the 2020 *CEQR Technical Manual* is used as the basis for this EA.

3.3.1 Study Areas

A regional study area and multiple local study areas were used to assess the potential effects of the Project. The regional study area was used to examine changes in travel patterns resulting from the CBD Tolling Alternative while different local study areas were used to identify more localized effects like the potential effects of constructing tolling infrastructure and tolling system equipment, changes in roadway traffic and access to transit stations; and social, economic, or environmental effects. **Chapter 1, "Introduction,"** provides an overview of development patterns, demographic characteristics, and commuting patterns within the study areas. The affected environment sections of the subsequent chapters of this EA describe the Project setting within the study areas relevant to, and appropriate for, the technical topic that is the subject of the chapter. The affected environment section provides context for the assessment of the Project's effects presented in the environmental consequences sections that follow in each chapter.

3.3.1.1 Regional Study Area

The regional study area includes 28 counties that are incorporated in the Best Practice Model (BPM), which is the New York City region's primary long-range travel forecasting model (**Figure 3-1**). These 28 counties represent the main catchment area for trips to and from the Manhattan CBD:

- New York City counties (Bronx, Kings [Brooklyn], New York [Manhattan], Queens, and Richmond [Staten Island])
- Long Island counties (Nassau and Suffolk)
- New York counties north of New York City (Dutchess, Orange, Putnam, Rockland, and Westchester)
- New Jersey counties (Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren)
- Connecticut counties (Fairfield and New Haven)

3.3.1.2 Local Study Areas

As previously stated, multiple local study areas were used for the analyses presented in this EA. **Figure 3-2a through Figure 3-2g** show the areas where installation of tolling infrastructure and tolling system equipment associated with the Project is proposed, and this is referred to as the local study area for tolling infrastructure and tolling system equipment. In addition, **Figure 3-3a through Figure 3-3j** show the proposed locations of the tolling infrastructure and tolling system equipment.

The local study area for tolling infrastructure and tolling system equipment includes more locations than the Project Sponsors would need to implement the Project because the ability of the Project Sponsors to locate tolling infrastructure and tolling system equipment on property controlled by the Port Authority of New York and New Jersey (PANYNJ) is uncertain. The Project Sponsors are coordinating with PANYNJ about potentially locating tolling infrastructure and equipment on property associated with the Lincoln and Holland Tunnels. If PANYNJ agrees to locate the tolling infrastructure and equipment on its property, then the Project Sponsors can eliminate several detection points on local streets near the Lincoln and Holland Tunnels. This EA includes the tolling infrastructure and tolling system equipment both on PANYNJ property and at locations nearby that could be eliminated if PANYNJ approves the use of its property by the Project Sponsors.

Figure 3-1. Regional Study Area

Source: ArcGIS Online, https://www.arcgis.com/index.html.

3.3.2 Analysis Years

This EA examines future conditions in the opening year of the Project and in a long-term planning horizon year:

- **Estimated Time of Completion (Opening Year 2023):** This EA uses an estimated time of Project completion date of 2023, when the system would be fully operational.
- **Long-Term Planning Horizon Year (2045):** FHWA typically considers the environmental effects of its undertakings for a long-term horizon year, which is 20 to 30 years after a project's estimated time of completion. For this Project, the long-term planning horizon analysis year aligns with the BPM's long-range forecast year, which is 2045.

3.3.3 CBD Tolling Alternative Tolling Scenarios

This EA includes multiple tolling scenarios within the CBD Tolling Alternative to identify the range of potential effects that could occur from implementing the CBD Tolling Alternative. (See **Chapter 2, "Project Alternatives," Section 2.4.2.4** for more information on the tolling scenarios.) The Project Sponsors conducted quantitative modeling of the potential transportation effects of each tolling scenario using the BPM (see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**).

The tolling scenarios are relevant to the environmental analyses that quantify the potential benefits or negative effects of changes in traffic and/or transit riders on a particular topic of analysis (e.g., intersection operations, pedestrian circulation, air quality, noise). For each of these topics, this EA describes the effects of the tolling scenario that would result in the greatest potential negative effects for that particular topic of analysis. For example, the analysis of potential impacts on traffic intersection operations is based on the tolling scenario that would result in the greatest increase in vehicle volumes at the intersections in the study area. This methodology results in the most potential negative effects of the CBD Tolling Alternative, and other tolling scenarios would result in lesser or fewer negative effects. This EA identifies the tolling scenario used for the analysis presented in each chapter. In addition, **Chapter 16, "Summary of Effects,"** compares the effects of the tolling scenarios.

3.3.4 Social and Economic Data

The social and economic conditions analysis in this EA incorporates data from two primary sources—the U.S. Census Bureau and the BPM.

The EA incorporates census data to describe existing conditions (also known as the "affected environment"). The data are from multiple census products, including the 2015–2019 American Community Survey (ACS) and the 2012–2016 Census Transportation Planning Package (CTPP). These were the most recent versions of these products available at the time the analysis was prepared. Data from the 2012–2016 CTPP is used when there is not a newer, comparable data set available from the 2015–2019 ACS.

The BPM is a complex transportation model, created by New York Metropolitan Transportation Council (NYMTC), used to project future conditions under the No Action Alternative and the CBD Tolling Alternative. Metropolitan planning organizations (e.g., NYMTC) are responsible for modeling and documenting their region's compliance with the Clean Air Act, and they use transportation models for that purpose. NYMTC's transportation planning model is based on data from the 2010 Census, traffic and transit ridership data, household surveys, and comprehensive projections of social and economic trends for the regional study area to project travel behavior in future years. NYMTC has adjusted and calibrated the model so that it can predict existing as well as future travel patterns. This EA cites the social and economic data from the BPM when describing future conditions based on BPM results (also known as the "environmental consequences" of the Project).

Some data sets from the U.S. Census Bureau and the BPM differ, but they are both valid sources for describing the potential changes anticipated to result from the Project. For example, the census population and household data are available for more recent years; therefore, it is more current than similar data from the BPM. Text, tables, and figures in the chapters of this EA cite the source of the data presented.

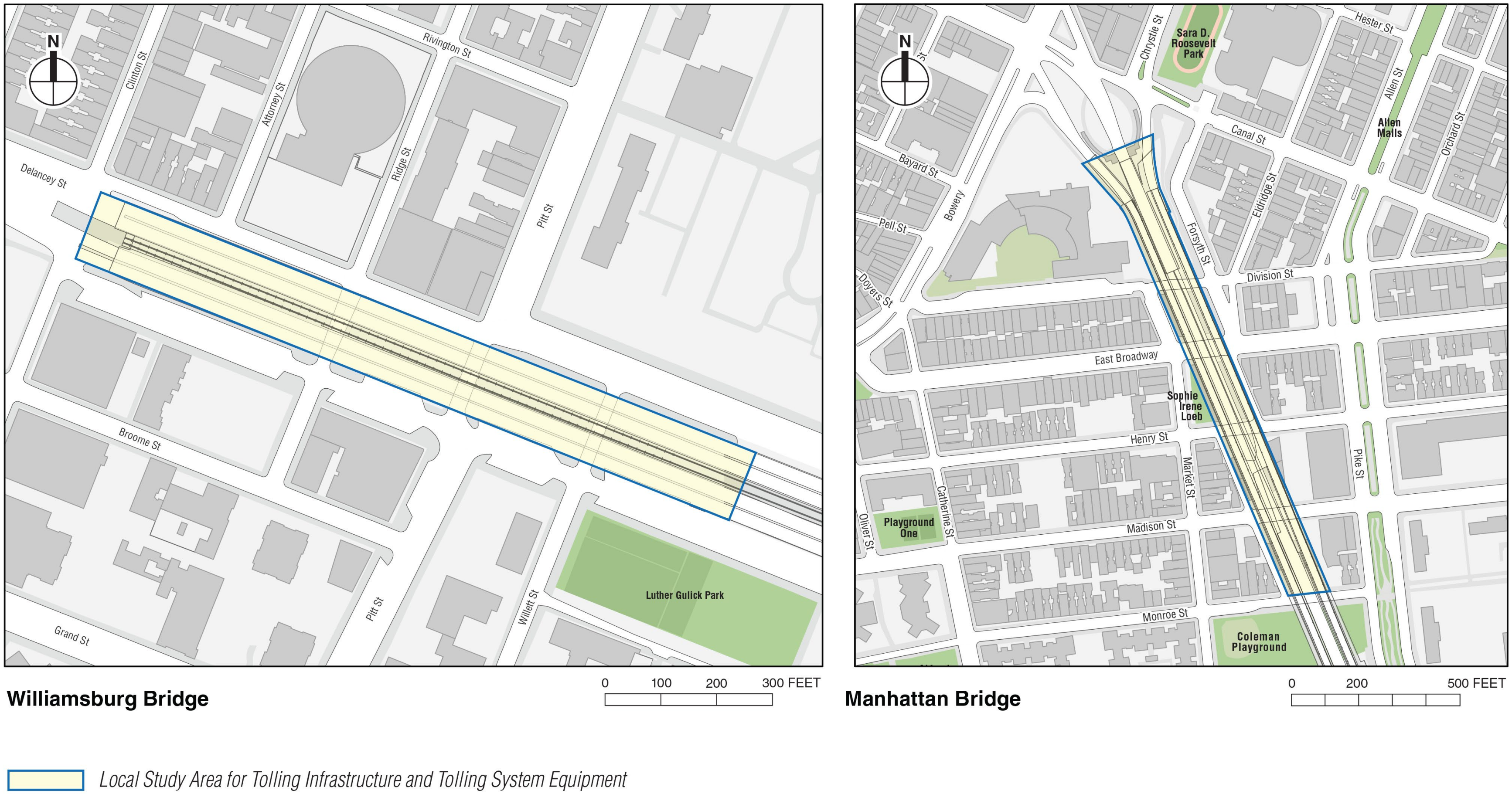
Figure 3-2a. Local Study Areas for Tolling Infrastructure and Tolling System Equipment

Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; New NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-2b. Local Study Area for Tolling Infrastructure and Tolling System Equipment: Ed Koch Queensboro Bridge and Queens-Midtown Tunnel

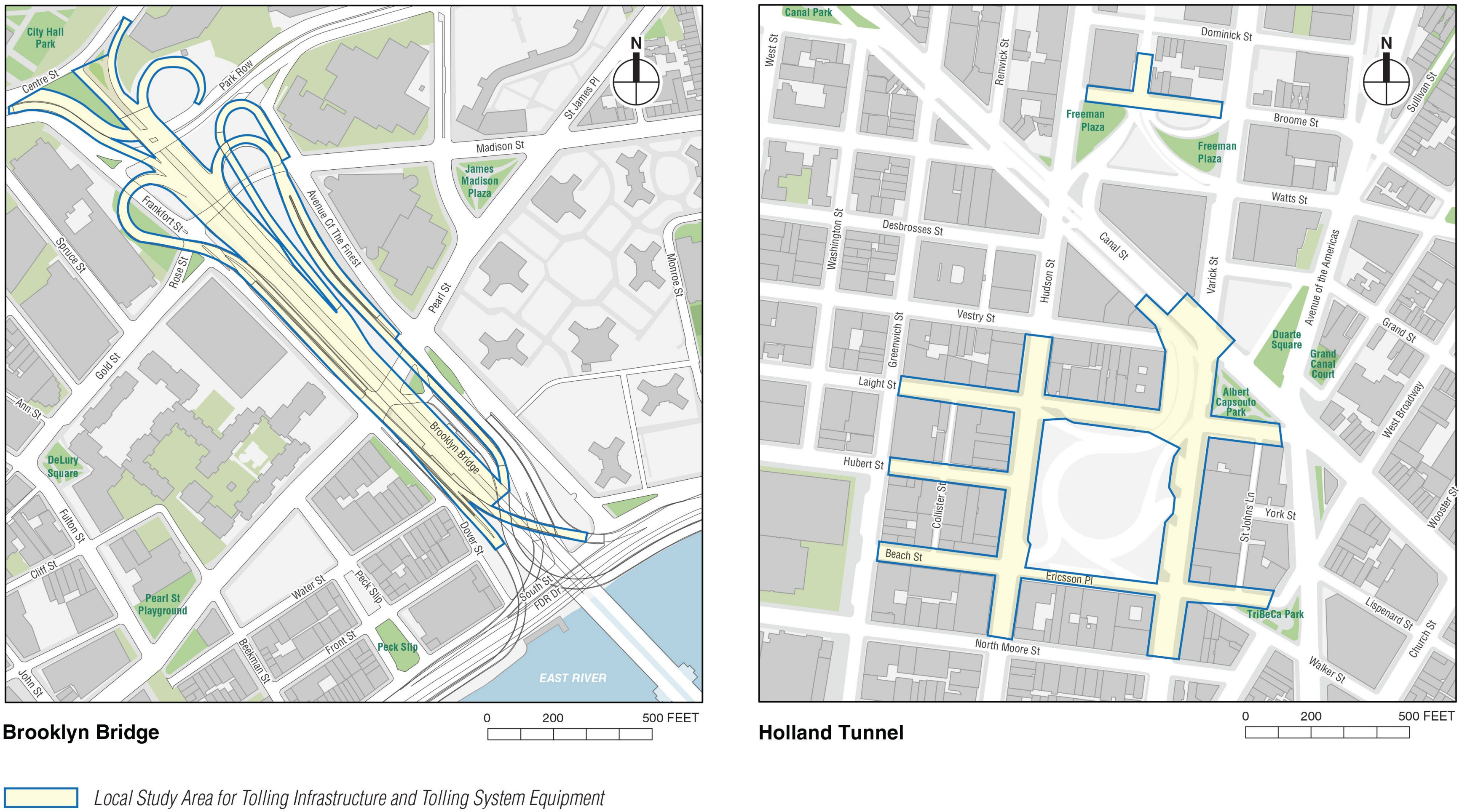
Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-2c. Local Study Area for Tolling Infrastructure and Tolling System Equipment: Williamsburg Bridge and Manhattan Bridge



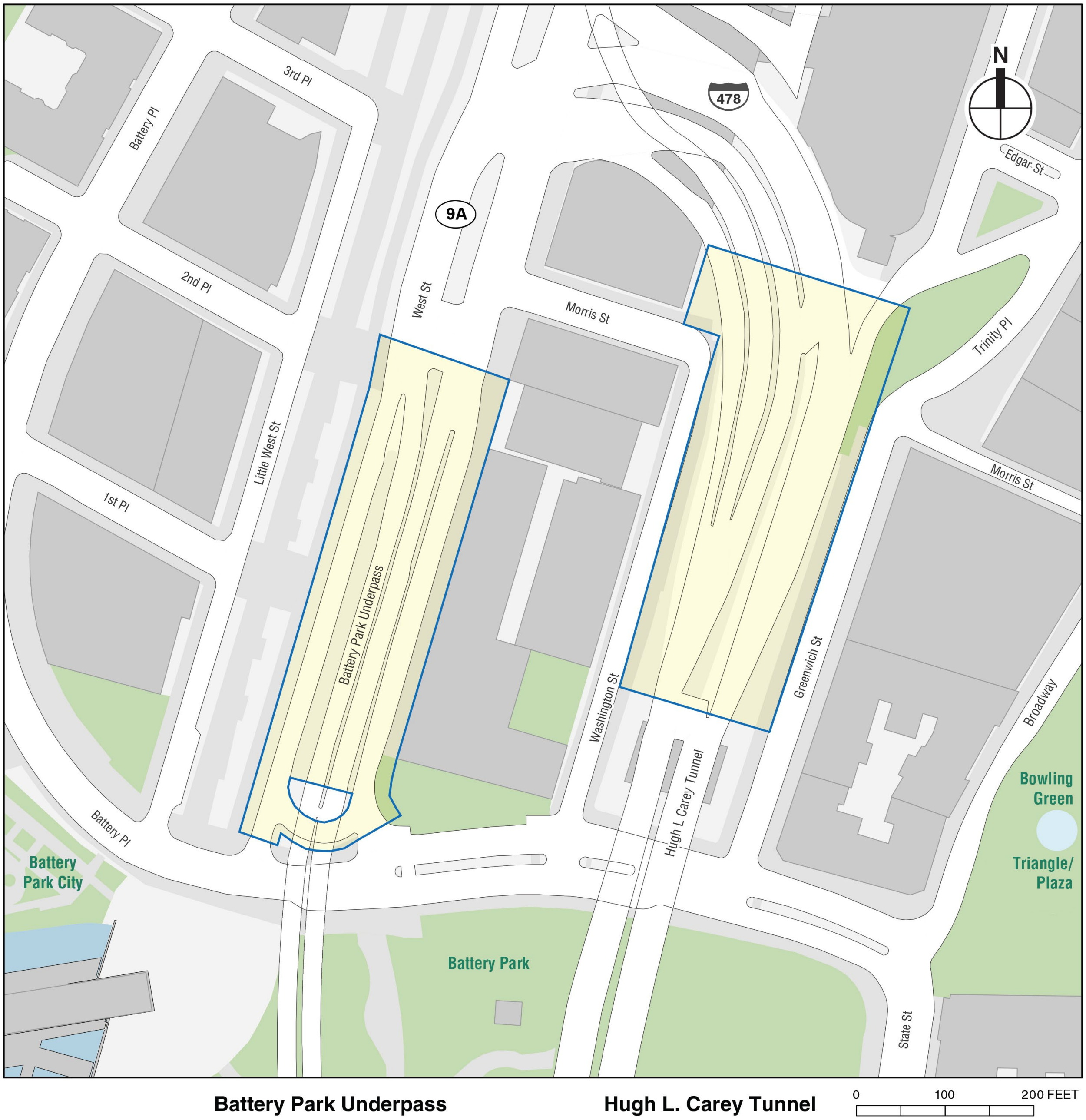
Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-2d. Local Study Area for Tolling Infrastructure and Tolling System Equipment: Brooklyn Bridge and Holland Tunnel



Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-2e. Local Study Area for Tolling Infrastructure and Tolling System Equipment: Battery Park Underpass and Hugh L. Carey Tunnel



Local Study Area for Tolling Infrastructure and Tolling System Equipment

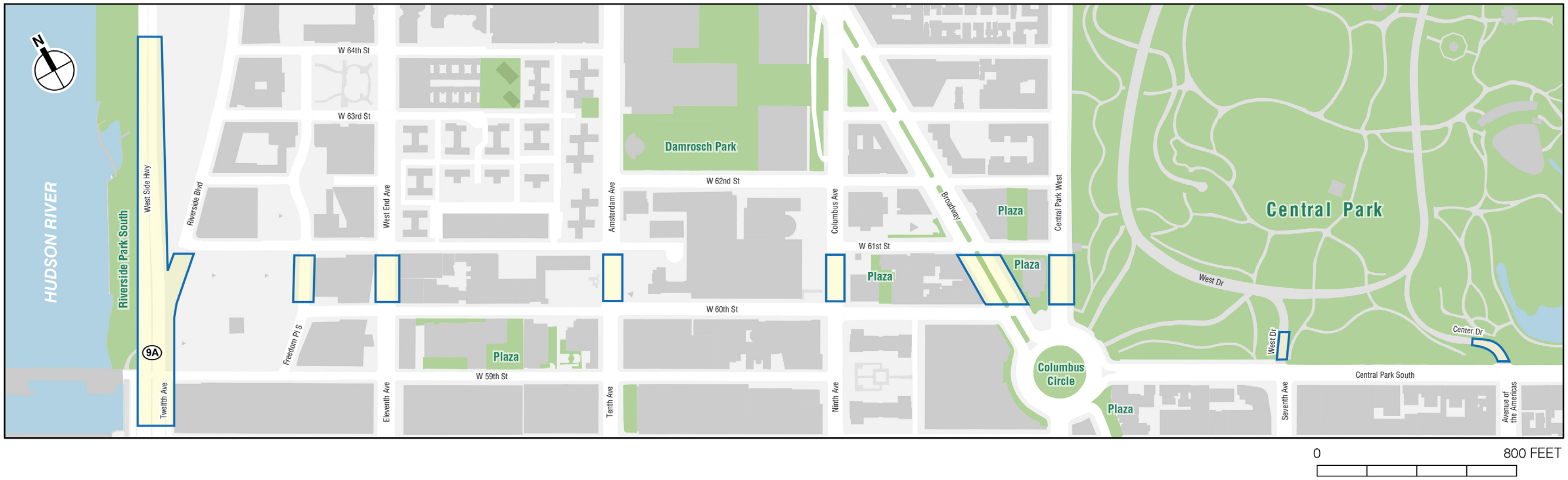
Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-2f. Local Study Area for Tolling Infrastructure and Tolling System Equipment: Lincoln Tunnel

Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-2g. Local Study Area for Tolling Infrastructure and Tolling System Equipment: 60th Street

60th Street - Western Portion



60th Street - Eastern Portion

Local Study Area for Tolling Infrastructure and Tolling System Equipment

Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 3-3a. Key Map and Proposed Locations of Tolling Infrastructure and Tolling System Equipment Along FDR Drive and West Side Highway/Route 9A

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: New York Statewide Digital Orthoimagery Program (NYSDOP) High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3b. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Ed Koch Queensboro Bridge

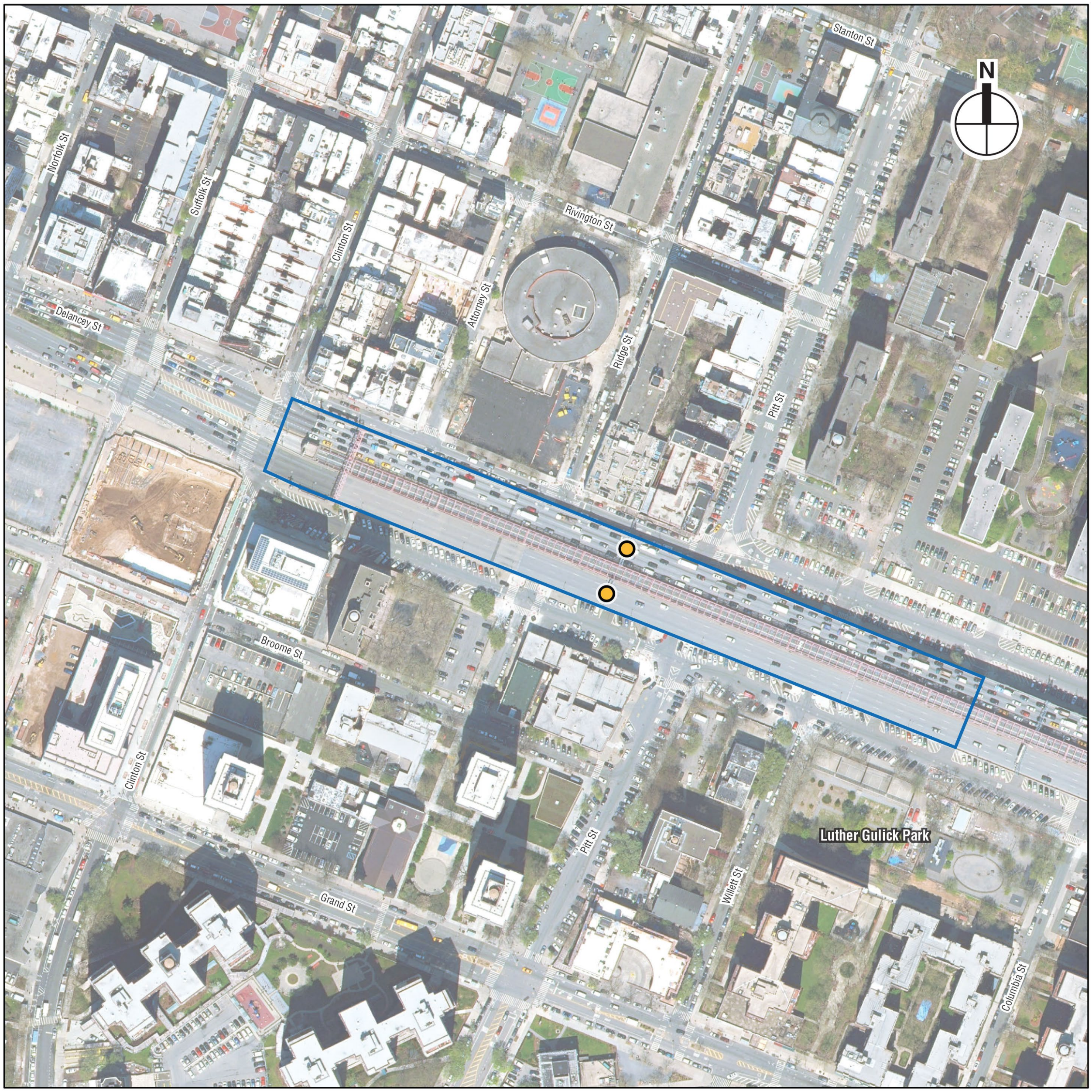
Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3c. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Queens-Midtown Tunnel

Note: No new tolling infrastructure and tolling system equipment proposed in this local study area (existing open road tolling infrastructure would be used)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3d. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Williamsburg Bridge



Local Study Area for Tolling Infrastructure and Tolling System Equipment

Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

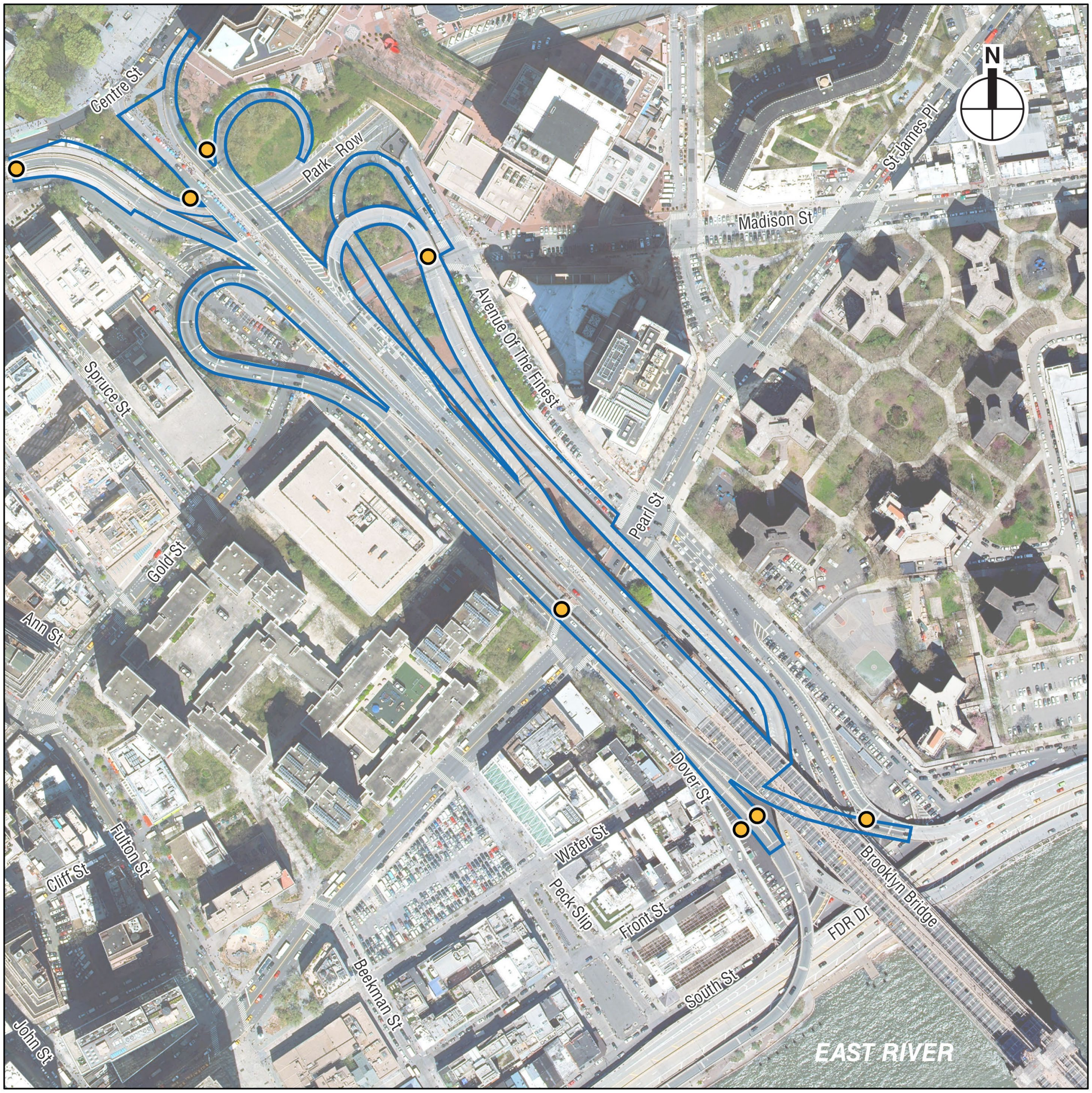
Figure 3-3e. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Manhattan Bridge

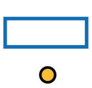
Local Study Area for Tolling Infrastructure and Tolling System Equipment

Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3f. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Brooklyn Bridge




Local Study Area for Tolling Infrastructure and Tolling System Equipment

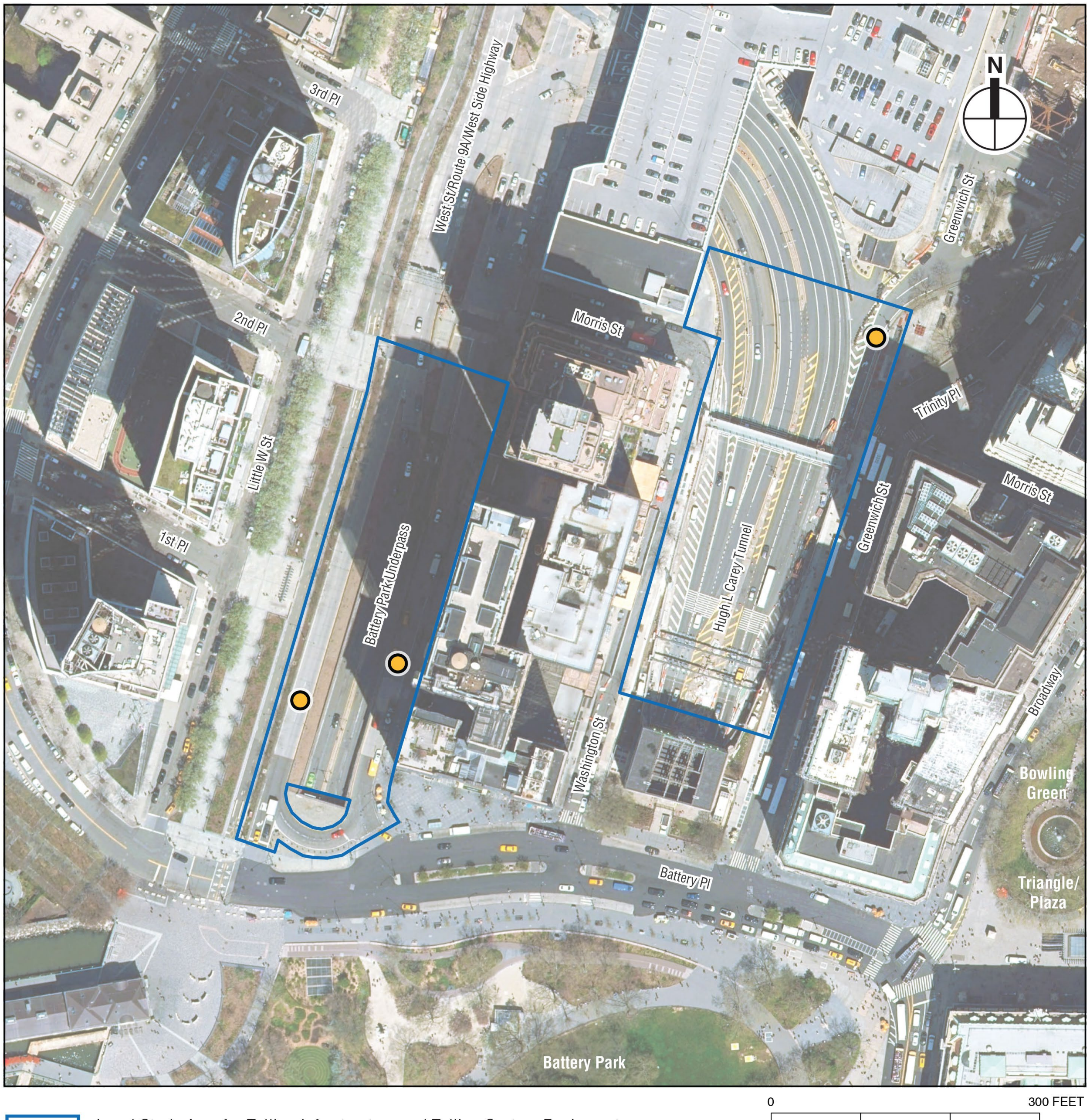
Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3g. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Holland Tunnel

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3h. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Battery Park Underpass and Hugh L. Carey Tunnel



Local Study Area for Tolling Infrastructure and Tolling System Equipment

Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location – existing open road tolling infrastructure would be used for the Hugh L. Carey Tunnel)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3i. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: Lincoln Tunnel

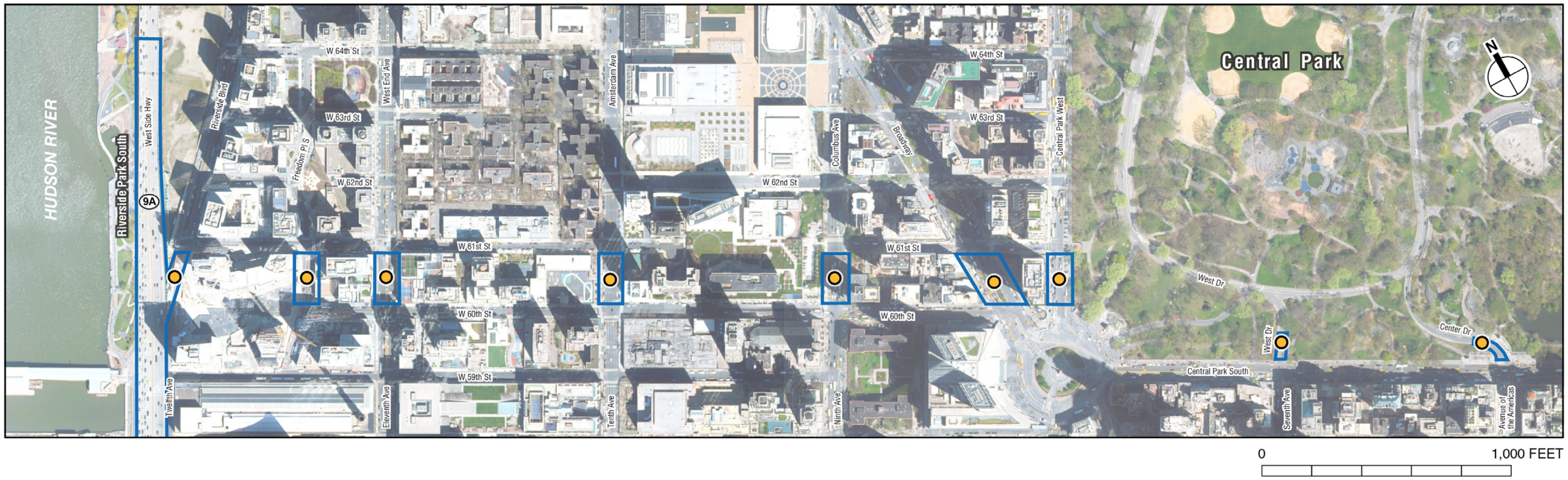
Local Study Area for Tolling Infrastructure and Tolling System Equipment

Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)

Potential Location of Tolling Infrastructure and Tolling System Equipment on PANYNJ Property In Place of All Other Detection Points at and Near the Lincoln Tunnel

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 3-3j. Proposed Locations of Tolling Infrastructure and Tolling System Equipment: 60th Street



Local Study Area for Tolling Infrastructure and Tolling System Equipment

Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

4. Transportation

As the commercial and economic hub of the region, 8 million daily trips are made to and from Manhattan's CBD.[1] These trips comprise vehicular trips (e.g., auto, truck, motorcycle), transit (e.g., subway, commuter rail, bus, ferry), and pedestrian and bicycle trips. Trips to and from the Manhattan CBD are generated throughout the 28-county transportation planning region used in this analysis.

Because of the size of the region and the extent of the analysis, this transportation chapter includes five subchapters:

- Subchapter 4A, Regional Transportation Effects and Modeling
- Subchapter 4B, Highways and Local Intersections
- Subchapter 4C, Transit
- Subchapter 4D, Parking
- Subchapter 4E, Pedestrians and Bicycles

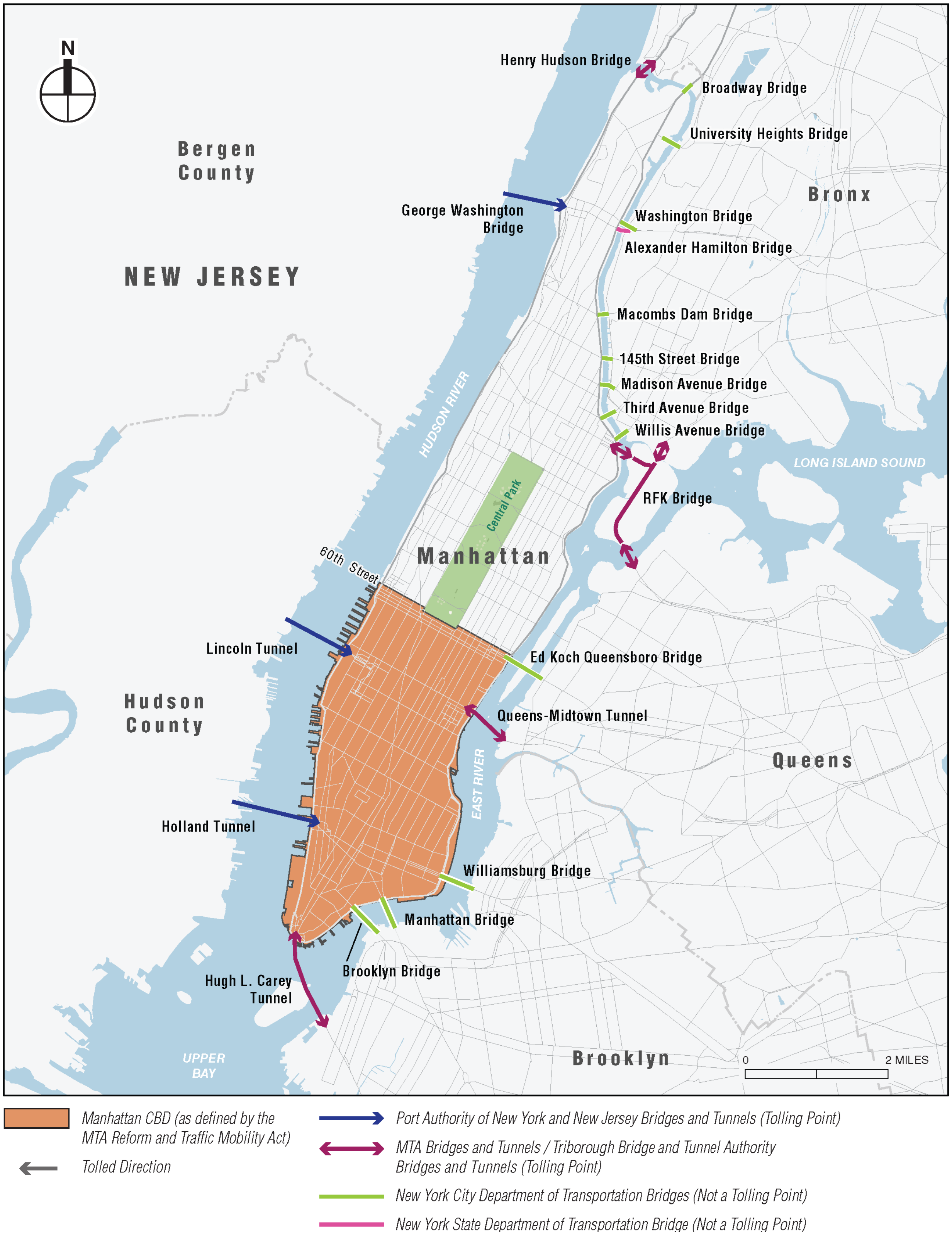
A comprehensive analysis of the relevant transportation effects of the CBD Tolling Alternative is provided in each of those subchapters, along with description of the analytical framework and process used to assess the effects discussed therein. Broadly, the process entailed data collection, regional model development, simulations, and quantitative and/or qualitative analyses. Initial context is provided in the following sections to describe the density and complexity of the regional transportation network, particularly when traveling to the Manhattan CBD.

4.1 ROADWAY ACCESS TO THE MANHATTAN CBD

Manhattan is separated from the rest of New York City by the Harlem River, East River, and New York Harbor and from New Jersey by the Hudson River, with 20 vehicular bridges and tunnels connecting to Manhattan. **Figure 4-1** shows the crossings into Manhattan, and **Figure 4-2** shows all vehicular entry and exit points for the Manhattan CBD. **Table 4-1 and Table 4-2** list the bridges and tunnels, and **Table 4-3** lists the existing (2022) toll rates for automobiles at each of the tolled crossings.

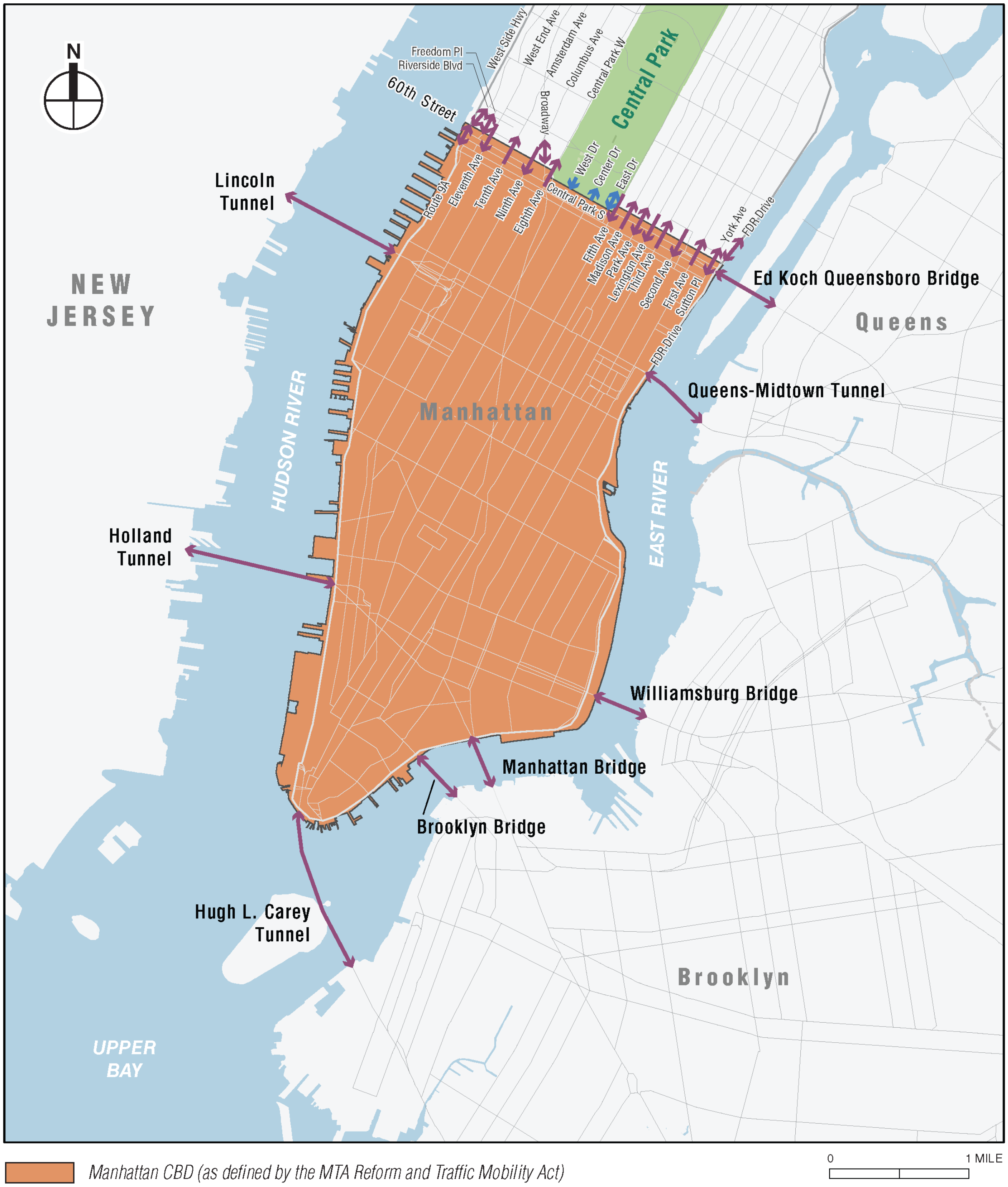
[1] New York Metropolitan Transportation Council, *Hub Bound Travel Data Report 2017*.

Figure 4-1. Existing Vehicular Crossings to Manhattan



Source: ArcGIS Online, https://www.arcgis.com/index.html.

Figure 4-2. Vehicular Entry and Exit Points for the Manhattan CBD



Manhattan CBD (as defined by the MTA Reform and Traffic Mobility Act)
Vehicular Entry/Exit Point: One-Way Traffic
Vehicular Entry/Exit Point: Two-Way Traffic
Vehicular Entry/Exit Point: Authorized Vehicles Only (General traffic is not permitted in Central Park; park drives are for use by authorized vehicles only)

Source: ArcGIS Online, https://www.arcgis.com/index.html.

Table 4-1. Bridges and Tunnels Connecting to Manhattan CBD

BRIDGE OR TUNNEL	LOCATION	JURISDICTION	BRIDGE/TUNNEL TOLL
Brooklyn Bridge	East River–Between Brooklyn and Manhattan	NYCDOT	Untolled
Manhattan Bridge	East River–Between Brooklyn and Manhattan	NYCDOT	Untolled
Williamsburg Bridge	East River–Between Brooklyn and Manhattan	NYCDOT	Untolled
Ed Koch Queensboro Bridge	East River–Between Queens and Manhattan	NYCDOT	Untolled
Queens-Midtown Tunnel	East River–Between Queens and Manhattan	TBTA	Inbound and outbound[1]
Hugh L. Carey Tunnel	New York Harbor–Between Brooklyn and Manhattan	TBTA	Inbound and outbound[1]
Holland Tunnel	Hudson River–Between New Jersey and Manhattan	PANYNJ	Inbound[1]
Lincoln Tunnel	Hudson River–Between New Jersey and Manhattan	PANYNJ	Inbound[1]

Notes:
[1] Inbound = To or entering Manhattan; Outbound = From or leaving Manhattan.
NYCDOT = New York City Department of Transportation.
TBTA = Triborough Bridge and Tunnel Authority.
PANYNJ = Port Authority of New York and New Jersey.

Table 4-2. Bridges Connecting to Manhattan Outside the Manhattan CBD

BRIDGE	LOCATION	JURISDICTION	BRIDGE/TUNNEL TOLL
Broadway Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
University Heights Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
Washington Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
Alexander Hamilton Bridge (I-95)	Harlem River–Between Bronx and Manhattan	NYSDOT	Untolled
Macombs Dam Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
145th Street Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
Madison Avenue Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
Third Avenue Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
Willis Avenue Bridge	Harlem River–Between Bronx and Manhattan	NYCDOT	Untolled
Robert F. Kennedy Bridge	Harlem River and East River–Between Bronx, Queens, and Manhattan	TBTA	Inbound and outbound[1]
Henry Hudson Bridge (Route 9A)	Harlem River–Between Bronx and Manhattan	TBTA	Inbound and outbound[1]
George Washington Bridge (I-95)	Hudson River–Between New Jersey and Manhattan	PANYNJ	Inbound[1]

Notes: Vehicles use these bridges to reach Manhattan and then travel by Manhattan streets to the Manhattan CBD.
[1] Inbound = To or entering Manhattan; Outbound = From or leaving Manhattan.
NYCDOT = New York City Department of Transportation.
NYSDOT = New York State Department of Transportation
TBTA = Triborough Bridge and Tunnel Authority.
PANYNJ = Port Authority of New York and New Jersey.

Table 4-3. Existing (2022) Passenger Vehicle Toll Rates on Bridges and Tunnels Connecting to Manhattan

AGENCY	BRIDGE OR TUNNEL	TOLL DIRECTION[1]	TOLL AMOUNT:* E-ZPass Peak	TOLL AMOUNT:* E-ZPass Off-Peak	OTHER TOLL AMOUNTS*
TBTA	Hugh L. Carey Tunnel	Inbound and outbound	$6.55	$6.55	Tolls by Mail = $10.17 Mid-Tier = $8.36
TBTA	Queens-Midtown Tunnel	Inbound and outbound	$6.55	$6.55	Tolls by Mail = $10.17 Mid-Tier = $8.36
TBTA	Robert F. Kennedy Bridge	Inbound and outbound	$6.55	$6.55	Tolls by Mail = $10.17 Mid-Tier = $8.36
TBTA	Henry Hudson Bridge	Inbound and outbound	$3.00	$3.00	Tolls by Mail = $7.50 Mid-Tier = $4.62
PANYNJ	Holland Tunnel	Inbound	$13.75	$11.75	Tolls by Mail = $16.00
PANYNJ	Lincoln Tunnel	Inbound	$13.75	$11.75	Cash Toll = $16.00 Tolls by Mail = $16.00
PANYNJ	George Washington Bridge	Inbound	$13.75	$11.75	Tolls by Mail = $16.00

1. Inbound = To or entering Manhattan; Outbound = From or leaving Manhattan.

* Toll amounts are for vehicles with two axles and single rear wheels; higher rates apply to other vehicle classes. Discount plans are available for certain vehicles. For more information see https://new.mta.info/fares-and-tolls/bridges-and-tunnels/tolls-by-vehicle/cars and https://www.panynj.gov/bridges-tunnels/tolls.html.
For PANYNJ facilities, E-ZPass rates apply to E-ZPass accounts issued at the E-ZPass New York and New Jersey Customer Service Centers. For TBTA facilities, E-ZPass rates apply to E-ZPass accounts issued at the New York Customer Service Center (NYCSC). For E-ZPass accounts not issued at the NYCSC, customers pay the Tolls by Mail rate. The Mid-Tier toll rate applies to E-ZPass NYCSC customers when not using their properly mounted NYCSC E-ZPass tags, leading to charges being posted to their accounts based on their license plate.
Peak hours for PANYNJ crossings are weekdays 6:00 a.m. to 10:00 a.m. and 4:00 p.m. to 8:00 p.m. and weekends 11:00 a.m. to 9:00 p.m. TBTA does not vary its tolls by time of day.

From Brooklyn, motor vehicles can enter the Manhattan CBD using the Hugh L. Carey Tunnel beneath New York Harbor and the Brooklyn Bridge, Manhattan Bridge, and Williamsburg Bridge across the East River. From Queens, vehicles can use the Queens-Midtown Tunnel, which is the western terminus of the Long Island Expressway (I-495) and runs beneath the East River to connect with multiple streets between East 34th and East 41st Streets and Second and Third Avenues, or the Ed Koch Queensboro Bridge, which reaches Manhattan between East 59th and East 60th Streets at the Manhattan CBD boundary and connects to multiple streets between East 57th and East 62nd Streets. From New Jersey, vehicles can enter the Manhattan CBD using the Holland and Lincoln Tunnels beneath the Hudson River. Motorists from outside the Manhattan CBD can also enter via southbound roadways that enter the Manhattan CBD at 60th Street.

Motorists using the Hugh L. Carey Tunnel and Queens-Midtown Tunnel pay a toll to TBTA, which operates those tunnels and charges a toll in both directions. Motorists using the Holland and Lincoln Tunnels pay a toll to the PANYNJ, which operates those tunnels and charges a toll only in the inbound (to Manhattan) direction. Motorists using the four East River bridges, which are under the jurisdiction of NYCDOT, do not pay a toll.

Some vehicles enter the Manhattan CBD from the north using Manhattan's local street grid or the two highways on its periphery: the West Side Highway/Route 9A and Franklin D. Roosevelt (FDR) Drive. Those vehicles can enter Manhattan using untolled bridges over the Harlem River from the Bronx or one of three other TBTA and PANYNJ crossings: the Robert F. Kennedy Bridge from the Bronx and Queens, a TBTA facility that is tolled in both directions; the Henry Hudson Bridge over the Harlem River from the Bronx, a TBTA facility that is tolled in both directions; and the George Washington Bridge over the Hudson River from New Jersey, a PANYNJ facility that is tolled in the inbound (to Manhattan) direction.[2]

Motorists must use the river crossings or the West Side Highway/Route 9A and the FDR Drive to access the region's interstate highways located outside the Manhattan CBD. From the Holland Tunnel, vehicles may connect to the New Jersey Turnpike Extension (I-78) and NJ Route 139 to US Routes 1 and 9. From the Lincoln Tunnel, vehicles may connect via NJ Route 495 to the New Jersey Turnpike (I-95) and NJ Routes 3 and 17. From the Hugh L. Carey Tunnel, vehicles may access the Gowanus Expressway (I-278) and Prospect Expressway (NY Route 27) in Brooklyn. The Williamsburg Bridge has direct access to the Brooklyn-Queens Expressway (I-278) in Brooklyn, and the Brooklyn and Manhattan Bridges have ramp connections to the Brooklyn-Queens Expressway near their Brooklyn landings. The Queens-Midtown Tunnel leads directly to the Long Island Expressway (I-495) in Queens. Motorists can access the interstate network north of the Manhattan CBD (I-80, I-87, I-95, and I-278, multiple parkways, and New York and New Jersey state highways) via the West Side Highway/Route 9A and Henry Hudson Parkway or the FDR Drive, either directly or using various connecting roadways. Some facilities such as the FDR Drive and certain parkways prohibit trucks and buses.

4.2 TRANSIT ACCESS TO THE MANHATTAN CBD

The New York metropolitan region has a robust transit network, much of it operating 24 hours per day/7 days per week/365 days per year, and the Manhattan CBD is the hub for much of it. People traveling to the Manhattan CBD can arrive by rail, subway, bus, tram, ferry, and paratransit (**Figure 4-3**).[3]

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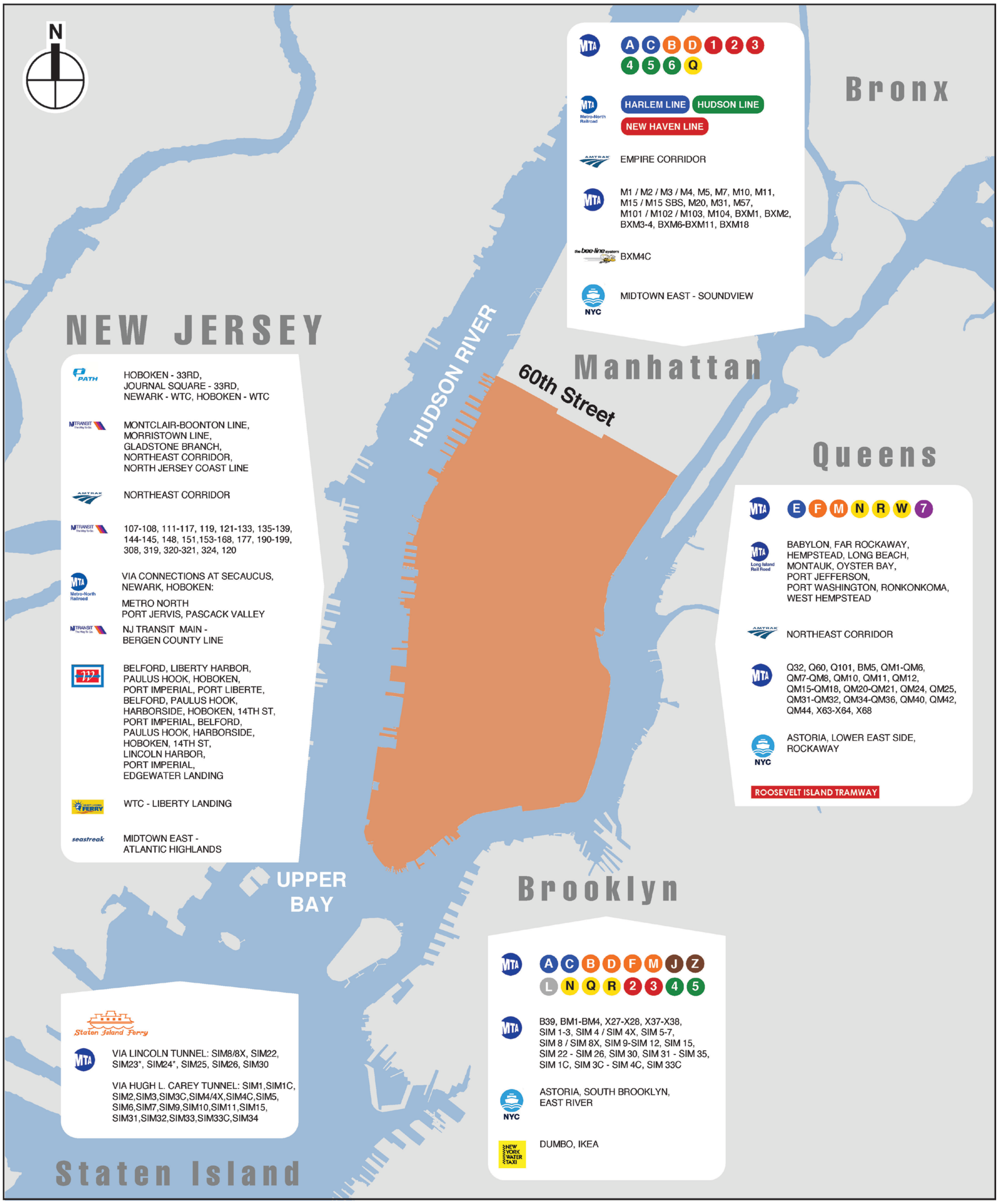
2 TBTA collects tolls at its facilities using open-road, cashless tolling. Tolls are charged to E-ZPass accounts for those who have E-ZPass tags. For vehicles without E-ZPass tags, customers may participate in the regional Tolls by Mail program through which license plate images are matched with information from the relevant Department of Motor Vehicles and a bill is sent to the registered vehicle owner. Motorists can also set up temporary, short-term accounts (for example, if they are planning to use a rental car in New York City). PANYNJ accepts E-ZPass at all of its bridges and tunnels, including the Holland and Lincoln Tunnels and the George Washington Bridge. The Holland Tunnel and the George Washington Bridge operate with cashless tolling. PANYNJ currently allows cash toll collection at the Lincoln Tunnel but is transitioning it to cashless tolling.

3 A limited number of people also arrive by helicopter at one of three heliports in Manhattan and by seaplane using the Midtown Skyport on the East River.

Figure 4-3. Transit Routes to/from the Manhattan Central Business District (2019)



Notes: Private bus operators connect commuters to various locations within the Manhattan CBD; those routes are not displayed here.
* Operated by Academy Bus

Manhattan CBD *(Excluding West Side Highway/Route 9A and FDR Drive)*

Transit by Sector

Source: WSP 2022

4.2.1 Subways

The New York City subway is the most widely used transit mode for access to the Manhattan CBD by residents of New York City.[4] It is the largest subway system in the United States, both in terms of miles of track and number of passengers served per year. The subway system comprises 25 routes serving 472 stations across the boroughs of the Bronx, Brooklyn, Manhattan, and Queens with 665 miles of track for transporting passengers (revenue track) with additional track to support operations (nonrevenue track). In 2019, the New York City subway had an average weekday ridership of about 5.5 million people and an annual ridership of 1.66 billion passengers. All but three of the 25 subway routes serve the Manhattan CBD, and the Manhattan CBD contains the system's 10 busiest stations.[5]

New York subway routes form an integrated network with free transfers between routes at many stations in the Manhattan CBD. For example, the Times Square subway station complex, which also includes stations on Sixth and Eighth Avenues, provides free connections between 16 subway routes (A, C, and E; N, Q, R, W, S, and Nos. 1, 2, 3, 7; and B, D, F, and M). The World Trade Center-Fulton Street Station complex in Lower Manhattan provides free transfers between 12 subway routes (E; N, R, and W; and A, C, J, Z, and Nos. 2, 3, 4, 5).[6] The subway also connects with regional transit hubs in the Manhattan CBD, allowing for connections from other modes. These include two stations with direct pedestrian connections to Penn Station New York and Moynihan Train Hall, a station complex beneath Grand Central Terminal, and a connection from the Times Square station complex via the 42nd Street-Port Authority Bus Terminal subway station to the Port Authority Bus Terminal.

In fall 2019, 2,228,000 people entered the Manhattan CBD by subway on an average weekday, which accounted for 58 percent of all people who entered the Manhattan CBD.[7]

4.2.2 Port Authority Trans-Hudson

Port Authority Trans-Hudson (PATH) is a rapid transit system serving Newark, Harrison, Hoboken, and Jersey City in New Jersey, as well as Lower and Midtown Manhattan in New York City. PANYNJ operates the PATH system, which comprises four routes and 13 stations (six in the Manhattan CBD and seven in New Jersey). PATH trains run from either Newark or Hoboken and into the Manhattan CBD with Manhattan termini at the World Trade Center and 33rd Street, just south of Penn Station New York. The system is just about 14 miles total in length. The PATH trains that terminate at West 33rd Street make intermediate stops within the Manhattan CBD. Trains that go to the World Trade Center make only that single stop in Manhattan. PATH train passengers can connect to the New York City subway at multiple PATH stations in

[4] The subway does not provide access to the Manhattan CBD from Staten Island.

[5] Metropolitan Transportation Authority. "Subway and Bus Ridership for 2019." https://new.mta.info/agency/new-york-city-transit/subway-bus-ridership-2019.

[6] The Cortlandt Street (No. 1 line) subway station is located within the World Trade Center site, but there is no fare-free connection between this station and the World Trade Center-Fulton Street station complex.

[7] New York Metropolitan Transportation Council. January 2021. *Hub Bound Travel Data Report 2019*. https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

Manhattan, but they must pay an additional fare. In fall 2019, an average of 273,447 people entered and exited the Manhattan CBD via the PATH train on average weekdays.[8]

4.2.3 Commuter Rail

New York City has the largest commuter rail network in the United States and includes MTA's Long Island Rail Road (LIRR) and Metro-North Railroad (Metro-North), as well as New Jersey Transit Corporation (NJ TRANSIT). Two commuter rail stations are in the Manhattan CBD—Grand Central Terminal and Penn Station New York. Metro-North serves Grand Central Terminal, while LIRR and NJ TRANSIT serve Penn Station New York. Projects are underway that will allow for some LIRR service at Grand Central Terminal and some Metro-North service at Penn Station New York.

LIRR operates between Manhattan and Long Island with station stops in Brooklyn and Queens in New York City and Nassau and Suffolk Counties on Long Island. With an average weekday ridership of 301,000 passengers across 735 trains, it is the busiest commuter railroad in North America. LIRR has 124 stations across 11 regularly operating branches and 319 miles of track in customer service. Most LIRR inbound trains terminate at Penn Station New York. Some LIRR trains terminate at Atlantic Terminal in Brooklyn or Hunters Point Terminal in Queens, where passengers can transfer to the subway and continue their trip to the Manhattan CBD. In addition to the Manhattan CBD, LIRR serves major commercial centers in Downtown Brooklyn and Nassau and Suffolk Counties. In fall 2019, an average of 246,843 people entered and exited the Manhattan CBD via LIRR on weekdays.[9]

Metro-North runs service between New York City and its northern suburbs in New York and Connecticut and provides local rail service within the New York City boroughs of Manhattan and the Bronx. Metro-North has five major branches (though some of the branches have multiple spurs) serving 124 stations within the regional study area. Two branches serve Rockland and Orange Counties, which are north of New York City and west of the Hudson River, and share tracks with NJ TRANSIT en route to their terminal in Hoboken, New Jersey. Three branches provide service between Grand Central Terminal and the Bronx, New York counties east of the Hudson River, and Connecticut. According to MTA, the system has an annual ridership of about 87 million people with close to 400 miles of track in customer service. In addition to serving the Manhattan CBD, Metro-North stops at large commercial districts in Yonkers, White Plains, and New Rochelle in New York as well as Stamford and New Haven, Connecticut. In fall 2019, an average of 226,296 people entered and exited the Manhattan CBD via Metro-North on average weekdays.[10]

NJ TRANSIT commuter rail connects 13 of the 14 New Jersey counties in the regional study area to the Manhattan CBD through its eight branches that serve the New York metropolitan region with close to 450 miles of track in customer service (excludes the Atlantic City branch). The eastern termini of NJ TRANSIT

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8 New York Metropolitan Transportation Council. January 2021. *Hub Bound Travel Data Report 2019*. https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

9 Ibid.

10 Ibid.

trains are Penn Station New York, Newark Penn Station, or the Hoboken Terminal. From Newark, passengers can transfer to a Penn Station New York-bound commuter rail train or can access PATH. From Hoboken, commuters can transfer to PATH or a ferry to complete the journey into the Manhattan CBD. In fall 2019, an average of 212,191 people entered and exited the Manhattan CBD via NJ TRANSIT commuter rail on average weekdays.[11]

4.2.4 Buses

New York City and the regional study area have an extensive network of buses. Commuter buses typically provide direct service between New York City neighborhoods or suburban communities and the Manhattan CBD and other employment centers in the region. Express or limited stop buses provide higher speed service on the more heavily patronized routes, and local buses operate throughout New York City and other counties in the regional study area. MTA has two subsidiaries—New York City Transit and MTA Bus—that operate bus service in New York City. NJ TRANSIT is the primary operator of commuter, express, and local buses in New Jersey, although some private bus operators provide both commuter and local bus services. Multiple public and private bus operators serve the suburban counties of New York and Connecticut.

MTA operates an extensive network of buses in New York City. Combined, New York City Transit and MTA Bus operate 234 local routes, 20 Select Bus Service routes (with payment prior to boarding to reduce dwell times at stops), and 73 commuter/express bus routes. The Manhattan CBD is well-served by buses. Express bus services available from Queens, Brooklyn, the Bronx, and Staten Island offer service to locations in Lower and Midtown Manhattan. The Manhattan CBD has multiple Select Bus Service routes (M14A, M14D, M15, and M23, M34, and M34A), which operate higher speed service with fewer stops than the local bus routes. Local bus routes (some of which have limited service with fewer stops) operate on most north–south avenues through the Manhattan CBD with continued service to Upper Manhattan. Crosstown local bus routes operate between the east and west sides of Manhattan on most two-way crosstown streets (e.g., Houston Street, 14th Street, 23rd Street, 34th Street, 42nd Street, and 57th Street). Crosstown service is available on pairs of one-way streets (e.g., St. Marks Place/Eighth Street and Ninth Street, 49th Street and 50th Street, and East 59th and East 60th Streets). Riders receive one free transfer between local, limited, and Select Bus Service routes and other local and Select Bus Service routes as well as the subway within two hours of the first swipe of a MetroCard. Customers may transfer to or from a commuter bus from a local bus, Select Bus Service bus, or subway, but they must pay the difference in the fare. Riders must pay for a transfer to an express service unless using an Unlimited Express Bus MetroCard.

The busiest bus route in all of New York City is the M15 local/M15 Select Bus Service, which operates along First and Second Avenues in Manhattan from the South Ferry Terminal in Lower Manhattan to 126th Street in the East Harlem neighborhood of Upper Manhattan.

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[11] New York Metropolitan Transportation Council. January 2021. *Hub Bound Travel Data Report 2019.* https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

New York City in cooperation with MTA, has included an extensive bus lane network throughout Manhattan and other boroughs to increase bus operating speeds and provide a degree of priority to buses over general traffic lanes.

NJ TRANSIT buses and private bus companies serve New Jersey counties in the regional study area. NJ TRANSIT operates an extensive network of commuter and local bus routes. Many commuter buses provide one-seat ride service between cities and towns in New Jersey and the Port Authority Bus Terminal in the Manhattan CBD, meaning travelers do not need to transfer between buses or from buses to trains to get to the Manhattan CBD. More than 65 NJ TRANSIT bus routes operate between New Jersey and the Port Authority Bus Terminal (PABT). While not every town in New Jersey has one-seat ride service to the Manhattan CBD, NJ TRANSIT provides bus service to all 14 New Jersey counties in the regional study area. Other private bus operators (e.g., Academy Bus Lines, Coach USA, and Trans-Bridge Bus Lines) operate between New Jersey communities within the regional study area (including park-and-ride lots), and either the PABT or curbside stops within the Manhattan CBD.

Limited bus connections are available from Long Island, New York counties north of New York City, and Connecticut to the Manhattan CBD. The Westchester County Department of Transportation's Bee-Line operates an express bus route to the Manhattan CBD from Westchester County. Coach USA operates commuter buses between towns in Rockland and Orange Counties, New York, and the PABT. Hampton Jitney is a private bus service between towns in eastern Long Island (Suffolk County, New York) and the Manhattan CBD. Other private bus operators offer limited operations between communities within the regional study area and either the PABT or curbside stops within the Manhattan CBD.

In the fall 2019, an average of 276,000 people entered and exited the Manhattan CBD by bus on average weekdays.[12]

4.2.5 Ferries

The following ferry operators, both privately owned and publicly owned, provide service to the Manhattan CBD from the other boroughs of New York City and waterfront communities in New Jersey:

- The New York City Economic Development Corporation owns NYC Ferry. The NYC Ferry service is a network of six ferry routes (with a seventh planned) that connects certain waterfront neighborhoods in the Bronx, Queens, Brooklyn, and Staten Island with various piers in the Manhattan CBD, including Wall Street, East 34th Street, and Midtown West at West 37th Street/Pier 79. There are also stops at Stuyvesant Cove (East River at East 20th Street) and Corlears Hook (East River at Jackson Street) within the Manhattan CBD, but only one ferry route serves each of these stops.

12 New York Metropolitan Transportation Council. January 2021. *Hub Bound Travel Data Report 2019.* https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

- NYCDOT operates the Staten Island Ferry between the South Ferry Terminal in Lower Manhattan and the St. George Ferry Terminal in Staten Island.
- New York Waterway is a privately operated ferry system that operates service on multiple routes across the Hudson River between eight piers in Bergen and Hudson Counties in New Jersey and four piers in Midtown and Lower Manhattan.
- Seastreak is a privately owned ferry service that operates between East 34th Street and the Battery Maritime Building piers on the East River in the Manhattan CBD and either Atlantic Highlands or Sandy Hook Beach in Monmouth County, New Jersey.

In the fall 2019, an average of 118,525 people entered and exited the Manhattan CBD via ferry service on average weekdays.[13]

4.2.6 Tram

The Roosevelt Island tram connects Roosevelt Island (an island in the East River between Queens and Manhattan) with Manhattan. The Manhattan terminus is located on Second Avenue between East 59th and East 60th Streets. The entire trip takes about 3 minutes, and the system transports more than 2 million passengers annually. The F subway line also provides service between Roosevelt Island and Manhattan.

4.3 BICYCLE AND PEDESTRIAN ACCESS TO THE MANHATTAN CBD

People may reach the Manhattan CBD on foot or by bicycle. The north–south avenues that cross 60th Street have sidewalks, and bicycle lanes are available on Amsterdam Avenue, Columbus Avenue, Central Park West, Second Avenue, and First Avenue. Shared-use bicycle and pedestrian paths are also along the Hudson and East Rivers. From Brooklyn and Queens, people may cross the Ed Koch Queensboro, Williamsburg, Manhattan, and Brooklyn Bridges by bicycle or on foot. There is no direct bicycle or pedestrian access between New Jersey and the Manhattan CBD as pedestrians are prohibited from the tunnel crossings.[14]

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13 New York Metropolitan Transportation Council. January 2021. *Hub Bound Travel Data Report 2019.* https://www.nymtc.org/Portals/0/Pdf/Hub%20Bound/2019%20Hub%20Bound/DM_TDS_Hub_Bound_Travel_2019.pdf?ver=GS5smEoyHSsHsyX_t_Zriw%3d%3d.

14 Pedestrians and bicyclists are permitted to cross the George Washington Bridge and can reach the Manhattan CBD using the Hudson River Greenway or one of Manhattan's north–south avenues.

4A. Regional Transportation Effects and Modeling

4A.1 OVERVIEW AND CONTEXT

This subchapter describes the reasonably expected effects of implementing the CBD Tolling Alternative on the regional transport system, including travel demand and mode choice. It provides a description of the Best Practice Model (BPM)—the travel demand forecasting model that the New York Metropolitan Transportation Council (NYMTC) developed and maintains—and explains how the model was used to forecast the reasonably expected effects of the Project. The model results show changes in the region's travel characteristics, and specifically how trips would be made to, from, through, and around the Manhattan CBD, including any changes in the total number of trips, routes, and mode choice. The analysis of traffic impacts and mitigation, effects on transit usage, parking, pedestrians, and bicycle usage are based on outputs from these BPM forecasts, and they are evaluated in detail in other subchapters of **Chapter 4, "Transportation."**

4A.2 METHODOLOGY

This analysis is based on a compilation of existing travel characteristics and forecasts of changes in travel demand using the BPM, which is the primary tool used to analyze the effects of large-scale regional transportation projects including, the New York metropolitan area's Federally recognized Regional Transportation Plan, PANYNJ Bus Terminal Redesign, and New NY Bridge Project. The model has been adopted by NYMTC's member agencies for use in regional transportation planning analyses, and it is the Federally recognized transportation forecasting tool for the region. Transportation findings from the BPM were augmented with information from academic studies and observed changes from similar cordon tolling programs in London, England, and Stockholm, Sweden.[1]

4A.2.1 Overview of Best Practice Model

The NYMTC version of the BPM used for this study was developed for NYMTC's 2017 Regional Transportation Plan and Federal air quality conformity determination. It includes the 28 counties that this EA uses for the study area (**Figure 4A-1**). NYMTC regularly updates and calibrates the BPM as part of its regional transportation planning responsibilities, including updating the model's demographic data, future employment and population projections, and changes in the underlying transportation network.

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1 London and Stockholm were chosen as comparative cities based on the scale and scope of their congestion charging programs. Congestion charging programs in these cities offer the most similarities to the proposed CBD Tolling Program. Additional cities in Europe and Asia (e.g., Milan [Italy] and Singapore) have congestion charging programs, but the programs in these cities differ in substantive ways from the proposed CBD Tolling Program. For example, the Milan program bans late-model high-pollution vehicles from the charging zone altogether. Social context is also important for comparative analysis where differing government and social norms may result in contrasting outcomes from a congestion charge.

Figure 4A-1. The Best Practice Model 28-County Region

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network
Note: The shades of purple, green, and pink reinforce the county boundaries for New York, New Jersey, and Connecticut, respectively.

The BPM includes roadway and transit networks and land use data (observed and forecast) for 2010,[2] 2017, 2020, and 2045. For the Project, NYMTC's 2020 BPM roadway and transit networks and land use data were used as the basis to forecast the effects of the CBD Tolling Alternative in the opening year (2023) because it provides the most recent pre-COVID-19-pandemic data, including but not limited to 2019 traffic counts. In addition, as described in **Chapter 1, "Introduction,"** pre-COVID-19-pandemic baseline conditions are considered the appropriate way to define near-term 2023 No Action Alternative conditions as the region rebounds and to forecast to 2045, a horizon year that reflects a long-term condition not biased by periodic disruptions.[3, 4] The roadway networks from NYMTC were updated to include projects that have been implemented or constructed but were not included in the original BPM roadway networks from NYMTC (e.g., two-way tolling on the Verrazzano-Narrows Bridge, reduced lane capacity on the Brooklyn-Queens Expressway near Brooklyn Heights, and bike lane projects like the Brooklyn Bridge bike lane) in the opening (2023) and horizon (2045) years.

The BPM is an activity-based model that simulates the number and types of journeys[5] made on an average weekday in the region by each resident. The BPM does not model or forecast weekend travel or other atypical days such as Gridlock Alert days.[6] This creates a realistic analysis that is based on the various decisions (e.g., mode, purpose, destination, frequency, location of intermediate stops, and time of day) made by travelers between these locations informed by employment and demographic data from NYMTC. The BPM generates over 28.8 million journeys per average weekday from the 28-county region's 8.2 million households.

For vehicular modes, the BPM roadway networks contain more than 61,000 links that include local streets, interstates, and freeways, and more than 4,600 Traffic Analysis Zones (TAZs).[7] For each roadway link, the BPM roadway networks contain information on the number of lanes, functional class,[8] speed, truck usage, and toll collection. The opening year and horizon year roadway and transit networks are used to estimate travel times and distances between all parts of the region—from each TAZ to every other TAZ. The roadway and transit networks are also used to assign travel demand flows to roadways and transit routes to produce

2 This version of the BPM is calibrated to 2010 conditions because the regional household travel survey upon which the BPM is based was conducted in 2010.

3 The 2023 and 2045 transportation networks for the No Action Alternative include the planned improvements documented in the Regional Transportation Plan, adopted in June 2017. Source: New York Metropolitan Transportation Council. June 2017. *Plan 2045: Maintaining the Vision for a Sustainable Region*.

4 The horizon year is typically defined as the year for which a transportation plan describes the envisioned transportation system. This is typically the last year of a metropolitan region's 20-year regional transportation plan. The last year analyzed in the New York Metropolitan Transportation Council's adopted 2017 Regional Transportation Plan is 2045.

5 A journey is defined as round-trip travel between principal locations like home and anchor locations such as work, school, retail, or entertainment. The BPM also estimates related trips linked to the anchor travel location (e.g., intermediate stops such as a day care center or gym).

6 Most regional travel demand models in the United States forecast only average weekday travel behavior. In the New York region, weekend travel is less than weekday travel. To derive annual estimates of travel and air quality metrics, annualization factors derived from observed data are used to extrapolate average weekday trends to average annual trends.

7 TAZs are approximately the size of U.S. Census Block Groups in the BPM. TAZs are used to aggregate travel origins and destinations to computationally manageable sizes for roadway and transit assignment procedures.

8 Functional classification describes roadway design, including its speed, capacity, and relationship to existing and future land use development.

roadway volumes, speeds, and transit boardings and alightings. Roadway volumes can be reported by the following vehicle classes:

- Single-occupancy vehicles[9, 10]
- High-occupancy vehicles (HOV) (of a minimum of two or more occupants)
- Taxis (including FHVs)[11]
- Medium trucks, heavy trucks, and commercial vans
- Buses[12]

For transit modes, the BPM contains all the routes, stations/stops, service frequencies, and fares for transit service throughout the metropolitan region, including the following:

- MTA subway, bus, and commuter rail
- NJ Transit Corporation (NJ TRANSIT) commuter rail, light rail, and bus
- Port Authority Trans-Hudson (PATH) rail service
- Ferries
- Other public buses such as the Westchester Bee-Line and Nassau Inter-County Express
- Private transit bus operators[13]

The model also generates an estimate of travel demand based on how people travel to their destination and from their origin (walk,[14] drive) or any transfers between routes for commuter rail, subway, light rail, bus, ferry, and tramway.

4A.2.2 Modeling of Toll Rates

Because the actual tolls will be determined through a process subsequent to the completion of this EA, the BPM modeling for this effort makes use of seven tolling scenarios within the CBD Tolling Alternative, each with a different set of variable toll rates and different exemptions, discounts, and/or crossing credits. Tolls are an explicit model input. Through this set of tolling scenarios, the modeling captures the full range of potential effects from the Project (see **Table 2-3 and Table 2-5** in **Chapter 2, "Project Alternatives"** for a

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9 Occupancy in this context refers to the number of people in the vehicle during the trip. It is not a reference to the occupant capacity of the vehicle.

10 In the BPM, motorcycles are considered personal vehicles, and they are included in the model's representation of single- and high-occupancy vehicles along with cars, trucks, sport-utility vehicles, and other personal vehicles. Motorcycles comprise less than 0.5 percent of overall traffic entering the Manhattan CBD at TBTA facilities.

11 FHVs provide pre-arranged transportation. There are four classes of FHV services: Community Cars (Liveries), Black Cars, Luxury Limousines, and High Volume For-Hire Services. Prominent examples of High Volume For-Hire Services include Lyft, Uber, and Via.

12 Bus volumes in the BPM reflect the estimated number of transit buses on a roadway link based on transit operating schedules.

13 The BPM includes private bus operators (not jitneys) that provide contracted transit services to a public transit agency, for example, Suburban Transit service on behalf of NJ TRANSIT in Middlesex County. The BPM also includes private, regular commuter services to Manhattan like commuter express services from New Jersey, Long Island, and the New York counties north of New York City (e.g., Academy, Lakeland, Coach USA).

14 Walk includes all nonmotorized access to the transit system including bicycles.

description of the tolling scenarios evaluated).[15] In addition, the BPM represents the cost sensitivity of various travelers in response to tolling. The assumptions that drive these sensitivities are described in **Appendix 4A.1, "Transportation: Section 4A.1-7. Value of Time."**

4A.3 EVALUATING THE PROJECT

Results from the BPM for the No Action Alternative and the seven tolling scenarios were used to evaluate the effects of the CBD Tolling Alternative. This subchapter focuses on key findings from the BPM analysis and regional changes in travel behavior across the 28 counties included in the BPM (see **Figure 4A-1**). More detailed results on local roads, highways, local intersections, transit, bicycles, pedestrians, and parking are described and discussed in **Subchapter 4B through Subchapter 4E** across the 28-county region.

A detailed summary of the BPM outputs for the No Action Alternative and CBD Tolling Alternative (including the tolling scenarios) is provided in **Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables,"**. In all tables presented here, unless noted, the term "vehicle" in this chapter refers to all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs,[16] buses, and trucks.

Three metrics were used to summarize and compare the forecasts of the No Action Alternative and the CBD Tolling Alternative in this subchapter:

1. **Daily Vehicles Entering the Manhattan CBD:** This metric conveys the change in the number of vehicles that would cross into the Manhattan CBD as a result of the different tolling scenarios, and how those changes would vary geographically. **Table 4A-1**, **Table 4A-4**, **Table 4A-5**, **Table 4A-11**, and **Table 4A-12** report the number of vehicle crossings into the Manhattan CBD as described below:
   - New Jersey Crossings: Lincoln and Holland Tunnels
   - Brooklyn Crossings: Williamsburg, Manhattan, and Brooklyn Bridges and the Hugh L. Carey Tunnel
   - Queens Crossings: Ed Koch Queensboro Bridge[17] and Queens-Midtown Tunnel
   - 60th Street Crossings in Manhattan (divided into three groupings):
     - East Side avenues
     - West Side avenues

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15 As described in **Chapter 2, "Project Alternatives,"** this Environmental Assessment (EA) evaluates multiple tolling scenarios to identify the range of potential effects that would occur from implementing the Project. These tolling scenarios have a range of different toll amounts and toll structures, such as crossing credits, discounts, and/or exemptions. Ultimately, the TBTA Board will determine the toll amounts and toll structure to be implemented.

16 Since the BPM does not distinguish between taxis and FHVs, taxi and FHV maximum CBD toll rates were blended to evaluate policy differences in tolling. **Appendix 4A.1, "Transportation: Implementation of Tolls in the Best Practice Model,"** provides a more detailed discussion of modeling taxi and FHV travel.

17 The Manhattan-bound upper ramp of the Queensboro Bridge is considered part of the Queens-inbound crossing locations to the Manhattan CBD, and it is also reported in the 60th Street outbound crossing locations. Currently, all Manhattan-bound traffic enters the bridge via the northern upper-level lanes of the Ed Koch Queensboro Bridge and enters the Manhattan CBD but immediately exits the Manhattan CBD on the northbound ramp to 62nd Street (except for AM peak-period HOV lanes that use the southern lanes, typically reserved for outbound traffic, which enter the Manhattan CBD at 59th Street). The Queensboro Bridge entrances and exits are consistent with the NYMTC *Hub Bound Travel Data Report*. All traffic using the northern upper roadway of the Ed Koch Queensboro Bridge to access Manhattan north of 60th Street would not be subject to CBD tolling in the tolling scenarios modeled in this EA.

- Franklin D. Roosevelt (FDR) Drive and the West Side Highway/Route 9A (combined volumes)[18]

2. **Daily VMT:** The analysis conveys the change in the aggregate level of driving or traffic that would occur within the BPM's modeled area. **Table 4A-2, Table 4A-6, Table 4A-7, Table 4A-13, and Table 4A-14** report the quantity of VMT (i.e., total miles traveled by vehicles) forecast in each reporting area. Changes in VMT are correlated with changes in level of service, air quality, and noise discussed in **Subchapter 4B, "Highways and Local Intersections," Chapter 10, "Air Quality," and Chapter 12, "Noise."**

   Figure 4A-2 displays the reporting subareas used within New York City (NYC Subareas 1, 2, and 3). The subareas are defined based on their proximity to the Manhattan CBD entry and exit locations. The Manhattan CBD comprises the surface streets within the CBD, referred to below as the CBD Core and the highways that circumnavigate the surface streets, referred to as the Peripheral Highways. The Peripheral Highways include:

   – West Side Highway/Route 9A south of 60th Street
   – FDR Drive south of 60th Street, including the Battery Park Underpass
   – Lincoln, Holland, Hugh L. Carey, and Queens-Midtown Tunnels
   – Brooklyn, Manhattan, Williamsburg, and Ed Koch Queensboro Bridges

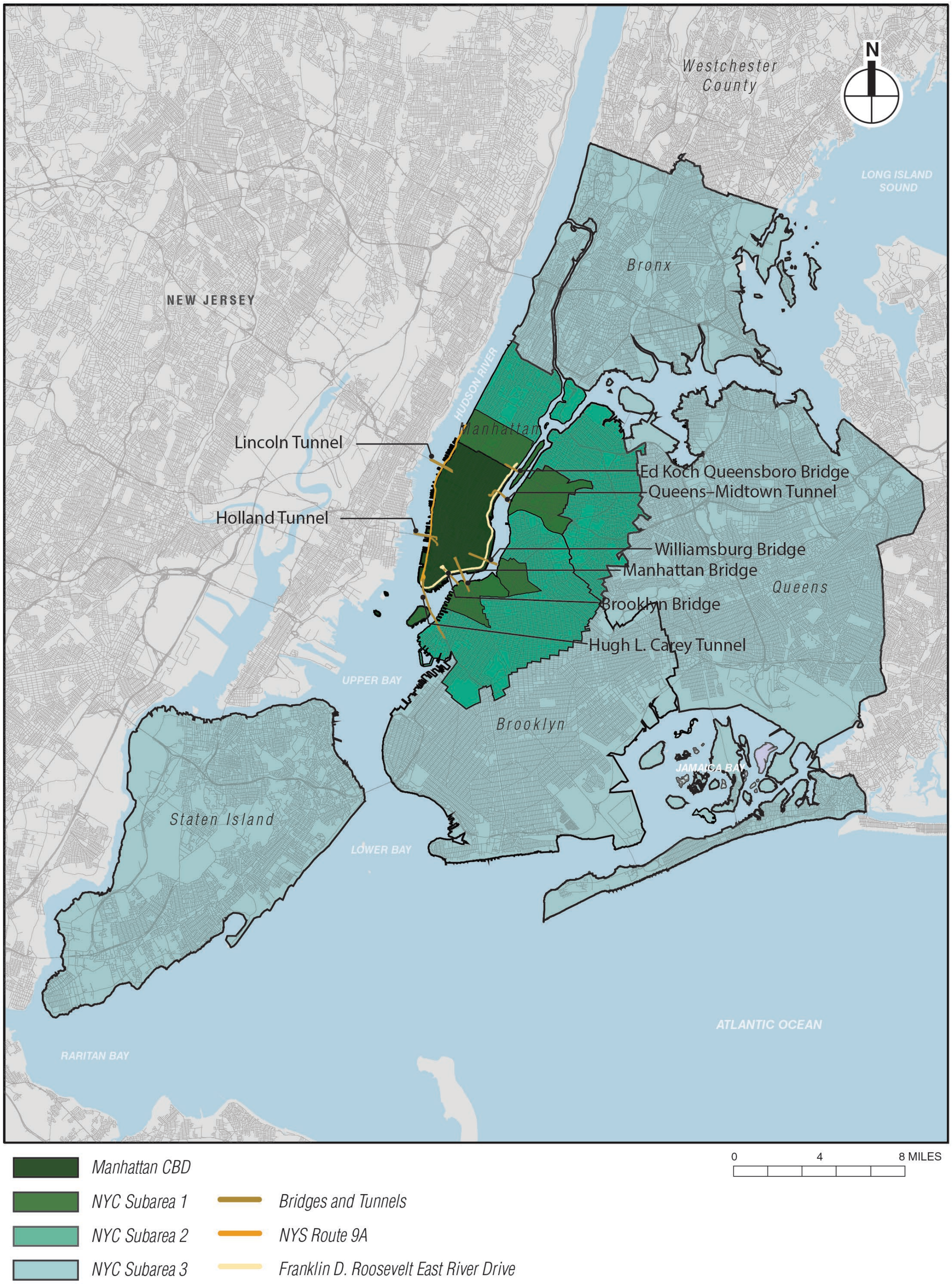
   Outside New York City, VMT is reported for the remaining seven New York counties that are inside the BPM boundary: Nassau County and Suffolk County on Long Island and five counties to the north of New York City (Dutchess, Orange, Putnam, Rockland, and Westchester). In Connecticut, VMT is reported for Fairfield and New Haven Counties. In New Jersey, VMT is reported for the 14 northeastern counties. (See **Figure 4A-1** for a map of the 28 counties in the BPM.)

3. **Mode Shares for Manhattan CBD-Related Person-Journeys.** The analysis conveys the share of journeys that would be made by transit, auto, and nonmotorized (e.g., walk and bike) travel modes related to the Manhattan CBD. Manhattan CBD-related journeys are those with one or both ends of the journey inside the Manhattan CBD. These metrics are reported in **Table 4A-3, Table 4A-8, and Table 4A-15.**

   Table 4A-9Table 4A-10Table 4A-16**Table 4A-8 and Table 4A-15**Table 4A-17 report changes in the percentage share of transit journeys that would originate outside and travel into the Manhattan CBD; journeys that would originate inside and travel out of the Manhattan CBD; and journeys that would be completely internal to the Manhattan CBD. Transit share reported is the number of people who would make a transit journey—including via subway, commuter rail, buses, ferries, and trams—as a percentage of people who would travel by all motorized vehicles and nonmotorized modes such as walking and biking.

[18] Vehicles traveling south of 60th Street on the West Side Highway/Route 9A and the FDR Drive would not be charged a CBD toll if they remain on these roadways and do not enter the Manhattan CBD.

Figure 4A-2. Reporting Locations in New York City for Additional Vehicle-Miles Traveled



Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Roadway Network

4A.4 ENVIRONMENTAL CONSEQUENCES

4A.4.1 No Action Alternative

This section presents the predicted changes in regional travel patterns between the opening year (2023) and the horizon year (2045) for the No Action Alternative. The 2023 and 2045 transportation networks for the No Action Alternative include the planned improvements documented in the Regional Transportation Plan, adopted in June 2017.[19] Additional network updates (described in **Appendix 4A.1, "Transportation: Implementation of Tolls in the Best Practice Model," Table 4A.1-3**) were implemented to reflect existing conditions as of September 2021.[20] Land use, population, and employment assumptions come from the NYMTC Socioeconomic and Demographic Forecasts. NYMTC routinely develops these forecasts for the region, which include population, households, employment, and labor force projections.

With these assumptions, BPM-generated forecasts show a 4.8 percent increase (about 0.25 percent per year) in daily vehicles entering the Manhattan CBD (**Table 4A-1**) between 2023 and 2045. The largest absolute increase would occur on the 60th Street crossings, with an additional 12,410 vehicle trips.

Table 4A-1. Forecast Growth in Daily Vehicles Entering the Manhattan CBD: No Action Alternative

CROSSING LOCATIONS	OPENING YEAR (2023)	HORIZON YEAR (2045)	DIFFERENCE	PERCENTAGE CHANGE
60th Street	**276,466**	**288,876**	**12,410**	**4.5%**
FDR Drive and West Side Highway/Route 9A[1]	161,696	168,499	6,803	4.2%
West Side Avenues	28,026	31,920	3,894	13.9%
East Side Avenues[2]	86,744	88,457	1,713	2.0%
Queens	**142,596**	**154,348**	**11,752**	**8.2%**
Brooklyn	**187,486**	**192,604**	**5,118**	**2.7%**
New Jersey	**109,602**	**114,867**	**5,265**	**4.8%**
TOTAL	**716,150**	**750,695**	**34,545**	**4.8%**

1 Vehicle volumes entering the Manhattan CBD reported in this table for the FDR Drive and the West Side Highway/Route 9A and are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the FDR Drive and the West Side Highway/Route 9A to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. The volumes here are reported in this manner to be consistent with counts published in the annual NYMTC *Hub Bound Travel Data Report*.

2 The larger volumes in East Side avenues result from some Queensboro Bridge traffic being counted twice. The NYMTC *Hub Bound Travel Data Report* cordon includes the upper inbound roadway as a Manhattan CBD outbound tolling zone boundary. Any traffic that would then circle back into the Manhattan CBD via Second Avenue or York Avenue would be recounted as a Manhattan CBD inbound trip.

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19 New York Metropolitan Transportation Council. June 2017. *Plan 2045: Maintaining the Vision for a Sustainable Region*.

20 Modeling of tolling scenarios commenced on September 2021; therefore, any road network changes since then are not included in this analysis.

Table 4A-2 summarizes the changes in forecast daily VMT for all vehicles under the No Action Alternative. In the No Action Alternative, VMT is forecast to grow by 8.8 percent regionwide between 2023 and 2045. In the Manhattan CBD, VMT is forecast to grow by 4.9 percent. The largest increases in VMT would be on Long Island and in the five New York counties north of New York City. For the New Jersey counties in the model area, VMT would increase by 10.6 percent (an increase of more than 10 million VMT on an average weekday). For the 12 New York State counties in the model area, VMT would increase by nearly 12 million VMT (9.8 percent). New York City's subareas are expected to see increases in daily VMT in the range of 5.3 percent to 7.2 percent.

In 2045, the No Action Alternative would have a 1.2 percent increase in Manhattan CBD-related transit mode share—from 61.7 percent to 62.9 percent transit share. This growth would be driven primarily by journeys that begin outside the Manhattan CBD (**Table 4A-3**).

4A.4.2 2023 CBD Tolling Alternative

Travel forecasts were prepared for the opening year (2023) and horizon year (2045) for the CBD Tolling Alternative for each of the seven tolling scenarios (see **Chapter 2, "Project Alternatives,"** for more information on the tolling scenarios). The results of these forecasts were compared with the No Action Alternative to assess the effects of each tolling scenario. **Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables,"** provides detailed statistics for each of the forecasts. This section summarizes key metrics for 2023.

Table 4A-4 and Table 4A-5 show the change in vehicles that would enter or pass through the Manhattan CBD. Absolute volumes and percentage change compared to the No Action Alternative are shown. The larger reductions on the East Side avenues compared to the West Side avenues are a result of changing volumes on the upper level of the Ed Koch Queensboro Bridge. Tolling Scenarios C through F all offer some form of crossing credits for the Queens-Midtown Tunnel. The crossing credits increase the attractiveness of the TBTA East River facilities compared to the Ed Koch Queensboro Bridge and divert crossings destined for the Manhattan CBD off the bridge and onto TBTA facilities. With fewer Manhattan CBD-bound vehicles using the upper level of the bridge, traffic would be reduced on the East Side avenues into the Manhattan CBD at greater levels than the West Side avenues.

Table 4A-2. Forecast Growth in All Vehicle Daily Vehicle-Miles Traveled: No Action Alternative

LOCATION	OPENING YEAR (2023)	HORIZON YEAR (2045)	GROWTH FROM 2023 TO 2045	PERCENTAGE CHANGE
New York Counties	**122,186,497**	**134,186,361**	**11,999,864**	**9.8%**
New York City	47,131,752	49,748,914	2,617,162	5.6%
Manhattan CBD	3,244,791	3,402,711	157,920	4.9%
CBD Core	1,217,727	1,262,019	44,292	3.6%
Peripheral Highways (south of 60th Street; excluded from the toll)	2,027,064	2,140,692	113,628	5.6%
West Side Highway/Route 9A	610,657	647,671	37,014	6.1%
FDR Drive	720,682	758,659	37,977	5.3%
Bridges and Tunnels*	695,725	734,362	38,637	5.6%
NYC Subarea 1 (see Figure 4A-2)	2,218,077	2,349,929	131,852	5.9%
NYC Subarea 2 (see Figure 4A-2)	6,660,953	7,142,863	481,910	7.2%
NYC Subarea 3 (see Figure 4A-2)	35,007,931	36,853,411	1,845,480	5.3%
Long Island Counties (2)	**41,585,545**	**46,813,526**	**5,227,981**	**12.6%**
New York Counties North of New York City (5)	**33,469,200**	**37,623,921**	**4,154,721**	**12.4%**
New Jersey Counties (14)	**97,578,100**	**107,907,842**	**10,329,742**	**10.6%**
Connecticut Counties (2)	**34,909,870**	**35,063,470**	**153,600**	**0.4%**
TOTAL	**254,674,467**	**277,157,673**	**22,483,206**	**8.8%**

Note: The number of counties are indicated within parentheses ( ).

* Bridge and tunnel traffic includes VMT from the portion of bridges and tunnels in New York County (Manhattan) entering the Manhattan CBD from Kings County (Brooklyn), Queens, and New Jersey.

Table 4A-3. Changes in Manhattan CBD Total Daily Mode Share: No Action Alternative

DIRECTION OF JOURNEY	OPENING YEAR (2023)	HORIZON YEAR (2045)	PERCENTAGE POINT CHANGE
Journeys Beginning Outside the Manhattan CBD	**1,920,016**	**2,056,665**	
Auto (including HOV, Taxi, FHV)	19.1%	17.7%	-1.4%
Transit	78.2%	79.7%	1.5%
Walk and Bike	2.7%	2.6%	-0.1%
Journeys Beginning Inside the Manhattan CBD	**159,183**	**173,345**	
Auto (including HOV, Taxi, FHV)	30.2%	29.7%	-0.5%
Transit	51.5%	52.1%	0.6%
Walk and Bike	18.3%	18.2%	-0.1%
Journeys Within the Manhattan CBD	**875,418**	**916,741**	
Auto (including HOV, Taxi, FHV)	7.1%	6.9%	-0.2%
Transit	27.5%	27.4%	-0.1%
Walk and Bike	65.4%	65.7%	0.3%
All Manhattan CBD-Related Journeys	**2,954,617**	**3,146,751**	
Auto (including HOV, Taxi, FHV)	16.2%	15.3%	-0.9%
Transit	61.7%	62.9%	1.2%
Walk and Bike	22.1%	21.8%	-0.3%

Note: Trucks are excluded from mode share calculations

Table 4A-4. Daily Vehicles[1] Entering the Manhattan CBD by Crossing Location: No Action Alternative and Tolling Scenarios (2023)

CROSSING LOCATION	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**276,466**	**220,659**	**221,318**	**208,405**	**198,437**	**196,294**	**204,011**	**216,999**
FDR Drive and West Side Highway/Route 9A[2]	161,696	151,594	152,322	146,846	141,979	140,589	144,802	150,734
West Side Avenues	28,026	22,265	22,743	20,793	19,710	19,467	20,410	22,105
East Side Avenues	86,744	46,800	46,253	40,766	36,748	36,238	38,799	44,160
Queens	**142,596**	**125,030**	**124,315**	**130,029**	**136,799**	**136,652**	**137,229**	**123,298**
Brooklyn	**187,486**	**168,154**	**167,624**	**152,790**	**138,880**	**137,092**	**137,368**	**165,509**
New Jersey	**109,602**	**92,070**	**90,704**	**100,791**	**107,810**	**103,257**	**106,560**	**88,196**
TOTAL	**716,150**	**605,913**	**603,961**	**592,015**	**581,926**	**573,295**	**585,168**	**594,002**

1 Unless noted, the term “vehicles” in this subchapter refers to all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs, buses, and trucks.

2 In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

Table 4A-5. Percentage Change (compared to No Action Alternative) in Daily Vehicles Entering the Manhattan CBD by Crossing Location and Tolling Scenario (2023)

CROSSING LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**-20.2%**	**-19.9%**	**-24.6%**	**-28.2%**	**-29.0%**	**-26.2%**	**-21.5%**
FDR Drive and West Side Highway/Route 9A*	-6.2%	-5.8%	-9.2%	-12.2%	-13.1%	-10.4%	-6.8%
West Side Avenues	-20.6%	-18.9%	-25.8%	-29.7%	-30.5%	-27.2%	-21.1%
East Side Avenues	-46.0%	-46.7%	-53.0%	-57.6%	-58.2%	-55.3%	-49.1%
Queens	**-12.3%**	**-12.8%**	**-8.8%**	**-4.1%**	**-4.2%**	**-3.8%**	**-13.5%**
Brooklyn	**-10.3%**	**-10.6%**	**-18.5%**	**-25.9%**	**-26.9%**	**-26.7%**	**-11.7%**
New Jersey	**-16.0%**	**-17.2%**	**-8.0%**	**-1.6%**	**-5.8%**	**-2.8%**	**-19.5%**
TOTAL	**-15.4%**	**-15.7%**	**-17.3%**	**-18.7%**	**-19.9%**	**-18.3%**	**-17.1%**

* In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

While all the tolling scenarios within the CBD Tolling Alternative would reduce traffic entering the Manhattan CBD, the largest total reduction would occur with Tolling Scenario E. Tolling Scenario E would also result in the largest reduction of vehicle crossings into the Manhattan CBD from Upper Manhattan at 60th Street and Brooklyn, while Tolling Scenario G would result in the largest reduction of vehicles crossing into the Manhattan CBD from Queens and New Jersey.

Changes in daily VMT by tolling scenario are shown in Table 4A-6 (absolute values) and Table 4A-7 (percentage change compared to the No Action Alternative). Consistent with changes in vehicles entering the Manhattan CBD, the largest reduction in regional VMT and VMT in New York City would occur under Tolling Scenario E. The greatest reduction in VMT on a percentage basis would occur on the West Side Highway/Route 9A south of 60th Street, with a maximum reduction of 20.5 percent under Tolling Scenario D. New York City Subarea 3 would have an increase in VMT under Tolling Scenarios A, B, C, and G of less than 0.1 percent to 0.3 percent. VMT on the FDR Drive would increase south of 60th Street in Tolling Scenario A, B, F, and G because of travelers seeking a free path around the Manhattan CBD using the FDR Drive and untolled ramps to the Brooklyn Bridge. VMT would increase by less than 0.2 percent in New Jersey in all tolling scenarios, mostly in Bergen and Middlesex Counties, from increased diversions to and from the George Washington Bridge and Outerbridge Crossing for through-trips avoiding the Manhattan CBD toll.

Table 4A-8 shows how many journeys would shift from passenger vehicles to transit and walking and biking for Manhattan CBD-related journeys. Changes are shown separately for journeys that originate outside and travel into the Manhattan CBD, journeys that originate inside and travel out of the Manhattan CBD, and journeys that are completely internal to the Manhattan CBD.

In all tolling scenarios, some Manhattan CBD-related journeys would shift to transit. Tolling Scenarios D and E would have the largest shift to transit (an increase in transit journeys up to 2.3 percent) to and from the Manhattan CBD. Transit journeys entirely within the Manhattan CBD would change 1 percent or less for all tolling scenarios (see Table 4A-8). Walking and biking trips would also increase slightly (up to 0.14 percent).

Table 4A-9 breaks down the numbers of Manhattan CBD-related journeys for private vehicles (drive alone and HOVs), taxis, and FHVs. Table 4A-10 shows the shift in all Manhattan CBD-related transit journeys by tolling scenario.

Table 4A-6. Daily Vehicle-Miles Traveled: No Action Alternative and CBD Tolling Alternative, by Tolling Scenario (2023)

LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York Counties	**122,186,497**	**121,752,302**	**121,789,089**	**121,438,634**	**121,227,956**	**121,111,122**	**121,464,091**	**121,662,622**
New York City	47,131,752	46,743,670	46,784,237	46,572,720	46,461,121	46,404,913	46,578,412	46,713,541
Manhattan CBD	3,244,791	2,993,214	2,998,489	2,984,080	2,963,211	2,946,339	3,016,013	2,970,819
CBD Core	1,217,727	1,150,843	1,152,471	1,161,407	1,159,162	1,147,545	1,183,476	1,142,077
Peripheral Highways (south of 60th Street; excluded from the toll)	2,027,064	1,842,371	1,846,018	1,822,673	1,804,049	1,798,794	1,832,537	1,828,742
West Side Highway/Route 9A	610,657	510,785	513,887	493,396	485,167	486,404	501,603	508,951
FDR Drive	720,682	725,459	729,706	718,820	705,903	710,555	721,421	727,101
Bridges & Tunnels	695,725	606,127	602,425	610,457	612,979	601,835	609,513	592,690
NYC Subarea 1 (see Figure 4A-2)	2,218,077	2,049,561	2,049,528	2,004,366	1,955,714	1,944,168	1,962,310	2,031,243
NYC Subarea 2 (see Figure 4A-2)	6,660,953	6,626,001	6,630,016	6,588,313	6,578,676	6,568,162	6,596,549	6,615,308
NYC Subarea 3 (see Figure 4A-2)	35,007,931	35,074,894	35,106,204	34,995,961	34,963,520	34,946,244	35,003,540	35,096,171
Long Island Counties (2)	**41,585,545**	**41,609,407**	**41,595,736**	**41,546,248**	**41,503,705**	**41,497,676**	**41,598,789**	**41,573,420**
New York Counties North of New York City (5)	**33,469,200**	**33,399,225**	**33,409,116**	**33,319,666**	**33,263,130**	**33,208,533**	**33,286,890**	**33,375,661**
New Jersey Counties (14)	**97,578,100**	**97,594,939**	**97,590,826**	**97,748,567**	**97,733,034**	**97,665,181**	**97,768,338**	**97,642,310**
Connecticut Counties (2)	**34,909,870**	**34,878,673**	**34,856,848**	**34,830,279**	**34,846,493**	**34,842,671**	**34,893,239**	**34,844,682**
TOTAL	**254,674,467**	**254,225,914**	**254,236,763**	**254,017,480**	**253,807,483**	**253,618,974**	**254,125,668**	**254,149,614**

Notes:
1. The number of counties are indicated within parentheses ( ).
2. Unless noted, the terms "Vehicle-Miles Traveled" or "VMT" in this subchapter refer to miles traveled by all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs, buses, and trucks.

Table 4A-7. Percentage Change (compared to No Action Alternative) in Daily Vehicle-Miles Traveled by Tolling Scenario (2023)

LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York Counties	**-0.4%**	**-0.3%**	**-0.6%**	**-0.8%**	**-0.9%**	**-0.6%**	**-0.4%**
New York City	-0.8%	-0.7%	-1.2%	-1.4%	-1.5%	-1.2%	-0.9%
Manhattan CBD	-7.8%	-7.6%	-8.0%	-8.7%	-9.2%	-7.1%	-8.4%
CBD Core	-5.5%	-5.4%	-4.6%	-4.8%	-5.8%	-2.8%	-6.2%
Peripheral Highways (south of 60th Street; excluded from the toll)	-9.1%	-8.9%	-10.1%	-11.0%	-11.3%	-9.6%	-9.8%
West Side Highway/Route 9A	-16.4%	-15.8%	-19.2%	-20.5%	-20.3%	-17.9%	-16.7%
FDR Drive	0.7%	1.3%	-0.3%	-2.1%	-1.4%	0.1%	0.9%
Bridges & Tunnels	-12.9%	-13.4%	-12.3%	-11.9%	-13.5%	-12.4%	-14.8%
NYC Subarea 1 (see Figure 4A-2)	-7.6%	-7.6%	-9.6%	-11.8%	-12.3%	-11.5%	-8.4%
NYC Subarea 2 (see Figure 4A-2)	-0.5%	-0.5%	-1.1%	-1.2%	-1.4%	-1.0%	-0.7%
NYC Subarea 3 (see Figure 4A-2)	0.2%	0.3%	0.0%	-0.1%	-0.2%	0.0%	0.3%
Long Island Counties (2)	**0.1%**	**0.0%**	**-0.1%**	**-0.2%**	**-0.2%**	**0.0%**	**0.0%**
New York Counties North of New York City (5)	**-0.2%**	**-0.2%**	**-0.4%**	**-0.6%**	**-0.8%**	**-0.5%**	**-0.3%**
New Jersey Counties (14)	**0.0%**	**0.0%**	**0.2%**	**0.2%**	**0.1%**	**0.2%**	**0.1%**
Connecticut Counties (2)	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.2%**	**0.0%**	**-0.2%**
TOTAL	**-0.2%**	**-0.2%**	**-0.3%**	**-0.3%**	**-0.4%**	**-0.2%**	**-0.2%**

Note: The number of counties are indicated within parentheses ( ).

Table 4A-8. Daily Manhattan CBD Journey Mode Share (compared to No Action Alternative) by Tolling Scenario (2023)

DIRECTION OF JOURNEY	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Beginning Outside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	19.1%	18.0%	18.1%	17.7%	17.0%	16.8%	17.3%	17.7%
Transit	78.2%	79.3%	79.2%	79.6%	80.3%	80.5%	80.0%	79.6%
Walk and Bike	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Change in Transit Share		1.1%	1.0%	1.4%	2.1%	2.3%	1.8%	1.4%
Beginning Inside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	30.2%	28.9%	29.0%	28.5%	27.6%	27.6%	28.2%	27.9%
Transit	51.5%	52.4%	52.3%	52.6%	53.4%	53.4%	52.9%	53.6%
Walk and Bike	18.3%	18.7%	18.7%	18.9%	19.0%	19.0%	18.9%	18.5%
Change in Transit Share		0.9%	0.8%	1.1%	1.9%	1.9%	1.4%	2.1%
Beginning and Ending Within the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	7.1%	7.1%	7.2%	7.2%	7.2%	7.1%	7.1%	7.3%
Transit	27.5%	27.5%	27.3%	27.5%	27.6%	27.6%	27.5%	27.7%
Walk and Bike	65.4%	65.4%	65.5%	65.3%	65.2%	65.3%	65.4%	65.0%
Change in Transit Share		0.0%	-0.2%	0.0%	0.1%	0.1%	0.0%	0.2%
All Manhattan CBD-Related Journeys								
Auto (including HOV, Taxi, FHV)	16.2%	15.3%	15.5%	15.1%	14.6%	14.5%	14.9%	15.1%
Transit	61.7%	62.5%	62.4%	62.7%	63.2%	63.3%	63.0%	62.8%
Walk and Bike	22.1%	22.2%	22.1%	22.2%	22.2%	22.2%	22.1%	22.1%
Change in Transit Share		0.8%	0.7%	1.0%	1.5%	1.6%	1.3%	1.1%

Note: Table includes only journeys made by single-occupancy vehicles, HOVs, taxis, FHVs, motorcycles, public transit, bicycle, and walking, but does not include commercial trucks.

Table 4A-9. Daily Manhattan CBD-Related Auto-Based Vehicle Person-Journeys (compared to No Action Alternative) by Tolling Scenario (2023)

MODE	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Private Vehicles (drive alone and HOVs)	412,721	397,185	393,224	387,136	380,656	370,785	374,743	393,570
	Difference	-15,536	-19,497	-25,585	-32,065	-41,936	-37,978	-19,151
	Percentage	-3.8%	-4.7%	-6.2%	-7.8%	-10.2%	-9.2%	-4.6%
Taxi/FHV	64,695	56,165	64,314	59,995	50,713	57,081	63,737	55,450
	Difference	-8,530	-381	-4,700	-13,982	-7,614	-958	-9,245
	Percentage	-13.2%	-0.6%	-7.3%	-21.6%	-11.8%	-1.5%	-14.3%
TOTAL	**477,416**	**453,350**	**457,538**	**447,131**	**431,369**	**427,866**	**438,480**	**449,020**
	Difference	**-24,066**	**-19,878**	**-30,285**	**-46,047**	**-49,550**	**-38,936**	**-28,396**
	Percentage	**-5.0%**	**-4.2%**	**-6.3%**	**-9.6%**	**-10.4%**	**-8.2%**	**-5.9%**

Table 4A-10. Daily Manhattan CBD-Related Transit Journeys (compared to No Action Alternative) by Tolling Scenario (2023)

NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
1,833,770	1,856,016	1,856,487	1,864,633	1,874,509	1,878,700	1,872,355	1,860,737
Difference	22,246	22,717	30,863	40,739	44,930	38,585	26,967
Percentage	1.2%	1.2%	1.7%	2.2%	2.5%	2.1%	1.5%

4A.4.3 2045 CBD Tolling Alternative

This section compares key measures for the horizon year (2045) forecasts with and without the Project. Manhattan CBD tolls in 2045 are assumed to grow consistent with inflation between 2023 and 2045. Socioeconomic conditions from 2045 are provided by NYMTC and are consistent with the NYMTC 2017 Regional Transportation Plan.

Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables," provides detailed statistics for each of the forecasts.

Table 4A-11 and Table 4A-12 show the daily vehicles[21] entering or passing through the Manhattan CBD by tolling scenario for 2045. (Absolute number and percentage change compared to the No Action Alternative are shown.) The horizon year (2045) analysis shows results similar to the opening year (2023). The largest total reduction in vehicles entering the Manhattan CBD would occur with Tolling Scenario E. Tolling Scenario E would also result in the largest reduction of vehicle crossings into the Manhattan CBD from Upper Manhattan at 60th Street and Brooklyn, while Tolling Scenario G would result in the largest reduction of vehicles crossing into the Manhattan CBD from Queens and New Jersey.

Table 4A-13 shows the regional VMT by tolling scenario, and Table 4A-14 shows the percentage change from the No Action Alternative for 2045. Tolling Scenario E would reduce VMT the most at the regional level, across the New York City subareas, and in the Manhattan CBD, the last of which would experience an 8.7 percent reduction in VMT. Localized increases in VMT would be experienced on the FDR Drive south of 60th Street under Tolling Scenarios A, B, and G because travelers would seek a free path around the Manhattan CBD using the FDR Drive and untolled ramps to the Brooklyn Bridge.

Table 4A-15 shows changes in the share of travelers driving, using transit, and walking and biking compared to the No Action Alternative for 2045. For all Manhattan CBD-related journeys, the change in the number of journeys by transit would be between 0.6 percent and 1.5 percent, which represents an increase of 20,000 to 50,000 transit passengers. Journeys on transit that begin outside the Manhattan CBD would increase up to 2.2 percent for Tolling Scenario E. Table 4A-16 breaks down the numbers of Manhattan CBD-related journeys for people in vehicles (drive alone and HOVs) and people in taxis and FHVs. Table 4A-17 shows the shift in all Manhattan CBD-related transit journeys compared to the No Action Alternative by tolling scenario for 2045.

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[21] Unless noted, the term "vehicles" in this subchapter refers to all on-road vehicles, including single-occupancy vehicles, HOVs, motorcycles, taxis, FHVs, buses, and trucks.

Table 4A-11. Daily Vehicles Entering the Manhattan CBD by Crossing Locations: No Action Alternative and Tolling Scenarios (2045)

CROSSING LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**288,876**	**236,408**	**239,250**	**226,243**	**212,735**	**211,409**	**216,884**	**233,737**
FDR Drive and West Side Highway/Route 9A*	168,499	159,420	161,258	155,262	149,310	148,025	151,119	158,853
West Side Avenues	31,920	25,300	25,946	24,035	21,961	22,067	22,849	25,529
East Side Avenues	88,457	51,688	52,046	46,946	41,464	41,317	42,916	49,355
Queens	**154,348**	**138,824**	**138,730**	**142,997**	**147,894**	**147,558**	**148,430**	**136,884**
Brooklyn	**192,604**	**172,530**	**173,247**	**159,307**	**143,498**	**141,693**	**143,711**	**169,120**
New Jersey	**114,867**	**100,060**	**99,252**	**107,304**	**113,390**	**109,619**	**112,875**	**96,443**
TOTAL	**750,695**	**647,822**	**650,479**	**635,851**	**617,517**	**610,279**	**621,900**	**636,184**

* In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

Table 4A-12. Percentage Change (compared to No Action Alternative) in Daily Vehicles Entering the Manhattan CBD by Crossing Locations and Tolling Scenario (2045)

CROSSING LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
60th Street	**-18.2%**	**-17.2%**	**-21.7%**	**-26.4%**	**-26.8%**	**-24.9%**	**-19.1%**
FDR Drive &and West Side Highway/Route 9A*	-5.4%	-4.3%	-7.9%	-11.4%	-12.2%	-10.3%	-5.7%
West Side Avenues	-20.7%	-18.7%	-24.7%	-31.2%	-30.9%	-28.4%	-20.0%
East Side Avenues	-41.6%	-41.2%	-46.9%	-53.1%	-53.3%	-51.5%	-44.2%
Queens	**-10.1%**	**-10.1%**	**-7.4%**	**-4.2%**	**-4.4%**	**-3.8%**	**-11.3%**
Brooklyn	**-10.4%**	**-10.1%**	**-17.3%**	**-25.5%**	**-26.4%**	**-25.4%**	**-12.2%**
New Jersey	**-12.9%**	**-13.6%**	**-6.6%**	**-1.3%**	**-4.6%**	**-1.7%**	**-16.0%**
TOTAL	**-13.7%**	**-13.3%**	**-15.3%**	**-17.7%**	**-18.7%**	**-17.2%**	**-15.3%**

* In this table, vehicle volumes reported as entering the Manhattan CBD on the FDR Drive and the West Side Highway/Route 9A are all vehicles traveling south on these facilities at 60th Street regardless of whether the vehicle eventually enters the Manhattan CBD from one of these facilities. Some vehicles reported in this table may use the West Side Highway/Route 9A and the FDR Drive to access the Hugh L. Carey Tunnel or Brooklyn Bridge without ever entering the Manhattan CBD. These volumes are reported in this manner to be consistent with how vehicle count data is published in the annual NYMTC *Hub Bound Travel Data Report*.

Table 4A-13. Daily Vehicle-Miles Traveled: No Action Alternative and Tolling Scenarios (2045)

LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**134,186,361**	**133,549,102**	**133,603,123**	**133,407,441**	**133,011,541**	**132,941,187**	**133,056,675**	**133,576,575**
New York City	49,748,914	49,306,506	49,361,708	49,206,260	48,917,855	48,908,967	49,014,661	49,271,140
Manhattan CBD	3,402,711	3,173,972	3,199,881	3,156,249	3,117,142	3,106,570	3,147,541	3,144,017
CBD Core	1,262,019	1,211,069	1,219,101	1,222,077	1,236,236	1,230,340	1,246,015	1,197,152
Peripheral Highways (south of 60th Street; excluded from the toll)	2,140,692	1,962,903	1,980,780	1,934,172	1,880,906	1,876,230	1,901,526	1,946,865
West Side Highway/Route 9A	647,671	554,316	562,018	528,271	500,214	499,855	509,900	550,459
FDR Drive	758,659	760,056	770,395	754,497	733,879	739,383	743,921	763,263
Bridges & Tunnels	734,362	648,531	648,367	651,404	646,813	636,992	647,705	633,143
NYC Subarea 1 (see Figure 4A-2)	2,349,929	2,195,311	2,199,825	2,155,278	2,113,309	2,104,806	2,123,309	2,173,895
NYC Subarea 2 (see Figure 4A-2)	7,142,863	7,086,769	7,098,540	7,060,838	7,013,071	7,012,113	7,032,663	7,083,658
NYC Subarea 3 (see Figure 4A-2)	36,853,411	36,850,454	36,863,462	36,833,895	36,674,333	36,685,478	36,711,148	36,869,570
Long Island Counties (2)	**46,813,526**	**46,752,292**	**46,709,696**	**46,716,462**	**46,732,209**	**46,699,238**	**46,688,529**	**46,757,385**
New York Counties North of New York City (5)	**37,623,921**	**37,490,304**	**37,531,719**	**37,484,719**	**37,361,477**	**37,332,982**	**37,353,485**	**37,548,050**
New Jersey Counties (14)	**107,907,842**	**107,914,688**	**107,948,940**	**108,040,676**	**107,970,946**	**107,950,075**	**108,024,196**	**107,882,082**
Connecticut Counties (2)	**35,063,470**	**35,045,234**	**35,006,855**	**35,042,347**	**35,004,182**	**35,002,445**	**34,998,648**	**35,059,459**
TOTAL	**277,157,673**	**276,509,024**	**276,558,918**	**276,490,464**	**275,986,669**	**275,893,707**	**276,079,519**	**276,518,116**

Note: The number of counties are indicated within parentheses ( ).

Table 4A-14. Percentage Change (compared to No Action Alternative) in Daily Vehicle-Miles Traveled by Tolling Scenario (2045)

LOCATIONS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**-0.5%**	**-0.4%**	**-0.6%**	**-0.9%**	**-0.9%**	**-0.8%**	**-0.5%**
New York City	-0.9%	-0.8%	-1.1%	-1.7%	-1.7%	-1.5%	-1.0%
Manhattan CBD	-6.7%	-6.0%	-7.2%	-8.4%	-8.7%	-7.5%	-7.6%
CBD Core	-4.0%	-3.4%	-3.2%	-2.0%	-2.5%	-1.3%	-5.1%
Peripheral Highways (south of 60th Street; excluded from the toll)	-8.3%	-7.5%	-9.6%	-12.1%	-12.4%	-11.2%	-9.1%
West Side Highway/Route 9A	-14.4%	-13.2%	-18.4%	-22.8%	-22.8%	-21.3%	-15.0%
FDR Drive	0.2%	1.5%	-0.5%	-3.3%	-2.5%	-1.9%	0.6%
Bridges & Tunnels	-11.7%	-11.7%	-11.3%	-11.9%	-13.3%	-11.8%	-13.8%
NYC Subarea 1 (see Figure 4A-2)	-6.6%	-6.4%	-8.3%	-10.1%	-10.4%	-9.6%	-7.5%
NYC Subarea 2 (see Figure 4A-2)	-0.8%	-0.6%	-1.1%	-1.8%	-1.8%	-1.5%	-0.8%
NYC Subarea 3 (see Figure 4A-2)	0.0%	0.0%	-0.1%	-0.5%	-0.5%	-0.4%	0.0%
Long Island Counties (2)	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.3%**	**-0.1%**
New York Counties North of New York City (5)	**-0.4%**	**-0.2%**	**-0.4%**	**-0.7%**	**-0.8%**	**-0.7%**	**-0.2%**
New Jersey Counties (14)	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**0.0%**	**0.1%**	**0.0%**
Connecticut Counties (2)	**-0.1%**	**-0.2%**	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**0.0%**
TOTAL	**-0.2%**	**-0.2%**	**-0.2%**	**-0.4%**	**-0.5%**	**-0.4%**	**-0.2%**

Note: The number of counties are indicated within parentheses ( ).

Table 4A-15. Daily Manhattan CBD Journey Mode Share: No Action Alternative and Tolling Scenarios (2045)

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Beginning Outside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	17.7%	16.6%	16.9%	16.4%	15.7%	15.5%	15.9%	16.4%
Transit	79.7%	80.8%	80.5%	81.0%	81.7%	81.9%	81.5%	81.0%
Walk and Bike	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
Change in Transit Share	—	1.1%	0.8%	1.3%	2.0%	2.2%	1.8%	1.3%
Beginning Inside the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	29.7%	28.3%	28.7%	28.1%	27.2%	27.1%	27.7%	27.6%
Transit	52.1%	53.0%	52.7%	53.1%	53.9%	53.8%	53.4%	54.0%
Walk and Bike	18.2%	18.7%	18.6%	18.8%	18.9%	19.1%	18.9%	18.4%
Change in Transit Share	—	0.9%	0.6%	1.0%	1.8%	1.7%	1.3%	1.9%
Within the Manhattan CBD								
Auto (including HOV, Taxi, FHV)	6.9%	7.0%	7.1%	7.0%	7.0%	7.0%	6.9%	6.9%
Transit	27.4%	27.4%	27.3%	27.4%	27.5%	27.5%	27.5%	27.8%
Walk and Bike	65.7%	65.6%	65.6%	65.6%	65.5%	65.5%	65.6%	65.2%
Change in Transit Share	—	0.0%	-0.1%	0.0%	0.1%	0.1%	0.1%	0.4%
All Manhattan CBD-Related Journeys								
Auto (including HOV, Taxi, FHV)	15.3%	14.5%	14.7%	14.3%	13.8%	13.7%	13.9%	14.3%
Transit	62.9%	63.7%	63.5%	63.8%	64.3%	64.4%	64.2%	64.0%
Walk and Bike	21.8%	21.8%	21.8%	21.9%	21.9%	21.9%	21.9%	21.8%
Change in Transit Share	—	0.8%	0.6%	0.9%	1.4%	1.5%	1.3%	1.1%

Table 4A-16. Daily Manhattan CBD-Related Auto-Based Vehicle Person-Journeys: No Action Alternative and Tolling Scenarios (2045)

MODE	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Private Vehicles (drive alone and HOVs)	413,933	397,688	397,043	388,905	380,950	371,699	374,270	393,717
	Difference	-16,245	-16,890	-25,028	-32,983	-42,234	-39,663	-20,216
	Percentage	-3.9%	-4.1%	-6.0%	-8.0%	-10.2%	-9.6%	-4.9%
Taxi/FHV	65,930	57,711	65,695	61,423	51,777	57,977	64,241	56,056
	Difference	-8,219	-235	-4,507	-14,153	-7,953	-1,689	-9,874
	Percentage	-12.5%	-0.4%	-6.8%	-21.5%	-12.1%	-2.6%	-15.0%
TOTAL	**479,863**	**455,399**	**462,738**	**450,328**	**432,727**	**429,676**	**438,511**	449,773
	Difference	**-24,464**	**-17,125**	**-29,535**	**-47,136**	**-50,187**	**-41,352**	-30,090
	Percentage	**-5.1%**	**-3.6%**	**-6.2%**	**-9.8%**	**-10.5%**	**-8.6%**	-6.3%

Note: Table includes only motorized journeys.

Table 4A-17. Daily Manhattan CBD-Related Transit Journeys: No Action Alternative and Tolling Scenarios (2045)

NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
1,990,024	2,014,453	2,011,180	2,021,324	2,033,609	2,038,364	2,033,022	2,018,632
Difference	24,429	21,156	31,300	43,585	48,340	42,998	28,608
Percentage	1.2%	1.1%	1.6%	2.2%	2.4%	2.2%	1.4%

4A.4.4 CBD Tolling Alternative Tolling Scenario Summaries

All tolling scenarios within the CBD Tolling Alternative would result in travel pattern changes that would support congestion relief: reduced automobile and truck trips to the Manhattan CBD, reduced VMT to and within the Manhattan CBD and regionally, and a shift from auto trips to transit.[22] Percentage reductions in 2023 vehicle trips entering the Manhattan CBD range from 15.4 percent (Tolling Scenario A) to 19.9 percent (Tolling Scenario E; see **Table 4A-5**). As summarized in **Chapter 2, "Project Alternatives,"** the primary differences revolve around the magnitude and the distribution of the reductions resulting from the toll rates and potential crossing credits, which vary by tolling scenario. **Appendix 4A.2, "Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables,"** describes the opening year (2023) travel pattern changes for each tolling scenario followed by horizon year (2045) travel pattern changes for each tolling scenario compared to the No Action Alternative, and also provides details for both the 2023 and 2045 results. While the results of the 2045 model runs are different in terms of actual numbers (because they reflect the longer-term background growth in the model's forecast), the patterns from tolling scenario to tolling scenario are consistent between 2023 and 2045.

4A.4.5 Key Findings

The BPM assessment of regional travel demand and trip characteristics shows that implementing the CBD Tolling Alternative would reduce vehicular traffic within the Manhattan CBD compared to the No Action Alternative in all tolling scenarios analyzed. Based on the BPM, which looks at the time and cost associated with a trip-making decision, the imposition of a Manhattan CBD toll would reduce the number of vehicles entering the Manhattan CBD compared to the No Action Alternative for both the 2023 and the longer-term 2045 analysis years.

With the CBD Tolling Alternative, total regional VMT and vehicle-hours traveled would be reduced. The largest changes would occur in the Manhattan CBD and would diminish farther away from the Manhattan CBD. Roughly three-quarters of the auto-trip reductions into and through the Manhattan CBD would result from travelers avoiding the Manhattan CBD for through-trips (e.g., Jersey City to Brooklyn). These trips either would switch modes or, more often, would find alternative paths around the Manhattan CBD. Other auto-trip reductions would result from people switching modes for trips into the Manhattan CBD. Modeling of the CBD Tolling Alternative indicates that drivers would have three basic ways to avoid paying the Manhattan CBD toll:

- Switch to another mode such as transit.
- Choose a new and different path to avoid the Manhattan CBD for vehicular through-trips.
- Choose not to make the trip to the Manhattan CBD.

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22 Buses on the roadways are included in the calculation of volumes and VMT. However, the number of buses reflects the No Action Alternative and does not vary between the No Action Alternative and CBD Tolling Alternative. This is because the model does not include additional buses that may be needed to serve increased transit demand. **Subchapter 4C, "Transportation: Transit"** provides an analysis of transit demand.

AUTO TRIPS

Across all the tolling scenarios, non-taxi, Manhattan CBD-related auto-based person-journeys would decline between 4 percent and 10 percent in the 2023 analysis year, representing 16,000 to 42,000 fewer people accessing the Manhattan CBD in a private automobile[23] on an average weekday (see **Table 4A-9**). Among drivers who would continue to drive to the Manhattan CBD, some would choose different routings under tolling scenarios that introduce crossing credits.

For Tolling Scenarios A and D, taxis and FHVs would have a higher sensitivity to the Manhattan CBD toll because they would be charged each time they enter the Manhattan CBD, while private automobiles would be charged just once per day. Overall, the total decline in auto-based person-journeys to the Manhattan CBD would be between 24,000 and 46,000 person-journeys for Tolling Scenario A and Tolling Scenario D.

Subchapter 4B, "Transportation: Highways and Local Intersections," examines the potential impacts on highways and local intersections from changes in traffic volumes projected under the CBD Tolling Alternative.

TIME-OF-DAY SHIFTING

Because the traffic in the Manhattan CBD builds throughout the day, extending well into the evening, six of the seven tolling scenarios considered in this analysis (Tolling Scenarios A through E, plus Tolling Scenario G), have extended peak periods from 6:00 a.m. to 8:00 p.m. Tolling Scenario F has peak periods more consistent with those on the surrounding bridges and tunnels, from 6:00 a.m. to 10 a.m. and 4:00 p.m. to 8:00 p.m.

While arguably less important for this Project, which aims to move people from their vehicles to transit, time of day still has a role to play and is helpful to consider briefly.

In 2005, PANYNJ studied the impact of peak-period tolling on trip diversions to the off-peak period.[24] The study evaluated whether travelers shifted to the off-peak period after the PANYNJ implemented a $1 discount (20 percent lower than the peak period) for off-peak travel in 2001 on its roadway facilities entering New York City. The key findings relevant to this study indicated the following:

- Some people switched travel to the preceding hour in the AM peak.
- Trucks did not change their time-of-day choice in response to the 20 percent price difference, in part because their delivery times are dependent upon receivers and shippers.[25]

The study indicated about 10 percent of travelers were willing to shift their travel times based on time-of-day tolling, with many travelers indicating they do not have flexibility to change their travel times. The

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23 Person-journey reductions in private automobile includes drive-alone person-journeys and HOV or carpool person-journeys. Carpool person-journeys result in fewer vehicular trips than person-journeys due to higher auto occupancy.

24 Holguín-Veras, J., K. Ozbay, and A. C. de Cerreño. (2005). *Evaluation Study of Port Authority of New York and New Jersey's Time of Day Pricing Initiative*.

25 The CBD tolling scenarios would offer a deeper reduction in the overnight (50 percent lower than peak-travel), which would encourage some travelers and some trucks to shift.

average amount of time travelers were willing to arrive early was 20 minutes, and the average amount of time travelers were willing or able to be late was 12 minutes.

AUTO AND TRUCK TRAVEL-TIME SAVINGS

The Project would alter the driving paths people choose to access the Manhattan CBD. Tolling Scenario A does not include any crossing credits and would result in a general reduction of auto travel to the Manhattan CBD from across the region. Due to reduced congestion, auto travel times to the Manhattan CBD would be faster in each tolling scenario from most areas of the region compared to the No Action Alternative. Some trips would experience longer auto travel times to the Manhattan CBD due to increased diversionary trips avoiding the Manhattan CBD via highways in the Bronx and Staten Island. For example, auto and truck trips from Connecticut would be slower to the Manhattan CBD due to increased diversionary traffic on the Cross Bronx Expressway and Bruckner Expressway. Longer auto and truck travel times from Central New Jersey and Staten Island would result from increased traffic on the Staten Island Expressway.

Crossing credits would make the Hugh L. Carey and Queens-Midtown Tunnels relatively more attractive to the Brooklyn, Manhattan, and Williamsburg Bridges compared to Tolling Scenario A because the net toll paid by a driver using a tolled tunnel would be closer to the cost of using one of the untolled bridges. This leveling of net tolls across the East River would increase traffic in the East River tunnels and decrease traffic on the East River bridges. As a result of this increased tunnel traffic, in tolling scenarios with crossing credits, some auto and truck travel times from Long Island to the Manhattan CBD would increase due to additional congestion in the Queens-Midtown Tunnel.

Similar diversions would also occur in Northern New Jersey and Southern Orange and Rockland Counties because traffic would move to the Lincoln and Holland Tunnels from the George Washington Bridge to take advantage of the tunnel crossing credits in Tolling Scenarios C, D, and E. However, traffic volumes at the Lincoln and Holland Tunnels still decrease in all scenarios.

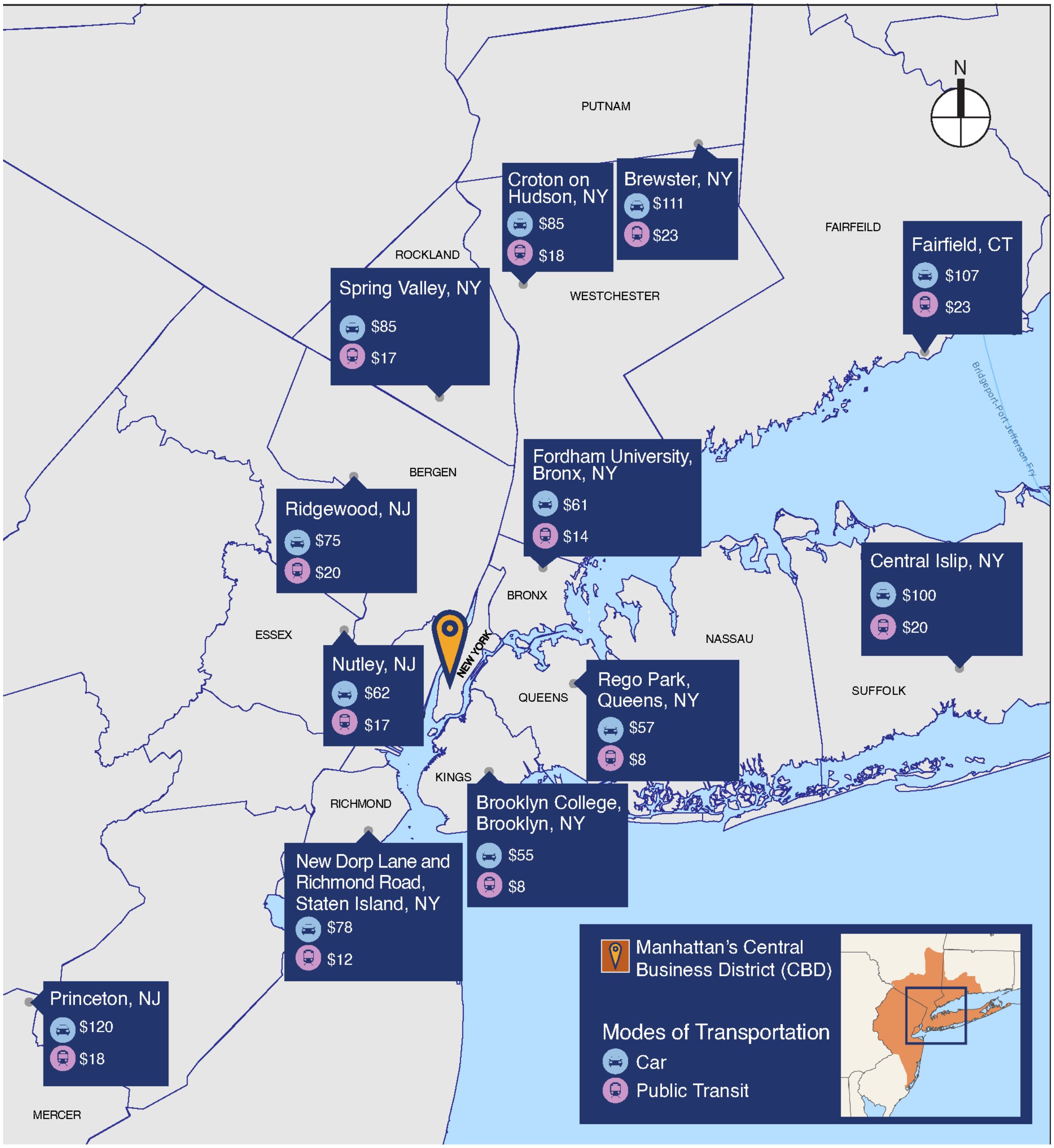
AUTO AND TRANSIT COMMUTE COSTS

The monetary cost of accessing the Manhattan CBD by auto versus transit is also important to take note of. The Manhattan CBD is the anchor of the regional economy and a destination for millions of daily trips. As discussed in many chapters of this EA, the vast majority of these trips are made via public transportation, but there are also tens of thousands of trips made by auto commuters. There are likely many reasons why a person may prefer to drive to Manhattan, but choosing to drive is an expensive undertaking for many reasons—notably extra vehicle operating costs due to congestion, existing tolls on various facilities, and limited and expensive parking.

To establish perspective, a representational typical commute from throughout the region has been evaluated to estimate the daily average cost of that trip either by auto or by transit. As shown in Figure 4A-3, this includes locations in New York City (Bronx, Queens, Brooklyn, and Staten Island), on Long Island (Central Islip), in New York communities to the north of New York City (Spring Valley, Croton-on-Hudson, Brewster), in New Jersey (Ridgewood to the north, Nutley in the central area, and Princeton to the south), and in Connecticut (Fairfield County). The average cost of each representative trip was developed using trip destinations to both a lower (World Trade Center) and upper (42nd Street, Bryant Park) Manhattan CBD location, which reflect different costs due to different routing and transit options. For these trips, when the cost of mileage, parking, and tolls are factored in, it is less expensive to take transit to the Manhattan CBD than to use a car.

For those who continue to use a car to travel to the Manhattan CBD, the overall trip cost would increase with the CBD Tolling Alternative because the CBD toll would be applied. During early public outreach, concern was raised by drivers who already pay tolls on tunnels and bridges before they enter the Manhattan CBD. To better understand the cost implications for drivers currently paying tolls to access the Manhattan CBD, Table 4A-18 provides information on the percentage increase in the cost of travel by auto that drivers could expect under the CBD Tolling Alternative for each tolling scenario for a representative trip to the World Trade Center. Table 4A-19 further provides sample toll costs for those same trips when using different crossing facilities.

Figure 4A-3. Representative Commuting Costs in the Regional Study Area



Source: WSP, Best Practice Model, Google Maps

Notes: See **Appendix 4A.3, "Transportation: Representative Commuting Costs by Auto and Transit"** for more detail on costs shown here.

1. Cost based on auto distance as measured by the BPM travel demand model and averaged for two destinations within the CBD (World Trade Center and 42nd Street, Bryant Park).
2. A typical driving route and transit route were obtained by reviewing recommended directions from Google Maps for an approximately 7:30 a.m. commute trip (and were compared for consistency with the BPM results).
3. Costs include the daily round-trip mileage expense using IRS Q1 2022 auto operating rate of 58.5 cents per mile, all applicable tolls, and parking.
4. For transit, the costs include the single or combination of fares and an added level of origin parking and destination travel cost.

Table 4A-18. Percentage Change in Round-Trip Driving Costs for Representative Route by Auto to the World Trade Center Using E-ZPass at 7:30 a.m.

COUNTY	ORIGIN	CROSSING USED FOR ROUNDTRIP	NO ACTION ALTERNATIVE TRAVEL COST	CBD TOLLING ALTERNATIVE - % INCREASE IN TRAVEL COST BY TOLLING SCENARIO (CBD TOLL FOR E-ZPASS PEAK AUTO)						
				SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
				Base Plan ($9)	Base Plan with Caps and Exemptions ($10)	Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($14)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD ($19)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	Base Plan with Same Tolls for All Vehicle Classes ($12)
The Bronx	Fordham University	RFK	$62	14.9%	16.4%	22.6%	30.7%	37.2%	16.0%	18.7%
Brooklyn	Brooklyn College	HCT	$54	17.1%	18.9%	13.9%	11.0%	18.4%	18.4%	21.6%
Queens	Rego Park	QMT	$59	15.6%	17.2%	12.6%	10.0%	16.8%	16.8%	19.7%
Staten Island	New Dorp	HCT	$75	12.3%	13.6%	10.0%	7.9%	13.2%	13.2%	15.5%
Suffolk	Central Islip	QMT	$102	9.0%	9.9%	7.3%	5.8%	9.7%	9.7%	11.4%
Rockland	Spring Valley	GWB	$86	10.7%	11.8%	16.3%	22.1%	26.8%	11.5%	13.5%
Westchester	Croton-on-Hudson	HHB	$86	10.6%	11.7%	16.2%	22.0%	26.6%	19.7%	13.4%
Putnam	Brewster	RFK	$116	7.9%	8.8%	12.1%	16.4%	19.9%	8.6%	10.0%
Bergen	Ridgewood	HT	$76	12.1%	13.3%	9.8%	7.8%	13.0%	13.0%	15.2%
Essex	Nutley	HT	$64	14.4%	15.8%	11.6%	9.2%	15.4%	15.4%	18.1%
Mercer	Princeton	HT	$116	7.9%	8.7%	6.4%	5.1%	8.5%	8.5%	10.0%
Fairfield	Fairfield	RFK	$113	8.1%	9.0%	12.4%	16.8%	20.3%	8.8%	10.3%

Source: WSP, BPM, Google Maps

Notes: See **Appendix 4A.3, "Transportation: Representative Commuting Costs by Auto and Transit"** for more detail on the No Action Alternative costs in this table.

1. Auto costs based on the auto route distance as measured by the BPM travel demand model.
2. A typical driving route was obtained by reviewing recommended directions from Google Maps for an approximately 7:30 a.m. commute trip (and were compared for consistency with the BPM results).
3. Costs include the daily round-trip mileage expense using IRS Q1 2022 auto operating rate of 58.5cents per mile, all applicable tolls and parking.
4. GWB–George Washington Bridge; HCT–Hugh L. Carey Tunnel; HHB–Henry Hudson Bridge; HT–Holland Tunnel; QMT–Queens Midtown Tunnel; RFK–Robert F. Kennedy Bridge.

Table 4A-19. Total Tolls, Round-Trip, for Representative Routes by Auto to the World Trade Center Using E-ZPass at 7:30 a.m.

COUNTY	ORIGIN	CROSSING USED FOR ROUNDTRIP[1]	NO ACTION ALTERNATIVE TOLL COST, ROUND-TRIP[2]	CBD TOLLING ALTERNATIVE – TOTAL TOLLS BY TOLLING SCENARIO(CBD TOLL FOR E-ZPASS PEAK AUTO)						
				SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
				Base Plan ($9)	Base Plan with Caps and Exemptions ($10)	Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($14)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD ($19)	High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions ($23)	Base Plan with Same Tolls for All Vehicle Classes ($12)
The Bronx	Fordham University	Robert F Kennedy Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$23.00	$25.10
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Brooklyn	Brooklyn College	Hugh L. Carey Tunnel	$13.10	$22.10	$23.10	$20.55	$19.00	$23.00	$23.00	$25.10
		Brooklyn Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Queens	Rego Park	Queens Midtown Tunnel	$13.10	$22.10	$23.10	$20.55	$19.00	$23.00	$23.00	$25.10
		Brooklyn Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Staten Island	New Dorp	VNB + Hugh L. Carey Tunnel	$26.20	$35.20	$36.20	$33.65	$32.10	$36.10	$36.10	$38.20
		VNB + Brooklyn Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$36.10	$25.10
Suffolk	Central Islip	Queens Midtown Tunnel	$13.10	$22.10	$23.10	$20.55	$19.00	$23.00	$23.00	$25.10
		Brooklyn Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Rockland	Spring Valley	George Washington Bridge	$13.75	$22.75	$23.75	$27.75	$32.75	$36.75	$23.65	$25.75
		MCB[3] + Willis Ave Bridge	$3.45	$12.45	$13.45	$17.45	$22.45	$26.45	$26.45	$15.45
Westchester	Croton-on-Hudson	Henry Hudson Bridge	$6.00	$15.00	$16.00	$20.00	$25.00	$29.00	$23.00	$18.00
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Putnam	Brewster	Robert F Kennedy Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$23.00	$25.10
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00
Bergen	Ridgewood	George Washington Bridge	$13.75	$22.75	$23.75	$27.75	$32.75	$36.75	$23.65	$25.75
		Lincoln or Holland Tunnel	$13.75	$22.75	$23.75	$21.20	$19.65	$23.65	$23.65	$25.75
Essex	Nutley	Lincoln or Holland Tunnel	$13.75	$22.75	$23.75	$21.20	$19.65	$23.65	$23.65	$25.75
Mercer	Princeton	OBX + VNB + HCT[4]	$39.95	$48.95	$49.95	$47.40	$45.85	$49.85	$49.85	$51.95
		NJ Turnpike + Holland Tunnel	$23.08	$32.08	$33.08	$30.53	$28.98	$32.98	$32.98	$35.08
Fairfield	Fairfield	Robert F Kennedy Bridge	$13.10	$22.10	$23.10	$27.10	$32.10	$36.10	$23.00	$25.10
		Willis Ave Bridge	$0	$9.00	$10.00	$14.00	$19.00	$23.00	$23.00	$12.00

Sources: TBTA, PANYNJ, NYSTA, Google Maps
1 A typical driving route was obtained by reviewing recommended directions from Google Maps for both toll and non-toll choices, where available.
2 Toll rates as of July 2022.
3 MCB–Mario Cuomo Bridge. At the Mario Cuomo Bridge, the commuter E-ZPass cost of $3.45 is used here. The resident cost is $4.75; standard E-ZPass is $5.75; and out of state E-ZPass pays $6.61.
4 OBX-Outerbridge Crossing; VNB–Verrazzano Narrows Bridge; HCT–Hugh L. Carey Tunnel.

BROOKLYN BRIDGE AND HUGH L. CAREY TUNNEL

The Brooklyn Bridge and Hugh L. Carey Tunnel would provide access across the East River to and from the FDR Drive and the West Side Highway/Route 9A that would not be subject to the Manhattan CBD toll. The Battery Park Underpass is not tolled and would not be tolled in the future, and therefore offers an untolled connection between the FDR Drive and the West Side Highway/Route 9A around the southern edge of Manhattan.

These Manhattan CBD toll exemptions for the Hugh L. Carey Tunnel ramps to the West Side Highway/Route 9A and Brooklyn Bridge ramps to the FDR Drive would provide a toll-free route around the Manhattan CBD to and from Brooklyn. Traffic from the Hugh L. Carey Tunnel and Brooklyn Bridge directly accessing Manhattan CBD streets would pay the Manhattan CBD toll. For all tolling scenarios, the total number of vehicles using the Brooklyn Bridge toward Manhattan would decrease, but volumes on the ramp connecting Manhattan-bound bridge traffic to the FDR Drive would increase (Table 4A-20). Tolling scenarios that provide crossing credits on TBTA facilities into the Manhattan CBD would subdue these increases, because crossing credits would increase the relative attractiveness of using TBTA tunnels.

Table 4A-20. Brooklyn Bridge Average Weekday Vehicle Volumes (Manhattan-Bound): No Action Alternative and Tolling Scenarios

DIRECTION	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Manhattan-Bound								
Main Span	58,976	55,180	54,883	50,181	45,361	44,995	44,691	55,096
Ramp to FDR Drive	39,415	44,690	44,718	44,293	42,337	42,155	41,830	45,270
Ramps to Manhattan CBD	19,164	10,091	9,767	5,491	2,626	2,442	2,463	9,428
Manhattan-Bound (Difference from No Action Alternative)								
Main Span	—	-3,796	-4,093	-8,795	-13,615	-13,981	-14,285	-3,880
Ramp to FDR Drive	—	5,275	5,303	4,878	2,922	2,740	2,415	5,855
Ramps to Manhattan CBD	—	-9,073	-9,397	-13,673	-16,538	-16,722	-16,701	-9,736

Note: Volumes in this table are results directly from the BPM. Subchapter 4B, "Transportation: Highways and Local Intersections," includes more detailed traffic engineering analysis with additional bridge capacity and operational restrictions, which are beyond the scope of regional analysis considered by the BPM.

Manhattan-bound volumes in the Hugh L. Carey Tunnel would increase for all tolling scenarios. For Tolling Scenario A and Tolling Scenario B, volume increases would result from increased demand to West Street and the FDR Drive via the Battery Park Underpass (Table 4A-21). This connection would not be subject to the Manhattan CBD toll in any of the tolling scenarios. For Tolling Scenarios C, D, E and F, use of the tunnel would also increase in response to the crossing credits for the TBTA tunnel toll. In these tolling scenarios, the increase in traffic would be derived from travelers diverted by the advantage of Manhattan CBD crossing credits offered by using the Hugh L. Carey Tunnel to access the Manhattan CBD.

Table 4A-21. Hugh L. Carey Tunnel Average Weekday Vehicle Volumes (Manhattan-Bound): No Action Alternative and Tolling Scenarios

DIRECTION	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Manhattan-Bound								
Volume	31,063	31,785	32,061	41,122	51,087	51,369	50,962	31,580
Manhattan-Bound (Difference from No Action Alternative)								
Volume	—	722	998	10,059	20,025	20,306	19,900	517

Note: Volumes in this table are results directly from the BPM. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** includes more detailed traffic engineering analysis with additional tunnel capacity and operational restrictions, which are beyond the scope of regional analysis considered by the BPM.

TRUCK TRIPS

BPM analysis of truck trips assumed that deliveries would still be made to restaurants, businesses, and residents regardless of Project implementation. The BPM assumed that trip origins and destinations of trucks and other commercial vehicles would remain consistent across all the tolling scenarios. As a result, all modeled reductions in trucks into the Manhattan CBD would result from through-trips diverting around the Manhattan CBD, balancing increased cost to access the Manhattan CBD and increased travel times to avoid the Manhattan CBD. The BPM analysis also assumed that trucks would use only valid truck routes.

The model estimates a reduction in trucks through the Manhattan CBD ranging from approximately 1,700 trucks in Tolling Scenario G to nearly 6,800 trucks in Tolling Scenario F compared to the No Action Alternative (**Table 4A-22**). Tolling Scenario F would have the highest tolls for trucks entering the Manhattan CBD.

Table 4A-22. Average Daily Truck Trips through the Manhattan CBD: No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Truck Trips Through Manhattan CBD	8,392	3,746	3,424	3,139	2,705	1,788	1,607	6,657
Difference	—	-4,645	-4,967	-5,253	-5,687	-6,604	-6,784	-1,734

In addition to the BPM analysis, an assessment of truck travel changes from the congestion pricing programs in London and Stockholm were reviewed, along with findings from academic research on the propensity of shippers to switch toward overnight (or lower-toll period) deliveries once the Project is underway. Most importantly, the London and Stockholm post-implementation studies suggest that truck delivery companies continue to deliver their goods regardless of a congestion pricing program. Commercial stores still need their goods delivered. In some instances when reduced congestion in the core could improve travel times, some truck companies switched their deliveries into the peak period to deliver their goods.

For example, the congestion pricing program trial in Stockholm resulted in more truck deliveries in the middle of the day between commuting peak hours. Stockholm truck distribution companies were surveyed, and feedback showed that companies felt positively about the program regarding reduced congestion and more efficient deliveries.[26]

Transport for London reported that approximately 10 percent of business sectors changed their policies on the timing of deliveries in response to the congestion pricing program. Like Stockholm, these temporal changes have resulted in truck companies either taking advantage of reduced congestion or avoiding congestion charges altogether.[27]

A report published in 2011[28] concludes that truck delivery carriers are limited in their ability to change delivery times because receivers need to agree to overnight deliveries. Receivers are not likely to choose overnight delivery times because there are too many disadvantages, ranging from lack of staff to limited lighting and security. As a result, trucking and delivery companies have limited opportunities to shift their delivery schedules to lower tolled times of day. **Chapter 6, "Economic Conditions,"** provides an analysis of the economic effects of the CBD Tolling Alternative on truck delivery companies and the receivers of their deliveries.

VEHICLE-MILES TRAVELED

Under all tolling scenarios, daily VMT would decline across the 28-county region, with the greatest declines occurring within the Manhattan CBD (see **Table 4A-7**). For the tolling scenarios analyzed, higher toll rates lead to more daily VMT reductions. Tolling scenarios with crossing credits temper daily VMT reductions in the Manhattan CBD, while leading to greater reductions outside of the Manhattan CBD. Within the Manhattan CBD Core, daily VMT would decline from 1.22 million in the No Action Alternative to between 1.14 million and 1.18 million (a decrease of between 2.8 percent and 6.2 percent). For the entire Manhattan CBD, daily VMT would decline from 3.24million in the No Action Alternative to between 2.95 million and 3.02 million (a decrease of between 9.2 percent and 7.1 percent). In 2023 for all tolling scenarios, the regional daily VMT would decline from 254.7 million to between 253.6 million and 254.2 million daily VMT (a decrease of between 0.4 percent and 0.2 percent).

Due to traffic diverting around Manhattan to avoid the Manhattan CBD toll, VMT would increase on Staten Island for all tolling scenarios and in the Bronx for Tolling Scenarios A, B, C, F, and G. **Table 4A-25 and Table 4A-27** present the quantity of these changes. Through the early outreach for the Project, the Project Sponsors heard from environmental justice communities that they would like a better understanding of the composition of vehicles that would be responsible for these VMT increases. Thus, **Table 4A-26** and

[26] Congestion Charge Secretariat, City of Stockholm. Facts and results from the Stockholm Trials. December 2006. http://www.planetizen.com/files/Final%20Report_The%20Stockholm%20Trial.pdf.

[27] Transport for London. Impacts monitoring: Second Annual Report. April 2004. http://content.tfl.gov.uk/impacts-monitoring-report-2.pdf.

[28] Holguín-Veras, José. (2011). Urban delivery industry response to cordon pricing, time-distance pricing, and carrier-receiver policies in competitive markets. Transportation Research Part A: Policy and Practice. Volume 45, Issue 8, 2011, pp. 802-824, ISSN 0965-8564, https://doi.org/10.1016/j.tra.2011.06.008.

Table 4A-28 provide the vehicle types related to these changes for Staten Island and the Bronx, respectively.

Some increases in VMT would occur within or near environmental justice communities. **Chapter 17, "Environmental Justice,"** discusses a broader description of these increases. However, VMT changes were tabulated for environmental justice and non-environmental justice communities and are presented in Table 4A-23 and Table 4A-24 for the various subareas of the region. A comparison of the two tables reveals the following:

- Within New York City, non-environmental justice areas would have slightly higher reductions in VMT in all but tolling scenario F compared to environmental justice areas.
- Within the Manhattan CBD core, environmental justice areas would have higher reductions in VMT for all tolling scenarios compared to non-environmental justice areas.
- Within NYC Subarea 1, environmental justice areas would have slightly lower reductions in VMT compared to non-environmental justice areas for Tolling Scenarios A, B, and G (tolling scenarios without crossing credits) and slightly higher reductions in VMT compared to non-environmental justice areas for Tolling Scenarios C, D, E, and F (tolling scenarios with crossing credits).
- Within NYC Subarea 2, environmental justice areas would experience similar but slightly lower reductions in VMT compared to non-environmental justice areas, in all but Tolling Scenario F.
- Within NYC Subarea 3, environmental justice areas would experience slight reductions in VMT in Tolling Scenarios C, D, E, and F, while non-environmental justice areas would experience increases in VMT.
- For all New York counties, environmental justice areas would experience slightly higher reductions in VMT compared to non-environmental justice areas for Tolling Scenarios C, D, E, and F.

For all Long Island counties, environmental justice areas would experience similar or slightly higher reductions in VMT compared to non-environmental justice areas for all tolling scenarios. For all New Jersey and Connecticut counties, environmental justice areas would experience similar changes in VMT compared to non-environmental justice areas for all tolling scenarios.

MODE SHIFT TO TRANSIT

Some of the decline in auto access to the Manhattan CBD would translate to increases in transit trips. Transit trips (e.g., commuter rail, subway, bus, tram, and ferry) to the Manhattan CBD from outside the Manhattan CBD would increase between 1 percent and 2 percent, depending on the tolling scenario (see Table 4A-8). These transit trips represent an AM peak period (6:00 a.m. to 10:00 a.m.) increase of between 22,000 and 45,000 people each weekday. See **Subchapter 4C, "Transportation: Transit,"** for a more complete description of the changes in transit use.

Table 4A-23. Vehicle-Miles Traveled Percentage Changes by Tolling Scenario in Environmental Justice Census Tracts by Subarea (2023)

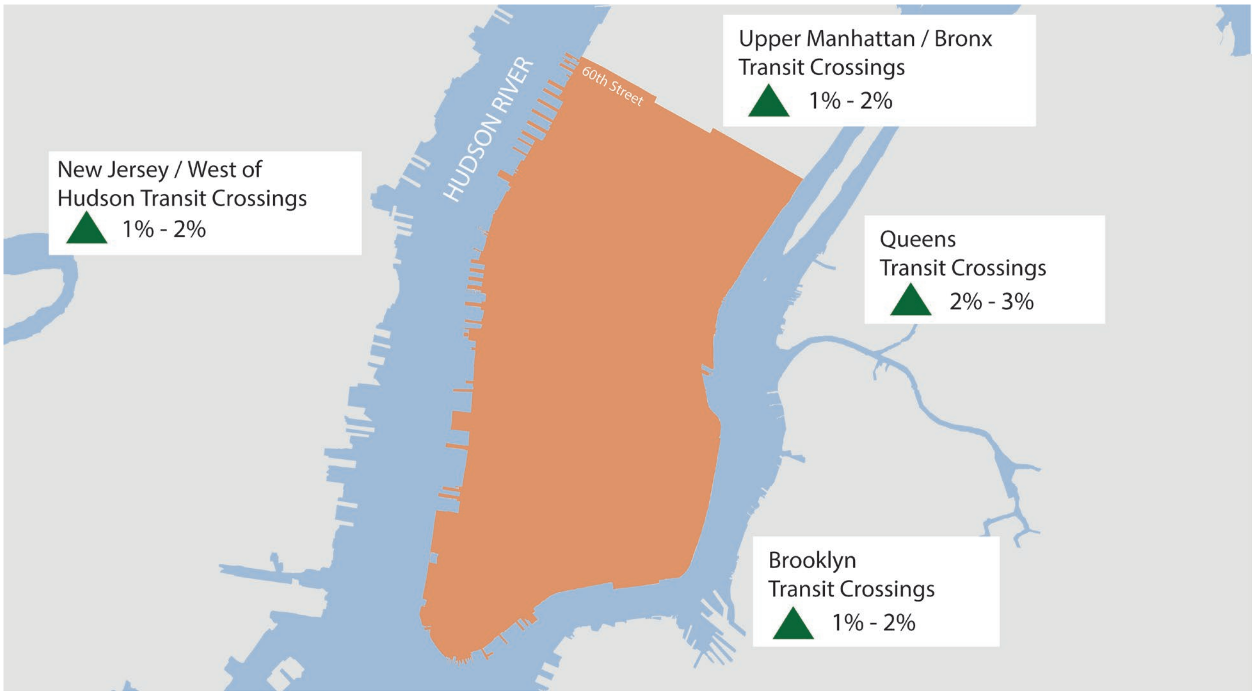
LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**54,496,693**	**-0.3%**	**-0.3%**	**-0.7%**	**-1.0%**	**-1.1%**	**-0.8%**	**-0.4%**
New York City	30,852,557	-0.5%	-0.4%	-1.0%	-1.4%	-1.5%	-1.2%	-0.5%
Manhattan CBD	1,048,542	-8.0%	-7.8%	-11.1%	-15.6%	-16.2%	-14.4%	-8.7%
CBD Core	338,339	-10.3%	-10.1%	-12.3%	-15.5%	-16.7%	-14.3%	-11.4%
Peripheral Highways (south of 60th Street; excluded from the toll)	710,203	-6.9%	-6.7%	-10.6%	-15.6%	-15.9%	-14.4%	-7.4%
West Side Highway/Route 9A	181,790	-12.8%	-12.4%	-15.0%	-18.3%	-19.0%	-16.2%	-13.6%
FDR Drive	338,626	1.6%	2.2%	0.8%	-0.8%	-0.1%	1.1%	2.0%
Bridges & Tunnels	189,787	-16.6%	-17.2%	-26.5%	-39.5%	-41.3%	-40.4%	-18.4%
NYC Subarea 1 (see Figure 4A-2)	871,420	-7.3%	-7.6%	-10.7%	-14.5%	-14.9%	-14.4%	-8.3%
NYC Subarea 2 (see Figure 4A-2)	3,992,349	-0.1%	0.0%	-0.7%	-1.5%	-1.6%	-1.2%	-0.2%
NYC Subarea 3 (see Figure 4A-2)	24,940,246	0.0%	0.1%	-0.3%	-0.3%	-0.4%	-0.2%	0.0%
Long Island Counties (2)	14,052,534	-0.1%	0.0%	-0.2%	-0.3%	-0.3%	-0.1%	-0.1%
New York Counties North of New York City (5)	9,591,602	-0.1%	-0.2%	-0.4%	-0.7%	-0.8%	-0.6%	-0.2%
New Jersey Counties (14)	**42,703,264**	**0.0%**	**0.0%**	**0.2%**	**0.2%**	**0.1%**	**0.2%**	**0.0%**
Connecticut Counties (2)	**8,274,823**	**-0.1%**	**-0.1%**	**-0.2%**	**-0.2%**	**-0.1%**	**0.0%**	**-0.2%**
TOTAL	**105,474,780**	**-0.2%**	**-0.2%**	**-0.3%**	**-0.5%**	**-0.5%**	**-0.3%**	**-0.2%**

Table 4A-24. Vehicle-Miles Traveled Percentage Changes by Tolling Scenario in Non-Environmental Justice Census Tracts by Subarea (2023)

LOCATIONS	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York State	**67,689,790**	**-0.4%**	**-0.4%**	**-0.6%**	**-0.6%**	**-0.7%**	**-0.4%**	**-0.5%**
New York City	16,279,182	-1.5%	-1.3%	-1.6%	-1.5%	-1.6%	-1.0%	-1.6%
Manhattan CBD	2,196,245	-7.6%	-7.5%	-6.6%	-5.4%	-5.9%	-3.6%	-8.3%
CBD Core	879,387	-3.6%	-3.5%	-1.7%	-0.7%	-1.5%	1.6%	-4.2%
Peripheral Highways (south of 60th Street; excluded from the toll)	1,316,858	-10.3%	-10.1%	-9.8%	-8.5%	-8.7%	-7.0%	-11.0%
West Side Highway/Route 9A	428,866	-17.8%	-17.3%	-21.0%	-21.5%	-20.9%	-18.6%	-17.9%
FDR Drive	382,055	-0.2%	0.4%	-1.2%	-3.2%	-2.6%	-0.8%	-0.1%
Bridges & Tunnels	505,937	-11.5%	-12.0%	-6.9%	-1.5%	-3.1%	-1.9%	-13.4%
NYC Subarea 1 (see Figure 4A-2)	1,346,653	-7.8%	-7.6%	-9.0%	-10.1%	-10.7%	-9.7%	-8.5%
NYC Subarea 2 (see Figure 4A-2)	2,668,602	-1.2%	-1.1%	-1.7%	-0.9%	-1.1%	-0.6%	-1.4%
NYC Subarea 3 (see Figure 4A-2)	10,067,682	0.7%	0.8%	0.6%	0.4%	0.4%	0.5%	0.8%
Long Island Counties (2)	27,533,010	0.1%	0.0%	0.0%	-0.2%	-0.2%	0.1%	0.0%
New York Counties North of New York City (5)	23,877,598	-0.2%	-0.2%	-0.5%	-0.6%	-0.8%	-0.5%	-0.3%
New Jersey Counties (14)	**54,874,836**	**0.0%**	**0.0%**	**0.2%**	**0.2%**	**0.1%**	**0.2%**	**0.1%**
Connecticut Counties (2)	**26,635,047**	**-0.1%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.1%**	**-0.2%**
TOTAL	**149,199,673**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.3%**	**-0.3%**	**-0.1%**	**-0.2%**

While **Table 4A-8** shows a more aggregate change in transit activity, **Figure 4A-4** shows a more detailed picture of the changes in transit trips (crossings) into the Manhattan CBD from different locations outside of the Manhattan CBD. All tolling scenarios would lead to an increase in transit trips from each location shown in the map.

Figure 4A-4. Change in Transit Crossings into the Manhattan CBD



Source: BPM, range of results across all tolling scenarios

DIVERSIONS TO OTHER ROUTES

With the CBD Tolling Alternative, some people who previously traveled through the Manhattan CBD in vehicle or truck would choose a different path to avoid the Manhattan CBD altogether. For example, a person traveling by car from Caldwell, New Jersey, to Lincoln Center in Manhattan typically uses the Lincoln Tunnel between New Jersey and New York. Under some of the tolling scenarios, that same person would likely choose to reroute across the George Washington Bridge to avoid the Manhattan CBD toll. Between 72 percent and 82 percent of the total traffic reductions in the Manhattan CBD would be from through-trips finding other paths that do not include the Manhattan CBD.

In addition, some drivers who would continue to drive to the Manhattan CBD would choose a different route based on the introduction of Manhattan CBD crossing credits. In tolling scenarios with crossing credits, some drivers would choose more direct paths using free or reduced crossing credits when the cost of the toll is crossing-credited against their CBD toll, thereby minimizing the cost differential of traffic on East River crossings. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** examines these specific highway- and intersection-based consequences and potential impacts of the CBD Tolling Alternative.

DIVERSION EFFECTS ON STATEN ISLAND

As a result of diversions, average daily traffic and congestion would increase in certain corridors outside of the Manhattan CBD. VMT, average daily traffic, and congestion in Staten Island would increase as a result of the CBD Tolling Alternative. This increase would be limited mostly to highways, with a minimum of change on local streets. In Staten Island, 92 percent of the total increase in VMT in Tolling Scenario A would be on highways (**Table 4A-25**). For tolling scenarios with crossing credits, the share of additional VMT on the highways in Staten Island would decline to 84 percent of the total increase.

On Staten Island highways, more than 90 percent of the increase in VMT would be caused by increased personal vehicle traffic, with the remaining percentage from commercial trucks in all tolling scenarios (**Table 4A-26**).

DIVERSION EFFECTS IN THE BRONX

As a result of diversions, average daily traffic and congestion would increase in certain corridors outside of the Manhattan CBD. In the Bronx, VMT would increase across Tolling Scenarios A, B, C, F, and G, with all the increase in VMT in the tolling scenarios occurring on highways (in each direction of travel) and ramps while local streets would have less VMT (**Table 4A-27**). In Tolling Scenarios A, B, C, F, and G, VMT in the Bronx would increase for personal vehicles, while VMT for commercial trucks would increase in all tolling scenarios except G (**Table 4A-28**).

During the public outreach phase of the Project, several commenters raised questions about the type and location of diversions in the Bronx, and particularly on the Cross Bronx Expressway, the Bruckner Expressway, and the Major Deegan Expressway. Additional analysis was conducted to address these questions, and it is presented here.

Increases in VMT in the Bronx would be driven largely by increases in VMT on the Cross Bronx Expressway between the Alexander Hamilton Bridge and the two Long Island Sound crossings (Whitestone and Throgs Neck Bridges). Personal vehicle VMT would comprise most of the VMT increases on the Cross Bronx Expressway, with commercial truck VMT contributing roughly 25 percent of the overall VMT increase in all tolling scenarios (**Table 4A-29**).

On Bronx highways other than the Cross Bronx Expressway, VMT would increase in Tolling Scenarios A, B, F, and G. All tolling scenarios with crossing credits would have lower VMT changes than Tolling Scenarios A and B, and Tolling Scenarios C, D, and E would have a decrease in VMT on other Bronx highways. (**Table 4A-31**).

Table 4A-25. Staten Island Daily Vehicle-Miles Traveled by Roadway Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Staten Island Vehicle-Miles Traveled								
All Roads	3,986,457	4,071,056	4,078,180	4,078,984	4,076,004	4,085,745	4,080,603	4,098,571
Highways	1,954,370	2,032,359	2,037,322	2,038,405	2,031,673	2,040,204	2,033,669	2,052,174
Local Streets	1,848,897	1,851,808	1,853,295	1,853,460	1,856,424	1,857,188	1,859,385	1,858,658
Ramps	183,191	186,890	187,563	187,119	187,907	188,354	187,549	187,739
Staten Island Vehicle-Miles Traveled (Difference from No Action Alternative)								
All Roads	—	84,598	91,723	92,526	89,547	99,288	94,145	112,113
Highways	—	77,988	82,952	84,035	77,303	85,834	79,299	97,804
Local Streets	—	2,911	4,398	4,563	7,527	8,291	10,488	9,762
Ramps	—	3,699	4,372	3,928	4,716	5,163	4,358	4,548

Table 4A-26. Staten Island Daily Vehicle-Miles Traveled on Highways by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Staten Island Highway Vehicle-Miles Traveled								
Personal Vehicle	1,784,013	1,863,248	1,866,725	1,867,229	1,859,509	1,867,296	1,862,611	1,885,233
Taxi/FHV/ Commercial Van	54,327	49,048	49,105	49,358	50,283	48,622	49,341	49,767
Commercial Truck	110,041	114,074	115,505	115,830	115,893	118,298	115,729	111,186
Bus	5,988	5,988	5,988	5,988	5,988	5,988	5,988	5,988
Staten Island Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	79,235	82,711	83,216	75,496	83,283	78,598	101,220
Taxi/FHV/ Commercial Van	—	-5,279	-5,223	-4,969	-4,044	-5,705	-4,986	-4,560
Commercial Truck	—	4,033	5,464	5,789	5,852	8,257	5,687	1,144
Bus*	—	*	*	*	*	*	*	*

* In the BPM, all buses (e.g., MTA NYCT, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Table 4A-27. Bronx Daily Vehicle-Miles Traveled by Roadway Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Vehicle-Miles Traveled								
All Roads	7,489,634	7,512,109	7,508,943	7,491,356	7,479,948	7,465,870	7,495,104	7,497,337
Highways	4,941,832	4,965,292	4,965,119	4,950,635	4,941,795	4,934,194	4,953,800	4,956,677
Local Streets	2,017,196	2,012,399	2,010,155	2,008,325	2,006,281	2,001,172	2,007,692	2,006,147
Ramps	530,606	534,418	533,668	532,397	531,872	530,504	533,613	534,513
Bronx Vehicle-Miles Traveled (Difference from No Action Alternative)								
All Roads	—	22,475	19,308	1,722	-9,686	-23,764	5,470	7,703
Highways	—	23,460	23,287	8,803	-38	-7,638	11,967	14,844
Local Streets	—	-4,797	-7,041	-8,872	-10,915	-16,024	-9,504	-11,049
Ramps	—	3,812	3,063	1,791	1,266	-102	3,007	3,907

Table 4A-28. Bronx Daily Vehicle-Miles Traveled on Highways by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Highway Vehicle-Miles Traveled								
Personal Vehicle	4,275,956	4,298,318	4,294,704	4,282,357	4,275,223	4,264,603	4,282,572	4,296,317
Taxi/FHV/ Commercial Van	249,631	242,846	245,607	245,673	243,385	247,686	249,576	244,131
Commercial Truck	405,597	413,481	414,161	411,957	412,540	411,258	411,005	405,582
Bus	10,647	10,647	10,647	10,647	10,647	10,647	10,647	10,647
Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	22,362	18,748	6,401	-734	-11,354	6,616	20,360
Taxi/FHV/ Commercial Van	—	-6,786	-4,024	-3,958	-6,246	-1,945	-56	-5,500
Commercial Truck	—	7,884	8,564	6,360	6,942	5,660	5,407	-16
Bus*	—	*	*	*	*	*	*	*

* In the BPM, all buses (e.g., MTA NYCT, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Table 4A-29. Cross-Bronx Daily Vehicle-Miles Traveled by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Highway Vehicle-Miles Traveled								
Personal Vehicle	562,113	573,862	571,858	570,545	567,198	569,538	567,172	574,355
Taxi/FHV/ Commercial Van	35,574	35,752	36,516	36,513	36,928	37,472	37,117	36,352
Commercial Truck	100,673	102,559	102,661	101,775	102,333	101,447	102,642	100,226
Bus	58	58	58	58	58	58	58	58
TOTAL	**698,418**	**712,232**	**711,093**	**708,892**	**706,518**	**708,515**	**706,989**	**710,991**
Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	11,749	9,746	8,433	5,086	7,426	5,059	12,242
Taxi/FHV/ Commercial Van	—	179	942	939	1,354	1,898	1,543	778
Commercial Truck	—	1,886	1,988	1,102	1,660	774	1,969	-447
Bus*	—	*	*	*	*	*	*	*
TOTAL	—	**13,814**	**12,675**	**10,474**	**8,100**	**10,097**	**8,571**	**12,573**

* In the BPM, all buses (e.g., MTA NYCT, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Finally, several comments were made regarding traffic and VMT increases on the three primary highways in the South Bronx—the Cross Bronx Expressway, Major Deegan Expressway, and Bruckner Expressway. The increases on the Cross Bronx Expressway are covered earlier in this section. The Major Deegan Expressway and Bruckner Expressway would both have lower VMT in all the tolling scenarios compared to the No Action Alternative. With the number of vehicles entering the Manhattan CBD decreasing, fewer drivers would use these two highways to access the CBD thus reducing VMT on these two highways (**Table 4A-32**).This is consistent as well with an overall decline in driving on local streets within the Bronx (**Table 4A-27**).

During early public outreach, concern was raised regarding the incremental increase in truck traffic, specifically, over the Cross Bronx Expressway. Additional analysis was done to provide more insight into the number of trucks that would divert. As a result of that analysis, Tolling Scenario G was added to this EA to demonstrate how that number could be reduced through the toll structure. **Table 4A-30** shows the volume of trucks on the Cross Bronx Expressway at Macombs Road, a location with a particularly high increase in daily truck volume. Analysis of the reason behind the truck volume increases revealed that long-distance trucks that previously passed through the Manhattan CBD would switch to the Cross Bronx Expressway in large numbers in Tolling Scenarios A through F. The significant reduction in additional trucks in Tolling Scenario G would result from reducing the truck toll to match the passenger vehicle toll.

Table 4A-30. Cross-Bronx Daily Truck Volume Changes (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Cross Bronx Expressway Daily Truck Volume at Macombs Road								
Commercial Trucks	27,592	28,100	28,296	27,762	28,102	27,970	28,128	27,642
Cross Bronx Expressway Daily Truck Volume at Macombs Road (Difference from No Action Alternative)								
Commercial Trucks	—	509	704	170	510	378	536	50

Source: WSP, BPM

Table 4A-31. Bronx Highways excluding Cross Bronx Expressway Daily Vehicle-Miles Traveled by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Bronx Highway Vehicle-Miles Traveled								
Personal Vehicle	3,713,844	3,724,456	3,722,846	3,711,812	3,708,024	3,695,064	3,715,400	3,721,962
Taxi/FHV/ Commercial Van	214,057	207,093	209,091	209,160	206,457	210,215	212,459	207,780
Commercial Truck	304,924	310,922	311,500	310,182	310,207	309,811	308,362	305,356
Bus	10,589	10,589	10,589	10,589	10,589	10,589	10,589	10,589
TOTAL	**4,243,414**	**4,253,061**	**4,254,026**	**4,241,743**	**4,235,277**	**4,225,679**	**4,246,811**	**4,245,687**
Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Personal Vehicle	—	10,613	9,002	-2,032	-5,819	-18,779	1,557	8,118
Taxi/FHV/ Commercial Van	—	-6,964	-4,966	-4,897	-7,601	-3,843	-1,598	-6,278
Commercial Truck	—	5,998	6,576	5,257	5,283	4,887	3,438	431
Bus*	—	*	*	*	*	*	*	*
TOTAL	—	**9,646**	**10,612**	**-1,671**	**-8,137**	**-17,735**	**3,396**	**2,271**

* In the BPM, all buses (e.g., Metropolitan Transportation Agency [MTA] New York City Transit, MTA Bus Company, NJ TRANSIT and private operators) were considered insensitive to Manhattan CBD tolling, because such buses were assigned a fixed route and headway based on existing or planned service. Transit vehicles in the model were not allowed to deviate from those routes or headways based on tolls or congestion. Therefore, bus volumes are the same across tolling scenarios.

Table 4A-32. Select Bronx Highways Daily Vehicle-Miles Traveled by Vehicle Type (2023): No Action Alternative and Tolling Scenarios

	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Select Bronx Highways Vehicle-Miles Traveled								
Major Deegan Freeway	1,119,278	1,115,360	1,114,715	1,106,730	1,105,357	1,103,220	1,111,200	1,113,208
Bruckner Expressway	476,409	472,256	476,060	472,911	467,568	465,258	471,241	472,443
Select Bronx Highway Vehicle-Miles Traveled (Difference from No Action Alternative)								
Major Deegan Freeway	—	-3,918	-4,563	-12,548	-13,921	-16,058	-8,078	-6,070
Bruckner Expressway	—	-4,154	-349	-3,499	-8,842	-11,151	-5,169	-3,966

TRIP SUPPRESSION

Trip suppression is a trip to the Manhattan CBD that would be "canceled" as a result of the Project. The trip would either no longer take place or divert to a different destination outside of the Manhattan CBD. These types of trips are different from trips that switch modes from driving to transit as discussed earlier in this chapter. The BPM includes explicit representations of destination change and mode choice; however, the BPM has a limited accounting for the third and smallest type of trip suppression (i.e., trip cancellation).

It is anticipated that some trips would be canceled due to the implementation of the Project based on similar program implementations in London and Stockholm. In those implementations, there is a strong relationship between trip cancellation and congestion pricing programs, although the available data varies between London and Stockholm. Of the available data, the trends in London and Stockholm similarly show that the implementation of congestion pricing programs are effective in reducing car traffic and suppressing trips to a CBD. After one year of implementing congestion pricing in Central London in February 2003, the number of vehicles entering the Central London CBD charging zone decreased by 18 percent, and there was an average daily decrease of approximately 60,000 trips made to the Central London CBD. Of these 60,000 trips, approximately 50 percent switched to public transit, approximately 20 percent of trips avoided the Central London CBD charging zone, roughly 15 percent switched to car share, and the remaining 15 percent of trips were assumed to be suppressed. In 2020, the program charged a flat weekday fee of £15 (around $20.25) when entering the zone between 7:00 a.m. and 10:00 p.m.

Similarly, after a six-month trial, Stockholm saw a 22 percent decrease in car traffic entering the Stockholm CBD charging zone between 2005 and 2006. Less than 50 percent of car users who stopped commuting into the Stockholm CBD charging zone switched to transit. It can be inferred that the remaining 50 percent or so of trips that were no longer made to the Stockholm CBD were suppressed, transferred to car share, routed elsewhere outside the Stockholm CBD, or switched to take place outside of tolling hours. The Stockholm CBD charges were effective weekdays from 6:30 a.m. to 6:30 p.m., and the price was set at 10 SEK to 20 SEK (US $1.33 to $2.67 at 2006 rates) for off-peak and peak periods.

TAXIS AND FHVS

The tolling scenarios test a variety of tolling policies for taxis and FHVs ranging from charging a toll each time a taxi or FHV enters the Manhattan CBD to a complete exemption from paying the CBD toll. **Table 4A-33** provides an overview of the CBD tolling policy for taxis and FHVs in each tolling scenario. The CBD tolls would be collected in addition to the New York State Congestion Surcharge[29] of $2.50 and $2.75 for taxis and FHVs, respectively, for trips that start, end, or pass through the congestion surcharge zone—Manhattan south of 96th Street.

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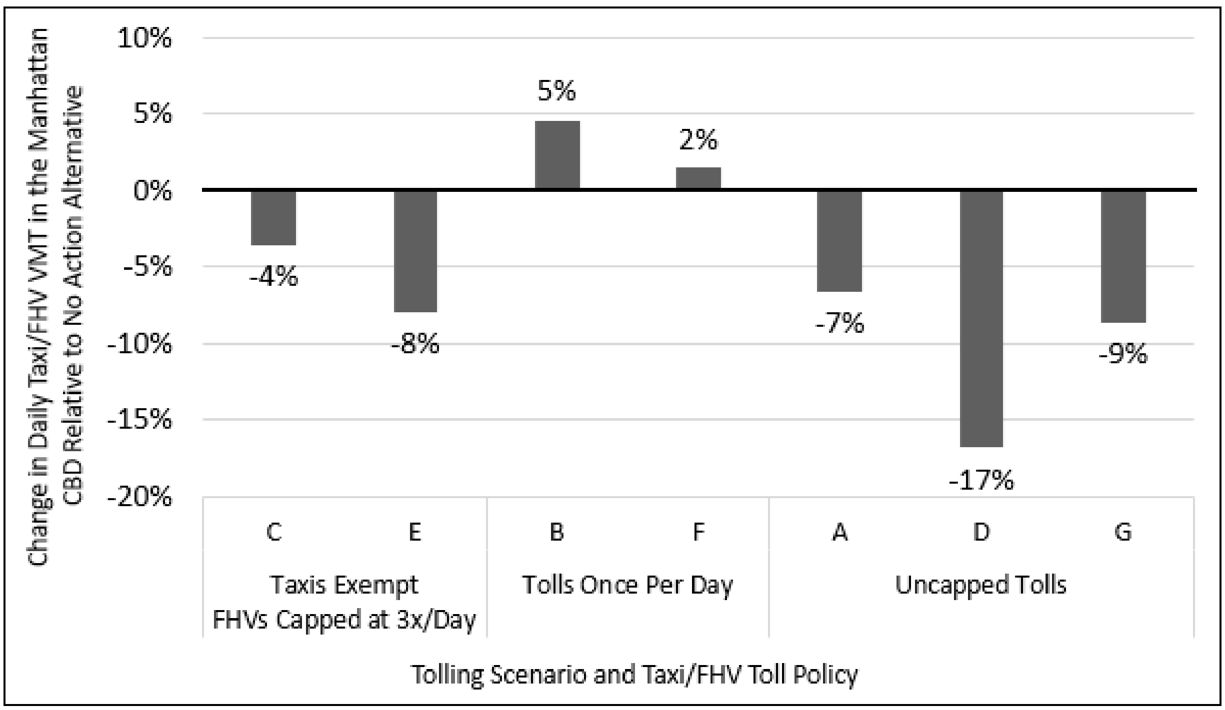
29 Congestion Surcharge. New York City Taxi & Limousine Commission. December 25, 2021. https://www1.nyc.gov/site/tlc/about/congestion-surcharge.page.

Table 4A-33. Taxi and FHV Manhattan CBD Tolling Policy

TOLLING POLICY	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Taxi Manhattan CBD Toll Policy	All Entries	Once per Day	Exempt	All Entries	Exempt	Once per Day	All Entries
FHV Manhattan CBD Toll Policy	All Entries	Once per Day	Up to 3x a Day	All Entries	Up to 3x a Day	Once per Day	All Entries

The CBD tolling policy for taxis and FHVs when combined with varying CBD toll rates would change demand for taxis and FHVs into, out of, and within the Manhattan CBD. **Figure 4A-5** demonstrates how the different tolling policies would affect taxi and FHV VMT. Exemptions and caps decrease the toll burden on taxi/FHV drivers, while increasing the toll rate for other drivers to meet the Project's congestion and revenue objectives. If taxis and FHVs are charged for each trip, the demand for their service would decline, particularly in New York City, reducing trips and better meeting the Project objectives, but creating new direct costs and/or potential job insecurity.

Figure 4A-5. Changes in Daily Taxi/FHV VMT in the Manhattan CBD, CBD Tolling Alternative Tolling Scenarios Compared to the No Action Alternative



Source: Best Practice Model, WSP 2021

Additional Analyses of Taxis and FHVs

In response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on both taxi and FHV drivers, additional analyses were conducted. Specifically, analyses were done to assess the revenue and traffic effects of implementing Tolling Scenarios A and D with a cap of once per day for taxis and FHVs (like Tolling Scenarios B and F) and implementing Tolling

Scenario D with both taxis and FHVs exempt from the toll. In the following tolling scenarios, the revenue objectives of the Project would be maintained. The results of these analyses are presented as follows:

- **Tolling Scenario A with Taxis/FHVs Capped at Once Per Day.** The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $100 million in forgone net annual revenue under the tolling rates used in Tolling Scenario A. The cap would result in about 20 percent more taxis and FHVs entering the Manhattan CBD as compared to the original Tolling Scenario A presented earlier in this subchapter. To still meet the congestion and revenue objective of the Project, tolls would need to be raised 10 percent to 15 percent on all vehicle classes in Tolling Scenario A to offset forgone taxi and FHV revenues. This would further reduce personal vehicles and trucks at the Manhattan CBD boundary by 2 percent to 3 percent compared to Tolling Scenario A. However, the decline in personal vehicles and trucks would be mostly offset by the increase in taxis and FHVs entering the Manhattan CBD. As a result, the volumes of all vehicles entering the Manhattan CBD would not change in aggregate.
- **Tolling Scenario D with Taxis/FHVs Capped at Once Per Day.** The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $150 million to $180 million in forgone net annual revenue under the tolling rates used in Tolling Scenario D. The cap would result in about 25 percent more taxis and FHVs entering the Manhattan CBD compared to the existing Tolling Scenario D. Tolling Scenario D—as presented originally with uncapped tolling of taxis and FHVs—would exceed the annual net revenue objectives of the Project by over $300 million. Thus, it is reasonably expected that a cap on taxis and FHVs so that these vehicles would be charged once each day could be accommodated without needing to raise toll rates presented in Tolling Scenario D.
- **Tolling Scenario D with Taxi/FHV Tolling Exemption.** The estimated value of a taxi and FHV toll exemption is $200 million to $250 million in forgone net annual revenue under the tolling rates used in Tolling Scenario D. Exempting taxis and FHVs from the CBD toll would increase the number of additional taxis and FHVs entering the Manhattan CBD by up to 50 percent compared to the existing Tolling Scenario D. Tolling Scenario D—as presented originally with no exemptions for taxis and FHVs—would exceed the annual net revenue objectives of the Project by over $300 million. Thus, it is reasonably expected that including an exemption for taxis and FHVs so that these vehicles would not be charged could be accommodated without needing to raise toll rates presented in Tolling Scenario D.
- **Tolling Scenario G with Taxis/FHVs Capped at Once Per Day.** A variation of Tolling Scenario G was run to test the impact of adding a one-charge-per-day cap to taxis and FHVs. Adding this cap required increasing tolls on other vehicles by about 10 percent to meet the Project’s revenue goal. This toll increase was low enough so as not to notably affect the results from Tolling Scenario G and, importantly, still addresses the concerns regarding commercial truck traffic in the South Bronx, though the number of trucks on the Cross Bronx Expressway at Macombs Road, would shift from 50 to 251, still lower than every other tolling scenario except Tolling Scenario C.

"WHO PAYS" ANALYSIS

To better understand the distribution of toll revenue (burdens) and CBD trips (benefits) by geography, an analysis was conducted that quantified the share of revenues paid by drivers from different geographies versus the share of trips made to the Manhattan CBD from each of those same geographies. This analysis became known as "Who Pays." This was conducted using results from the 2023 BPM Tolling Scenarios A through G. Table 4A-34 contains the results of this analysis. Each cell contains the percentage of total net revenue paid by drivers from a particular geography and the percentage of total trips to the Manhattan CBD made by drivers from that geography. For example, in Tolling Scenario A, Bronx drivers would pay 6.2 percent of total net revenue and would make 6.6 percent of total CBD vehicle trips.

The percentages of CBD toll revenue and trips shown in Table 4A-34 tend to be more balanced for tolling scenarios that do not offer crossing credits (Tolling Scenarios A, B, and G), while the percentages tend to diverge for tolling scenarios that offer crossing credits (Tolling Scenarios C, D, E, and F).

Table 4A-34. Projected Percentage of Total Revenue/Percentage of Total Trips

GEOGRAPHY	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York (Manhattan)	13.5% / 14.0%	13.0% / 13.5%	15.7% / 13.6%	19.6% / 12.5%	17.9% / 12.4%	20.0% / 12.5%	13.1% / 13.5%
Kings (Brooklyn)	19.0% / 17.9%	18.9% / 17.8%	20.3% / 18.7%	17.1% / 16.5%	17.1% / 16.7%	17.5% / 16.5%	19.1% / 18.0%
Queens	17.9% / 16.4%	18.1% / 16.6%	17.7% / 17.6%	15.8% / 16.4%	16.6% / 16.5%	16.4% / 16.1%	18.2% / 16.7%
Bronx	6.2% / 6.6%	6.2% / 6.7%	7.9% / 7.1%	9.9% / 6.6%	9.1% / 6.6%	10.2% / 6.6%	6.3% / 6.8%
Richmond (Staten Island)	1.6% / 1.6%	1.6% / 1.5%	1.7% / 1.8%	1.1% / 1.7%	1.4% / 1.8%	1.4% / 1.7%	1.6% / 1.6%
Long Island	7.6% / 6.8%	7.7% / 6.9%	7.2% / 7.0%	6.3% / 6.7%	6.8% / 6.8%	6.3% / 6.6%	7.7% / 6.9%
Hudson Valley	6.6% / 7.1%	6.6% / 7.2%	8.4% / 7.7%	10.4% / 7.1%	9.4% / 7.1%	10.8% / 7.2%	6.6% / 7.1%
New Jersey	17.7% / 20.0%	17.8% / 20.0%	11.6% / 16.5%	10.0% / 21.9%	11.8% / 21.4%	7.8% / 21.9%	17.5% / 19.6%
Connecticut	2.4% / 2.5%	2.4% / 2.6%	3.1% / 2.8%	4.0% / 2.6%	3.5% / 2.5%	4.1% / 2.6%	2.4% / 2.6%
Other	7.5% / 7.2%	7.5% / 7.3%	6.4% / 7.1%	5.8% / 8.1%	6.5% / 8.4%	5.5% / 8.3%	7.4% / 7.2%

Note: In this section, *revenue* includes only projected CBD toll revenue. Other existing TBTA and PANYNJ tolls, including those on crossings leading directly to or from the Manhattan CBD, are not included in the revenue calculations.

4A.5 CONCLUSION

This subchapter describes the travel forecasts that were prepared for the opening year (2023) and horizon year (2045) for each of the seven tolling scenarios established to evaluate the CBD Tolling Alternative. (See **Chapter 2, "Project Alternatives,"** for more information on the tolling scenarios and how they vary by the value of the toll based on specific tolling actions such as exemptions, crossing credits, and daily toll caps.)

Overall, the BPM provides a baseline representation of the complicated, dense, and congested transportation network that serves the New York City region. The model forecast results show that compared to the No Action Alternative, the CBD Tolling Alternative would meet the purpose and need and established goals for congestion relief in the Manhattan CBD and raise revenue to support transit capital improvements. This section identifies and summarizes general effects on travel patterns from implementing the Project and describes high-level changes to travel and trip-making decisions as well as effects on the taxi/FHV industry.

4A.5.1 General Effects

All tolling scenarios would result in travel pattern changes that would support congestion relief such as reduced automobile and truck trips to the Manhattan CBD, reduced VMT to and within the Manhattan CBD and regionally, and a shift from auto trips to transit. Percentage reductions in 2023 vehicle trips entering the Manhattan CBD would range from 15.4 percent to 19.9 percent. These travel pattern changes are the basis for many of the impact evaluations found in subsequent chapters of this EA.

- **Transit**: The declines in auto-based trips to the Manhattan CBD would result in increases in transit trips. Transit trips (e.g., commuter rail, subway, bus, tram, and ferry) to the Manhattan CBD from outside the Manhattan CBD would increase between 1 percent and 2 percent, depending on the tolling scenario (see **Table 4A-8**).
- **VMT:** For the tolling scenarios analyzed, each tolling scenario would result in reductions in VMT in the Manhattan CBD, as well as across the region (see **Table 4A-7**). Each tolling scenario has a different combination of toll rates, crossing credits, and exemptions that combined would reduce daily VMT between 7.1 percent and 9.2 percent in the Manhattan CBD. Crossing credits temper daily VMT reductions in the CBD, while leading to greater reductions outside of the CBD. Patterns of VMT changes would be consistent across the region with similar changes in areas identified as environmental justice and non-environmental justice communities.
- **Travel Times**: While the Project would improve travel times to the Manhattan CBD, some areas would experience longer auto travel times to the Manhattan CBD from increases in diversionary trips to avoid the Manhattan CBD via highways in the Bronx and Staten Island.

4A.5.2 Crossing Credits

Four of the seven analyzed tolling scenarios offer a range of crossing credits to vehicles that pay tolls on TBTA and PANYNJ bridges and tunnels. While the location and amount of the crossing credits differ in those tolling scenarios,[30] common general effects include the following:

- Some drivers who continue to drive to the Manhattan CBD would choose a different route based on the introduction of Manhattan CBD crossing credits.
- Crossing credits would increase the attractiveness of TBTA East River facilities (Hugh L. Carey Tunnel, Queens-Midtown Tunnel, and the Robert F. Kennedy Bridge) compared to existing free bridges. The travel model indicates that increased demand for these routes has the effect of increasing auto and truck travel times from much of Long Island to the Manhattan CBD market due to additional congestion in the Queens-Midtown Tunnel. While these effects are observed in the four tolling scenarios that would provide crossing credits, they are less prevalent in the three tolling scenarios that would not provide crossing credits. With crossing credits in place, there are certain travel markets where travel times and congestion could increase due to the Project, while other travel markets could see less congestion compared to tolling scenarios without crossing credits.
- For the Hudson River crossings in three of the tolling scenarios, some drivers bound to the Manhattan CBD from west of the Hudson River would divert to the Lincoln Tunnel and Holland Tunnel based on the availability of crossing credits to offset existing tolls as part of the total vehicle cost with Manhattan CBD tolling. As a result, volumes on the George Washington Bridge to Manhattan would decline; however, this decline is reversed in the tolling scenario that offers crossing credits to George Washington Bridge users.
- Tolling scenarios with crossing credits lead to lower VMT in environmental justice communities than tolling scenarios without crossing credits.

4A.5.3 Diversions/Toll Avoidance

Every tolling scenario would cause diversions of traffic by drivers wishing to avoid or minimize the tolls paid. The particular diversions for different travel markets are explained in more detail in this chapter, but important themes are:

- Modeling of the CBD Tolling Alternative indicates that passenger auto trips (i.e., not truckers) have three basic ways to avoid paying the CBD toll:
  – Choose a new and different path to avoid the CBD toll.
  – Switch to another mode such as transit.
  – Choose not to make the trip to the Manhattan CBD.

30 Credits offered in tolling scenarios are described in **Chapter 2, "Project Alternatives,"** as well as in the narrative descriptions of the tolling scenarios found in "**Appendix 4A.2, Transportation: Travel Forecast Tolling Scenario Summaries and Detailed Tables (2023 and 2045)**."

- For trucks, only through-traveling trucks that do not stop in the Manhattan CBD can avoid tolling by switching paths. The modeling of CBD tolling scenarios indicates that the level of tolls imposed on trucks would have an impact on the amount of diverted truck traffic seen outside the Manhattan CBD.
- Trucks of different sizes exhibit different diversion behavior. Because through-traveling small and medium trucks have access to all bridges and tunnels, their potential to divert to non-Manhattan CBD routes is greater than through-traveling large trucks, which face prohibitions and height restrictions in certain tunnels and roadways.

4A.5.4 Taxis and FHVs

Taxis and FHVs are an important part of the CBD transportation network; in addition, taxi and FHV drivers largely identify as minority populations and are therefore an environmental justice population. The CBD tolling policy for taxis and FHVs when combined with varying CBD toll rates would change demand for taxis and FHVs into, out of, and within the Manhattan CBD. In every tolling scenario, taxi and FHV journeys into, out of, or within the Manhattan CBD would decrease between 1 percent and 22 percent. When the taxi and FHV toll is charged only once per day per vehicle, the cost would be spread across multiple trips and passengers during the day, with minimal effect on travel patterns, while taxi and FHV trips would decline the most in tolling scenarios that charge a toll for each entry into the Manhattan CBD.

4A.6 SUMMARY OF EFFECTS

Finally, Table 4A-35 is provided to summarize the effects of the tolling scenarios across various topics. All tolling scenarios would reduce traffic volumes within the Manhattan CBD, but to varying degrees. Tolling Scenario D results in the greatest overall reduction in vehicle trips entering the Manhattan CBD because it has the greatest reduction in daily work trips by automobile. Tolling Scenario E results in the greatest reduction of truck trips traveling through the Manhattan CBD, while Tolling Scenario G minimizes the increase in truck trips diverting through the Bronx. Overall, the tolling scenarios result in a 7 percent to 9 percent reduction in VMT in the Manhattan CBD and less than 1 percent reduction in VMT elsewhere in the regional study area.

Table 4A-35. Summary of Effects of Tolling Scenarios on Regional Transportation Effects and Modeling

TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION
				A	B	C	D	E	F	G		
Vehicle Volumes	▪ Decreases in daily vehicle trips to Manhattan CBD overall. ▪ Some diversions to different crossings to Manhattan CBD or around the Manhattan CBD altogether, depending on tolling scenario. As traffic, including truck trips, increase on some circumferential highways, simultaneously there is a reduction in traffic on other highway segments to the CBD. ▪ Diversions would increase or decrease traffic volumes at local intersections near the Manhattan CBD crossings.	Crossing locations to Manhattan CBD	% Increase or decrease in daily vehicles entering the Manhattan CBD relative to No Action Alternative	-15%	-16%	-17%	-19%	-20%	-18%	-17%	No	**No mitigation needed.** Beneficial effects
Auto Journeys to Manhattan CBD		Manhattan CBD	% increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-5%	-5%	-7%	-9%	-11%	-10%	-6%	No	**No mitigation needed.** Beneficial effects
			Absolute increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-12,571	-12,883	-17,408	-24,017	-27,471	-24,433	-14,578		
Truck Trips Through Manhattan CBD		Manhattan CBD	Increase or decrease in truck trips through Manhattan CBD relative to No Action Alternative	-4,645 (-55%)	-5,695 (-59%)	-5,253 (-63%)	-5,687 (-68%)	-6,604 (-79%)	-6,784 (-81%)	-6,567 (-21%)	No	**No mitigation needed.** Beneficial effects

TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO A	B	C	D	E	F	G	POTENTIAL ADVERSE EFFECT	MITIGATION
Transit Journeys	▪ Overall decrease in vehicle-miles traveled (VMT) in the Manhattan CBD and region overall in all tolling scenarios and some shift from vehicle to transit mode.	Manhattan CBD	% Increase or decrease in daily Manhattan CBD-related transit journeys relative to No Action Alternative	1% to 3%							No	**No mitigation needed.** No adverse effects
Traffic Results		Manhattan CBD	% increase or decrease in daily VMT relative to No Action Alternative	-9% to -7%							No	**No mitigation needed.** Beneficial effects in Manhattan CBD, NYC (non-Manhattan CBD), north of NYC, and Connecticut; no adverse effects in Long Island and New Jersey
		NYC (non-Manhattan CBD)		-1 to 0%								
		New York north of NYC		-1% to 0%								
		Long Island		Less than (+) 0.2% change								
		New Jersey		Less than (+) 0.2% change								
		Connecticut		-0.2% to 0%								

4B. Highways and Local Intersections

This subchapter presents the highways and local intersections traffic assessment of the CBD Tolling Alternative for the 2023 analysis year.[1] This subchapter provides an overview of the regional highway network and evaluates the potential traffic effects of the CBD Tolling Alternative on key highway segments accessing the Manhattan CBD and along circumferential highways. It also examines the potential change in traffic operations at local intersections that could increase or decrease volumes with the implementation of the CBD Tolling Alternative. Throughout the public outreach process, the potential effects of traffic changes at key locations, many of which are in or adjacent to environmental justice communities, was raised, and are discussed in this subchapter.

4B.1 INTRODUCTION

This subchapter focuses on regional highways at points where they would experience the greatest potential effect of shifts in travel and roadways near Manhattan CBD access points and circumferential routes that avoid the Manhattan CBD. The traffic on local roadways resulting from these shifts was analyzed at intersections, using accepted standards of level of service (LOS) and vehicle delay criteria as the basis for evaluating changes in traffic operations. While the MTA Reform and Traffic Mobility Act (Traffic Mobility Act) exempts the Project from any state or local environmental review, the methodology used for this analysis is based on the State Environmental Quality Review Act (SEQRA).[2]

To evaluate the potential effects of the Project on the highway system and local intersections the following steps were performed and documented in **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation"**:

- Used the New York Metropolitan Transportation Council Best Practice Model (BPM) to model regional travel for the seven tolling scenarios, in addition to the No Action Alternative, to identify changes in regional travel demand and patterns (shift in modes and diversion of traffic).
- Assigned BPM traffic flows to the highway and street network for all tolling scenarios.
- Performed a screening analysis using the BPM for all tolling scenarios to identify additional highway segments, in addition to the four tunnels within the Manhattan CBD, with a potential increase in traffic volumes greater than 5 percent. In consultation with the Project Sponsors, 10 highway corridors were analyzed for traffic operations using a using a traffic model or qualitative analyses as shown in **Figure 4B-1**.
- Determined the tolling scenario that would be representative of those with the highest potential to increase traffic along certain alternate routes and at local intersections (**Section 4B.4**).

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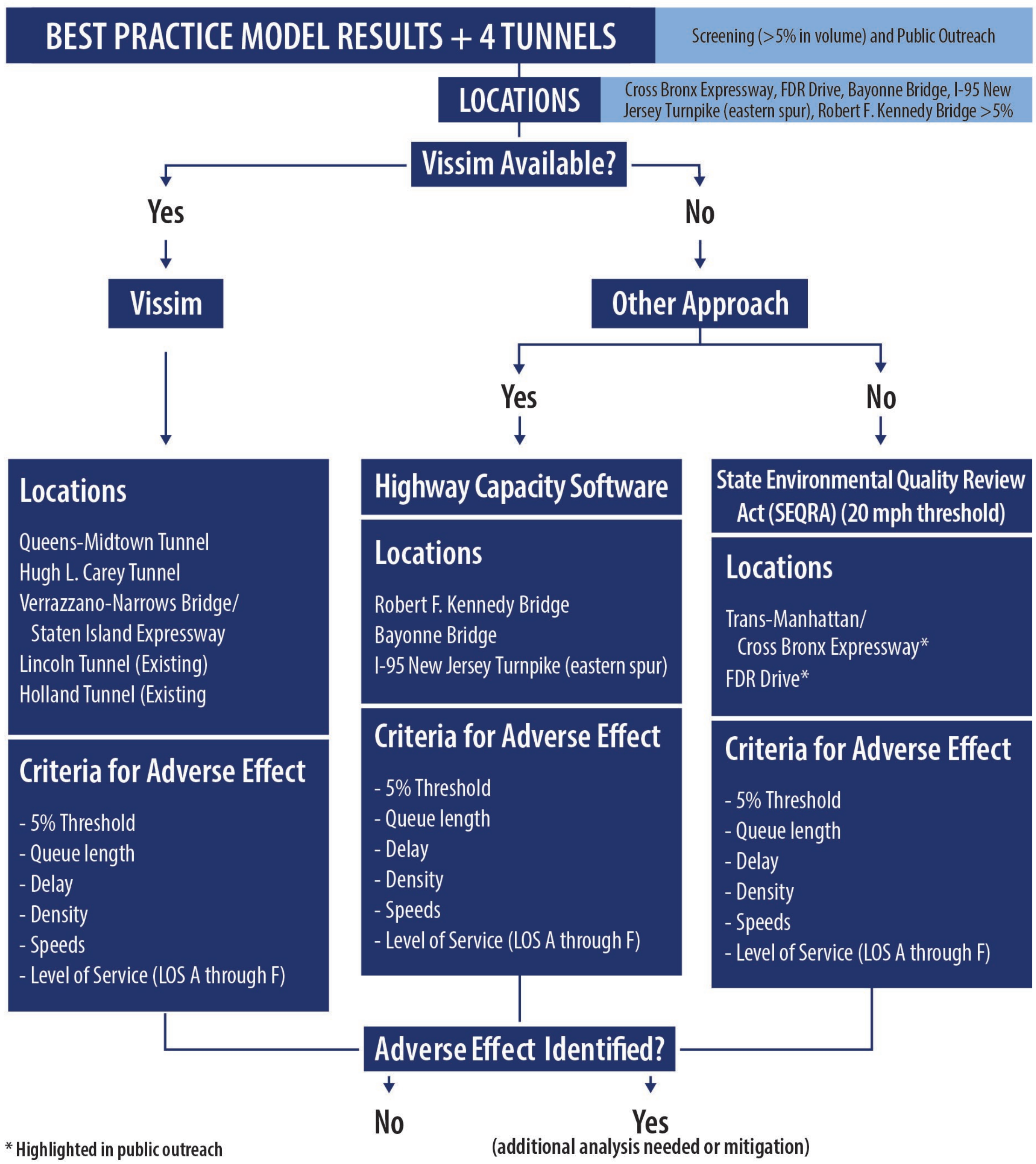
1 A 2045 horizon year traffic analysis is not required for this Environmental Assessment because the CBD Tolling Alternative would be expected to have a similar effect on traffic in 2045 as the 2023 analysis year due to capacity constraints at the Manhattan CBD crossings, which resulted in very low growth in traffic. However, a 2045 regional transportation and air quality analyses were performed using the BPM in order to meet state and Federal regional conformity requirements.

2 Traffic analyses for intersections were also performed using the methodology in the *New York City Environmental Quality Review (CEQR) Technical Manual*. See **Appendix 4B.5, "Transportation: Traffic LOS CBD Tolling Alternative with Mitigation."**

- To determine whether there was an adverse effect, changes in queue length, delay times, density, speeds, and LOS were assessed (**Section 4B.4**).
- Performed an assessment of effects on roadways in Central Park (**Section 4B.5**).
- In consultations with NYCDOT, identified and analyzed 102 local intersections within and outside the Manhattan CBD, grouping them functionally into 15 local study areas to be assessed (**Section 4B.6**).

Figure 4B-1. Analytical Approach Diagram



Source: WSP USA, 2022.

Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation" documents the following steps taken to assess the effect of the CBD Tolling Alternative on local intersections:

- Calibrated Synchro traffic model to reflect baseline intersection counts and operations.
- Determined analysis hours.
- Established traffic volumes for the No Action Alternative.
- Screened traffic volumes for various tolling scenarios to identify representative incremental traffic volumes.
- Projected CBD Tolling Alternative incremental traffic volumes and total traffic at each intersection based on regional travel model forecasting and trip assignment.
- Projected potential delays and LOS at key intersections.
- Identified potentially affected study area intersections with potential increases in delays that would exceed SEQRA criteria.[3]
- Developed minor intersection improvements (e.g., signal-timing, striping) to be incorporated into the Project that would reduce delays at the potentially affected intersections and avoid adverse effects.

In both the highway corridors and at the intersection locations, if an adverse effect was found after additional analyses were performed, mitigation was developed.

4B.2 SUMMARY OF EFFECTS OF THE CBD TOLLING ALTERNATIVE TOLLING SCENARIOS AND DETERMINATION OF TOLLING SCENARIO WITH LARGEST INCREASE IN LOCAL TRAFFIC VOLUMES

As set forth in **Chapter 2, "Project Alternatives,"** the proposed CBD Tolling Alternative is being evaluated through a range of tolling scenarios reflecting variations in tolls and application of possible discounts, exemptions, and/or crossing credits that would reduce or eliminate the CBD tolls paid by certain motorists or vehicle classes but would result in generally higher tolls needed to offset potential loss in revenues. These discounts, exemptions, and crossing credits have the potential to alter travel behavior and travel patterns in a manner that could result in increased traffic at some locations, although overall traffic would be reduced for all tolling scenarios.

Tolling Scenario A has the lowest overall CBD tolls with no discounts, no exemptions, and no crossing credits (limited to only those identified in the Traffic Mobility Act). This tolling scenario, if adopted, would result in a reduction of traffic volumes at all Manhattan CBD crossings.

Tolling Scenarios B and C have higher CBD tolls but with some discounts, exemptions, and/or crossing credits. These tolling scenarios would generally reduce traffic; however, Tolling Scenario C, with partial crossing credits, has the potential for a modest shift in traffic from currently toll-free facilities to tolled facilities where the crossing credits would be applied. Tolling Scenario G is similar to Tolling Scenarios A and

[3] See **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation,"** for a detailed discussion of the applicable SEQRA criteria used to determine the significance of adverse traffic effects.

B, with lower toll costs for truck trips in the region. Tolling Scenario G would generally reduce traffic, and the lower truck toll rate would reduce truck diversions to circumferential routes around the Manhattan CBD.

Tolling Scenarios D, E, and F have the highest CBD tolls along with even higher discounts, exemptions, and/or crossing credits. These tolling scenarios would provide a full crossing credit at currently tolled facilities so that motorists would not have to pay both a facility toll and a CBD toll. This would equalize the effective tolls at all Manhattan CBD crossings and provide an incentive for some motorists currently using a toll-free facility (to avoid paying a toll) to shift to a currently tolled facility. The two facilities potentially most impacted by crossing credits are the Queens-Midtown Tunnel and the Hugh L. Carey Tunnel. The Queens-Midtown Tunnel would be expected to handle additional traffic volumes diverting primarily from the Ed Koch Queensboro Bridge and the Hugh L. Carey Tunnel would be expected to handle additional traffic diverted from the Brooklyn Bridge and the Manhattan Bridge. The shift of traffic to the Hugh L. Carey Tunnel and the Queens-Midtown Tunnel has the potential of increasing traffic at these tunnels, along the highway approaches leading to the tunnels, and at nearby intersections adjacent to the tunnel portals. Under Tolling Scenarios C, D, and E, the regional vehicle miles traveled (VMT) is expected to have larger reductions than Tolling Scenarios A, B, F, and G. However, for the Manhattan CBD, Tolling Scenarios D, E, and G would have the most significant reductions in VMT.

All tolling scenarios would be expected to divert some Manhattan CBD through traffic originating from Brooklyn, Queens, and Long Island to points in New Jersey and beyond to circumferential routes using the George Washington Bridge via the Cross Bronx Expressway and the Verrazzano-Narrows Bridge via the Staten Island Expressway. The higher overall CBD tolls under Tolling Scenarios D, E, and F would result in higher circumferential diversions compared to Tolling Scenarios A, B, C, and G, with lower CBD tolls.

4B.2.1 Summary of Highway Analysis to Determine Representative Tolling Scenario with Largest Increases in Traffic

Preliminary analyses were performed for all tolling scenarios to identify which tolling scenario(s) would have the greatest potential for traffic effects at local intersections and along highway segments, and these tolling scenarios were analyzed in detail. Table 4B-1 presents the change in peak-hour traffic volumes, referred to as the increment, for all tolling scenarios analyzed using the BPM. These increments were used to determine the representative tolling scenario for analysis, the facilities/highways to analyze in detail, and the direction of the highway that needed to be analyzed, inbound or outbound. [4]

The Lincoln Tunnel and Holland Tunnel would be expected to have negative increments in both directions, with reduced traffic volumes under all tolling scenarios during the peak hours in the inbound direction. Since these two facilities would be expected to generally operate with less or the same delay they were not analyzed further.

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4 Highways are analyzed by direction using peak hour one-way traffic volumes while VMT, air quality, and noise analyses utilize two-way traffic volumes as inputs. Therefore, the applicable tolling scenario(s) with the highest potential for adverse effects may be different for traffic analyses than the scenario(s) used to analyze VMT, air quality, and noise effects.

Table 4B-1. Peak-Hour Incremental Traffic Volumes: Comparison of Tolling Scenarios*

FACILITY/HIGHWAY	DIRECTION	TIME PERIOD	PEAK-HOUR TRAFFIC VOLUME INCREMENT (VEHICLES)						
			SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Lincoln Tunnel/ NJ Route 495	Inbound	AM	-407	-433	-209	-86	-205	-162	-533
		MD	-434	-478	-283	-147	-269	-109	-508
		PM	-248	-243	-141	-73	-135	-140	-287
	Outbound	AM	-137	-149	-177	-173	-178	-184	-177
		MD	-561	-584	-631	-695	-741	-639	-651
		PM	-629	-672	-647	-784	-888	-805	-770
Holland Tunnel/I-78/ NJ Route 139	Inbound	AM	-206	-231	-127	-78	-164	-143	-309
		MD	-213	-231	-147	-105	-189	-70	-285
		PM	-300	-310	-215	-140	-242	-246	-386
	Outbound	AM	-210	-229	-267	-293	-307	-317	-260
		MD	-311	-354	-422	-463	-519	-465	-403
		PM	-96	-103	-71	-18	-81	-15	-109
Queens-Midtown Tunnel - Long Island Expressway (I-495)	Inbound	AM	-188	-186	253	126	127	125	-192
		MD	-114	-113	224	383	385	379	-120
		PM	-420	-358	241	203	202	202	-409
	Outbound	AM	-61	-65	-67	-25	-30	-24	-63
		MD	-229	-240	-251	163	165	162	-211
		PM	-273	-268	-316	350	335	343	-278
Hugh L. Carey Tunnel - Gowanus Expressway	Inbound	AM	52	80	145	71	71	70	30
		MD	-54	-60	217	482	482	482	-57
		PM	1	7	28	47	44	44	-7
	Outbound	AM	106	100	101	110	107	101	87
		MD	56	64	59	574	574	574	66
		PM	-58	-69	-61	543	543	547	-99

FACILITY/HIGHWAY	DIRECTION	TIME PERIOD	PEAK-HOUR TRAFFIC VOLUME INCREMENT (VEHICLES)						
			SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
George Washington Bridge[1]	Inbound	AM	43	42	-72	-125	-144	-67	96
		MD	341	472	247	140	233	59	520
		PM	129	184	4	-89	-5	11	198
	Outbound	AM	-14	-8	-3	88	78	117	24
		MD	512	642	707	826	743	754	725
		PM	180	399	409	413	385	415	255
Verrazzano-Narrows Bridge/Staten Island Expressway	Inbound	AM	130	75	17	8	7	14	152
		MD	163	221	100	-8	37	-29	229
		PM	165	161	140	112	135	166	155
	Outbound	AM	77	89	160	230	213	209	124
		MD	211	207	290	400	372	345	248
		PM	170	174	238	240	243	235	210
FDR Drive—Between Williamsburg Bridge and Brooklyn Bridge	Southbound	AM	307	298	356	294	311	314	302
		MD	282	293	281	445	457	458	287
		PM	404	406	440	566	598	666	405
		LN	324	338	348	342	344	370	331
	Northbound	AM	253	298	249	275	285	313	276
		MD	156	231	105	97	107	61	193
		PM	307	298	356	294	311	314	302
		LN	282	293	281	445	457	458	287
Bayonne Bridge	Inbound	AM	421	154	137	275	376	415	145
		MD	273	160	144	266	317	346	142
		PM	239	78	57	161	213	248	87
		LN	47	7	9	37	54	66	9
	Outbound	AM	81	35	41	93	81	68	30
		MD	63	109	86	103	97	103	94
		PM	184	126	131	136	148	192	131
		LN	-1	19	15	12	1	6	25

FACILITY/HIGHWAY	DIRECTION	TIME PERIOD	PEAK-HOUR TRAFFIC VOLUME INCREMENT (VEHICLES)						
			SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Robert F. Kennedy Bridge	Inbound	AM	586	457	481	506	508	487	527
		MD	261	250	233	273	261	250	279
		PM	600	558	510	521	634	581	576
		LN	110	89	86	78	93	117	77
	Outbound	AM	418	374	387	396	396	404	485
		MD	505	569	503	545	474	512	559
		PM	630	597	605	606	612	617	637
		LN	576	569	554	607	598	636	630
I-95 Eastern Spur	Inbound	AM	143	-33	-12	26	98	89	-31
		MD	202	183	130	203	218	193	217
		PM	61	21	6	39	56	65	23
		LN	109	3	3	65	104	138	8
	Outbound	AM	58	53	35	38	53	58	51
		MD	62	76	90	80	63	121	118
		PM	144	100	58	102	80	93	95
		LN	-22	0	-5	-12	-16	-13	0

Source: BPM Facility Volumes (CBD Tolling Alternative minus No Action Alternative).
* Analyzed demand volumes.
1 **Table 4B-21** shows a detailed breakdown of the projected traffic volume increases along the Trans-Manhattan Expressway and Cross Bronx Expressway, which would be lower.

Two facilities crossing the Manhattan CBD—the Queens-Midtown Tunnel and Hugh L. Carey Tunnel—would be expected to have higher increases in traffic volumes inbound under Tolling Scenarios C, D, E, and F compared to other tolling scenarios, some of which have a negative increment. The volume increments for these tolling scenarios generally fall within a very narrow range and are expected to have similar effects. Only the inbound direction was analyzed because that direction experiences higher levels of congestion and delays.

Two facilities that handle circumferential diversion of through Manhattan CBD trips—the Verrazzano-Narrows Bridge and the George Washington Bridge—are expected to have higher increases in outbound (westbound) traffic volumes under Tolling Scenarios C, D, E, and F compared to other tolling scenarios. The George Washington Bridge/Trans-Manhattan/Cross Bronx Expressway corridor was assessed analytically and qualitatively because the data to properly build and calibrate a Vissim microsimulation model were not available (and current data would not be representative given the COVID-19 pandemic). Only the outbound (westbound) direction was analyzed for both the George Washington Bridge (New Jersey-bound) and the Verrazzano-Narrows Bridge (Staten Island bound) because the volume increments and congestion would be higher in that direction.

For all highway analyses, Tolling Scenario D was chosen as the representative tolling scenario due to having daily volumes that land between Tolling Scenarios E and F. In addition, Tolling Scenario D generally presented larger peak-hour volumes. For these reasons, Tolling Scenario D was analyzed in detail. For congested roadway segments, a Vissim microsimulation model was used to analyze the No Action Alternative and the CBD Tolling Alternative for the representative tolling scenario where a model was available. For roadways operating at higher speeds of 40 mph or greater, the Highway Capacity Software (HCS) model was used. A qualitative and analytical method was used to analyze congested roadways where neither a Vissim model nor reliable pre-COVID-19-pandemic traffic data were available since the HCS is not applicable for evaluation of congested roadways. A qualitative approach was also used in instances where all tolling scenarios would result in lower traffic volumes at a facility and its approaches.

4B.2.2 Summary of Intersection Analysis to Determine Representative Tolling Scenario with Highest Potential Increase in Traffic

The number of intersections projected to have an increase of 50 or more vehicles in a peak hour was used as a basis for evaluating the relative potential of each tolling scenario to trigger adverse effects and to determine which tolling scenario(s) to analyze in detail. The tolling scenarios with the highest crossing credits produced the highest number of intersections that would experience an increase of 50 or more vehicles in a peak hour. Because the number of intersections that would be potentially adversely affected correlates directly with the increase in facility crossing volumes feeding those intersections, this methodology was also used to identify which tolling scenario(s) to analyze in detail to evaluate potential adverse effects along highways leading to these crossing facilities. Diversion to circumferential routes that avoid the Manhattan CBD was found to be directly related to the level of CBD tolls (due to CBD toll crossing credits); therefore, the methodology also works to identify which tolling scenario(s) to analyze in detail for circumferential routes. The results of the BPM modeling confirmed that tolling scenarios with the highest tolls (and tolling crossing credits) produced the highest diversions to the Hugh L. Carey Tunnel and Queens-Midtown Tunnel, as well as along circumferential routes.

Table 4B-2 summarizes the number of times the peak-hour volume increment meets or exceeds the threshold of 50 or more vehicles for any given intersection (or intersection approach) within the traffic study areas established for this EA. Peak-hour traffic increments generated by each tolling scenario were assigned to evaluate the potential increase (or decrease) in traffic per the methodology described in Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation." This evaluation was the basis for determining the representative tolling scenario to use for detailed traffic impact analysis.[5]

As shown in Table 4B-2, Tolling Scenarios A, B, and G—with the lowest tolls along with the fewest discounts or exemptions, and no crossing credits—would result in an overall reduction in traffic and minimal shift of traffic to alternate routes. Increases in traffic volumes along alternate routes would result in 9, 10, and 10 instances out of 363,[6] respectively, where intersection or approach volumes would increase by 50 or more vehicles in a peak hour. Tolling Scenario C—with higher tolls along with discounts, exemptions, and partial crossing credits—would result in routing changes that lead to 24 instances where peak-hour volumes would increase by 50 or more vehicles at intersections or approaches. Tolling Scenarios D, E, and F incorporate higher tolls and more widely applied crossing credits, discounts, and/or exemptions, leading to 50, 48 and 50 instances out of 363 of an increase of 50 or more peak-hour vehicles at any intersection or intersection approach, respectively.

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5 The 50 or more additional vehicles threshold was used only to determine the representative tolling scenario for detailed traffic analysis; all intersections in the 15 study areas were analyzed regardless of whether traffic volumes increased or decreased.

6 A total of 363 intersection analyses were performed at 102 locations during the AM, MD, PM, and LN peak hours.

Table 4B-2. Instances of Intersections Meeting/Exceeding the Traffic Volume Screening Threshold in an Analysis Hour: Comparison of Tolling Scenarios

STUDY AREA	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Downtown Brooklyn	2	2	2	0	0	0	2
Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan	0	0	8	18	17	17	0
Hugh L. Carey Tunnel—Red Hook	0	0	0	7	7	7	0
Holland Tunnel—Jersey City	0	0	0	2	0	2	0
Lincoln Tunnel—Manhattan	0	0	0	0	0	0	0
East Side at 60th Street—Manhattan	1	1	1	2	2	2	1
West Side at 60th Street—Manhattan	0	0	0	0	0	0	0
Queens-Midtown Tunnel—Manhattan	0	0	2	5	5	5	0
Queens-Midtown Tunnel/Ed Koch Queensboro Bridge—Long Island City	1	1	4	9	9	10	1
Robert F. Kennedy Bridge—Queens	2	2	3	3	3	2	2
Robert F. Kennedy Bridge—Bronx	0	0	0	0	0	0	0
Robert F. Kennedy Bridge—Manhattan	3	4	3	3	4	4	3
West Side Highway/Route 9A at West 24th Street	0	0	0	0	0	0	0
Lower East Side—Manhattan	0	0	0	0	0	0	0
Little Dominican Republic—Manhattan	0	0	1	1	1	1	1
TOTAL	**9**	**10**	**24**	**50**	**48**	**50**	**10**

Source: WSP USA, 2022.

Tolling Scenarios D, E, and F provide the most extensive crossing credits for tolls paid at existing tolled facilities and would result in the greatest shift of traffic to the Queens-Midtown Tunnel and the Hugh L. Carey Tunnel. These tolling scenarios also have the highest tolls, due to the need to offset the revenue loss due to crossing credits, resulting in the highest diversion to circumferential routes via the Verrazzano-Narrows Bridge and the George Washington Bridge. Although Tolling Scenarios D and F have the same number of exceedances of the threshold with 50 instances, Tolling Scenario D was selected for detailed traffic analysis because it has a higher number of potentially affected intersections in the critical Lower Manhattan Study Area. However, it should be noted that Tolling Scenarios D, E, and F are very similar and would be expected to have very similar potential traffic effects; therefore, Tolling Scenario D is considered to be the representative tolling scenario inclusive of Tolling Scenarios E and F.

The Synchro traffic model was used to perform a detailed analysis of intersections for Tolling Scenario D. An additional Synchro analysis was performed in the Downtown Brooklyn study area for Tolling Scenario C, which was determined to have a higher potential for traffic effects in two instances where the increase in traffic volumes is projected to be 50 or more vehicles.

Calibrated Vissim microsimulation traffic models adapted for the CBD Tolling Alternative were used to perform detailed traffic analyses of the highway approaches to the Hugh L. Carey Tunnel and Queens-Midtown Tunnel, which are projected to have the highest increase in traffic volumes under Tolling Scenario D. A Vissim analysis was also performed at the Verrazzano-Narrows Bridge and its approaches to evaluate the potential traffic effects due to circumferential route diversion. An analytical and qualitative traffic analysis was performed at the George Washington Bridge including its approaches, and the Franklin D. Roosevelt (FDR) Drive near the Manhattan Bridge because pre-COVID-19-pandemic data were not available to create a Vissim traffic model at these locations. An estimation of the potential traffic effects was made based on the projected increase in traffic volumes in relation to the projected increase in traffic volumes at the Queens-Midtown Tunnel and the Long Island Expressway where detailed modeling was performed. Additional analyses were completed using HCS for the Bayonne Bridge, the Eastern Spur of I-95 New Jersey Turnpike, and a section of the Robert F. Kennedy (RFK) Bridge from Queens to the ramp connecting with the Manhattan leg of the RFK Bridge.

4B.3 OVERVIEW AND CONTEXT

An extensive network of highways serves the 28-county regional study area (see **Figure 3-1** in **Chapter 3, "Environmental Analysis Framework"**). This section describes the existing highway network at two levels:

- A broad discussion of highways throughout the regional study area
- A more detailed presentation of the highways that directly connect to the Manhattan CBD or are used to bypass the Manhattan CBD

Many of the region's highways connect directly with the bridges, tunnels, and local roadways that access the Manhattan CBD. Other major highways are circumferential in nature and provide regional access, bypassing the Manhattan CBD. The highway network includes several primary interstates (e.g., I-78, I-80, I-84, I-87, and I-95), auxiliary interstate routes (e.g., I-278, I-287, I-495, and I-684), and other limited-access state highways (e.g., NJ Route 3, NJ Route 4, NJ Route 17) and parkways (e.g., Grand Central Parkway, Henry Hudson Parkway). See **Appendix 4B.8, "Transportation: Overview of Highways Throughout the Study Area."**

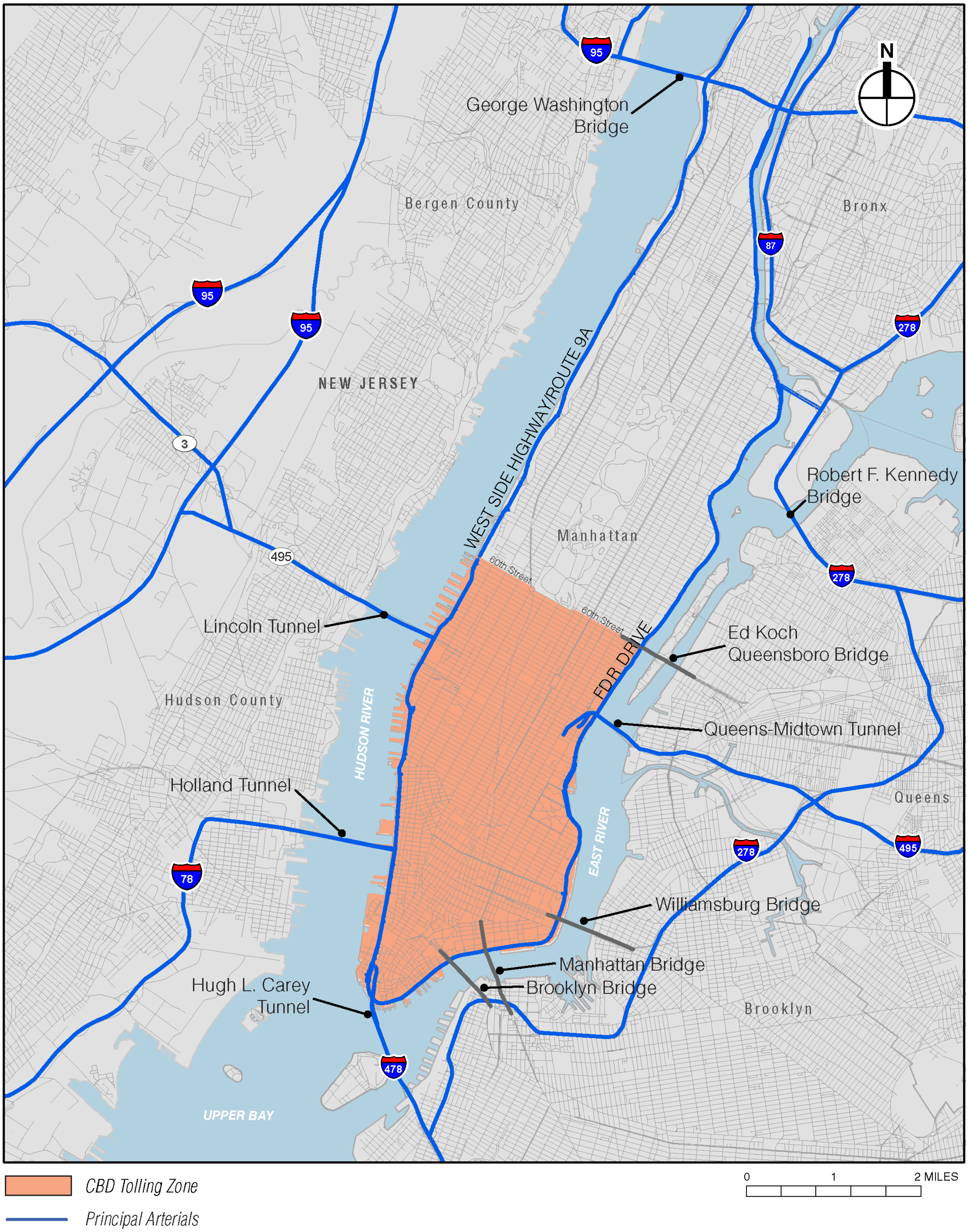
The potential effects on area highways from the Project under the representative tolling scenario would be concentrated on certain highways that directly lead into the Manhattan CBD and those that provide circumferential service around the Manhattan CBD. Direct highway routes to the Manhattan CBD that are unlikely to experience increases in traffic volumes from diversions would be expected to have reductions in traffic across all tolling scenarios and, therefore, a beneficial effect on traffic operations. Locations farther from the Manhattan CBD (or without direct routes to and from the Manhattan CBD) would be less affected as Manhattan CBD traffic becomes more dispersed throughout the region.

4B.3.1 Overview of Roadways and Highways Leading to the Manhattan CBD

This section gives an overview of the key roadways and highways that lead directly to the Manhattan CBD, for the purpose of providing appropriate background and context for the highway and intersection impact analyses later in this subchapter. The roadway descriptions are grouped by crossing location: Uptown Manhattan, Queens, Brooklyn, and New Jersey.

Figure 4B-2 shows the key highways in the area directly leading to the Manhattan CBD.

Figure 4B-2. Highways Leading to the Manhattan CBD



Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

UPTOWN MANHATTAN APPROACHES (60TH STREET CROSSINGS)

The northern boundary of the CBD tolling area inclusive of 60th Street is accessed by two highways and 16 avenues. From west to east, these highways and avenues are listed below, along with the number of lanes at the 60th Street Manhattan CBD boundary:

- **Route 9A** runs along the east side of the Hudson River from Lower Manhattan continuing northward through Upper Manhattan, the Bronx and Westchester County. It is known as West Street from the southern tip of Manhattan to West 14th Street, Eleventh Avenue from West 14th Street until West 22nd Street, Twelfth Avenue from West 22nd Street until West 58th Street, the Joe DiMaggio Highway from West 58th Street to West 72nd Street, and the Henry Hudson Parkway from West 72nd Street through the Bronx. In the Bronx, Route 9A serves as a local arterial up to the northern end of Westchester County. It is a bi-directional highway with six to eight lanes, with an elevated northern section (from West 59th Street to West 72nd Street) and an at-grade southern section south of West 59th Street. Trucks and buses are permissible only on the surface section, south of West 59th Street.
- **Twelfth Avenue** is a one-way, northbound street. It begins at an intersection with West Side Highway/Route 9A at West 54th Streets and continues to West 61st Street with one traffic lane and one parking lane. At West 61st Street, it continues as Riverside Boulevard, which is a two-way street with one traffic and one parking lane in both directions.
- **Eleventh Avenue/West End Avenue** starts at the West Side Highway/Route 9A between West 21st Street and West 22nd Street and continues north along the west side of Manhattan. South of West 34th Street, it is one-way southbound. Between West 34th and West 40th Street it is a two-way street. Between West 40th and West 57th Street, it is one-way southbound. North of West 57th Street, it is a two-way street. The number of traffic lanes varies; at the 60th Street Manhattan CBD boundary, it has two traffic lanes and a parking lane in both directions, plus a striped median/turn lane.
- **Tenth Avenue/Amsterdam Avenue** begins at West 14th Street and carries northbound traffic as far as West 110th Street (Cathedral Parkway), where it then continues as a two-way street. At the 60th Street Manhattan CBD boundary, it has three traffic lanes, a dedicated bicycle lane, and two parking (also used for loading and bus stop locations) lanes.
- **Ninth Avenue/Columbus Avenue** is a southbound street. It ends south of West 14th Street at Gansevoort Street in the West Village and extends uptown to West 59th Street, where it becomes Columbus Avenue. Columbus Avenue extends through the Upper West Side to West 110th Street, where it changes name to Morningside Drive, and runs north through Morningside Heights to West 122nd Street. At the 60th Street Manhattan CBD boundary, it has three traffic lanes, two parking lanes, and a protected bicycle lane.
- **Broadway** originates in Lower Manhattan and runs diagonally across the Manhattan street grid through the length of Manhattan, through the Bronx and into Westchester County to counties north of New York City. The street width and street direction vary widely, and in certain segments such as in Times Square, the street has been pedestrianized. At the 60th Street Manhattan CBD boundary, it has three traffic lanes and one parking lane in each direction, separated by a landscaped median.

- **Eighth Avenue** is a one-way northbound street that starts in the West Village at the intersection of Hudson Street and Bleecker Street and runs north to Columbus Circle at West 59th Street and then changes name to become Central Park West. North of West 110th Street the name changes to Frederick Douglass Boulevard. This avenue ends north of West 155th Street and merges into Harlem River Drive. At the 60th Street Manhattan CBD boundary, it has two traffic lanes, one parking lane, one loading/no standing lane, and a protected bicycle lane.
- **Seventh Avenue** is a one-way southbound street that originates at West 59th Street/Central Park South and runs south to the intersection of Carmine Street/Clarkson Street and Seventh Avenue, before turning into Varick Street. The northern boundary of the avenue connects to the Central Park roadway system, which is open to authorized vehicles part time.
- **Sixth Avenue** is a one-way northbound street that starts in Tribeca at the intersection of Church Street and Franklin Street and runs north to West 59th Street/Central Park South. The northern edge of the avenue connects to the Central Park roadway system, which is open to authorized vehicles part time.
- **Fifth Avenue** is a southbound avenue that originates at the Harlem River Drive near 143rd Street and passes through Manhattan along the east side of Central Park and through Midtown to Washington Square Park in Greenwich Village. At its northern end, the avenue is fed by both the Harlem River Drive and Madison Avenue Bridge (from the Bronx) and is bisected by Marcus Garvey Park near 120th Street. At the 60th Street Manhattan CBD boundary, it has two traffic lanes, one bus lane, one parking lane, and a turn lane.
- **Madison Avenue** is a north–south avenue beginning at Madison Square Park (at East 23rd Street) to the Madison Avenue Bridge over the Harlem River at West 142nd Street. Madison Avenue carries one-way northbound traffic from East 23rd Street to East 135th Street. Between East 135th Street and East 142nd Street, Madison Avenue only carries traffic to/from the Madison Avenue Bridge, though there is also a service road on this segment named Madison Avenue that is not connected to the rest of the avenue in Manhattan and carries southbound traffic only from the Harlem River Drive. At the 60th Street Manhattan CBD boundary, it has two traffic lanes, a double bus lane, and a turn lane.
- **Park Avenue** extends from Astor Place in Cooper Square to East 138th Street and carries both northbound and southbound traffic south of East 132nd Street. The avenue is called Union Square East between East 14th and East 17th Streets, and Park Avenue South between East 17th and East 32nd Streets. Between East 33rd Street and East 40th Street, there is a one lane northbound vehicular tunnel. Park Avenue splits by direction to wrap around Grand Central Terminal and other adjacent buildings at East 42nd Street. It rejoins at East 45th Street. North of East 97th Street, the landscaped median is replaced by Metro-North Railroad’s four tracks as it transitions from tunnel to an elevated structure. At the 60th Street Manhattan CBD boundary, Park Avenue has three traffic lanes and a parking lane in each direction, separated by a wide landscaped median.
- **Lexington Avenue** carries southbound, one-way traffic from East 131st Street to Gramercy Park at East 21st Street. At the 60th Street Manhattan CBD boundary, it has three traffic lanes, one weekday-only curb bus lane (parking lane on weekends), and one parking lane.

- **Third Avenue** begins at the intersection of Cooper Square and East 6th Street and continues north to 128th Street. It carries two-way traffic between East 6th Street and East 24th Street, whereupon it is one-way, northbound until it terminates at 128th Street in Manhattan. At the 60th Street Manhattan CBD boundary, it has four traffic lanes, one parking lane, and a turn lane.
- **Second Avenue** carries southbound traffic from Harlem River Drive at East 128th Street to Houston Street. South of Houston Street, the roadway continues as Chrystie Street south to Canal Street. At the 60th Street Manhattan CBD boundary, it has five traffic lanes, one bus lane, and a bicycle lane. Second Avenue provides a connection to the Ed Koch Queensboro Bridge and the Queens-Midtown Tunnel.
- **First Avenue** begins at Houston Street and travels northbound for over 125 blocks before terminating at the Willis Avenue Bridge into the Bronx at the Harlem River near East 126th Street. South of Houston Street, the roadway continues as Allen Street south to Division Street. First Avenue is a one-way, northbound street. At the 60th Street Manhattan CBD boundary, it has four traffic lanes, one bus lane and a protected bicycle lane.
- **Sutton Place/York Avenue** is a two-way street between East 53rd and East 92nd Streets. At the 60th Street Manhattan CBD boundary, York Avenue has two traffic lanes and one curb lane in each direction. Both curb lanes are used as a bus stop/additional travel lane.
- **FDR Drive** follows the East River shoreline between the Battery Park Underpass and approximately East 125th Street where it continues to Dyckman Street as the Harlem River Drive. It is a limited-access highway with interchanges at principal east–west streets. It also provides direct connections to the Brooklyn, RFK and George Washington Bridges. Commercial vehicles are prohibited on the FDR Drive, and there are height restrictions along its route.

Connections to the north end of Manhattan are provided by the George Washington Bridge (I-95), the Alexander Hamilton Bridge (I-95), the Henry Hudson Parkway and Henry Hudson Bridge, the RFK Bridge, and eight local roadway bridges that cross the Harlem River from the Bronx.

QUEENS CROSSINGS

The **Ed Koch Queensboro Bridge** connects the Upper East Side of Manhattan to Long Island City, Queens. It is a two-level bridge over the East River, passing over Roosevelt Island. In Queens, it is fed by Queens Boulevard, Northern Boulevard, 21st Street, and other local streets. The upper level of the bridge has four lanes, with two vehicular lanes in each direction. The lower level has five vehicular lanes and one shared-use bicycle and pedestrian path. During the AM time period, the upper-level southern roadway operates as a high-occupancy vehicle (HOV) contra-flow into Manhattan. The inner four and the southernmost lanes are used for automobile traffic. The northernmost lane was converted into a pedestrian walk and bicycle path in 2000.[7] In Manhattan, there are exits from the upper level of the bridge to East 62nd Street and East 63rd Street and from the lower level of the bridge to Second Avenue and East

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7 NYCDOT plans to convert the southern outer roadway on the lower level to a dedicated pedestrian path and to move pedestrians from the existing dedicated shared bicycle/pedestrian lane on the northern outer roadway to the southern outer roadway. It was assumed that this plan will be implemented by 2023 and was therefore included in the No Action Alternative roadway network.

60th Street. There are entrances from Second Avenue, East 57th, East 58th, and East 59th Streets. There is no toll to cross this bridge.

The **Queens-Midtown Tunnel** is a vehicular tunnel under the East River from the east side of Manhattan, in the residential neighborhood of Murray Hill, to the Hunters Point District of Long Island City. In Queens, the tunnel merges directly into the Long Island Expressway (I-495), which is approximately 1.5 miles west of the Long Island Expressway interchange with the Brooklyn-Queens Expressway (BQE). There are two tubes—one eastbound and one westbound—with two travel lanes each, although one lane of the eastbound tube is operated contra-flow during the AM peak period. In Manhattan, the tunnel is accessed via East 34th Street, East 36th Street, and Second Avenue. Vehicles exiting the tunnel can access East 37th Street or East 41st and East 34th Streets via Tunnel Exit Street. The TBTA collects tolls in both directions.

BROOKLYN CROSSINGS

The **Williamsburg Bridge** connects the Lower East Side of Manhattan at Delancey Street with the Williamsburg neighborhood of Brooklyn. In Brooklyn, it is fed by the BQE (I-278) and various local streets. In Manhattan, it is primarily fed by Delancey Street. The Williamsburg Bridge has eight lanes of vehicular traffic, two subway tracks, a pedestrian walkway, and a bikeway. There is no toll to cross this bridge.

The **Manhattan Bridge** connects Lower Manhattan at Canal Street to Downtown Brooklyn at Flatbush Avenue. In Manhattan, it is primarily fed by Canal Street. In Brooklyn, it is fed by the BQE (I-278), Flatbush Avenue, and various local streets. The Manhattan Bridge has seven lanes of vehicular traffic, four subway tracks, a pedestrian walkway, and a bikeway. There is no toll to cross this bridge.

The **Brooklyn Bridge** connects Lower Manhattan near City Hall to Downtown Brooklyn. In Manhattan, it is fed by the FDR Drive, Center Street/Park Row, and other local streets. In Brooklyn, it is fed by the BQE (I-278), Cadman Plaza, and various local streets. The bridge has two inbound travel lanes, three outbound travel lanes, and a pedestrian path. A travel lane in the Manhattan-bound direction was recently converted into a two-way bicycle lane, which is included in the No Action Alternative roadway network. There is no toll to cross this bridge, and commercial vehicles are prohibited.

The **Hugh L. Carey Tunnel** (I-478) connects the southern tip of Manhattan with Red Hook in Brooklyn. There are two tubes—one northbound and one southbound—with two travel lanes each. During the AM and PM, one of the lanes operates in a contra-flow direction to provide more peak direction lane capacity. In Manhattan, the tunnel is fed by West Side Highway/Route 9A and local streets. In Brooklyn, it is fed by the BQE (I-278), the Gowanus Expressway, Prospect Expressway, and local streets. The TBTA collects tolls in both directions.

NEW JERSEY CROSSINGS

Three vehicular Hudson River crossings provide connections between New Jersey and Manhattan of which only the two tunnels connect directly to the Manhattan CBD. The Port Authority of New York and New Jersey collects tolls on the following crossings in the eastbound direction.

- The **Holland Tunnel** is a vehicular tunnel under the Hudson River, connecting Lower Manhattan and Jersey City. In New Jersey, it is fed by the New Jersey Turnpike Extension (I-78), the Pulaski Skyway (US 1/9), and local roadways. The tunnel consists of two tubes, with two traffic lanes in each tube. The northern tube, which carries westbound traffic, originates at Broome Street in Manhattan between Varick and Hudson Streets and continues to 14th Street east of Marin Boulevard in Jersey City. The southern tube, carrying eastbound traffic, originates at 12th Street, east of Marin Boulevard, in Jersey City, New Jersey, and surfaces at the Holland Tunnel rotary in Manhattan just south of Canal Street.
- The **Lincoln Tunnel** is a vehicular tunnel under the Hudson River, connecting Midtown Manhattan and Weehawken, New Jersey. The tunnel consists of three vehicular tubes, with two traffic lanes in each tube. The center tube contains reversible lanes and is heavily used by buses, particularly during the morning peak when it serves as a de facto final leg of the Exclusive Bus Line (XBL) along NJ Route 495 leading to the Lincoln Tunnel. The northern and southern tubes exclusively carry westbound and eastbound traffic, respectively. In New Jersey, the Lincoln Tunnel is fed by NJ Route 495, which connects to the New Jersey Turnpike and NJ Route 3. In Manhattan, it is fed by Ninth and Eleventh Avenues, and a combination of local streets with dedicated ramps to the Port Authority Bus Terminal.

4B.4 HIGHWAY ASSESSMENT

4B.4.1 Methodology

TRAFFIC ASSIGNMENT

The BPM was used to determine projected changes in traffic volumes at bridges, tunnels, and/or highways crossing into or out of the Manhattan CBD, along major north–south roadways in Manhattan, and along bypass routes including the Verrazzano-Narrows Bridge, George Washington Bridge, and RFK Bridge and their approaches. This increase or decrease in volume is referred to as the BPM increment. The initial 2017 BPM forecast volumes were compared to observed traffic volumes for 2017 and then calibrated at each facility within each sector to account for over- or under-assignment of trips by the BPM as detailed in the methodology for trip assignments in **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation**."[8]

To evaluate the potential effects of the Project on the highway system, 10 highway corridors potentially affected were identified using the BPM and assessed as described below:[9]

- Long Island Expressway (I-495) leading to the Queens-Midtown Tunnel

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[8] Additional adjustments were made to account for a bounce back factor to adjust modeled demand in consideration of available capacity at any given facility when drivers would likely quickly return to their original route choice due to higher congestion and delays along the diversion route. The bounce back traffic volumes were subtracted from the initial CBD Tolling Alternative facility traffic volumes and added back to the original facility traffic volumes. Please see **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation**" for additional information on this methodology.

[9] These corridors were initially identified using the BPM, which showed traffic volume increases along these corridors for some tolling scenarios. Subsequent post-processing was used to determine the volume increment after adjusting for calibration variance and capacity constraints. Subsequent BPM screening runs were made for all tolling scenarios to identify additional highway segments that are projected to have volume increases greater than 5 percent.

- Gowanus Expressway leading to I-278 Hugh L. Carey Tunnel
- Staten Island Expressway leading to the Verrazzano-Narrows Bridge
- I-78 approach to the Holland Tunnel[10]
- NJ Route 495 approach to the Lincoln Tunnel
- Trans-Manhattan/Cross Bronx Expressway between the George Washington Bridge and I-87[11]
- FDR Drive—East 10th Street to Brooklyn Bridge
- The Bayonne Bridge and Approaches
- Eastern Spur of I-95 New Jersey Turnpike
- RFK between Queens and Ramps to/from Manhattan

Refer to **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation,"** for more information about the analysis methodology. It should be noted that throughout the public consultation period, concerns were expressed regarding potential traffic impacts on several of these highway corridors, given their proximity to environmental justice communities.

Two of the 10 corridors, the NJ Route 495 approach to the Lincoln Tunnel, and the I-78 approach to the Holland Tunnel were assessed analytically for the Existing conditions and qualitatively for the No Action Alternative and the CBD Tolling Alternative since there would be a net reduction in traffic under the analyzed tolling scenarios (Tolling Scenarios D, E, and F) and a higher net reduction in traffic for all other tolling scenarios. Therefore, these two corridors would be expected to have fewer delays and improved traffic operations under all tolling scenarios.

The remaining eight highway corridors analyzed would be expected to have higher traffic volumes at certain locations for some tolling scenarios. A variety of analytic tools and methods were used to evaluate the effects of the CBD Tolling Alternative, depending on the level of congestion and the appropriateness of the use of available models.

With highway peak-hour traffic assignments, and particularly in the absence of detailed Vissim microsimulation modeling, SEQRA and National Environmental Policy Act evaluations have used an initial assessment of incremental volumes as a more qualitative measure of potential effect. This is essentially an estimate of whether the variation in total volume falls within a reasonable band of typical volume variations that could be expected with or without a proposed project and where there would not be a noticeable change in speeds, travel times, or delays. For assessment purposes, it is assumed to be a change of 5 percent or less under congested conditions at LOS E or LOS F[12] based upon the analyzed effects of such volume increases where microsimulation was performed. If that is determined to be the case, then it can be expected that there would be no adverse effect.

10 There was a small net decrease in traffic volumes at the Holland Tunnel approaches since the traffic reduction due to CBD tolling was greater than diverted traffic to the facility.

11 An analytical and qualitative analysis was performed at the George Washington Bridge and its approaches and along the FDR Drive south of East 10th Street because a Vissim model was not available for this location.

12 Under SEQRA, a higher increase in volume is not considered to have an adverse effect if the LOS for the build condition is D or better.

For three highway locations, there was a Vissim model available which was adapted and used to analyze the potential traffic effects of the CBD Tolling Alternative. Each model was recalibrated to the existing condition volumes, geometry, and travel times. This type of model is particularly useful under congested conditions but can also be used at non-congested locations.

For three highway locations without an available Vissim model (the Bayonne Bridge and approaches, the eastern spur of I-95 New Jersey Turnpike, and the RFK Bridge between Queens and ramps to/from Manhattan), the HCS was used to evaluate the incremental traffic volume and obtain performance measures including change in delay and LOS. HCS models cannot be used effectively under congested conditions where the volume/capacity ratio is greater than 1. None of the models exceed the volume/capacity ratio threshold under any condition.

For two congested highway segments without an available Vissim model (the Trans-Manhattan Expressway/Cross Bronx Expressway and the FDR Drive south of East 10th Street), and where the HCS methodology is not appropriate, evaluation of the incremental traffic volume change provides the basis for the assessment of potential adverse effects.[13]

HIGHWAY ANALYSIS METHODOLOGY AND DETERMINATION OF POTENTIAL ADVERSE EFFECTS

To determine whether diversions of traffic to highway segments from new tolls are significant, FHWA typically consults with state sponsoring agencies—such as NYSDOT as well as, in this case, the TBTA, an affiliate of MTA, a New York State public benefit corporation—with expertise in transportation analyses, to determine the appropriate criteria. After careful review of how other state agencies have applied SEQRA to determine the significance of diversionary effects on highways, along with detailed Vissim or HCS analyses used to evaluate roadway stress thresholds, TBTA and NYSDOT, in consultation with NYCDOT, have agreed that the following criteria are appropriate for determining the significance of traffic effects along highways potentially affected by the Project:

- Under very congested conditions, at speeds of 20 mph or less, an increase in traffic volumes of up to 5 percent would not be considered significant.
- At speeds over 20 mph, an increase in traffic volume of up to 10 percent would not be considered significant.

The above guidelines are intended as a screening threshold under congested conditions. Highway segments on the fringe of the threshold would be carefully evaluated. Cases where highway segments surpass the volume threshold but would have only a minimal degradation in traffic operations and speed would not be considered as having an adverse effect. Determination of adverse traffic effects needs to consider the overall trip length and the variability in travel time that affects user perceptions of travel time. In general, based on modeling results along congested and uncongested corridors, the 5 percent and 10 percent thresholds would produce decreases in speeds and increases in travel times that would be relatively small within the context of average travel times in the New York City area; therefore, the change in delays and

[13] A similar approach was used for the *Tappan Zee Bridge Hudson River Bridge Crossing Project FEIS*, Vol. 1, Chapter 4, Page 4-18.

travel times would not be noticeable to most motorists. More information on the highway screening process can be found in **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA Evaluation**."

SEQRA CRITERIA USED TO DETERMINE ADVERSE TRAFFIC EFFECTS FOR HIGHWAYS

Where a detailed traffic analysis was performed using the Vissim model or HCS an additional SEQRA criterion was applied to determine adverse highway effects that relies on an increase in delay of 2.5 minutes or greater. This criterion was derived from an examination of average weekday travel times to the Manhattan CBD from the outer Boroughs based on FHV recorded travel time and distance between passenger pickups and drop-offs prior to COVID-19 and during spring 2022 when average travel times rebounded to pre-pandemic levels.

Average travel times to the Manhattan CBD from the outer boroughs during the weekday between 6:00 a.m. and 8:00 p.m. vary from about 35 minutes from Brooklyn, 45 minutes from the Bronx, 45 minutes from Queens, and about 58 minutes from Staten Island. A 2.5 minute increase in travel time under the SEQRA threshold would represent about a 5 percent increase in total travel time, depending on the trip origin, with shorter trips experiencing a higher percent change and longer trips experiencing a smaller percent change in travel time. See **Appendix 4B.7, "Transportation: Average Travel Time by Borough."**

Because up to a 2.5 minute increase in travel time would not be noticeable to most drivers over the length of the average trip, it is an appropriate threshold for determining adverse traffic effects. This threshold was applied at all locations where a detailed traffic analysis was performed. Where a detailed traffic analysis was not performed due to the lack of availability of a calibrated Vissim model, or where reliable pre-COVID-19 traffic data were not available, the following SEQRA criteria were used to determine adverse effects: an increase in traffic volumes greater than 5 percent at speeds of less than 20 mph, or an increase in traffic volumes greater than 10 percent at speeds of 20 mph or higher.

It should be noted that the average travel time savings within the Manhattan CBD is estimated at about 4 minutes inbound and 4 minutes outbound which would offset any potential increases in travel times to the Manhattan CBD that would be experienced by some drivers under certain tolling scenarios.

MICROSIMULATION MODEL

Vissim microsimulation models were developed[14] along the key highway segments potentially affected under Tolling Scenario D, which is representative of the tolling scenarios (including Tolling Scenarios E and F), to simulate vehicular movements in a dynamic setting and to create a virtual environment to replicate traffic conditions. These models were calibrated based on 2019 existing conditions, including traffic

[14] Calibrated Vissim models were derived from previous studies, where available, and adapted and updated for the Project traffic study. Vissim models were not available for the Trans-Manhattan Expressway/Cross-Bronx Expressway corridor and the FDR Drive corridor. These two corridors were analyzed using a combination of analytical and qualitative methods. As noted in **Section 4B.1**, **"Transportation: Transportation and Traffic Methodology for NEPA Evaluation,"** current data would not be representative due to the pandemic and thus could not be used to develop a Vissim model for certain roadways.

volumes processed[15] by the model, average speed, and observed queue lengths. Processed volumes reflect the number of vehicles that were able to enter the simulation model and traverse the analyzed segment within the analysis time period. Vehicles that are not processed in the analysis time period are considered to be the unmet demand and are therefore in queue outside of the simulated area at the end of the analysis time period. Average speed is calculated over the length of the analyzed segment for the processed vehicles. Observed queue lengths are recorded for vehicles that enter the simulation model. Unmet demand is assumed to be the additional vehicle queue in the real world that would be added to the end of the observed queue in the model. Once the Vissim models were calibrated, traffic was adjusted to 2023 by adding the No Action Alternative incremental volume[16] derived from the No Action Alternative BPM to evaluate the No Action Alternative traffic conditions. Measures of performance included traffic density, speed, delays, and LOS.

For the highway analysis, the Vissim modeling focused on the 3 weekday peak 1-hour periods (AM, midday [MD], and PM) in the Manhattan-bound direction where queuing and delays on the highway network would be expected to be the most severe for the tolling scenario with the largest increases in traffic. The peak 1-hour period for the AM, MD, and PM periods vary by highway corridor and are not the same for each corridor. These models produce density outputs that enabled the evaluation of the increase in density and delays between the No Action Alternative and the CBD Tolling Alternative.

HIGHWAY CAPACITY SOFTWARE ANALYSIS[17]

HCS analyses were performed along three highways where existing speeds were about 40 mph or higher during the AM, MD, and PM peak hours:

- RFK-Queens leg
- Bayonne Bridge
- New Jersey Turnpike (I-95) Eastern Spur

The HCS provides density, LOS, speed, and measures of performance where the LOS is E or better. At LOS F, the HCS does not provide speed and density as outputs.

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15 Processed traffic volumes is a measure of performance representing the ability of a roadway to meet traffic demand. When the processed volume is less than the traffic demand, the excess volume is converted to queues which result in increased travel times.

16 Incremental volumes were added to the No Action Alternative condition to account for network changes implemented by NYCDOT including a dedicated bike lane on the Brooklyn Bridge, a dedicated bike lane on the Ed Koch Queensboro Bridge, geometric changes at some intersections, and the reduction in travel lanes along portions of the BQE from three lanes to two lanes in each direction.

17 The Highway Capacity Software (HCS) is a macroscopic traffic simulation software that implements the methodology in the *Highway Capacity Manual* (HCM) 6th Edition. This tool is useful when speeds are generally 40 mph or higher. It provides LOS, speed, and density as measures of performance. At LOS F, this software does not provide useful output and, therefore, cannot be used effectively under congested conditions.

SUMMARY OF ANALYTICAL TOOLS AND CRITERIA USED TO DETERMINE ADVERSE EFFECTS

Table 4B-3 summarizes the analytical tools and the criteria used to determine adverse effects for the 10 highway study locations.

Table 4B-3. Analysis Type and Criteria Used for the Determination of Adverse Effects

ANALYSIS LOCATION[1]	% CHANGE IN VOLUME (SEQRA)	NO ACTION SPEED AT FACILITY	PASS SCREENING ?	ANALYSIS TYPE	RESULT OF ADDITIONAL ANALYSIS	CRITERIA USED TO DETERMINE ADVERSE EFFECT	ADVERSE EFFECT?
Holland Tunnel	Traffic volumes decrease	< 20 mph	Yes	No further analysis	N/A volumes decreased	> 5% volume increase	No
Lincoln Tunnel	Traffic volumes decrease	< 20 mph	Yes	No further analysis	N/A Volumes decreased	> 5% volume increase	No
QMT/LIE	> 5%	< 20 mph	No	Vissim model	Up to 4 min additional delay	> =2.5 minutes of increased delay	Yes
HCT	> 5%	< 20 mph	No	Vissim model	Up to 2.3 min additional delay	> =2.5 minutes of increased delay	No
VNB/SIE	> 10%	>= 20 mph	No	Vissim model	< 10 second increase in delay	> =2.5 minutes of increased delay	No
CBX/TME	> 5%	< 20 mph	No	SEQRA Volume Threshold	No additional analysis	> 5% volume increase	Yes
FDR Drive	> 5%	< 20 mph	No	SEQRA Volume Threshold	No additional analysis	> 5% volume increase	Yes
RFK Bridge	> 10%	>=20 mph	No	HCS	Minor changes in density/speed	>= 2.5 minutes of increased delay*	No
Bayonne Bridge	> 10%	> =20 mph	No	HCS	Minor changes in density/speed	>= 2.5 minutes of increased delay*	No
Eastern Spur of NJ Turnpike	> 10%	> =20 mph	No	HCS	Minor changes in density/speed	> =2.5 minutes of increased delay*	No

Source: WSP USA, 2022.
1 QMT-Queens-Midtown Tunnel; LIE-Long Island Expressway; HCT-Hugh L. Carey Tunnel; VNB-Verrazzano-Narrows Bridge; SIE-Staten Island Expressway; CBX-Cross Bronx Expressway; TME-Trans-Manhattan Expressway.
* For HCS analyses, it is assumed that additional delays along the corridor are less than 2.5 minutes if speeds remain at 40 mph and above.

Vissim models were available at five study locations: Lincoln Tunnel, Holland Tunnel, Queens-Midtown Tunnel-Long Island Expressway corridor, the Hugh L. Carey Tunnel-Gowanus corridor, and Verrazzano-Narrows Bridge-Staten Island Expressway corridor. Two of the study locations, the Holland Tunnel and Lincoln Tunnel, were dropped from further analysis because the volume changes were found to be negative for all tolling scenarios and there would not be an increase in delay. The remaining three Vissim study locations were analyzed in detail using an increase in delay of greater than or equal to 2.5 minutes as the primary criterion for determining adverse effects, although other factors such as speed, queue length, and density were also taken into consideration.

Three study locations were determined to be appropriate for the HCS model where speeds were 40 mph or higher: the RFK–Queens leg, the Bayonne Bridge, and the eastern spur of the New Jersey Turnpike. These locations were also evaluated using a greater than or equal to 2.5 minutes additional delay threshold as the primary criterion for the determination of adverse traffic effects along with other criteria such as LOS, speed, and density. (Note: If speeds remained greater than 40 mph under the CBD Tolling Alternative it was assumed that delays would be under 2.5 minutes for the entire corridor).

The remaining two study locations, the Trans-Manhattan/Cross Bronx Expressway and the FDR Drive between the Williamsburg Bridge and the Brooklyn Bridge, did not have an available Vissim model and the HCS was not an appropriate tool under congested conditions. Therefore, the analysis at these two locations defaulted to the SEQRA volume threshold of greater than 5 percent increase in traffic volumes under congested conditions (< 20 mph) to determine adverse effects.

4B.4.2 Long Island Expressway (I-495) Leading to the Queens-Midtown Tunnel

The Queens-Midtown Tunnel connects the boroughs of Manhattan and Queens. The tunnel is designated as NY-495 and in Queens, leads directly to and from the Long Island Expressway (I-495) at the junction with the BQE (I-278), although the section from the Queens-Midtown Tunnel to Queens Boulevard in Queens is known as the Queens-Midtown Expressway, and the section between Queens Boulevard and the Queens-Nassau County line is known as the Horace Harding Expressway. The tunnel has two tubes, an inbound and outbound tube, each with two travel lanes. A contra-flow Bus/3+ HOV lane operates westbound in the morning from 6:00 a.m. to 10:00 a.m. from Van Dam Street to Queens-Midtown Tunnel and then along the south tube of the tunnel into Manhattan, providing three travel lanes to Manhattan during this time. Figure 4B-3 depicts the location of the highways leading to the Queens-Midtown Tunnel and highlights the extent of the microsimulation model area for the Queens-Midtown Expressway/I-495 analysis.

AFFECTED ENVIRONMENT

Consistent with other highway analyses for this Project, the highway segment analysis was performed using a Vissim model, which incorporated volume data from TBTA toll transaction data and was calibrated based on traffic counts and observed speeds using data provided by StreetLight Data, Inc. (a third-party, on-demand mobility analytics platform that provides past traffic information). Collectively, the TBTA transaction data and data provided by StreetLight Data, Inc. provided performance metrics including hourly volume, travel speed in miles per hour (mph). The data were used to calculate maximum queue length (in feet), density (in passenger cars per mile per lane), and overall LOS. For this microsimulation model, the maximum queue length is based on length of roadway occupied by vehicles not moving or moving below a speed of approximately 6 mph. Table 4B-4 presents a summary of the existing conditions during the weekday AM, MD, and PM peak hours.

Based on the October 2019, transaction data provided by TBTA, the highest average weekday hourly traffic volume of 3,612 vehicles (2,672 vehicles in the two inbound general-purpose lanes plus 940 vehicles in the contra-flow HOV lane) occurred along the Long Island Expressway (I-495) at the eastern portal of the Queens-Midtown Tunnel in the Manhattan-bound direction during the AM peak hour (8:00 a.m. to 9:00 a.m.).

Figure 4B-3. Highways Leading to the Queens-Midtown Tunnel

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Table 4B-4. Existing Conditions: Long Island Expressway (I-495): The Queens-Midtown Tunnel

PERFORMANCE (2019)	AM (8 a.m. to 9 a.m.)	MD (1 p.m. to 2 p.m.)	PM (5 p.m. to 6 p.m.)
Hourly Volume (vehicles)			
I-495 Inbound, Mainline	2,672	2,581	2,714
I-495 Inbound, High-Occupancy Vehicle (HOV)–AM only	940	—	—
Processed Hourly Volume (vehicles)*			
I-495 Inbound, Mainline	2,436	2,396	2,311
I-495 Inbound, HOV–AM only	940	—	—
Travel Time (min:sec)			
I-495 Inbound, Mainline	05:44	05:09	08:59
I-495 Inbound, HOV–AM only	01:19	—	—
Travel Speed (miles per hour)			
I-495 Inbound, Mainline	8.7	9.7	5.6
I-495 Inbound, HOV–AM only	40.8	—	—
Maximum Queue (feet)			
I-495 Inbound, Mainline	3,987	4,464	5,824
I-495 Inbound, HOV–AM only	2	—	—
Density (pc/mi/ln)			
I-495 Inbound, Mainline	78	72	133
I-495 Inbound, HOV–AM only	22	—	—
Level of Service (LOS)			
I-495 Inbound, Mainline	F	F	F
I-495 Inbound, HOV–AM only	C	—	—

Source: WSP USA, 2022.

* Processed volume is the volume actually handled by the Vissim model and is used for calibration purposes to make sure the model is set to actual traffic. For future conditions, the processed volume is a performance measure and unprocessed volumes create backups and longer queues.

Other hourly Manhattan-bound traffic volumes at the Queens-Midtown Tunnel include 2,581 vehicles and 2,714 vehicles during the MD peak hour (1:00 p.m. to 2:00 p.m.) and the PM peak hour (5:00 p.m. to 6:00 p.m.), respectively.

Travel speeds approaching the Queens-Midtown Tunnel depend upon the time of day. In the Manhattan-bound direction, speeds along the Long Island Expressway (I-495) at the eastern portal of the Queens-Midtown Tunnel during the AM peak hour averaged approximately 9 mph on the mainline lanes and approximately 41 mph on the contra-flow HOV lane, which operates only during the morning peak period. During the MD and PM peak hours, speeds in the Manhattan-bound direction on the mainline lanes were approximately 10 mph and 6 mph, respectively.

The maximum queue lengths along the Long Island Expressway (I-495) in the Manhattan-bound direction as measured east of the Queens-Midtown Tunnel portal in the microsimulation model, are approximately 3,987 feet, 4,464 feet, and 5,824 feet during the AM, MD, and PM peak hours, respectively.

The existing LOS varies from LOS C on the HOV lane during the AM peak hour to LOS F on the mainline lanes during all peak hours of a typical weekday day.

ENVIRONMENTAL CONSEQUENCES

Table 4B-5, Table 4B-6, and Table 4B-7 present the results of the Vissim analysis for the weekday AM, MD, and PM peak hours, respectively, for Tolling Scenario D, which is representative of the tolling scenarios, including Tolling Scenarios E and F. The assessment describes the incremental change between the No Action Alternative and the CBD Tolling Alternative.

The highway analysis of the Queens-Midtown Tunnel and its approaches indicated that under Tolling Scenario D, there would be relatively small increases in traffic during the AM and PM peak hours due to capacity constraints and a larger increase in traffic during the MD peak hour. The LOS at critical locations during the weekday AM, MD, and PM peak hours are projected to remain the same (at LOS F). The most notable change is expected to occur in the MD peak hour where travel speeds would potentially drop from about 11.8 to 6.0 mph and the travel times would potentially increase by about 4 minutes.

Under the SEQRA criteria the increase in traffic volumes would be within a 5 percent threshold during the AM peak hour with an increase of 125 vehicles. However, during the MD and PM peak hours, the increase in volume of 383 and 203 vehicles, respectively, would exceed a 5 percent threshold. However, the 2.5 minutes of additional delay threshold is exceeded only during the MD peak hour.

AM Results (8:00 a.m. to 9:00 a.m.)

With CBD tolling, traffic in the Manhattan-bound direction is projected to increase by approximately 125 vehicles leading into the Queens-Midtown Tunnel. This would likely result in an increase in travel time during the AM peak of approximately 137 seconds in the mainline lanes, with the travel time in the HOV lane remaining the same as the No Action Alternative. Speeds are anticipated to decrease by 2.7 mph, from 9.1 mph to 6.4 mph, on the mainline lanes, while speeds on the HOV lane would remain the same as the No Action Alternative. Queues are expected to increase by approximately 1,719 feet (or approximately 86 vehicles) along the Long Island Expressway (I-495) mainline with no increase in the queue length expected for the HOV lane. The density along the Long Island Expressway (I-495) mainline lanes is expected to increase by approximately 39 pc/mi/ln and the LOS service would remain at LOS F. (The HOV lane would continue to operate at LOS C and the density is projected to remain the same as the No Action Alternative). Under the SEQRA criteria, the projected increase in traffic of 125 vehicles during the AM peak hour would be within a 5 percent increase and the additional delay of 2.2 minutes is less than the 2.5 minutes threshold; therefore, there would not be an adverse traffic effect during the AM peak hour.

MD Results (1:00 p.m. to 2:00 p.m.)

With CBD tolling, traffic volumes in the Manhattan-bound direction are projected to increase by approximately 383 vehicles on the mainline lanes. This is projected to result in an increase of approximately 242 seconds in travel time and speeds are projected to decrease by 5.8 mph, from 11.8 mph to 6.0 mph. The maximum queue length is expected to increase by approximately 1,355 feet (or approximately 68 vehicles) along the Long Island Expressway (I-495) and the density is expected to increase approximately 76 pc/mi/ln. The LOS is expected to remain at LOS F. Under the SEQRA criteria, the projected increase in traffic of 383 vehicles during the MD peak hour would exceed 5 percent and the increased delay of 4.0 minutes would exceed the 2.5 minutes threshold; therefore, there would be a potential adverse traffic effect during the MD peak hour.

Table 4B-5. Long Island Expressway (I-495) Approach to Queens-Midtown Tunnel – AM (8:00 a.m. to 9:00 a.m.)

PERFORMANCE (2023)	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume (vehicles)			
I-495 Inbound, Mainline	2,680	2,805	125
I-495 Inbound, High-Occupancy Vehicle (HOV) – AM only	940	940	0
Processed Hourly Volume (vehicles)*			
I-495 Inbound, Mainline	2,432	2,434	2
I-495 Inbound, HOV – AM only	942	943	1
Travel Time (min:sec)			
I-495 Inbound, Mainline	05:31	07:48	02:17
I-495 Inbound, HOV – AM only	01:19	01:19	00:00
Travel Speed (miles per hour)			
I-495 Inbound, Mainline	9.1	6.4	-2.7
I-495 Inbound, HOV – AM only	40.9	40.9	0.0
Maximum Queue (feet)			
I-495 Inbound, Mainline	3,981	5,700	1,719
I-495 Inbound, HOV – AM only	6	6	0
Density (pc/mi/ln)			
I-495 Inbound, Mainline	74	113	39
I-495 Inbound, HOV – AM only	23	23	0
Level of Service (LOS)			
I-495 Inbound, Mainline	F	F	—
I-495 Inbound, HOV – AM only	C	C	—

Source: WSP USA, 2022.

Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

* Processed volume is the volume actually handled by the Vissim model and is used for calibration purposes to make sure the model is set to actual traffic. For future conditions, the processed volume is a performance measure and unprocessed volumes create backups and longer queues.

Table 4B-6. Long Island Expressway (I-495) Approach to Queens-Midtown Tunnel – MD (1:00 p.m. to 2:00 p.m.)

PERFORMANCE (2023)	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume (vehicles)			
I-495 Inbound, Mainline	2,594	2,977	383
Processed Hourly Volume (vehicles)*			
I-495 Inbound, Mainline	2,444	2,490	46
Travel Time (min:sec)			
I-495 Inbound, Mainline	04:15	08:17	04:02
Travel Speed (miles per hour)			
I-495 Inbound, Mainline	11.8	6.0	-5.8
Maximum Queue (feet)			
I-495 Inbound, Mainline	3,505	4,860	1,355
Density (pc/mi/ln)			
I-495 Inbound, Mainline	55	131	76
Level of Service (LOS)			
I-495 Inbound, Mainline	F	F	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.
* Processed volume is the volume actually handled by the Vissim model and is used for calibration purposes to make sure the model is set to actual traffic. For future conditions, the processed volume is a performance measure and unprocessed volumes create backups and longer queues.

Table 4B-7. Long Island Expressway (I-495) Approach to Queens-Midtown Tunnel – PM (5:00 p.m. to 6:00 p.m.)

PERFORMANCE (2023)	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume (vehicles)			
I-495 Inbound, Mainline	2,687	2,890	203
Processed Hourly Volume (vehicles)*			
I-495 Inbound, Mainline	2,309	2,340	31
Travel Time (min:sec)			
I-495 Inbound, Mainline	08:27	09:45	01:18
Travel Speed (miles per hour)			
I-495 Inbound, Mainline	5.9	5.1	-0.8
Maximum Queue (feet)			
I-495 Inbound, Mainline	5,859	5,872	13**
Density (pc/mi/ln)			
I-495 Inbound, Mainline	127	141	14
Level of Service (LOS)			
I-495 (Inbound, Mainline)	F	F	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.
* Processed volume is the volume actually handled by the Vissim model and is used for calibration purposes to make sure the model is set to actual traffic. For future conditions, the processed volume is a performance measure and unprocessed volumes create backups and longer queues.
** Maximum queue length is constrained by the extent of the Vissim model. Actual increase in queue length is estimated at about 1,500 feet. This is based on an additional 203 vehicles accommodated in three lanes and 22-foot average vehicle spacing (15-foot average vehicle length and 7-foot average vehicle separation)

PM Results (5:00 p.m. to 6:00 p.m.)

With CBD tolling, Manhattan-bound direction traffic volumes are projected to increase by approximately 203 vehicles on the mainline lanes. This would likely result in an increase of approximately 78 seconds in travel time and speeds are anticipated to decrease slightly. Maximum queues are constrained by the extent of the Vissim model but are projected to increase by about 1,500 feet, assuming an additional 203 vehicles accommodated in three lanes and 22-foot vehicle spacing (15-foot average vehicle length and 7-foot separation between vehicles). Queue delays are projected to increase, but these additional queue delays would likely occur east of Van Dam Street, which is outside of the model limits. Density is projected to increase by approximately 14 pc/mi/ln with the LOS remaining at LOS F. Under the SEQRA criteria, the projected increase in traffic of 203 vehicles during the PM peak hour would exceed 5 percent but the increase in delay would be 1.3 minutes which would be below the 2.5 minutes threshold; therefore, there would not be an adverse traffic effect during the PM peak hour.

In summary, under Tolling Scenario D, traffic volumes would increase by 125/383/203 vehicles during the AM, MD, and PM peak hours, respectively, resulting in increased queue lengths and delays for all peak hours. Under the SEQRA criteria, assuming a potential adverse effect if traffic volumes increase more than 5 percent under congested conditions and delays increase by 2.5 minutes or more, there would be a potential adverse effect in the MD peak hour but no adverse effect during the AM and PM peak hours.

Adverse effects that would arise if Tolling Scenario D or another similar tolling scenario were implemented will be minimized through implementing Transportation Demand Management measures such as ramp metering, motorist information, signage, and/or targeted toll policy modifications to reduce diversions. The Project Sponsors will undertake monitoring of traffic patterns specifically tailored to the adopted tolling scenario—commencing prior to implementation with data collection approximately 3 months after the start of project operations—to determine whether the predicted adverse effects are occurring and to determine the appropriate Transportation Demand Management measures (or improvement in existing Transportation Demand Management measures) to be implemented. The monitoring program will examine changes in traffic volumes, changes in speeds, and changes in delays along the affected highway corridors. Volume changes will be determined from before/after traffic counts (where available); speed changes will be determined from actual before/after speeds based on data provided by StreetLight Data, Inc.; and the change in delay along major highway corridors will be determined based on actual speeds based on data provided by StreetLight Data, Inc.. The monitoring program will inform the development and implementation of appropriate Transportation Demand Management measures and possible adjustments to the tolling policy should traffic volumes increase by more than 5 percent and delays increase more than 2.5 minutes.

4B.4.3 Gowanus Expressway Leading to I-278 Hugh L. Carey Tunnel

The Hugh L. Carey Tunnel consists of two tubes—each with two traffic lanes—one tube for each direction. The eastern tunnel portal is in the neighborhood of Red Hook in Brooklyn and the western portal is north of Battery Park in Lower Manhattan.

The Hugh L. Carey Tunnel is part of the Interstate Highway System, designated as I-478, and encompasses the length of the tunnel and the short highway connection to I-278. The I-278 designation is applied to several expressways, including the Gowanus Expressway in southern Brooklyn and BQE across northern Brooklyn and Queens. During the weekday AM peak period, an HOV lane operates along the eastbound Gowanus Expressway toward the Hugh L. Carey Tunnel, for a total of three lanes toward Manhattan. During the weekday PM peak period the HOV lane operates in the reverse direction, westbound, along the Gowanus Expressway, for a total of three lanes toward Brooklyn. At all other times, two travel lanes operate both east and west. **Figure 4B-4** presents the location of the highways leading to and from the Hugh L. Carey Tunnel.

AFFECTED ENVIRONMENT

The highway segment analysis was performed using a Vissim model calibrated using existing speeds based on data provided by StreetLight Data, Inc.. The model provides performance metrics including hourly processed volumes, travel time (in seconds), travel speed (in miles per hour), maximum queue length (in feet), density (in passenger cars per mile per lane), and overall LOS. **Table 4B-8** presents a summary of existing conditions during the weekday AM, MD, and PM peak hours.

Figure 4B-4. Highways Leading to the Hugh L. Carey Tunnel

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Table 4B-8. Existing Conditions: Gowanus Expressway Leading to Hugh L. Carey Tunnel

PERFORMANCE (2019)	AM (8 a.m. to 9 a.m.)	MD (1 p.m. to 2 p.m.)	PM (5 p.m. to 6 p.m.)
Hourly Volume			
Total Volume to Hugh L. Carey Tunnel	2,953	1,551	1,205
Total Volume to Brooklyn-Queens Expressway (BQE)	1,308	2,528	2,964
Total Volume Weaving Segment	2,453	3,615	3,759
Travel Time (min:sec)			
Gowanus to BQE Off-Ramp, Weaving Segment	03:53	03:43	04:54
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	02:04	01:37	01:35
High-Occupancy Vehicle Lane	02:56	—	—
Travel Speed (miles per hour)			
Gowanus to BQE Off-Ramp, Weaving Segment	11.6	12.5	9.8
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	13.8	17.8	18.0
High-Occupancy Vehicle Lane	17.0	—	—
Maximum Queue (feet)			
Gowanus to BQE Off-Ramp, Weaving Segment	6,555	4,687	7,006
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	1,756	158	294
High-Occupancy Vehicle Lane	0	—	—
Density (pc/mi/ln)			
Gowanus to BQE Off-Ramp, Weaving Segment	77	87	93
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	34	25	15
High-Occupancy Vehicle Lane	56	—	—
Level of Service (LOS)			
Gowanus to BQE Off-Ramp, Weaving Segment	F	F	F
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	D	C	B
High-Occupancy Vehicle Lane	F	—	—

The highest average weekday hourly traffic volume of 2,953 vehicles, based upon October 2019 data provided by TBTA, occurs in the Manhattan-bound direction during the AM peak hour (8:00 a.m. to 9:00 a.m.). Other hourly Manhattan-bound traffic volumes at the Hugh L. Carey Tunnel are 1,551 vehicles and 1,205 vehicles in the MD peak hour (1:00 p.m. to 2:00 p.m.) and PM peak hour (5:00 p.m. to 6:00 p.m.), respectively.

The speeds in the Hugh L. Carey Tunnel vary by the time of day. In the Manhattan-bound direction the slowest speeds along I-478 at the eastern portal of the Hugh L. Carey Tunnel are during the AM peak hour, averaging 13.8 mph. During the MD and PM peak hours, speeds in the Manhattan-bound direction on the same segment are 17.8 mph and 18.0 mph, respectively. The average Manhattan-bound speeds along the most critical segment—the I-478 weaving segment between the merge of the Gowanus Expressway with the Prospect Expressway, over Hamilton Avenue, to the exit ramp to the BQE and Hamilton Avenue (Exit 26)—are 11.6 mph, 12.5 mph, and 9.8 mph during the AM, MD, and PM peak hours, respectively. In the HOV lane, which operates in the Manhattan-bound direction during the AM peak period, vehicles move at an average speed of 17 mph.

The maximum queue lengths along I-478 as measured east from the Hugh L. Carey Tunnel portal segment after the exit ramp to the BQE (Exit 26 to Hamilton Avenue access to the Hugh L. Carey Tunnel entrance) are approximately 1,756 feet, 158 feet, and 294 feet during the AM, MD, and PM peak hours, respectively. The maximum queue lengths along I-478 measured on the weaving segment between the merge from Gowanus/Prospect Expressways and the exit ramp to the BQE are approximately 6,555 feet, 4,687 feet, and 7,006 feet during the AM, MD, and PM peak hours, respectively.

Three locations on the Manhattan-bound tunnel approach show the existing LOS varies from LOS B to LOS F. The I-478 weaving section before the exit ramp to the BQE on the approach to the Hugh L. Carey Tunnel operates at LOS F during the AM, MD, and PM peak hours. The section along the I-478 segment between the exit ramp to the BQE and the eastern portal of the Hugh L. Carey Tunnel operates at LOS D, LOS C, and LOS B during the AM, MD, and PM peak hours, respectively. The HOV lane operates at LOS F at about 17 miles per hour without queues.

ENVIRONMENTAL CONSEQUENCES

For the 2023 No Action Alternative and 2023 CBD Tolling Alternative (Tolling Scenario D), **Table 4B-9, Table 4B-10,** and **Table 4B-11** present results of the Vissim assessment for the weekday AM, MD, and PM peak hours, respectively. The assessment summarized below describes the incremental change between the No Action Alternative and CBD Tolling Alternative.

Overall, the highway analysis of the Hugh L. Carey Tunnel and its approaches indicates that under Tolling Scenario D, there would likely be a change in travel patterns and an increase in traffic that would result in increased travel times, higher densities, and deteriorating LOS, thereby creating potential adverse traffic effects under the SEQRA criteria.

The change in traffic patterns resulting from the CBD Tolling Alternative is expected to result in a shift of traffic from the BQE to the Hugh L. Carey Tunnel in the critical weaving section between the merge of the Gowanus and Prospect Expressways and the Hugh L. Carey Tunnel split from the BQE based on the route choice of the tunnel versus other East River crossings. The anticipated decrease in volume on the BQE would improve its operation while the increase in volume to the Hugh L. Carey Tunnel would be expected to result in increased delays at the tunnel approach. The change in traffic volumes during the AM and PM peak hours are expected to be small due to capacity constraints at the Hugh L. Carey Tunnel while larger changes in volumes are expected during the MD peak hour. **Table 4B-9, Table 4B-10,** and **Table 4B-11** provide a summary of the results by peak hour.

Table 4B-9. Hugh L. Carey Tunnel – AM (8:00 a.m. to 9:00 a.m.)

PERFORMANCE (2023)	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume (vehicles)			
Total Volume to Hugh L. Carey Tunnel	3,233	3,305	72
Total Volume to Brooklyn-Queens Expressway (BQE)	1,147	1,105	-42
Total Volume Weaving Segment	2,453	2,453	0
Processed Hourly Volume (vehicles)			
Total Volume to Hugh L. Carey Tunnel	3,521	3,506	-15
Total Volume to BQE	1,294	1,212	-82
Total Volume Weaving Segment	2,821	2,780	-41
Travel Time (min:sec)			
Gowanus to BQE Off-Ramp, Weaving Segment	02:49	04:02	01:13
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	03:10	03:19	00:09
High-Occupancy Vehicle Lane	02:56	02:56	00:00
Travel Speed (miles per hour)			
Gowanus to BQE Off-Ramp, Weaving Segment	15.5	11.2	-4.3
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	9.1	8.7	-0.4
High-Occupancy Vehicle Lane	16.9	16.9	0.0
Maximum Queue (feet)			
Gowanus to BQE Off-Ramp, Weaving Segment	3,691	5,315	1,624
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	2,361	2,377	16
High-Occupancy Vehicle Lane	0	0	—
Density (pc/mi/ln)			
Gowanus to BQE Off-Ramp, Weaving Segment	53	81	28
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	69	78	9
High-Occupancy Vehicle Lane	60	61	1
Level of Service (LOS)			
Gowanus to BQE Off-Ramp, Weaving Segment	F	F	—
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	F	F	—
High-Occupancy Vehicle Lane	F	F	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

Table 4B-10. Hugh L. Carey Tunnel – MD (1:00 p.m. to 2:00 p.m.)

PERFORMANCE MEASURES	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume			
Total Volume to Hugh L. Carey Tunnel	1,867	2,353	486
Total Volume to Brooklyn-Queens Expressway (BQE)	2,248	1,820	-428
Total Volume Weaving Segment	3,615	3,615	0
Processed Hourly Volume			
Total Volume to Hugh L. Carey Tunnel	1,858	2,348	490
Total Volume to BQE	2,320	1,882	-438
Total Volume Weaving Segment	3,639	3,636	-3
Travel Time (min:sec)			
Gowanus to BQE Off-Ramp, Weaving Segment	02:15	02:12	-00:03
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	01:39	01:43	00:04
Travel Speed (miles per hour)			
Gowanus to BQE Off-Ramp, Weaving Segment	19.3	19.8	0.5
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	17.4	16.7	-0.7
Maximum Queue (feet)			
Gowanus to BQE Off-Ramp, Weaving Segment	1,277	201	-1,076
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	374	772	398
Density (pc/mi/ln)			
Gowanus to BQE Off-Ramp, Weaving Segment	47	45	-2
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	33	44	11
Level of Service (LOS)			
Gowanus to BQE Off-Ramp, Weaving Segment	F	E	—
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	D	E	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

Table 4B-11. Hugh L. Carey Tunnel – PM (5:00 p.m. to 6:00 p.m.)

PERFORMANCE MEASURES	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume			
Total Volume to Hugh L. Carey Tunnel	1,302	1,349	47
Total Volume to Brooklyn-Queens Expressway (BQE)	2,877	2,834	-43
Total Volume Weaving Segment	3,759	3,759	0
Processed Hourly Volume			
Total Volume to Hugh L. Carey Tunnel	1,303	1,374	71
Total Volume to BQE	2,852	2,889	37
Total Volume Weaving Segment	3,722	3,815	93
Travel Time (min:sec)			
Gowanus to BQE Off-Ramp, Weaving Segment	03:56	03:07	-00:49
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	01:38	01:41	00:03
Travel Speed (miles per hour)			
Gowanus to BQE Off-Ramp, Weaving Segment	12.4	15.2	2.8
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	17.6	17.1	-0.5
Maximum Queue (feet)			
Gowanus to BQE Off-Ramp, Weaving Segment	4,509	2,828	-1,681
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	423	631	208
Density (pc/mi/ln)			
Gowanus to BQE Off-Ramp, Weaving Segment	84	71	-13
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	18	20	2
Level of Service (LOS)			
Gowanus to BQE Off-Ramp, Weaving Segment	F	F	—
Mainline to Hugh L. Carey Tunnel After Exit 26 (BQE)	C	C	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

AM Results (8:00 a.m. to 9:00 a.m.)

Under Tolling Scenario D, traffic volumes to the Hugh L. Carey Tunnel are projected to increase by approximately 72 vehicles while traffic volumes to the BQE are expected to decrease by about 42 vehicles. Traffic volumes in the critical weaving segment between the merge of the Gowanus Expressway and Prospect Expressway to the split to the BQE and the Hugh L. Carey Tunnel are expected to remain about the same. Approximately 42 vehicles would be diverted from the BQE and instead would stay on the main travel way to the Manhattan-bound Hugh L. Carey Tunnel.

This would result in an estimated 73-second increase in travel time in the weaving segment between the merge of the Gowanus/Prospect Expressway and the off-ramp to the BQE. There would be an increase in travel time of approximately 9 seconds between the BQE off-ramp and the eastern portal of the Hugh L. Carey Tunnel due to increased volumes proceeding directly to the tunnel. The travel time in the HOV lane would remain approximately the same. At the eastern portal of the Hugh L. Carey Tunnel, speeds would decrease by about 0.4 mph, while speeds would decrease in the weaving section of the approach between the Gowanus/Prospect Expressway merge and the exit ramp to the BQE by about 4.3 mph.

While total volumes in the weaving segment would be about the same, heavier weaving volumes, from the Prospect Expressway, would result in additional queues in the segment between the Gowanus and Prospect merge and the split to the Hugh L. Carey Tunnel and BQE exit ramp. Under the CBD Tolling Alternative, the queues are anticipated to increase in the weaving segment before the exit ramp to the BQE by about 1,624 feet (or approximately 82 passenger cars) and there would be no queues anticipated along the HOV lane. An increase in density of 28 pc/ln/mi is anticipated for the weave segment. The LOS would remain the same under the CBD Tolling Alternative as the No Action Alternative at LOS F along the general-purpose lanes.

Under SEQRA, the increase in volume would be within 5 percent and the increase in delay of 1.2 minute in the weaving segment would be below 2.5 minutes; therefore, there would not be an adverse traffic effect during the AM peak hour.

MD Results (1:00 p.m. to 2:00 p.m.)

With CBD tolling, traffic volumes in the Hugh L. Carey Tunnel are projected to increase by 486 vehicles and traffic to the BQE is expected to decrease by about 428 vehicles, while total traffic volume on the I-478 weaving segment between the merge of Gowanus/Prospect Expressway and the exit ramp to the BQE would remain about the same.

Travel time in the weaving segment between the merge of Gowanus/Prospect Expressway and the exit ramp to the BQE as well as the approach to the Hugh L. Carey Tunnel would be expected to remain about the same. Overall, at the eastern portal of the Hugh L. Carey Tunnel, speeds would decrease by about 0.7 mph, while there would be improvement in speeds on the weaving section of the approach between the Gowanus/Prospect Expressway merge and BQE off-ramp by about 0.5 mph. Additional queue delays are anticipated and maximum queue lengths on this segment are expected to increase by approximately 398 feet (or approximately 20 vehicles). Reduction in queuing is anticipated in the weaving segment before the exit ramp to the BQE under the CBD Tolling Alternative by about 1,076 feet (or approximately

54 vehicles). Density along the Hugh L. Carey Tunnel approach is expected to increase by 11 pc/mi/ln, and as a result LOS would deteriorate from LOS D to LOS E. A reduction in density is anticipated by 2 pc/mi/ln in the weaving segment before the exit ramp to the BQE and the LOS is projected to improve from LOS F to LOS E.

Under the SEQRA criteria used for the initial evaluation of potential adverse effects, traffic volumes to the Hugh L. Carey Tunnel would increase more than 5 percent, but the detailed Vissim analysis indicates there is sufficient capacity in the tunnel to handle the additional traffic and there would be a minimal increase in delay of a few seconds which would be well below the 2.5 minutes threshold;[18] therefore, there would not be an adverse traffic effect during the MD peak hour.

PM Results (5:00 p.m. to 6:00 p.m.)

With CBD tolling, traffic volumes in the Hugh L. Carey Tunnel are projected to increase by 47 vehicles. The total traffic volume for the critical I-478 weaving segment between the merge of Gowanus/Prospect Expressway and the off-ramp to the BQE would remain about the same. Under the CBD Tolling Alternative, approximately 43 vehicles would no longer use the BQE and would instead shift to the Manhattan-bound Hugh L. Carey Tunnel.

This would result in an estimated 49-second reduction in travel time in the weaving segment between the merge of Gowanus/Prospect Expressway and the off-ramp to the BQE. There is a small, anticipated increase of 3 seconds in travel time between the BQE exit ramp and the eastern portal of the Hugh L. Carey Tunnel. Overall, at the eastern portal of the Hugh L. Carey Tunnel, speeds would decrease by 0.5 mph, while there would be improvement in speeds on the weaving section of the approach between the Gowanus/Prospect Expressway merge and BQE exit ramp by 2.8 mph. Additional queue delays are anticipated and maximum queue lengths at the eastern portal of the Hugh L. Carey Tunnel are expected to increase by approximately 208 feet (or approximately 10 vehicles). Reduction in queuing is anticipated in the weaving segment before the exit ramp to the BQE under the CBD Tolling Alternative by 1,681 feet (or approximately 84 vehicles). At the eastern portal of the Hugh L. Carey Tunnel, density is expected to increase by 2 pc/mi/ln. A reduction in density is anticipated of 13 pc/mi/ln in the weaving segment before the exit ramp to the BQE. The LOS is projected to remain the same under the CBD Tolling Alternative as it would in the No Action Alternative for all segments. The increase in traffic would not exceed 5 percent and there would be a reduction in delays of 49 seconds in the weaving segment; therefore, there would not be an adverse effect during the PM peak hour.

In summary, under Tolling Scenario D, inbound traffic volumes to the Hugh L. Carey Tunnel would increase by 72/486/47 vehicles during the AM, MD, and PM peak hours, respectively, resulting in increased queue lengths and delays for some time periods. Under the SEQRA criteria, assuming an increase in volume within 5 percent under congested conditions would not be considered an adverse effect, there would not be an adverse effect during the AM and PM peak hours. During the MD peak hour, although the 5 percent threshold would be exceeded, further detailed analysis indicates that there would be sufficient capacity in

[18] The capacity of the two inbound lanes is approximately 2,600 vehicles per hour. The projected CBD Tolling Alternative volume under the tolling scenario analyzed would be about 2,353 vehicles, which would be below capacity.

the two inbound lanes to handle the additional traffic volumes and delays would be well below the 2.5-minute threshold; therefore, there would not be an adverse effect during the MD peak hour.

4B.4.4 Staten Island Expressway Leading to the Verrazzano-Narrows Bridge

The Verrazzano-Narrows Bridge is a major regional highway link between Staten Island and Brooklyn, providing connections to the Staten Island Expressway and the Gowanus Expressway (**Figure 4B-5**).

As established by the BPM modeling results of the total trips currently using the bridge in the eastbound direction, only 7 percent are destined to the Manhattan CBD and would be directly affected by the Project.

In the westbound direction, some CBD through trips destined to New Jersey and points beyond are expected to divert to the Verrazzano-Narrows Bridge in order to avoid the CBD toll, resulting in higher westbound traffic volumes.

Based upon the BPM results, there would either be a decrease or a marginal increase in traffic, depending on the peak period, in the eastbound (Brooklyn-bound) direction on the Verrazzano-Narrows Bridge. Therefore, this highway analysis examined only the westbound (Staten Island-bound) direction where potential additional delays and queues would occur along the Staten Island Expressway between the Verrazzano-Narrows Bridge and Hylan Boulevard due to a projected increase in traffic.

Because the Verrazzano-Narrows Bridge would experience an increase in traffic only in the westbound (Staten Island-bound) direction based on traffic projected to navigate around the Manhattan CBD, this highway analysis examined only the westbound direction where potential additional delays and queues would occur along the Staten Island Expressway between the Verrazzano-Narrows Bridge and Hylan Boulevard due to a projected increase in traffic.

AFFECTED ENVIRONMENT

The highway analyses were performed using a calibrated Vissim model specifically modified for the Project along highways that would be expected to experience an increase in traffic and slower speeds.[19] **Table 4B-12** presents a summary of existing conditions during the weekday AM, MD, and PM peak hours.

Based upon October 2019 weekday transaction data provided by TBTA, the heaviest westbound traffic volume occurs during the PM peak hour, with a total of 8,521 vehicles. Traffic volumes during the AM and MD peak hours are lower at 5,789 and 5,425 vehicles, respectively. Typically, the average speeds in the calibrated Vissim model in the westbound direction along the Staten Island Expressway (I278) between the Verrazzano-Narrows Bridge and Hylan Boulevard vary in the range of 18.4 to 29.3 mph during the AM peak hour and 27.0 to 46.7 mph during the MD peak hour. During the PM peak hour, speeds were observed to decrease to the range of 16.8 to 23.7 mph, indicating relatively congested travel conditions during that period.

[19] The model was calibrated using existing speeds provided by StreetLight Data, Inc., hourly traffic counts, and observed queue lengths. Performance measures include processed volumes, speeds, maximum queue length (in feet), density (in passenger cars per mile per lane), and overall LOS.

Figure 4B-5. Highways Leading to/from the Verrazzano-Narrows Bridge

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Table 4B-12. Existing Conditions: Staten Island Expressway (I-278) Westbound – Verrazzano-Narrows Bridge to Hylan Boulevard

PERFORMANCE (2019)	AM (7 a.m. to 8 a.m.)	MD (1 p.m. to 2 p.m.)	PM (4 p.m. to 5 p.m.)
Hourly Volume			
Staten Island Expressway (SIE) Westbound (WB) Upper Level (UL)	2,153	2,656	4,281
SIE WB Lower Level (LL)	2,435	2,445	3,775
SIE WB – High-Occupancy Vehicle UL	1,201	324	465
Travel Time (min:sec)			
Verrazzano-Narrows Bridge merge to Lily Pond WB LL	01:12	00:34	01:03
To Lily Pond WB UL	00:59	00:55	00:56
Lily Pond to Hylan Boulevard WB LL	01:16	00:48	02:05
Lily Pond to Hylan Boulevard WB UL	01:17	00:50	02:14
SIE WB LL to Hylan Boulevard	02:28	01:20	03:10
SIE WB UL to Hylan Boulevard	02:06	01:42	03:06
Travel Speed (miles per hour)			
To Lily Pond WB LL	18.4	38.9	20.4
To Lily Pond WB UL	24.9	27.0	23.7
Lily Pond to Hylan Boulevard WB LL	29.2	46.7	17.3
Lily Pond to Hylan Boulevard WB UL	29.3	45.5	16.8
SIE WB LL to Hylan Boulevard	23.8	44.1	18.3
SIE WB UL to Hylan Boulevard	28.8	35.3	19.1
Density (pc/mi/ln)			
To Lily Pond WB LL	21	13	39
To Lily Pond WB UL	16	22	36
SIE WB LL to Hylan Boulevard	21	14	44
SIE WB UL to Hylan Boulevard	18	13	61
Level of Service (LOS)			
To Lily Pond WB LL	C	B	E
To Lily Pond WB UL	B	C	E
SIE WB LL to Hylan Boulevard	C	B	F
SIE WB UL to Hylan Boulevard	B	B	F

Source: WSP USA, 2022.

Travel times vary depending on whether the upper or lower level of the bridge is used. Based upon observed travel time data, it took slightly longer for westbound lower-level users to cross the bridge to Hylan Boulevard along the Staten Island Expressway (I-278) during the AM and PM peak hours, when the traffic volumes were higher. Travel times between the Verrazzano-Narrows Bridge and Hylan Boulevard in the calibrated Vissim model were approximately 148 seconds and 190 seconds for the lower-level users during the AM and PM peak, respectively. For those using the upper level, travel times were 126 seconds and 186 seconds during the AM and PM peak, respectively.

The most congested analyzed segment of the westbound Staten Island Expressway (I-278) was between Lily Pond Road and Hylan Boulevard during the PM peak hour, with the lowest observed speeds of approximately 17.3 and 16.8 mph for the lower and upper levels, respectively.

There were no queues observed along the westbound Staten Island Expressway (I-278) between the Verrazzano-Narrows Bridge and Hylan Boulevard throughout all peak hours of the day. The existing LOS on westbound Staten Island Expressway (I-278) between the Verrazzano-Narrows Bridge and Hylan Boulevard is LOS C or better during the AM and MD peak hours, and LOS E and LOS F during the PM peak hour.[20]

ENVIRONMENTAL CONSEQUENCES

Table 4B-13, **Table 4B-14**, and **Table 4B-15** present the Vissim results for the weekday AM, MD, and PM peak hours, respectively for the 2023 No Action and the 2023 CBD Tolling Alternative for Tolling Scenario D, which represents the tolling scenario with the highest increase in traffic.

In summary, the additional traffic volumes on the westbound Staten Island Expressway (I-278) are relatively small during the AM and PM peak hours, and there is sufficient capacity to handle the additional volumes expected under Tolling Scenario D and is not anticipated to result in an adverse effect to highway operations for the AM, MD, and PM peak hours. The relatively small volume changes resulted in insignificant changes across several roadway performance metrics, and thus not all metrics are presented in the table; therefore, there would not be adverse traffic effects for any of the tolling scenarios being considered nor any other tolling scenario adopted that would have lower tolls.

The results for each peak hour are described below.

AM Results (7:00 a.m. to 8:00 a.m.)

With CBD tolling, there would likely be a small increase in traffic during the AM peak hour in the westbound direction on the Verrazzano-Narrows Bridge, with an additional 32 vehicles on the upper level and an additional 64 vehicles on the lower level. Traffic in the HOV lane would likely remain the same. Under the CBD Tolling Alternative, the average speeds along the Staten Island Expressway (I-278) westbound between the Verrazzano-Narrows Bridge and Hylan Boulevard would likely remain in the range of 17.2 to 29.2 mph. There would be no queues between the Verrazzano-Narrows Bridge and Hylan Boulevard resulting from the implementation of the Project, and the LOS would remain the same at LOS C or better. The increase in volume would be small and within a 5 percent increase and the increase in delay of less than 10 seconds would be well below 2.5 minutes; therefore, there would not be an adverse effect during the AM peak hour.

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[20] Two-way (split) tolling was implemented at the Verrazzano-Narrows Bridge on December 1, 2020. The BPM modeling and the Vissim analyses incorporated the change in toll collection to two-way tolling.

Table 4B-13. Staten Island Expressway (I-278) Westbound—Verrazzano-Narrows Bridge to Hylan Boulevard – AM (7:00 a.m. to 8:00 a.m.)

PERFORMANCE MEASURES	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume			
Staten Island Expressway (SIE) Westbound (WB) Upper Level (UL)	2,196	2,228	32
SIE WB Lower Level (LL)	2,484	2,548	64
SIE WB – High-Occupancy Vehicle (HOV) UL	1,225	1,225	0
Travel Time (min:sec)			
To Lily Pond WB LL	01:12	01:17	00:05
To Lily Pond WB UL	00:59	01:00	00:01
Lily Pond to Hylan Boulevard WB LL	01:16	01:17	00:01
Lily Pond to Hylan Boulevard WB UL	01:17	01:17	00:00
SIE WB LL to Hylan Boulevard	02:28	02:30	00:02
SIE WB UL to Hylan Boulevard	02:06	02:06	00:00
Travel Speed (miles per hour)			
To Lily Pond WB LL	17.4	17.2	-0.2
To Lily Pond WB UL	24.9	24.8	-0.1
Lily Pond to Hylan Boulevard WB LL	29.1	29.0	-0.1
Lily Pond to Hylan Boulevard WB UL	29.4	29.2	-0.2
SIE WB LL to Hylan Boulevard	23.5	23.5	0.0
SIE WB UL to Hylan Boulevard	28.8	28.7	-0.1
Density (pc/mi/ln)			
To Lily Pond WB LL	23.8	27.0	3.2
To Lily Pond WB UL	16.5	17.4	0.9
SIE WB LL to Hylan Boulevard	21.5	22.8	1.3
SIE WB UL to Hylan Boulevard	18.7	19.7	1.0
Level of Service (LOS)			
To Lily Pond WB LL	C	C	—
To Lily Pond WB UL	B	B	—
SIE WB LL to Hylan Boulevard	C	C	—
SIE WB UL to Hylan Boulevard	B	B	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

Table 4B-14. Staten Island Expressway (I-278) Westbound—Verrazzano-Narrows Bridge to Hylan Boulevard – MD (1:00 p.m. to 2:00 p.m.)

PERFORMANCE MEASURES	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume			
Staten Island Expressway (SIE) Westbound (WB) Upper Level (UL)	2,738	2,939	201
SIE WB Lower Level (LL)	2,533	2,789	256
SIE WB – HOV UL	330	330	0
Travel Time (min:sec)			
To Lily Pond WB LL	00:33	00:34	00:01
To Lily Pond WB UL	00:55	00:55	00:00
Lily Pond to Hylan Boulevard WB LL	00:48	00:48	00:00
Lily Pond to Hylan Boulevard WB UL	00:49	00:50	00:01
SIE WB LL to Hylan Boulevard	01:20	01:20	00:00
SIE WB UL to Hylan Boulevard	01:42	01:43	00:01
Travel Speed (miles per hour)			
To Lily Pond WB LL	40.0	38.7	-1.3
To Lily Pond WB UL	27.0	26.8	-0.2
Lily Pond to Hylan Boulevard WB LL	46.8	46.7	-0.1
Lily Pond to Hylan Boulevard WB UL	45.6	45.4	-0.2
SIE WB LL to Hylan Boulevard	44.1	43.9	-0.2
SIE WB UL to Hylan Boulevard	35.4	35.2	-0.2
Density (pc/mi/ln)			
To Lily Pond WB LL	11	14	3
To Lily Pond WB UL	22	24	2
SIE WB LL to Hylan Boulevard	14	15	1
SIE WB UL to Hylan Boulevard	13	14	1
Level of Service (LOS)			
To Lily Pond WB LL	B	B	—
To Lily Pond WB UL	C	C	—
SIE WB LL to Hylan Boulevard	B	B	—
SIE WB UL to Hylan Boulevard	B	B	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

Table 4B-15. Staten Island Expressway (I-278) Westbound—Verrazzano-Narrows Bridge to Hylan Boulevard – PM (4:00p.m. to 5:00p.m.)

PERFORMANCE MEASURES	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume			
Staten Island Expressway (SIE) Westbound (WB) Upper Level (UL)	4,367	4,442	75
SIE WB Lower Level (LL)	3,850	3,947	97
SIE WB – High-Occupancy Vehicle (HOV) UL	474	474	0
Travel Time (min:sec)			
To Lily Pond WB LL	01:04	01:04	00:00
To Lily Pond WB UL	00:58	00:59	00:01
Lily Pond to Hylan Boulevard WB LL	02:04	02:08	00:04
Lily Pond to Hylan Boulevard WB UL	02:09	02:15	00:06
SIE WB LL to Hylan Boulevard	03:11	03:14	00:03
SIE WB UL to Hylan Boulevard	03:04	03:10	00:06
Travel Speed (miles per hour)			
To Lily Pond WB LL	20.3	20.3	0.0
To Lily Pond WB UL	22.7	22.3	-0.4
Lily Pond to Hylan Boulevard WB LL	17.5	16.9	-0.6
Lily Pond to Hylan Boulevard WB UL	17.5	16.8	-0.7
SIE WB LL to Hylan Boulevard	18.2	17.9	-0.3
SIE WB UL to Hylan Boulevard	19.3	18.7	-0.6
Density (pc/mi/ln)			
To Lily Pond WB LL	37.4	37.7	0.3
To Lily Pond WB UL	37.0	37.7	0.7
SIE WB LL to Hylan Boulevard	42.5	43.5	1.0
SIE WB UL to Hylan Boulevard	59.5	61.6	2.1
Level of Service (LOS)			
To Lily Pond WB LL	E	E	—
To Lily Pond WB UL	E	E	—
SIE WB LL to Hylan Boulevard	F	F	—
SIE WB UL to Hylan Boulevard	F	F	—

Source: WSP USA, 2022.
Note: Tolling Scenarios E and F results are expected to be similar to Tolling Scenario D.

MD Results (1:00 p.m. to 2:00 p.m.)

Under Tolling Scenario D, an increase in traffic is projected during the MD peak hour in the westbound direction on the Verrazzano-Narrows Bridge with an additional 201 vehicles on the upper level and an additional 256 vehicles on the lower level. Traffic in the HOV lane would likely remain the same. There would be a small reduction in speeds using the lower level or upper level of the Verrazzano-Narrows Bridge, but the change in speeds would not be noticeable. Although the projected increase in traffic volume would be nominally above normal daily fluctuation and would exceed 5 percent there would be sufficient capacity to absorb the additional traffic, with additional delays of less than 10 seconds and the LOS would remain the same at C or better; therefore, since the increase in delay would be well below the 2.5-minute threshold there would not be an adverse traffic effect under the SEQRA criteria.

PM Results (4:00 p.m. to 5:00 p.m.)

With CBD tolling, an increase in traffic is projected during the PM peak hour in the westbound direction on the Verrazzano-Narrows Bridge, with an additional 75 vehicles on the upper level and 97 vehicles on the lower level. Traffic levels in the HOV lane would remain the same. The average speeds along the Staten Island Expressway (I-278) westbound between the Verrazzano-Narrows Bridge and Hylan Boulevard would remain approximately the same as the No Action Alternative, in the range of 16.8 to 22.3 mph. There would be no increase in queues between the Verrazzano-Narrows Bridge and Hylan Boulevard and densities would be similar. Overall, there would be no change in LOS and increase in delays would be well below the 2.5-minute threshold; therefore, there would be no adverse effects associated with the additional volume during the PM peak hour.

Under Tolling Scenario D, a small increase in traffic is projected during the PM peak hour in the westbound direction on the Verrazzano-Narrows Bridge with an additional 75 vehicles on the upper level and an additional 97 vehicles on the lower level. Traffic in the HOV lane would remain the same. Average speeds under the No Action Alternative range from 16.8 to 22.3 mph. There would be a small reduction in speeds using the lower level or upper level of the Verrazzano-Narrows Bridge, but the change in speeds would be small and not noticeable. The projected increase in traffic volume is small and within 5 percent and the increase in delay would be less than 10 seconds which would be well below the 2.5-minute threshold; therefore, there would not be an adverse traffic effect during the PM peak hour.

In summary, Tolling Scenario D would result in increases in traffic volumes westbound on the Verrazzano-Narrows Bridge during the AM, MD, and PM peak hours of 32/201/75 vehicles at the lower level and 64/256/97 vehicles at the upper level, respectively. These increases in traffic volumes are relatively small and would not have an appreciable effect on travel times, delays, speeds, and densities. The LOS would remain the same during all time periods for all highway segments operating at LOS B/C during the AM and MD peak hours and LOS E/F during the PM peak hour. The increase in delay would be under 10 seconds for all time periods which would be well under the 2.5-minute threshold; therefore, Tolling Scenario D (and Tolling Scenarios E and F), would have no adverse traffic effect along the Verrazzano-Narrows Bridge and the Staten Island Expressway during any time period under the SEQRA criteria. Tolling Scenarios A, B, C, and G, with Lower Manhattan CBD tolls, would be expected to create less diversions than the tolling scenarios with the largest increase in traffic; therefore, these tolling scenarios would also not result in adverse traffic effects.

4B.4.5 I-78 and Route 139 Approach to the Holland Tunnel

The Holland Tunnel is a major gateway between New Jersey and Lower Manhattan with access from I-78 and Route 139, and connections from the New Jersey Turnpike, the Garden State Parkway, and local streets in New Jersey (**Figure 4B-6**).

The highway analysis examined only the Manhattan-bound direction where delays and queues occur along I-78 and Route 139, including the four intersections along 12th Street in Jersey City, just west of the tunnel. The New Jersey-bound traffic was not analyzed because the highways in New Jersey generally operate with less congestion and the volumes are constrained by the tunnel at the Manhattan approaches. However, the Manhattan approaches to the Holland Tunnel are examined as part of the local traffic analysis.

AFFECTED ENVIRONMENT

The highway segment analysis of the existing conditions was performed using a Vissim microsimulation model calibrated to actual volumes and speeds based on data provided by StreetLight Data, Inc. The existing volumes were based on 2019 transaction data. The model provides several important performance metrics including travel time (seconds), travel speed (mph), and maximum queue length (feet).

Table 4B16 presents a summary of existing conditions during the weekday AM, MD, and PM peak hours. The Vissim network for this highway segment includes intersections in New Jersey that were also analyzed separately using the Synchro traffic model (**Section 4B.6**).

On a typical weekday, the Holland Tunnel carries 86,800 vehicles (41,800 Manhattan-bound and 45,000 New Jersey-bound). The peak hourly Manhattan-bound traffic volumes for the highway approaches are:

- 3,103 AM peak hour
- 2,439 MD peak hour
- 2,977 PM peak hour

The average speeds along I-78 approaching the Holland Tunnel are 7.0 mph, 12.3 mph, and 8.1 mph during the AM, MD, and PM peak hours, respectively. The average speeds along Route 139 approaching the Holland Tunnel are 6.8 mph, 10.9 mph, and 8.6 mph during the AM, MD, and PM peak hours, respectively.

The maximum queue lengths along I78, as measured west from the intersection at Jersey Avenue, are approximately 529 feet, 293 feet, and 444 feet during the AM, MD, and PM peak hours, respectively. The queue lengths along NJ Route 139, also measured from the intersection at Jersey Avenue, are generally much lower in the AM peak hour and there is no queue in the MD and PM peak hours. The signalized arterial roadway segment between Jersey Avenue and the Holland Tunnel portal is typically congested during the AM, MD, and PM peak hours. These intersections along this segment were analyzed using Synchro traffic model and are included in the intersection traffic analysis (**Section 4B.6).**

Figure 4B-6. Highways Leading to the Holland Tunnel

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Table 4B-16. Existing Conditions: I-78 and Route 139

PERFORMANCE (2019)	AM (8 a.m. to 9 a.m.)	MD (Noon to 1 p.m.)	PM (5 p.m. to 6 p.m.)
Hourly Volume			
I-78	1,175	889	1,127
Route 139	1,928	1,550	1,850
Travel Time (min:sec)			
I-78	09:19	05:19	08:05
Route 139 Local	07:53	04:52	06:11
Route 139 Express	08:21	04:59	06:21
Travel Speed (miles per hour)			
I-78	7.0	12.3	8.1
Route 139 Local	6.8	10.9	8.6
Route 139 Express	6.4	10.7	8.4
Maximum Queue (feet)			
I-78	529	293	444
Route 139 Local	114	0	0
Route 139 Express	434	0	0

Source: WSP USA, 2022.

Based upon the results of the BPM regional model for Tolling Scenario D (the tolling scenario that would likely generate the greatest amount of adverse traffic effects), and subsequent post-processing to obtain hourly volumes, there would be a small net decrease in trips across the Holland Tunnel in the Manhattan-bound direction during the AM, MD, and PM peak hours; therefore, a qualitative assessment of potential adverse traffic effects was performed for the No Action Alternative and CBD Tolling Alternative.

ENVIRONMENTAL CONSEQUENCES

For existing conditions and the 2023 No Action Alternative and 2023 CBD Tolling Alternative (Tolling Scenario D), **Table 4B-17** presents a summary of the overall changes in traffic volume. There is little anticipated change between the existing and No Action Alternative conditions and the assessment summarized below describes the incremental change in traffic volumes between the No Action Alternative and CBD Tolling Alternative for the tolling scenario that would likely generate the greatest amount of adverse traffic effects.

Table 4B-17. Holland Tunnel Eastbound Traffic Volumes during AM, MD and PM Peak Hours under Existing Conditions, No Action Alternative, and CBD Tolling Alternative

PEAK HOUR	EXISTING CONDITIONS	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (TOLLING SCENARIO D)
AM (8:00 a.m. to 9:00 a.m.)	3,103	3,109	3,060
MD (12:00 p.m. to 1:00 p.m.)	2,439	2,431	2,364
PM (5:00 p.m. to 6:00 p.m.)	2,977	2,975	2,912

Source: WSP USA, 2022.

Under the CBD Tolling Alternative, there would be a small reduction in traffic volumes during the AM, MD, and PM peak hours at the eastbound approaches to the Holland Tunnel and a small improvement in traffic operations; therefore, there would not be an adverse traffic impact during any peak hour as described below.

AM Results (8:00 a.m. to 9:00 a.m.)

During the AM peak hour, traffic volumes are projected to decrease by a total of 49 vehicles, with approximately 18 vehicles along I-78 and approximately 31 vehicles along NJ Route 139 in the eastbound direction, resulting in a small improvement in traffic operations. Therefore, there would not be an adverse traffic effect during the AM peak hour.

MD Results (12:00 p.m. to 1:00 p.m.)

During the MD peak hour, traffic volumes are projected to decrease by a total of 67 vehicles, with approximately 24 vehicles along I-78 and approximately 43 vehicles along NJ Route 139 in the eastbound direction, resulting in a small improvement in traffic operations. Therefore, there would not be an adverse traffic effect during the MD peak hour.

PM Results (5:00 p.m. to 6:00 p.m.)

During the PM peak hour, traffic volumes are projected to decrease by a total of 63 vehicles, with approximately 24 vehicles along I-78, and approximately 39 vehicles along NJ Route 139 in the eastbound direction, resulting in a small improvement in traffic operations. Therefore, there would not be an adverse traffic effect during the PM peak hour.

In summary, there would be a net reduction in traffic volumes during the AM (-49), MD (-67), and PM (-63) peak hours at the Manhattan-bound approaches to the Holland Tunnel, and traffic operations would be expected to improve slightly; therefore, there would be no adverse effects as a result of Tolling Scenarios D, E, and F during the AM, MD, and PM peak hours. The net traffic reductions for Tolling Scenarios A, B, C, and G would be expected to be greater than under the remaining tolling scenarios; therefore, there would be expected to be a greater improvement in traffic operations. Since traffic volumes would decrease under all tolling scenarios, there would not be an adverse traffic effect at the Holland Tunnel and its approaches for any tolling scenario being considered.

4B.4.6 NJ Route 495 Approach to the Lincoln Tunnel

The Lincoln Tunnel is a major gateway to Midtown Manhattan from New Jersey. It provides direct access from NJ Route 495 and offers connections to and from the New Jersey Turnpike (I-95), Route 9, Route 3, and local streets in New Jersey (Figure 4B-7). In Manhattan, the Lincoln Tunnel provides connections to West 42nd Street, and south to West 30th Street and streets in between via the Lincoln Tunnel Expressway. In addition, the Lincoln Tunnel provides a direct connection for buses to the Port Authority Bus Terminal.

The highway analysis examined only the Manhattan-bound direction where delays and queues occur along NJ Route 495. The New Jersey-bound highway traffic generally operates with less congestion because the volumes are constrained by the tunnel at the Manhattan approaches (which are examined in Section 4B.6).

Figure 4B-7. Highways Leading to the Lincoln Tunnel

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

AFFECTED ENVIRONMENT

A qualitative highway segment analysis was performed because a reduction in traffic is projected by the BPM during the AM, MD, and PM peak hours. **Table 4B-18** presents a summary of the existing conditions during the weekday AM, MD, and PM peak hours.

Table 4B-18. Existing Conditions: New Jersey Route 495 Approach to the Lincoln Tunnel

PERFORMANCE (2019)	AM (8 a.m. to 9 a.m.)	MD (1 p.m. to 2 p.m.)	PM (5 p.m. to 6 p.m.)
Hourly Volume			
Helix to Lincoln Tunnel Entrance	1,725	1,631	771
Exclusive Bus Lane (XBL) to Lincoln Tunnel Entrance	512		
Local Ramps to Lincoln Tunnel Entrance	1,753	714	1,005
Processed Hourly Volume			
Helix to Lincoln Tunnel Entrance	1,731	1,577	775
XBL to Lincoln Tunnel Entrance	492		
Local Ramps to Lincoln Tunnel Entrance	1,541	729	957
Travel Time (min:sec)			
Helix to Lincoln Tunnel Entrance	10:45	09:47	02:03
XBL to Lincoln Tunnel Entrance	01:31		
Local Ramps to Lincoln Tunnel Entrance	02:23	00:55	04:38
Travel Speed (miles per hour)			
Helix to Lincoln Tunnel Entrance	3.5	3.9	18.4
XBL to Lincoln Tunnel Entrance	25.9		
Local Ramps to Lincoln Tunnel Entrance	6.5	17.0	3.4
Maximum Queue (feet)			
Helix to Lincoln Tunnel Entrance	8,443	951	32
XBL to Lincoln Tunnel Entrance	0		
Local Ramps to Lincoln Tunnel Entrance	1,289	0	1,681
Density (pc/mi/ln)			
Helix to Lincoln Tunnel Entrance	175	168	10
XBL to Lincoln Tunnel Entrance	19		
Level of Service (LOS)			
Helix to Lincoln Tunnel Entrance	F	F	A
XBL to Lincoln Tunnel Entrance	C	—	—

Source: WSP USA, 2022.

Based upon the results of the BPM for Tolling Scenario D, and subsequent post-processing to obtain hourly volumes, there would likely be a small decrease in trips across the Lincoln Tunnel in the Manhattan-bound direction during the AM, MD, and PM peak hours; therefore, a qualitative assessment of potential adverse traffic effects was performed for the CBD Tolling Alternative.

On a typical weekday, the Lincoln Tunnel carries 117,200 vehicles (53,900 Manhattan-bound and 63,300 New Jersey-bound). The following are peak hourly Manhattan-bound traffic volumes:

- 3,990 AM peak hour
- 2,345 MD peak hour
- 1,776 PM peak hour

The average speeds along the helix segment approaching the Lincoln Tunnel are 3.5 mph, 3.9 mph, and 18.4 mph during the AM, MD, and PM peak hours, respectively. The contra-flow XBL converts a New Jersey-bound general traffic lane on I-495 to serve as a Manhattan-bound bus-only lane. The XBL is in effect only during the AM peak period, and buses operate at an average speed of 25.9 mph during the AM peak hour. The general-purpose traffic entrance ramp from Park Avenue in Weehawken, New Jersey, has an average speed of 6.5 mph, 17.0 mph, and 3.4 mph during the AM, MD, and PM peak hours, respectively. The maximum queue lengths along NJ Route 495, measured west of the Lincoln Tunnel portal in New Jersey, are approximately 8,443 feet, 951 feet, and 32 feet during the AM, MD, and PM peak hours, respectively. The queue lengths along the entrance ramp from Park Avenue in Weehawken are approximately 1,289 feet, 0 feet, and 1,681 feet during the AM, MD, and PM peak hours, respectively. The NJ Route 495 approach to the Lincoln Tunnel operates at LOS F during the AM and MD peak hours and at LOS A during the PM peak hour.

ENVIRONMENTAL CONSEQUENCES

For existing conditions and the No Action Alternative and CBD Tolling Alternative Tolling Scenario D, Table 4B-19 presents a summary of the overall changes in traffic volume at the Lincoln Tunnel approaches for each of the peak hours, and compares the existing conditions, No Action Alternative, and CBD Tolling Alternative. The existing data was derived from 2018 transaction data and adjusted to 2019 values. There is little anticipated change between existing and No Action Alternative conditions, and the assessment summarized below describes the incremental change traffic volumes between the No Action Alternative and Tolling Scenario D.

Table 4B-19. Lincoln Tunnel Traffic Volumes during AM, MD and PM Peak Hours under Existing Conditions, No Action Alternative, and CBD Tolling Alternative

PEAK HOUR	EXISTING CONDITIONS	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)
AM (8:00 a.m. to 9:00 a.m.) (including Exclusive Bus Lane)	3,990	3,955	3,869
MD (1:00 p.m. to 2:00 p.m.)	2,345	2,338	2,190
PM (5:00 p.m. to 6:00 p.m.)	1,776	1,780	1,706

Source: WSP USA, 2022.

In summary, there would be a net reduction in traffic volumes during the AM (-86), MD (-148), and PM (-74) peak hours at the Manhattan-bound approaches to the Lincoln Tunnel, and traffic operations would be expected to improve slightly; therefore, there would be no adverse effects as a result of Tolling Scenarios D, E, and F during the AM, MD, and PM peak hours. The net traffic reductions for Tolling Scenarios A, B, C, and G would be expected to be greater than under the remaining tolling scenarios; therefore, there would be expected to be a greater improvement in traffic operations. Since traffic volumes would decrease under all tolling scenarios, there would not be an adverse traffic effect at the Lincoln Tunnel and its approaches for any of the tolling scenarios being considered.

AM Results (8:00 a.m. to 9:00 a.m.)

During the AM peak hour, traffic volumes are projected to decrease by approximately 43 vehicles along the helix and 43 vehicles along the Park Avenue ramp, resulting in a small improvement in traffic operations. No additional buses are anticipated on the XBL, which comprises approximately 2.2 percent of total AM peak-hour traffic. Therefore, there would not be an adverse traffic effect during the AM peak hour.

MD Results (1:00 p.m. to 2:00 p.m.)

During the MD peak hour, traffic volumes are projected to decrease by approximately 74 vehicles along the helix and 74 vehicles along Park Avenue ramp, resulting in a small improvement in traffic operations. Therefore, there would not be an adverse traffic effect during the MD peak hour.

PM Results (5:00 p.m. to 6:00 p.m.)

During the PM peak hour, traffic volumes are projected to slightly decrease, by approximately 37 vehicles along the helix and 37 vehicles along Park Avenue ramp, resulting in a small improvement in traffic operations. Therefore, there would not be an adverse traffic effect during the PM peak hour.

4B.4.7 Trans-Manhattan/Cross Bronx Expressway between the George Washington Bridge and I-87

The George Washington Bridge is a major crossing carrying I-95 and US Routes 1 and 9 across the Hudson River for trips between New Jersey and Manhattan as well as the Bronx, Queens, and Brooklyn. I-95 continues along segments known as the Trans-Manhattan Expressway and the Cross Bronx Expressway and provides connections to the Henry Hudson Parkway, Major Deegan Expressway, Harlem River Drive, and other local streets and highways (**Figure 4B-8**).

The highway analysis examines only the outbound (westbound/New Jersey-bound) direction of the Trans-Manhattan Expressway where it enters the George Washington Bridge (the convergence and maximum accumulation of vehicles from the feeder roadways to the George Washington Bridge). The BPM forecasts the traffic volumes under the representative tolling scenario in the inbound (eastbound) direction to be lower; therefore, the eastbound direction was not analyzed.

In the outbound (westbound) direction increases in vehicular trips are anticipated to occur along the major connections to the bridge approach due to circumferential diversion of through Manhattan CBD traffic taking advantage of the toll-free trans-Hudson crossings in the westbound direction to avoid the CBD toll.

Projections of changes in traffic volumes along the Trans-Manhattan/Cross Bronx Expressway as well as other feeder routes to the George Washington Bridge are based on existing bridge volume data, BPM projections of changes in traffic volumes, and travel patterns derived from data provided by StreetLight Data, Inc. used to determine the distribution of traffic using the George Washington Bridge.

Figure 4B-8. Highways Leading to the Trans-Manhattan/Cross Bronx Expressway

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Due to the lack of availability of an existing calibrated highway traffic model and gaps in the pre-COVID-19 pandemic traffic data, the analysis of the Trans-Manhattan/Cross Bronx Expressway relies on a combination of analytical quantitative and qualitative evaluation of potential adverse effects. The potential traffic effects along the Trans-Manhattan/Cross Bronx Expressway corridor were estimated from the Long Island Expressway Vissim model with appropriate adjustments for the relative increase in traffic volumes and the initial No Action speeds

AFFECTED ENVIRONMENT

On a typical weekday, the George Washington Bridge carries approximately 300,000 vehicles (145,000 Manhattan-bound and 155,000 New Jersey-bound). The peak-hour westbound/New Jersey-bound traffic volumes for the bridge are:

- 7,028 AM peak hour
- 8,315 MD peak hour
- 9,660 PM peak hour

ENVIRONMENTAL CONSEQUENCES

The incremental changes in traffic resulting from the CBD Tolling Alternative were assigned to the highways leading to the George Washington Bridge using data provided by StreetLight Data, Inc. For each time period, estimates were made as to where the majority of traffic originated from before combining along the Trans-Manhattan Expressway. Over the course of the day, the majority of traffic destined to the George Washington Bridge in the westbound direction comes from the Cross Bronx Expressway, Harlem River Drive, Henry Hudson Parkway and Major Deegan Expressway. **Table 4B-20** presents the proportion of traffic along these main roadways that lead to the George Washington Bridge.

Table 4B-20. Roadway Contribution by Time Period to George Washington Bridge Traffic

HIGHWAY CONNECTIONS TO GEORGE WASHINGTON BRIDGE	AM PEAK (6 a.m. to 10 a.m.) % Traffic	MD PEAK (10 a.m. to 4 p.m.) % Traffic	PM PEAK (4 p.m. to 8 p.m.) % Traffic
Harlem River Drive	29.5%	42.4%	36.7%
Cross Bronx Expressway – Westbound	43.7%	26.6%	26.1%
Henry Hudson Parkway (north- and southbound)	12.9%	17.7%	24.4%
Major Deegan Expressway (north- and southbound)	13.8%	13.4%	12.7%
TOTAL	**100.0%**	**100.0%**	**100.0%**

Source: StreetLight Data, Inc. (2019) and WSP analysis.

Under Tolling Scenario D, there would be increases in traffic across the George Washington Bridge in the westbound/New Jersey-bound direction during the AM, MD, and PM peak hours of 87, 826, and 414 vehicles, respectively. These increases would affect routes feeding the George Washington Bridge, including the Henry Hudson Parkway, the Trans-Manhattan Expressway westbound, the Harlem River Drive, the Major Deegan Expressway, and the Cross Bronx Expressway westbound. **Table 4B-21** summarizes the incremental changes in westbound/New Jersey-bound traffic along the major highways leading to the George Washington Bridge.

Table 4B-21. Projected Increase in Traffic, compared to the No Action Alternative, along Trans-Manhattan and Cross Bronx Expressway Corridor

FACILITY/HIGHWAY	PEAK-HOUR VEHICLES		
	AM	MD	PM
George Washington Bridge	**87**	**826**	**414**
From Henry Hudson Parkway	11	146	101
Trans-Manhattan Expressway	**76**	**680**	**313**
From Harlem River Drive	26	350	152
From Major Deegan Expressway	12	110	53
Cross Bronx Expressway	**38**	**220**	**108**

Source: 2019 Port Authority of New York and New Jersey traffic data at the George Washington Bridge, 2019 StreetLight Data, Inc. origin-destination data, and WSP analysis.

An analytical and qualitative assessment of anticipated traffic effects is presented below during the AM, MD, and PM peak hours based upon the estimated increases in peak hour volumes and estimated levels of congestion.

AM Results (7:00 a.m. to 8:00 a.m.)

During the AM peak hour, traffic volumes are projected to increase by approximately 87 vehicles on the George Washington Bridge, which would be a 1.2 percent increase over existing volumes. Approximately 11 vehicles would be added to the Henry Hudson Parkway, 26 vehicles to Harlem River Drive, 12 vehicles to the Major Deegan Expressway, and 38 vehicles to the Cross Bronx Expressway westbound. These small increases in traffic volumes are well within 5 percent and there would not be a noticeable change in speeds and travel times during the AM peak hour; therefore, there would not be an adverse effect under SEQRA.

MD Results (3:00 p.m. to 4:00 p.m.)

During the MD peak hour, traffic volumes are projected to increase by approximately 826 vehicles on the George Washington Bridge, which would be an 8.8 percent increase over existing volumes. Approximately 146 vehicles would be added to the Henry Hudson Parkway, 350 vehicles to Harlem River Drive, 110 vehicles to the Major Deegan Expressway, and 220 vehicles to the Cross Bronx Expressway westbound. It is expected that delays and travel times along these roadways would increase during the MD peak hour. Along the Cross Bronx Expressway and the Trans-Manhattan Expressway, the increases in projected volumes would be considered an adverse effect under the volume increase criteria of greater than 5 percent used to determine adverse effects under SEQRA.

Adverse effects that would arise if Tolling Scenario D or another similar tolling scenario were implemented will be minimized through implementing Transportation Demand Management measures such as ramp metering, motorist information, signage, and/or targeted toll policy modifications to reduce diversions. The Project Sponsors will undertake monitoring of traffic patterns specifically tailored to the adopted tolling scenario—commencing prior to implementation with data collection approximately 3 months after the start of project operations—to determine whether the predicted adverse effects are occurring and to determine the appropriate Transportation Demand Management measures (or improvement in existing Transportation Demand Management measures) to be implemented. The monitoring program will examine changes in traffic volumes, changes in speeds, and changes in delays along the affected highway corridors. Volume changes will be determined from before/after traffic counts (where available); speed changes will be determined from actual before/after speeds based on data provided by StreetLight Data, Inc.; and the change in delay along major highway corridors will be determined based on actual speeds based on data provided by StreetLight Data, Inc.. The monitoring program will inform the development and implementation of appropriate Transportation Demand Management measures and possible adjustments to the tolling policy should traffic volumes increase by more than 5 percent and delays increase more than 2.5 minutes.

PM Results (5:00 p.m. to 6:00 p.m.)

During the PM peak hour, traffic volumes are projected to increase by approximately 414 vehicles on the George Washington Bridge, which would be a 4.3 percent increase over existing volumes. Approximately 101 vehicles would be added to the Henry Hudson Parkway, 152 vehicles to Harlem River Drive, 53 vehicles to the Major Deegan Expressway, and 108 vehicles to the Cross Bronx Expressway westbound. These relatively small increases in traffic volumes would be within the 5 percent threshold, and there would not be an adverse effect under SEQRA.

4B.4.8 FDR Drive/Lower East Side—East 10th Street to the Brooklyn Bridge

ENVIRONMENTAL CONSEQUENCES

As with the Trans-Manhattan/Cross Bronx Expressway corridor, to be able to appropriately address the questions and concerns expressed by communities affected by any traffic changes in this corridor, additional traffic counts were obtained to complete further analysis. Under the CBD Tolling Alternative, the FDR Drive would experience a net decline in traffic at 60th Street, resulting in improved travel times and operating conditions along the upper FDR Drive and the segment between East 23rd Street and East 60th Street. However, the lower FDR Drive between East 10th Street and the Brooklyn Bridge would experience a net increase in traffic, with diverted traffic greater than the suppression of traffic due to CBD tolling. Under all tolling scenarios, the FDR Drive would become a more competitive route for some origin-destination pairs, thereby offsetting the overall decline in projected traffic along the FDR Drive in this specific area south of East 10th Street.

The highest projected increase in traffic along the lower FDR Drive would occur under Tolling Scenarios D, E, and F, which have the highest levels of discounts, exemptions, and crossing credits and therefore the highest tolls that would result in the greatest levels of diversions and changes in travel patterns. The BPM analyses showed a potential 5 percent to 9 percent increase in daily traffic volumes along the northbound FDR Drive and a 19 percent to 26 percent increase in daily traffic volumes along the southbound FDR Drive in the section between East 10th Street and the Brooklyn Bridge.

Based upon a select link analysis[21] of the lower FDR Drive, the net increase in traffic in this segment would come from three primary markets:

- **Queens:** Under the CBD Tolling Alternative, with the reduction in lanes along the BQE as part of the No Action Alternative from three lanes to two lanes in each direction, some trips from Queens to Brooklyn would divert to the Ed Koch Queensboro Bridge upper level, then to the southbound FDR Drive, and then to the Brooklyn Bridge (or Hugh L. Carey Tunnel) to bypass congestion on the BQE. This alternate routing, a toll-free route, would become more attractive under the CBD Tolling Alternative due to an overall reduction of traffic along the upper portion of the FDR Drive between 60th Street and West 23rd Street. The higher the CBD toll, the more traffic would be suppressed along the upper FDR Drive and the more attractive the FDR Drive becomes as a toll-free alternative to the BQE for travel between Queens and Brooklyn. The BPM does not show a northbound diversion from Brooklyn to Queens trips because this route would be tolled under all tolling scenarios because it would require re-entry into the CBD zone via a local street to access one of the East River crossings to Queens.
- **The Bronx:** Some trips between Bronx and Brooklyn would use the FDR Drive as an alternate to the congested BQE via the Third Avenue Bridge and the Willis Avenue Bridge, which would provide a toll-free connection between the Major Deegan Expressway (I-87) and the FDR Drive.
- **North Bergen County:** Some trips between North Bergen County and Brooklyn would divert to the FDR Drive as an alternative to the West Side Highway/Route 9A and local streets used to access the Brooklyn Bridge.

Table 4B-22 summarizes the changes in traffic volumes along the FDR Drive between East 10th Street and the Brooklyn Bridge.

[21] A select link analysis examines all trips using a particular highway segment and tracks the volume of traffic using the link from each origin-destination zone. This type of analysis allows a detailed review of travel pattern and routing changes.

Table 4B-22. Estimated Increase of Traffic on the Lower FDR Drive*

PERIOD		NORTHBOUND		SOUTHBOUND	
		Low	High	Low	High
AM	Peak Period	1,586	1,871	1,947	2,735
	Peak Hour	324	370	294	356
MD	Peak Period	1,219	1,535	2,524	4,117
	Peak Hour	249	313	281	458
PM	Peak Period	83	403	1,776	2,918
	Peak Hour	61	231	404	666
Daily		2,352	4,472	8,845	12,145

Source: WSP USA, 2022.
Notes:
1. Daily volumes will not equal peak-period increments due to values being pulled from differing tolling scenarios.
2. Peak-period increments are from the BPM (unadjusted).
3. Peak-hour volumes are estimated using an average and adjusted for accuracy.
4. Low = Tolling Scenarios A, B, C, and G
5. High = Tolling Scenarios D, E, and F

* NYCDOT reduced the number of lanes on the BQE from three lanes to two lanes in each direction on August 30, 2021, between Atlantic Avenue and Sands Street, to preserve the life of the cantilever structure. This has caused some motorists to divert to the FDR Drive. The Project is expected to cause additional motorists to divert to the FDR Drive to avoid congestion along the BQE.

AM Peak Hour (8:00 a.m. to 9:00 a.m.)

In the northbound direction, the AM peak-hour volume is expected to increase by about 324 to 370 vehicles. Typically, traffic flows freely along the lower FDR Drive in the northbound direction during the AM peak and it is anticipated that the additional traffic can be accommodated. In the southbound direction, the AM peak-hour volume is expected to increase by about 294 to 356 vehicles. Typically, traffic flows freely along the lower FDR Drive in the southbound direction during the AM peak, and it is anticipated that the additional traffic can be accommodated for all tolling scenarios.

MD Peak Hour (1:00 p.m. to 2:00 p.m.)

In the northbound direction, the MD peak-hour volume is expected to increase by about 249 to 313 vehicles. Typically, traffic flows freely along the lower FDR Drive in the northbound direction during the MD peak and it is anticipated that the additional traffic can be accommodated. In the southbound direction, the peak-hour volume is expected to increase by about 281 to 458 vehicles. Typically, traffic flows freely along the lower FDR Drive in the southbound direction during the MD peak, and it is anticipated that the additional traffic can be accommodated for all tolling scenarios.

PM Peak Hour (5:00 p.m. to 6:00 p.m.)

In the northbound direction, the PM peak-hour volume is expected to increase by about 61 to 231 vehicles. Typically, traffic flows freely along the lower FDR Drive in the northbound direction during the PM peak and it is anticipated that the additional traffic can be accommodated for all scenarios, aside from Tolling Scenario B. Under this tolling scenario, the projected increase in traffic volume would be marginally above the 5 percent threshold (at 5.8 percent), resulting in potential adverse effects.

In the southbound direction, the PM peak-hour volume is expected to increase by about 404 to 666 vehicles, depending on the tolling scenario. Typically, there is severe congestion along the lower FDR Drive in the southbound direction during the PM peak, and it is not anticipated that the additional traffic can be accommodated without adverse effects. Since the FDR Drive southbound is congested during the PM peak hour and the increase in volume would exceed the 5 percent threshold, an adverse traffic effect is projected.

In summary, all tolling scenarios would result in increases in daily and peak-hour traffic along the lower FDR Drive, between East 10th Street and the Brooklyn Bridge by more than the 5 percent threshold. Tolling Scenarios A, B, and G are generally anticipated to have lower potential increases in traffic volumes, and Tolling Scenarios D, E, and F are anticipated to have higher increases in traffic volumes, with some variation based on direction. Tolling Scenario C is anticipated to have increases in traffic volumes somewhere in the middle.

In the northbound direction, projected increases in traffic volumes would be lower than in the southbound direction, and there is capacity along the lower FDR Drive to handle some or all of the additional traffic without causing adverse effects during the AM and MD peak hours. However, during the PM peak hour, it is not anticipated that the additional traffic can be accommodated without some potential adverse effects under Tolling Scenario B. However, the adverse effects in the northbound direction are expected to be marginal.

In the southbound direction, potential diversions to the FDR Drive would be higher. Typically, traffic moves freely in this segment, except during the PM peak period when there is severe congestion. It is anticipated that sufficient reserve capacity is available to handle the expected increase in traffic during the AM and MD peak hours for some of the tolling scenarios without adverse effects. However, during the PM peak hour when traffic congestion is prevalent, it is not anticipated that the additional traffic can be accommodated without adverse effects. Therefore, an adverse traffic effect is projected during the PM peak hour in the southbound direction.

Adverse effects that would arise if Tolling Scenario D or another similar tolling scenario were implemented will be minimized through implementing Transportation Demand Management measures such as ramp metering, motorist information, signage, and/or targeted toll policy modifications to reduce diversions. The Project Sponsors will undertake monitoring of traffic patterns specifically tailored to the adopted tolling scenario—commencing prior to implementation with data collection approximately 3 months after the start of project operations—to determine whether the predicted adverse effects are occurring and to determine the appropriate Transportation Demand Management measures (or improvement in existing Transportation Demand Management measures) to be implemented. The monitoring program will examine changes in traffic volumes, changes in speeds, and changes in delays along the affected highway corridors. Volume changes will be determined from before/after traffic counts (where available); speed changes will be determined from actual before/after speeds based on data provided by StreetLight Data, Inc.; and the change in delay along major highway corridors will be determined based on actual speeds based on data provided by StreetLight Data, Inc.. The monitoring program will inform the development and implementation of appropriate Transportation Demand Management measures and possible adjustments to the tolling policy should traffic volumes increase by more than 5 percent and delays increase more than 2.5 minutes. Although some increases in traffic volumes and travel times are expected along the Long Island Expressway, there would be comparable decreases in traffic volumes and travel times and delays for motorists using the Queensboro Bridge along its approaches in Manhattan and Queens, which would see a higher reduction in traffic volumes under Tolling Scenario D.

4B.4.9 Bayonne Bridge

AFFECTED ENVIRONMENT

The highway segment analysis was performed using an HCS with incremental volumes from BPM analyses. The analysis provides performance metrics including speed, density (in passenger cars per mile per lane) and overall LOS. **Table 4B-23, Table 4B-24, Table 4B-25, and Table 4B-26** present a summary of existing, No Action Alternative, and CBD Tolling Alternative (Tolling Scenario D) conditions during the weekday AM, MD, PM, and late night (LN) peak hour. A map of the analyzed location is shown in **Figure 4B-9.**

ENVIRONMENTAL CONSEQUENCES

For existing conditions and the No Action Alternative and CBD Tolling Alternative Tolling Scenario D, **Table 4B-23, Table 4B-24, Table 4B-25, and Table 4B-26**present a summary of the overall changes in traffic volume at the Bayonne Bridge for each of the peak hours, and compares the existing conditions, No Action Alternative, and CBD Tolling Alternative. The existing data was obtained from BPM. There is little anticipated change between the No Action Alternative and CBD Tolling Alternative (Tolling Scenario D), the assessment summarized below describes the incremental change in traffic volumes between the No Action Alternative and Tolling Scenario D.

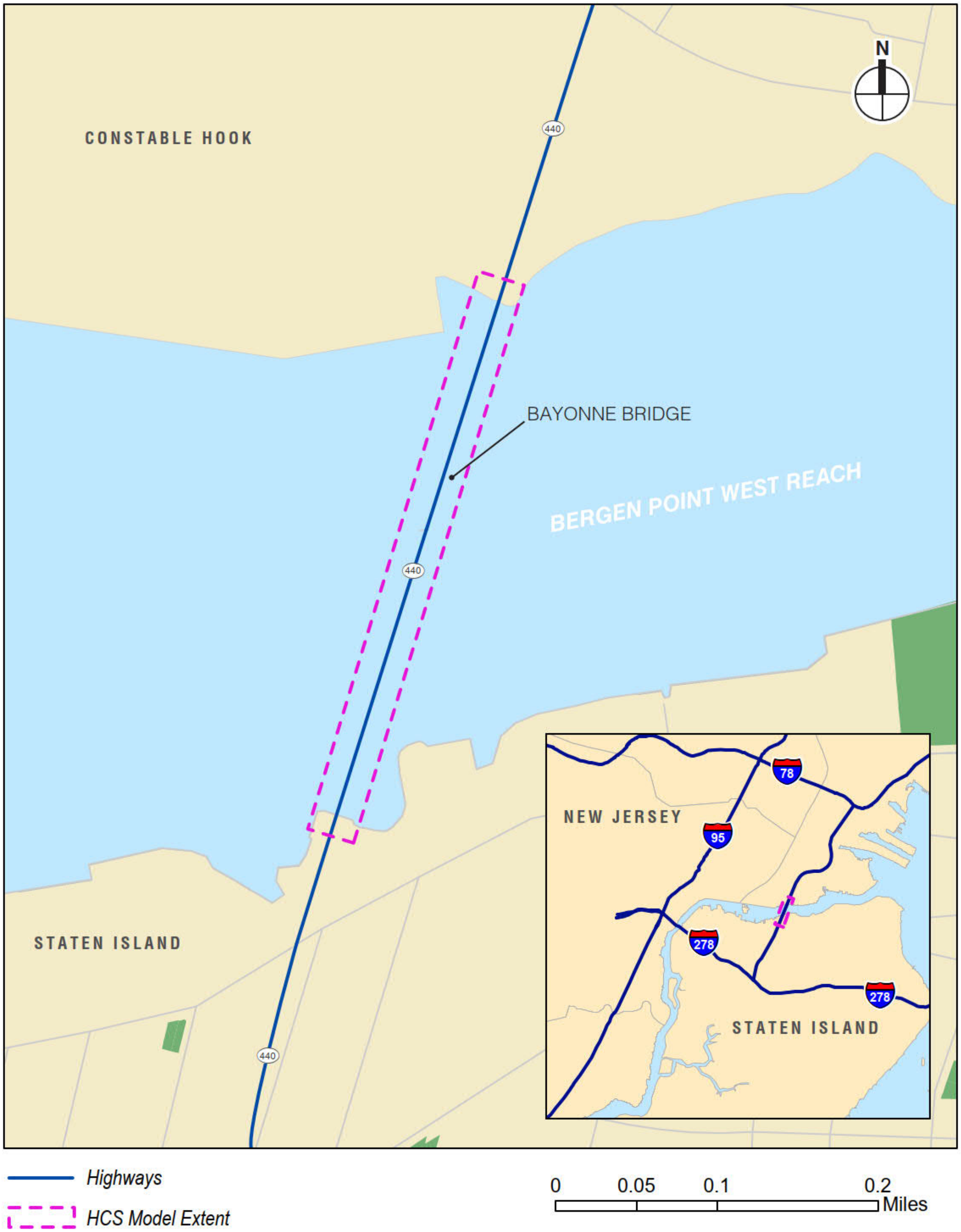
In summary, there would be a net increase in northbound traffic volumes during the AM (376), MD (317), PM (213), and LN (54) peak hours at the Bayonne Bridge. There would be a net increase in southbound traffic volumes during the AM (81), MD (97), PM (148), and LN (1) peak hours at the Bayonne Bridge. There would be no adverse effects as a result of the tolling scenarios with the largest traffic increases during the AM, MD, PM, and LN peak hours. Since traffic volumes would increase by less under the other tolling scenarios, there would not be an adverse traffic effect for any of the tolling scenarios being considered.

AM Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 376 vehicles heading into New Jersey. This would result in the northbound density along Route 440 to increase by approximately 4.9 pc/mi/ln and the LOS would decrease from LOS B to LOS C. Under the SEQRA criteria, LOS C during the AM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Traffic in the southbound direction is projected to increase by approximately 81 vehicles heading into Staten Island. This would result in the southbound density along Route 440 to increase by approximately 1 pc/mi/ln and the LOS would decrease from LOS A to LOS B. Under the SEQRA criteria, LOS B during the AM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Figure 4B-9. Highways Leading to the Bayonne Bridge



Source: WSP USA, 2022.

MD Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 317 vehicles heading into New Jersey. This would result in the northbound density along Route 440 to increase by approximately 4.3 pc/mi/ln and the LOS would decrease from LOS A to LOS B. Under the SEQRA criteria, LOS B during the MD peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Traffic in the southbound direction is projected to increase by approximately 97 vehicles heading into Staten Island. This would result in the southbound density along Route 440 to increase by approximately 1.3 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the MD peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

PM Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 213 vehicles heading into New Jersey. This would result in the northbound density along Route 440 to increase by approximately 2.8 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the PM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Traffic in the southbound direction is projected to increase by approximately 148 vehicles heading into Staten Island. This would result in the southbound density along Route 440 to increase by approximately 1.8 pc/mi/ln and the LOS would remain LOS B. Under the SEQRA criteria, LOS B during the PM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

LN Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 54 vehicles heading into New Jersey. This would result in the northbound density along Route 440 to increase by approximately 0.7 pc/mi/ln and the LOS service would remain LOS A. Under the SEQRA criteria, LOS A during the LN peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Traffic in the southbound direction is projected to increase by approximately one vehicle heading into Staten Island. This would result in the southbound density along Route 440 to increase by approximately 0 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the LN peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

4B.4.10 Eastern Spur of I-95 New Jersey Turnpike

AFFECTED ENVIRONMENT

The highway segment analysis was performed using an HCS with existing volumes from BPM analyses. The analysis provides performance metrics including density (in passenger cars per mile per lane) and overall LOS. Table 4B-23, Table 4B-24, Table 4B-25, and Table 4B-26 present a summary of existing, No Action Alternative, and CBD Tolling Alternative Scenario D conditions during the weekday AM, MD, PM, and LN peak hour. A map of the analyzed location is shown in Figure 4B-10.

ENVIRONMENTAL CONSEQUENCES

For existing conditions and the No Action Alternative and CBD Tolling Alternative Tolling Scenario D, Table 4B-23, Table 4B-24, Table 4B-25, and Table 4B-26 present a summary of the overall changes in traffic volume at the I-95 eastern spur for each of the peak hours, and compares the existing conditions, No Action Alternative, and CBD Tolling Alternative. The existing data was obtained from the BPM. There is little anticipated change between the No Action Alternative and CBD Tolling Alternative Tolling Scenario D. The assessment summarized below describes the incremental change in traffic volumes between the No Action Alternative and Tolling Scenario D.

In summary, there would be a net increase in northbound traffic volumes during the AM (53), MD (63), PM (80) peak hour and a net decrease during the LN (-16) peak hour at the Bayonne Bridge. There would be a net increase in southbound traffic volumes during the AM (98), MD (218), PM (56), and LN (104) peak hours at the Eastern Spur of the New Jersey Turnpike. There would be no adverse effects as a result of the tolling scenarios with the largest increases in traffic volumes during the AM, MD, PM, and LN peak hours. Since traffic volumes would increase by less under the other tolling scenarios, there would not be an adverse traffic effect for any of the tolling scenarios being considered.

AM Results

With CBD tolling, traffic in the northbound direction to the George Washington Bridge is projected to increase by approximately 53 vehicles. This would result in the northbound density along I-95 to increase by approximately 0.4 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the AM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

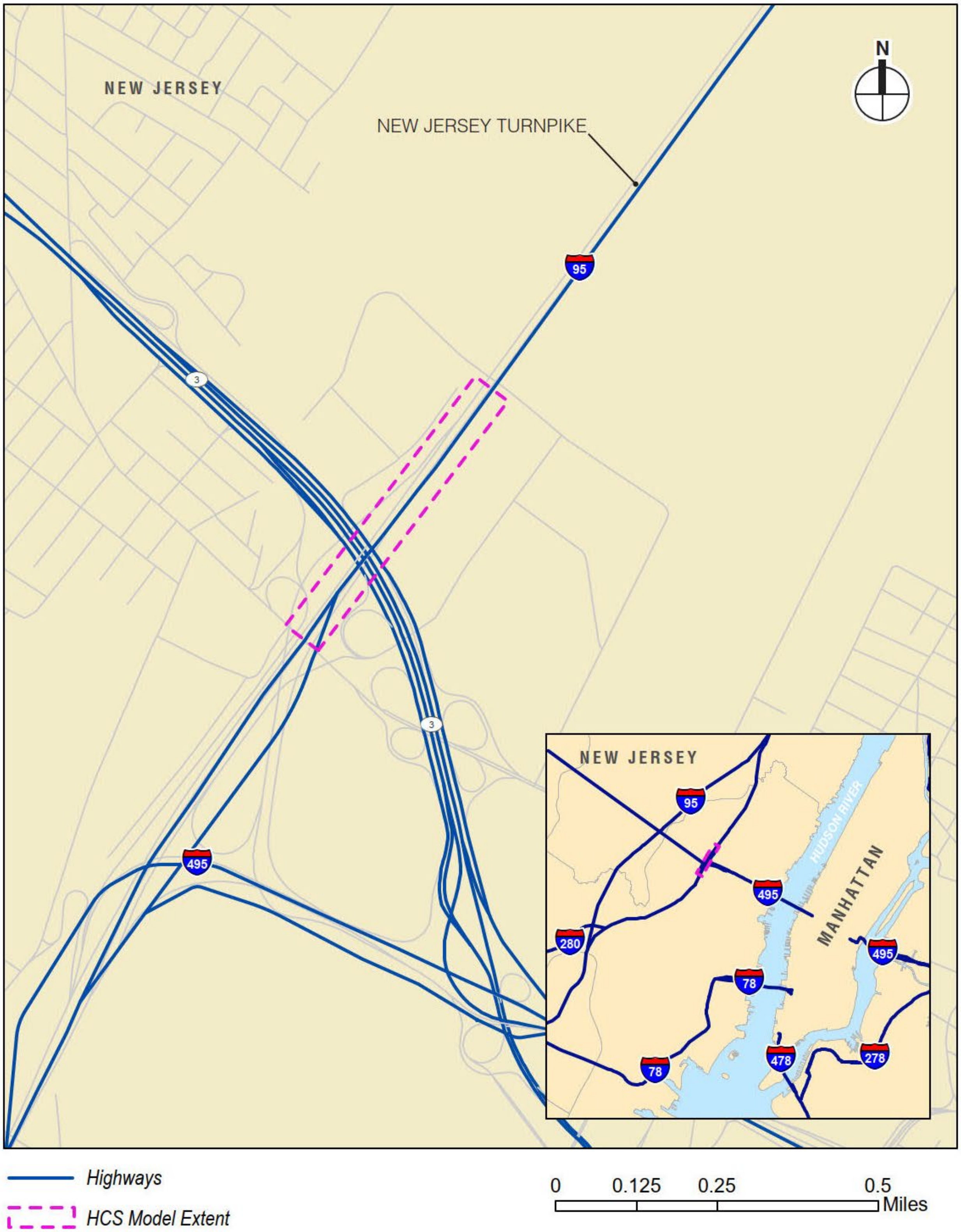
Traffic in the southbound direction from the George Washington Bridge is projected to increase by approximately 98 vehicles. This would result in the southbound density along I-95 to increase by approximately 0.6 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the AM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

MD Results

With CBD tolling, traffic in the northbound direction to the George Washington Bridge is projected to increase by approximately 63 vehicles. This would result in the northbound density along I-95 to increase by approximately 0.4 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the MD peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Traffic in the southbound direction from the George Washington Bridge is projected to increase by approximately 218 vehicles. This would result in the southbound density along I-95 to increase by approximately 1.7 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the MD peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Figure 4B-10. Highways Leading to the Eastern Spur of I-95



Source: WSP USA, 2022.

PM Results

With CBD tolling, traffic in the northbound direction to the George Washington Bridge is projected to increase by approximately 80 vehicles. This would result in the northbound density along I-95 to increase by approximately 0.5 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the PM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

Traffic in the southbound direction from the George Washington Bridge is projected to increase by approximately 56 vehicles. This would result in the southbound density along I-95 to increase by approximately 0.4 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the PM peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

LN Results

With CBD tolling, traffic in the northbound direction to the George Washington Bridge is projected to decrease by approximately 16 vehicles. This would result in the northbound density along I-95 to decrease by approximately 0.2 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the LN peak hour is considered acceptable and therefore is not considered to create an adverse effect.

Traffic in the southbound direction from the George Washington Bridge is projected to increase by approximately 104 vehicles. This would result in the southbound density along I-95 to increase by approximately 0.8 pc/mi/ln and the LOS would remain LOS A. Under the SEQRA criteria, LOS A during the LN peak hour is considered acceptable and, therefore, is not considered to create an adverse effect.

4B.4.11 RFK Bridge between Queens and Ramps to/from Manhattan

AFFECTED ENVIRONMENT

The highway segment analysis was performed using the HCS with existing volumes and incremental volumes from BPM analyses. The analysis provides performance metrics including density (in passenger cars per mile per lane) and overall LOS. **Table 4B-23, Table 4B-24, Table 4B-25, and Table 4B-26** present a summary of existing, No Action Alternative, and CBD Tolling Alternative Scenario D conditions during the weekday AM, MD, PM, and LN peak hour. **Figure 4B-11** shows the analyzed location**.**

ENVIRONMENTAL CONSEQUENCES

For existing conditions and the No Action Alternative and CBD Tolling Alternative Tolling Scenario D, **Table 4B-23, Table 4B-24, Table 4B-25, and Table 4B-26** present a summary of the overall changes in traffic volume at the RFK Bridge (between Queens and ramps to/from Manhattan) for each of the peak hours, and compares the existing conditions, No Action Alternative, and CBD Tolling Alternative. The existing data was obtained from BPM. There is an anticipated change between the No Action Alternative and Tolling Scenario D, the assessment summarized below describes the incremental change in traffic volumes between the No Action Alternative and Tolling Scenario D.

In summary, there would be a net increase in northbound traffic volumes during the AM (508), MD (261), PM (634), and LN (93) peak hours at the RFK Bridge. There would be a net increase in southbound traffic volumes during the AM (396), MD (474), PM (612), and LN (598) peak hours at the RFK Bridge. There would be potential change in LOS from D to marginally E under the tolling scenarios with the largest increases in local traffic volumes during the AM and PM peak hours. However, the speeds would remain about the same or slightly lower at approximately 40 mph and delays would be below the 2.5-minute threshold. Therefore, there would not be an adverse effect at the RFK under any of the tolling scenarios in both the northbound and southbound directions. Therefore, there would not be an adverse traffic effect at the RFK Bridge.

AM Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 508 vehicles heading into Manhattan or Bronx. This would result in the northbound density along I-278 to increase by approximately 3.6 pc/mi/ln. There would be potential change in LOS from D to marginally E under the tolling scenarios with the largest increases in traffic volumes. However, the speeds would remain about the same at approximately 40 mph and increases in delays would be below the 2.5-minute threshold; therefore, there would not be an adverse traffic effect during the AM in the northbound direction. Traffic in the southbound direction is projected to increase by approximately 396 vehicles heading into Queens. This would result in the southbound density along I-278 to increase by approximately 2.7 pc/mi/ln. There would be a potential change in LOS from D to marginally E under the tolling scenarios with the largest increases in traffic volumes. However, the speeds would remain about the same at approximately 40 mph and increases in delays would be below the 2.5-minute threshold; therefore, there would not be an adverse traffic effect during the AM in the southbound direction.

Table 4B-23 summarizes the changes in traffic volumes, density, and LOS between existing conditions, the No Action Alternative, and the CBD Tolling Alternative (Tolling Scenario D) for the Bayonne Bridge, RFK Bridge, and I-95 Eastern Spur for the AM time period.

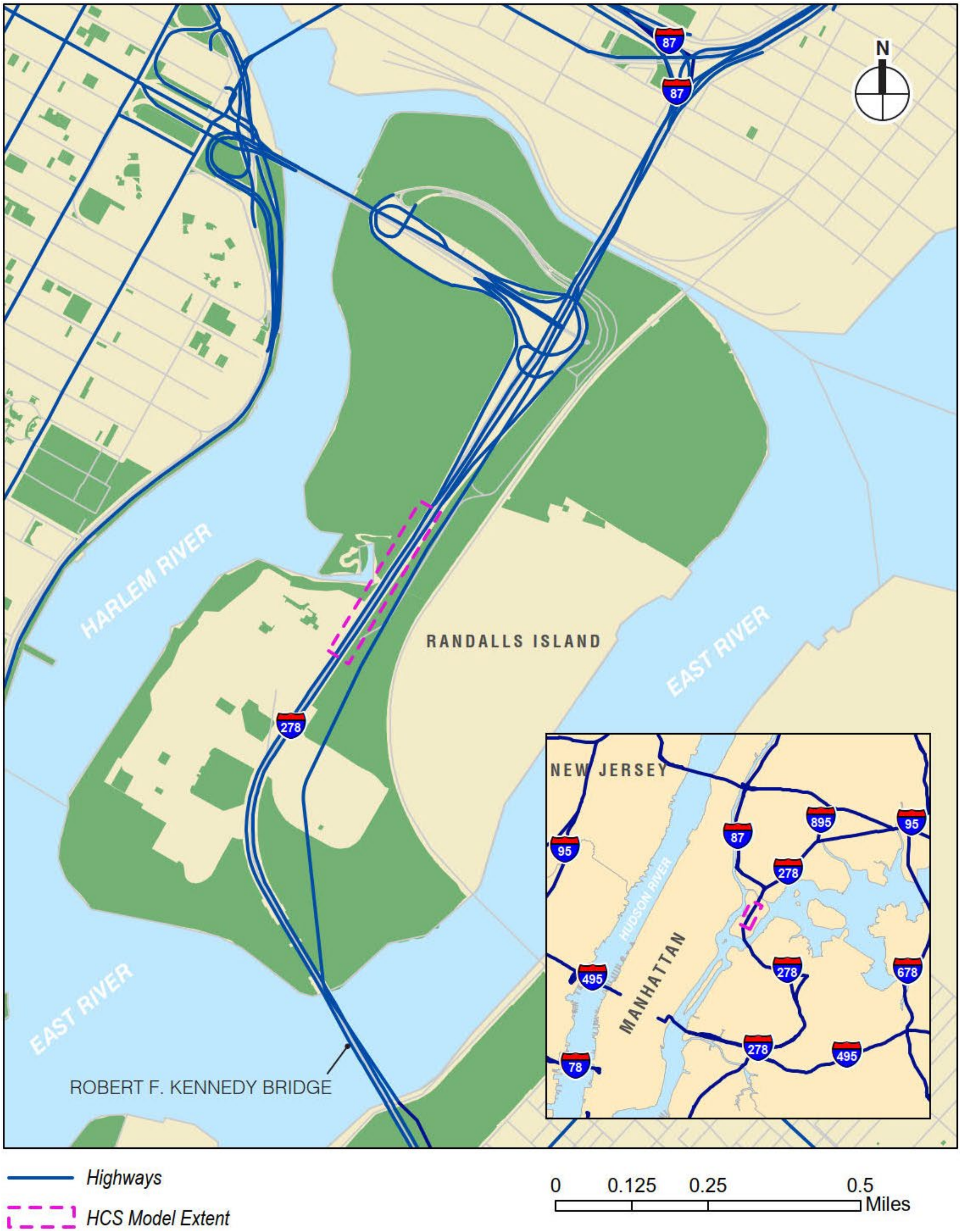
MD Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 261 vehicles heading into Manhattan or Bronx. This would result in the northbound density along I-278 to increase by approximately 2.4 pc/mi/ln and the LOS would remain LOS D. Speeds would remain about the same at 40 mph and the increase in delay would be small and well below the 2.5-minute threshold.

Traffic in the southbound direction is projected to increase by approximately 474 vehicles heading into Queens. This would result in the southbound density along I-278 to increase by approximately 3.3 pc/mi/ln. and the LOS service would decrease from LOS C to D. Speeds would remain about the same at 40 mph or higher and the increase in delay would be small and well below the 2.5-minute threshold.

Table 4B-24 summarizes the changes in traffic volumes, density, and LOS between existing conditions, the No Action Alternative, and the CBD Tolling Alternative (Tolling Scenario D) for the Bayonne Bridge, RFK Bridge, and I-95 Eastern Spur for the MD time period.

Figure 4B-11. Highways Leading to the Robert F. Kennedy Bridge



Source: WSP USA, 2022.

Table 4B-23. Highway Capacity Software Performance Measures (AM)

DIRECTION	LOCATION	HOURLY VOLUME			
		EXISTING CONDITION	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume					
Northbound	Bayonne Bridge	1,075	1,091	1,467	376
	RFK Bridge	4,452	4,575	5,083	508
	Eastern Spur I-95 (Pre-ramp)	152	152	208	56
	Merge from 495	641	660	657	-3
	Eastern Spur I-95 (Post-ramp)	793	811	865	53
Southbound	Bayonne Bridge	659	678	759	81
	RFK Bridge	4,951	5,127	5,524	396
	Eastern Spur I-95 (Pre-ramp)	1,063	1,145	1,244	98
	Diverge to 495	630	627	686	59
	Eastern Spur I-95 (Post-ramp)	433	519	558	39
Density (pc/mi/ln)					
Northbound	Bayonne Bridge	15.4	15.6	20.5	4.9
	RFK Bridge	31.1	32	35.6	3.6
	Eastern Spur I-95 (Pre-ramp)	1.4	1.4	1.8	0.4
	Merge from 495	8.2	8.4	8.6	0.2
	Eastern Spur I-95 (Post-ramp)	6.5	6.7	7.1	0.4
Southbound	Bayonne Bridge	10.5	10.8	11.8	1
	RFK Bridge	34.4	35.6	38.3	2.7
	Eastern Spur I-95 (Pre-ramp)	8.6	9.3	9.9	0.6
	Diverge to 495	4.9	5.2	5.6	0.4
	Eastern Spur I-95 (Post-ramp)	3.4	4.1	4.3	0.2
Level of Service (LOS)					
Northbound	Bayonne Bridge	B	B	C	—
	RFK Bridge	D	D	E	X
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Merge from 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—
Southbound	Bayonne Bridge	A	A	B	—
	RFK Bridge	D	E	E	X
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Diverge to 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—

Source: WSP USA, 2022.

Table 4B-24. Highway Capacity Software Performance Measures (MD)

DIRECTION	LOCATION	HOURLY VOLUME			
		EXISTING CONDITION	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume					
Northbound	Bayonne Bridge	459	434	751	317
	RFK Bridge	4,325	4,381	4,642	261
	Eastern Spur I-95 (Pre-ramp)	225	195	237	42
	Merge from 495	572	569	590	21
	Eastern Spur I-95 (Post-ramp)	798	764	827	63
Southbound	Bayonne Bridge	592	585	683	97
	RFK Bridge	3,430	3,551	4,025	474
	Eastern Spur I-95 (Pre-ramp)	637	629	847	218
	Diverge to 495	596	586	646	60
	Eastern Spur I-95 (Post-ramp)	40	43	201	158
Density (pc/mi/ln)					
Northbound	Bayonne Bridge	7.4	7	11.3	4.3
	RFK Bridge	30.4	30.8	33.2	2.4
	Eastern Spur I-95 (Pre-ramp)	1.9	1.7	2	0.3
	Merge from 495	8.3	8.1	8.3	0.2
	Eastern Spur I-95 (Post-ramp)	6.8	6.5	6.9	0.4
Southbound	Bayonne Bridge	9.8	9.6	10.9	1.3
	RFK Bridge	24.7	25.6	28.9	3.3
	Eastern Spur I-95 (Pre-ramp)	5.4	5.3	7.0	1.7
	Diverge to 495	3	3	3.9	0.9
	Eastern Spur I-95 (Post-ramp)	0.4	0.4	1.5	1.1
Level of Service (LOS)					
Northbound	Bayonne Bridge	A	A	B	—
	RFK Bridge	D	D	D	—
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Merge from 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—
Southbound	Bayonne Bridge	A	A	A	—
	RFK Bridge	C	C	D	—
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Diverge to 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—

Source: WSP USA, 2022.

PM Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 634 vehicles heading into Manhattan or Bronx. This would result in the northbound density along I-278 to increase by approximately 4.5 pc/mi/ln. There would be potential change in LOS from D to E under the analyzed tolling scenario with the highest increase in traffic. However, the speeds would remain about the same at approximately 40 mph or higher and the increase in delay would be small and well below the 2.5-minute threshold.

Traffic in the southbound direction is projected to increase by approximately 612 vehicles heading into Queens. This would result in the southbound density along I-278 to increase by approximately 4.1 pc/mi/ln and the LOS service would remain LOS D. However, the speeds would remain about the same at approximately 40 mph or higher and the increase in delay would be small and well below the 2.5-minute threshold.

Table 4B-25 summarizes the changes in traffic volumes, density, and LOS between existing conditions, the No Action Alternative, and the CBD Tolling Alternative (Tolling Scenario D) for the Bayonne Bridge, RFK Bridge, and I-95 Eastern Spur for the PM time period.

LN Results

With CBD tolling, traffic in the northbound direction is projected to increase by approximately 93 vehicles heading into Manhattan or Bronx. This would result in the northbound density along I-278 to increase by approximately 0.9 pc/mi/ln and the LOS would remain LOS A. Traffic in the southbound direction is projected to increase by approximately 598 vehicles heading into Queens. This would result in the southbound density along I-278 to increase by approximately 3.7 pc/mi/ln and the LOS service would remain at acceptable LOS A. Therefore, there would not be an adverse traffic effect during the LN.

Table 4B-26 summarizes the changes in traffic volumes, density, and LOS between existing conditions, the No Action Alternative, and the CBD Tolling Alternative (Tolling Scenario D) for the Bayonne Bridge, RFK Bridge, and I-95 Eastern Spur for the LN time period.

Table 4B-25. Highway Capacity Software Performance Measures (PM)

DIRECTION	LOCATION	HOURLY VOLUME			
		EXISTING CONDITION	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume					
Northbound	Bayonne Bridge	563	570	783	213
	RFK Bridge	4,710	4,704	5,337	634
	Eastern Spur I-95 (Pre-ramp)	418	436	470	34
	Merge from 495	805	805	851	46
	Eastern Spur I-95 (Post-ramp)	1,223	1,241	1,321	80
Southbound	Bayonne Bridge	791	814	962	148
	RFK Bridge	4,159	4,344	4,957	612
	Eastern Spur I-95 (Pre-ramp)	801	792	847	56
	Diverge to 495	761	755	808	53
	Eastern Spur I-95 (Post-ramp)	40	37	39	3
Density (pc/mi/ln)					
Northbound	Bayonne Bridge	7.8	7.9	10.7	2.8
	RFK Bridge	31.3	31.2	35.7	4.5
	Eastern Spur I-95 (Pre-ramp)	3.1	3.2	3.5	0.3
	Merge from 495	10.4	10.5	10.9	0.4
	Eastern Spur I-95 (Post-ramp)	9.1	9.2	9.7	0.5
Southbound	Bayonne Bridge	11.2	11.6	13.4	1.8
	RFK Bridge	27.9	29.1	33.2	4.1
	Eastern Spur I-95 (Pre-ramp)	5.9	5.9	6.3	0.4
	Diverge to 495	3.4	3.3	3.6	0.3
	Eastern Spur I-95 (Post-ramp)	0.3	0.3	0.3	0
Level of Service (LOS)					
Northbound	Bayonne Bridge	A	A	A	—
	RFK Bridge	D	D	E	X
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Merge from 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—
Southbound	Bayonne Bridge	B	B	B	—
	RFK Bridge	D	D	D	—
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Diverge to 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—

Source: WSP USA, 2022.

Table 4B-26. Highway Capacity Software Performance Measures (Late Night)

DIRECTION	LOCATION	HOURLY VOLUME			
		EXISTING CONDITION	NO ACTION ALTERNATIVE	CBD TOLLING ALTERNATIVE (Tolling Scenario D)	INCREMENTAL CHANGE
Hourly Volume					
Northbound	Bayonne Bridge	173	175	228	54
	RFK Bridge	847	866	959	93
	Eastern Spur I-95 (Pre-ramp)	15	16	15	-1
	Merge from 495	341	343	329	-14
	Eastern Spur I-95 (Post-ramp)	356	360	344	-16
Southbound	Bayonne Bridge	207	207	208	1
	RFK Bridge	833	847	1,446	598
	Eastern Spur I-95 (Pre-ramp)	347	354	458	104
	Diverge to 495	334	340	445	105
	Eastern Spur I-95 (Post-ramp)	13	14	13	-1
Density (pc/mi/ln)					
Northbound	Bayonne Bridge	2.6	2.6	3.3	0.7
	RFK Bridge	6.1	6.1	7	0.9
	Eastern Spur I-95 (Pre-ramp)	0.1	0.2	0.1	-0.1
	Merge from 495	4.5	4.5	4.3	-0.2
	Eastern Spur I-95 (Post-ramp)	2.8	2.8	2.6	-0.2
Southbound	Bayonne Bridge	3.3	3.3	3.3	0
	RFK Bridge	5.9	6.3	10.0	3.7
	Eastern Spur I-95 (Pre-ramp)	2.7	2.7	3.5	0.8
	Diverge to 495	1.5	1.5	2	0.5
	Eastern Spur I-95 (Post-ramp)	0.1	0.1	0.1	0
Level of Service (LOS)					
Northbound	Bayonne Bridge	A	A	A	—
	RFK Bridge	A	A	A	—
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Merge from 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—
Southbound	Bayonne	A	A	A	—
	RFK	A	A	A	—
	Eastern Spur I-95 (Pre-ramp)	A	A	A	—
	Diverge to 495	A	A	A	—
	Eastern Spur I-95 (Post-ramp)	A	A	A	—

Source: WSP USA, 2022.

SUMMARY OF HIGHWAY ASSESSMENT

Tolling Scenarios A, B, C, and G with the lowest level of discounts, exemptions, and/or crossing credits reduced overall traffic entering and leaving the Manhattan CBD with the least potential effect on travel patterns and diversions. However, VMT would increase slightly in Staten Island and the Bronx due to drivers to and from New Jersey diverting around the Manhattan CBD to avoid paying the CBD toll. Tolling Scenarios D, E, and F, with higher discounts, exemptions and/or crossing credits were found to create the highest overall reduction in traffic entering and leaving the Manhattan CBD, but with higher potential changes in travel patterns and diversions to several highways.

Tolling Scenario D, with higher Manhattan CBD crossing credits and no exemptions and discounts, was determined to have the highest potential for changes in travel patterns and a shift of traffic; therefore, Tolling Scenario D was selected for detailed analysis of potential traffic effects along highway approaches to the Manhattan CBD, along circumferential routes, and at local intersections adjacent to the tunnel portals and bridges crossing into the Manhattan CBD. Potential changes in travel patterns, diversions, and increases in traffic volumes at the affected facilities would fall into a narrow range; therefore, the potential traffic effects are expected to be similar for Tolling Scenarios D, E, and F.

The following four tunnels that cross into the Manhattan CBD have a potential for net increases in traffic due to diversion of traffic:[22]

- The potential shift in traffic to the Lincoln Tunnel for Tolling Scenario D would be offset by a reduction in traffic due to CBD tolling, resulting in a net reduction in traffic. Therefore, the Lincoln Tunnel and NJ Route 495 are expected to have generally reduced traffic and improved traffic operations for all tolling scenarios during the peak hours. Therefore, this facility was not analyzed further because there would not be an adverse effect for any tolling scenario.
- The potential shift in traffic to the Holland Tunnel for Scenario D would be offset by a reduction in traffic due to CBD tolling, resulting in a net reduction in traffic. Therefore, the Holland Tunnel, I-78, and NJ Route 139 are expected to have reduced traffic based on the BPM forecast and improved traffic operations for all tolling scenarios during the peak hours. Therefore, this facility was not analyzed further because there would not be an adverse effect for any tolling scenario.
- The Hugh L. Carey Tunnel is expected to have a net increase in traffic under the tolling scenarios with the largest increases in traffic volumes. A major portion of the increase in traffic in the tunnel is attributable to traffic diverted from the BQE, but overall traffic along the Gowanus Expressway/Prospect Expressway weaving segment leading to the Hugh L. Carey Tunnel and BQE should not increase appreciably. Under Tolling Scenario D, traffic volumes to the Hugh L. Carey Tunnel would increase by 72/486/47 vehicles during the AM, MD, and PM peak hours, respectively. Under the SEQRA criteria, based on a 5 percent increase in traffic under congested conditions and less than a 2.5-minute increase in delay, there would be no adverse effect during the AM and PM peak hours. During the MD peak hour, although the 5 percent increase in traffic would be exceeded, the increase

22 Only the inbound direction was examined because that is the critical direction due to higher congestion and greater sensitivity to increases (or decreases) in traffic volumes.

in delay would be well below the 2.5-minute threshold and, therefore, there would not be an adverse effect. The Vissim analysis indicates that there would be minimal traffic effects because there would be sufficient reserve capacity in the two inbound lanes of the tunnel to handle the additional traffic volumes during the MD peak hour.

- The Queens-Midtown Tunnel and the Long Island Expressway (I-495) approaches are expected to have a net increase in traffic under the analyzed tolling scenario with the highest increase in traffic associated with crossing credits and a reduction in traffic under all other tolling scenarios. A major portion of the increase in traffic at the Queens-Midtown Tunnel is due to expected diversion of traffic from the Ed Koch Queensboro Bridge, which would be expected to have a net decline in traffic. Under Tolling Scenario D, traffic volumes at the Queens-Midtown Tunnel would increase by 125/383/203 vehicles during the AM, MD, and PM peak hours, respectively, resulting in increased queue lengths and delays for all peak hours. Under the SEQRA criteria, assuming a 5 percent increase threshold under congested conditions and a delay of greater than 2.5 minutes, there would be a potential adverse effect in the MD peak hour but no anticipated adverse effect during the AM and PM peak hours. Representative of reduced exemptions and crossing credits, Tolling Scenarios A, B, C, and G would provide opportunities for reducing or avoiding potential adverse traffic effects.

All tolling scenarios would increase traffic along two circumferential routes—the Trans-Manhattan/Cross Bronx Expressway via the George Washington Bridge and the Staten Island Expressway (I-278) via the Verrazzano-Narrows Bridge—which would avoid the CBD tolls. In the inbound/eastbound direction, Tolling Scenarios A, B, C, and G would produce the highest diversions while in the outbound/westbound direction, Tolling Scenarios D, E, and F would produce the highest diversions. Overall, the potential diversion of traffic in the westbound direction would be expected to be higher than in the eastbound direction. The circumferential diversion of traffic is expected to have a potential effect on traffic operations along the Trans-Manhattan/Cross Bronx Expressway and, to a much lesser extent, along the Staten Island Expressway (I-278).

- **Staten Island Expressway (I-278):** Under Tolling Scenario D, there would be an increase in traffic volumes westbound on the Verrazzano-Narrows Bridge during the AM, MD, and PM peak hours of 32/201/75 vehicles on the lower level and 64/256/97 vehicles on the upper level, respectively. These increases in traffic are relatively small and would not have an appreciable effect on travel time, delays, speeds, and densities given the available capacity on the Verrazzano-Narrows Bridge. The LOS would remain the same during all time periods for all highway segments operating at LOS B/C during the AM and MD peak hours and LOS E/F during the PM peak hour; therefore, Tolling Scenario D (and Tolling Scenarios E and F), would have no adverse traffic effect along the Verrazzano-Narrows Bridge and the Staten Island Expressway (I-278) during any time period under the SEQRA criteria. Tolling Scenarios A, B, C, and G, with Lower Manhattan CBD tolls, would be expected to create fewer diversions than Tolling Scenarios D, E, and F; therefore, these tolling scenarios would also not result in adverse traffic effects.
- **George Washington Bridge:** Under Tolling Scenario D, there would be an increase in traffic volumes westbound/New Jersey-bound on the George Washington Bridge during the AM, MD, and PM peak hours of 87/826/414 vehicles, respectively. It is anticipated that the increase in traffic volumes would

be within 5 percent during the AM and PM peak hours. During the MD peak hour, it is expected that there would be sufficient capacity to accommodate the additional 826 vehicles given there are two levels on the George Washington Bridge; therefore, an adverse traffic effect under SEQRA is not anticipated.

- Trans-Manhattan Expressway: Under Tolling Scenario D, there would be an increase in traffic volumes westbound/New Jersey-bound on the Trans-Manhattan Expressway during the AM, MD, and PM peak hours of 76/660/313 vehicles. It is anticipated that the increase in traffic volumes would be within 5 percent during the AM and PM peak hours. The increases in traffic volumes during the MD peak hour is expected to exceed 5 percent and there is a potential adverse effect under SEQRA, depending on the available capacity to handle additional traffic.
- Cross Bronx Expressway: Under Tolling Scenario D, there would be an increase in traffic volumes westbound/New Jersey-bound on the Cross Bronx Expressway during the AM, MD, and PM peak hours of 61/200/108 vehicles, respectively. It is anticipated that the increase in traffic volumes would be within 5 percent during the AM and PM peak hours. The increases in traffic volumes during the MD peak hour is expected to exceed 5 percent, and there is a potential adverse effect under SEQRA, depending on the available capacity to handle additional traffic.
- FDR Drive/Lower East Side: The BPM analyses showed a potential 5 to 9 percent increase in daily traffic volumes along the northbound FDR Drive and a 14 to 22 percent increase in daily traffic volumes in the southbound direction in the Lower East Side. Under the SEQRA criteria based on normal traffic fluctuation, there would no adverse effect during the AM and MD peak hours and the additional increment would be absorbed due to the available capacity. During the PM peak hour, these increases in traffic volumes have the potential of creating increased queue lengths and delays during certain peak hours and an anticipated adverse traffic effect under SEQRA.

In summary, there are potential adverse traffic effects during certain peak hours under the analyzed tolling scenario with the highest increase in traffic along three of the 10 highways analyzed based upon the volume increase criteria used for a preliminary assessment of potential adverse traffic effects under SEQRA along the Long Island Expressway (I-495), the Trans-Manhattan/Cross Bronx Expressway (I-95), and the lower FDR Drive, between East 10th Street and the Brooklyn Bridge.

Adverse effects that would arise if Tolling Scenario D or another similar tolling scenario were implemented will be minimized through implementing Transportation Demand Management measures such as ramp metering, motorist information, signage, and/or targeted toll policy modifications to reduce diversions. The Project Sponsors will undertake monitoring of traffic patterns specifically tailored to the adopted tolling scenario—commencing prior to implementation with data collection approximately three months after the start of Project operations—to determine whether the predicted adverse effects are occurring and to determine the appropriate Transportation Demand Management measures (or improvement in existing Transportation Demand Management measures) to be implemented. The monitoring program will examine changes in traffic volumes, changes in speeds, and changes in delays along the affected highway corridors. Volume changes will be determined from before/after traffic counts (where available); speed changes will be determined from actual before/after speeds based on data provided by StreetLight Data, Inc.; and the change in delay along major highway corridors will be determined based on actual speeds based on data provided by StreetLight Data, Inc.. The monitoring program will inform the development and implementation of appropriate Transportation Demand Management measures and possible adjustments to the tolling policy should traffic volumes increase by more than 5 percent and delays increase more than 2.5 minutes. Although some increases in traffic volumes and travel times are expected along the Long Island Expressway, there would be comparable decreases in traffic volumes and travel times and delays for motorists using the Queensboro Bridge along its approaches in Manhattan and Queens, which would see a higher reduction in traffic volumes under Tolling Scenario D.

Given the few locations where there is a potential for adverse traffic effects along highways leading to and from the Manhattan CBD and circumferential highways, the offsetting reductions in traffic volumes and improvements in travel times along routes from which traffic would divert, reductions in travel times and delays within the CBD portion of the trip, and the overall Project benefits in the Manhattan CBD and regionally due to a reduction in vehicular travel, the Project when viewed holistically would not have an adverse effect on traffic.

Table 4B-27. Potential Adverse Traffic Effects on Highway Segments – SEQRA

HIGHWAY SEGMENT		TOLLING SCENARIO D		
		AM	MD	PM
Long Island Expressway (I-495)	Leading to the Queens-Midtown Tunnel	No Adverse Effect	SEQRA	No Adverse Effect
George Washington Bridge Approach – Westbound	George Washington Bridge	No Adverse Effect	No Adverse Effect	No Adverse Effect
	Trans-Manhattan Expressway (I-95)*	No Adverse Effect	SEQRA	No Adverse Effect
	Cross Bronx Expressway*	No Adverse Effect	SEQRA	No Adverse Effect
FDR Drive	Northbound Brooklyn Bridge to East 10th Street	No Adverse Effect	No Adverse Effect	SEQRA
	Southbound East 10th Street to the Brooklyn Bridge	No Adverse Effect	No Adverse Effect	SEQRA

Source: WSP USA, 2022.
Note: SEQRA indicates potential adverse effect under the New York State Environmental Quality Review Act.
* Estimated values

4B.5 POTENTIAL TRAFFIC EFFECTS ON CENTRAL PARK ROADWAYS

All tolling scenarios would result in overall lower traffic volumes along roadways within and abutting Central Park. Tolling scenarios without crossing credits would have the highest reduction in traffic volumes while tolling scenarios with crossing credits would have lower reductions in traffic volumes. Tolling Scenario F—with all Manhattan crossing credits—was determined to produce the least reduction in traffic volumes within Central Park and surrounding roadways.

Figure 4B-12 shows the percentage change in daily traffic along roadways within Central Park as well as roadways surrounding the park for Tolling Scenario F. All roadways abutting the park—including Central Park West, Fifth Avenue, 110th Street, and 59th Street—are expected to have about 10 percent lower traffic volumes during all time periods. All transverse roadways through the park at 96/97th Streets, 86th Street, 79th Street, Terrace Drive, and 65th Street would also be expected to have lower traffic volumes (about 5 percent to 10 percent less) compared to the No Action Alternative.

Based on an evaluation of the tolling scenario that would result in the highest increase in traffic volumes at certain locations, there would generally be lower traffic along roadways in Central Park and the roadways surrounding the park; therefore, there would not be an adverse traffic effect at Central Park.

Figure 4B-12. Effects of CBD Tolling Alternative on Central Park Traffic

Source: WSP USA, 2022.

4B.6 INTERSECTION IMPACT ASSESSMENT

4B.6.1 Methodology[23]

DEFINITION OF STUDY AREAS

To evaluate the potential localized traffic effects of the Project, multiple study areas were defined based on the key entry points to the CBD tolling district, including along the 60th Street Manhattan CBD boundary and on either side of the bridges and tunnels that enter and exit the Manhattan CBD. **Figure 4B-13** shows the local study areas or intersection data collection zones identified as focal points for changes in travel patterns with CBD tolling.[24] A total of 102 intersections were identified and were aggregated into 15 study areas. Similar to the highway impacts, many of these study areas were identified through the public outreach process at locations where communities expressed concerns regarding the potential impacts of more local traffic changes. Those intersections are the locations that would most likely experience increases in traffic under the various tolling scenarios, as identified by the BPM. The 15 study areas follow:

- Brooklyn Bridge/Manhattan Bridge—Downtown Brooklyn
- Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan, Brooklyn Bridge, and Manhattan Bridge
- Hugh L. Carey Tunnel—Red Hook
- Holland Tunnel—Jersey City, New Jersey
- Lincoln Tunnel—Manhattan
- Ed Koch Queensboro Bridge—East Side at 60th Street—Manhattan
- West Side at 60th Street—Manhattan
- Queens-Midtown Tunnel/Ed Koch Queensboro Bridge—Long Island City—Queens
- Queens-Midtown Tunnel—Murray Hill—Manhattan
- Robert F. Kennedy Bridge—Astoria—Queens
- Robert F. Kennedy Bridge—The Bronx
- Robert F. Kennedy Bridge—125th Street–Manhattan
- West Side Highway/Route 9A at West 24th Street
- Lower East Side—Manhattan
- Little Dominican Republic—Manhattan

The local intersections at the New Jersey and Manhattan approaches to the George Washington Bridge and the New Jersey approach to the Lincoln Tunnel were not included because traffic at those intersections connects primarily to regional highways and not local streets.

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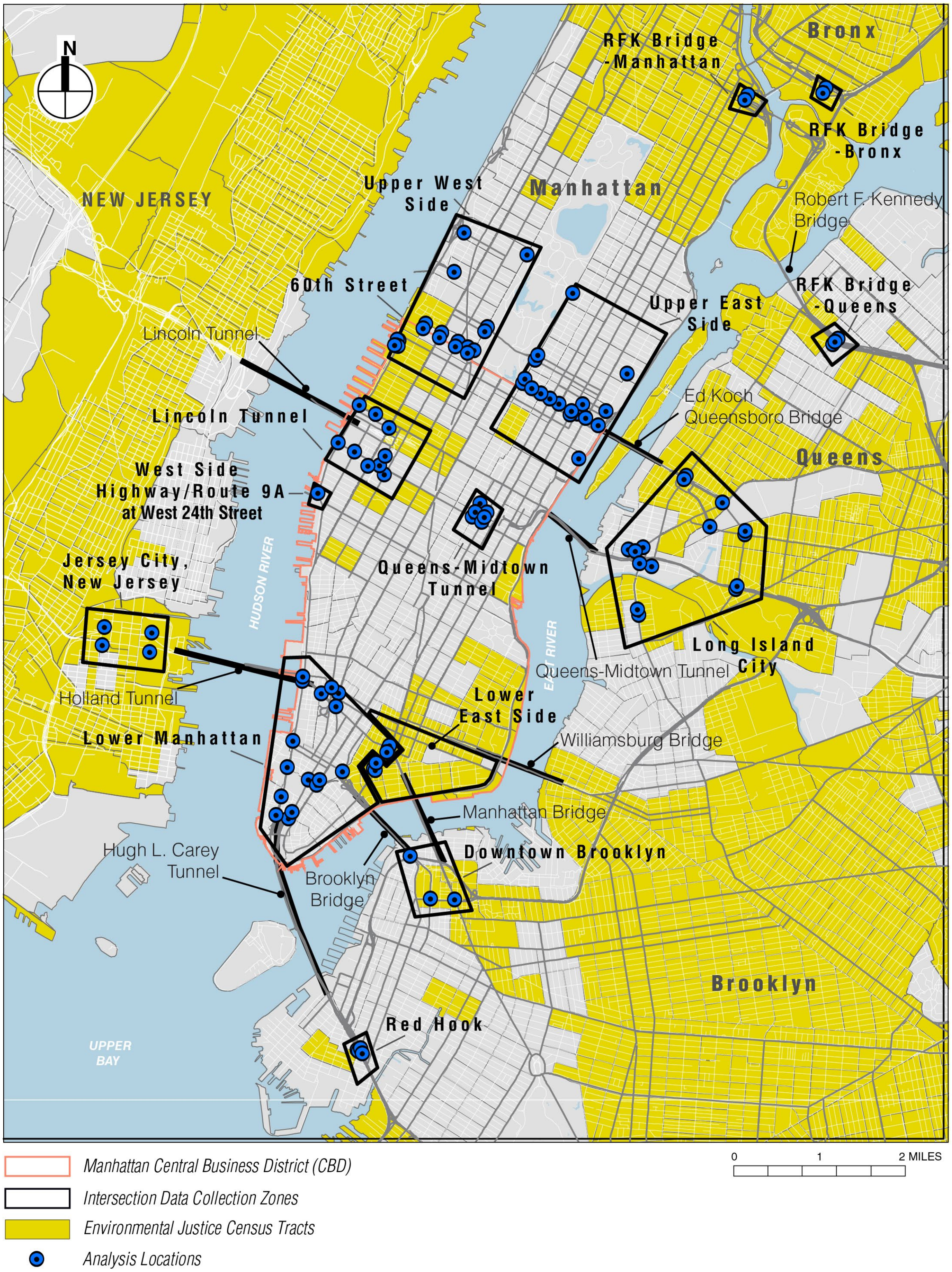
23 Detailed methodology is contained in **Appendix 4B.1, "Transportation: Transportation and Traffic Methodology for NEPA."**

24 Data collection was performed in 2019 prior to the COVID-19 pandemic. Earlier data from 2016 and 2018 from previous studies were used to supplement the data collected in 2019.

Figure 4B-13. Local Intersections and Data Collection Zones



*Broadway & West 179th Street location is located north of illustrated map extent, though demonstrates *No Adverse Impact*

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

ANALYSIS HOURS

The analysis periods—weekday AM, MD, PM, and LN—were based on the existing peak time periods, which were assumed to be same under the various tolling scenarios. It was assumed that the volume of diverted traffic would be higher during the off-peak periods when Manhattan CBD crossings would be less congested and better able to accommodate diverted traffic. The actual analysis hour was determined by reviewing the highest volumes from the Automatic Traffic Recorder (ATR) counts and transaction data, and through consultation with NYCDOT. Table 4B-28 shows the peak hours varied by study area based on the available data that does not include LN information at certain locations.

Table 4B-28. Peak Hours by Study Area

STUDY AREA		WEEKDAY			
		AM	MD	PM	LN[1]
1	Downtown Brooklyn	8 to 9	1 to 2	5 to 6	9 to 10
2	Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan	8 to 9	1 to 2	5 to 6	—
3	Hugh L. Carey Tunnel—Red Hook	7:45 to 8:45	12 to 1	4 to 5	9 to 10
4	Holland Tunnel—Jersey City	8 to 9	12 to 1	5 to 6	—
5	Lincoln Tunnel—Manhattan	8 to 9	1 to 2	5 to 6	—
6	East Side at 60th Street—Manhattan	8 to 9	1 to 2	5 to 6	9 to 10
7	West Side at 60th Street—Manhattan	8 to 9	1 to 2	5 to 6	9 to 10
8	Queens-Midtown Tunnel/Ed Koch Queensboro Bridge—Long Island City	7 to 8	1 to 2	5 to 6	—
9	Queens-Midtown Tunnel—Manhattan	8 to 9	1 to 2	5 to 6	9 to 10
10	Robert F. Kennedy Bridge—Queens	7:15 to 8:15	12:30 to 1:30	4 to 5	9:45 to 10:45
11	Robert F. Kennedy Bridge—The Bronx	8 to 9	1 to 2	5 to 6	9 to 10
12	Robert F. Kennedy Bridge—Manhattan	7:45 to 8:45	1 to 2	4 to 5	9:45 to 10:45
13	West Side Highway/Route 9A at West 24th Street[2]	8 to 9	1 to 2	5 to 6	9 to 10
14	Lower East Side—Manhattan	8 to 9	1 to 2	5 to 6	—
15	Little Dominican Republic—Manhattan	7 to 8	3 to 4	5 to 6	—

Source: WSP analysis of traffic count data, 2019.
1 Late night data not available in some study areas.
2 This location is treated separately because it is between the Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan study area and the Lincoln Tunnel—Manhattan study area.

2023 NO ACTION ALTERNATIVE AND CBD TOLLING ALTERNATIVE (TOLLING SCENARIO D[25]) INTERSECTION TRAFFIC VOLUMES

The No Action Alternative intersection traffic volumes were estimated from the BPM results at each intersection for each of the four analysis hours. The No Action Tolling Alternative traffic volumes were estimated for each intersection by adding the 2023 No Action Alternative increment to the 2019 existing traffic volumes to account for changes in the roadway network and intersections already implemented or planned to be implemented by 2023.

Incremental traffic volumes were estimated for Tolling Scenario D at each intersection for each of the four analysis hours from the BPM results. The 2023 CBD Tolling Alternative traffic volumes were estimated for each intersection by adding the adjusted 2023 increment to the 2023 No Action Alternative traffic volumes to account for changes in the roadway network and geometry changes at intersections already implemented or planned to be implemented by NYCDOT by 2023.

INTERSECTION LEVEL OF SERVICE

Table 4B-29 shows the criteria used to determine intersection LOS for signalized and unsignalized intersections, according to the *Highway Capacity Manual*:[26]

- LOS A, B, and C reflect clearly acceptable traffic conditions.
- LOS D reflects the existence of delays within a generally tolerable range in dense urban environments.
- LOS E and F indicate levels of congestion.

DETERMINING ADVERSE TRAFFIC EFFECTS

For periodic increases in tolling on its bridges, TBTA has historically conducted environmental assessments using SEQRA criteria as a guideline, as well as other considerations, in determining whether a proposed action would result in adverse traffic effects on local intersections.

Under the SEQRA criteria used for many years by NYSDOT and other agencies for projects in the region (including National Environmental Policy Act documents with FHWA as the lead agency such as *Hunts Point Interstate Access Improvement Project EIS* and the *Miller Highway Reconstruction EIS*), an increase threshold of equal to or greater than 10 seconds in average intersection delays at LOS E or LOS F has been used as criteria to determine adverse traffic effects. Several SEQRA analyses by TBTA and other agencies have applied a more conservative criteria of an increase in average intersection delay of greater than 5 seconds at LOS E or LOS F to determine a traffic impact. At LOS D or better, the 5-second threshold could be exceeded if the LOS does not worsen to LOS E or LOS F.

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25 An additional traffic analysis was done for the Downtown Brooklyn study area where Tolling Scenario C was determined to be the representative tolling scenario.

26 *Highway Capacity Manual* (2010)

Table 4B-29. Level of Service Average Control Delay Criteria

	LEVEL OF SERVICE	SIGNALIZED INTERSECTIONS AVERAGE CONTROL DELAY (sec/veh)	UNSIGNALIZED INTERSECTIONS AVERAGE CONTROL DELAY (sec/veh)
	A	≤ 10	≤ 10
	B	> 10 and ≤ 20	> 10 and ≤ 15
	C	> 20 and ≤ 35	> 15 and ≤ 25
	D	> 35 and ≤ 55	> 25 and ≤ 35
	E	> 55 and ≤ 80	> 35 and ≤ 50
	F	> 80	> 50

Source: *Highway Capacity Manual*. 2010. Transportation Research Board, National Research Council, Washington DC.

CALIBRATION OF SYNCHRO MODELS

For calibration of Synchro models, NYCDOT provided guidance for intersection performance analysis to reflect prevailing traffic operational conditions based on count data and field observation, including volume and peak-hour factors, parking and curbside lane movements, pedestrian conflicts, and other physical and operational characteristics.

4B.6.2 Affected Environment (including No Action Alternative)

Appendix 4B.2, "Transportation: Traffic Flow Maps" and Appendix 4B.3, "Transportation: Traffic LOS Existing and No Action" presents volume maps and Synchro analysis results for existing conditions and the No Action Alternative for the intersections in the 15 study areas. The following sections summarize the results of the analyses by study area for existing conditions and the No Action Alternative. The No Action Alternative includes known changes that have been or will soon be implemented by NYCDOT, most notably including an additional bicycle lane on the Ed Koch Queensboro Bridge and Brooklyn Bridge, reduction in moving lanes on the BQE between Atlantic Avenue and Sands Street, and updated intersection geometries and signal-timings.

DOWNTOWN BROOKLYN STUDY AREA

In the downtown Brooklyn study area, three intersections were examined:

- AM Peak:
  - During the existing AM peak, 1 intersection operates at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E and 1 intersection would operate at LOS F.
- MD Peak:
  - During the existing MD peak, 1 intersection operates at LOS E and no intersection operate at LOS F.
  - During the No Action Alternative MD peak, 1 intersection would operate at LOS E and no intersection would operate at LOS F.
- PM Peak:
  - During the existing PM peak, 1 intersection operates at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative PM peak, 1 intersection would operate at LOS E and no intersection would operates at LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F

HUGH L. CAREY TUNNEL AND HOLLAND TUNNEL—LOWER MANHATTAN STUDY AREA

In the Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan study area, the analysis included 15 intersections:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, 2 intersections would operate at LOS E and no intersection would operate at LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E and 1 intersection operates at LOS F.
  - During the No Action Alternative PM peak, 1 intersection would operate at LOS E and 1 intersection would operate at LOS F.
- LN Peak:
  - The Synchro model for these intersections did not include LN data and based on lower overall nighttime existing conditions and No Action Alternative volumes, no further evaluation was warranted.

HUGH L. CAREY TUNNEL—RED HOOK STUDY AREA

In the Hugh L. Carey Tunnel—Red Hook study area, the analysis included two intersections:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

HOLLAND TUNNEL—JERSEY CITY STUDY AREA

In the Holland Tunnel—Jersey City study area, 4 intersections were examined:

- AM Peak:
  - During the existing AM peak, 2 intersections operate at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative AM peak, 2 intersections would operate at LOS E and 1 intersection would operate at LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, 2 intersections operate at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative PM peak, 3 intersections would operate at LOS E and no intersection would operate at LOS F.
- LN Peak:
  - The Synchro model for these intersections did not include LN data and based on lower overall nighttime existing conditions and No Action Alternative volumes, no further evaluation was warranted.

LINCOLN TUNNEL—MANHATTAN STUDY AREA

In the Lincoln Tunnel—Manhattan study area, 9 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - The Synchro model for these intersections did not include LN data and based on lower overall nighttime existing conditions and No Action Alternative volumes, no further evaluation was warranted.

EAST SIDE AT 60TH STREET—MANHATTAN STUDY AREA

In the East Side at 60th Street—Manhattan study area, 17 signalized intersections and 2 unsignalized intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, 1 intersection would operate at LOS E and no intersection would operates at LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, 1 intersection would operate at LOS E and no intersection would operates at LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

WEST SIDE AT 60TH STREET—MANHATTAN STUDY AREA

In the West Side at 60th Street—Manhattan study area, 19 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, 1 intersection operates at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative MD peak, 1 intersection would operate at LOS E and no intersection would operate at LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

QUEENS-MIDTOWN TUNNEL—MANHATTAN STUDY AREA

In the Queens-Midtown Tunnel—Manhattan study area, 6 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E and 1 intersection would operate at LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E and 1 intersection would operate at LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

QUEENS-MIDTOWN TUNNEL/ED KOCH QUEENSBORO BRIDGE—LONG ISLAND CITY STUDY AREA

In the Queens-Midtown Tunnel—Long Island City study area, 13 intersections were examined, including 4 unsignalized intersections:

- AM Peak:
  - During the existing AM peak, 2 intersections operate at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative AM peak, 2 intersections would operate at LOS E and no intersection would operate at LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, 1 intersection operates at LOS E and no intersection operates at LOS F.
  - During the No Action Alternative PM peak, 3 intersections would operate at LOS E and no intersection would operate at LOS F.
- LN Peak:
  - The Synchro model for these intersections did not include LN data and based upon the lower overall nighttime existing conditions and No Action Alternative volumes, no further evaluation was warranted.

RFK BRIDGE—QUEENS STUDY AREA

In the RFK Bridge—Queens study area, 3 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E and 1 intersection operates at LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E and 1 intersection would operate at LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

RFK BRIDGE—BRONX STUDY AREA

In the RFK Bridge—Bronx study area, 2 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the projected No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

RFK BRIDGE—MANHATTAN STUDY AREA

In the RFK Bridge—Manhattan study area, 2 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

WEST SIDE HIGHWAY/ROUTE 9A AT WEST 24TH STREET STUDY AREA[27]

In the West Side Highway/Route 9A at West 24th Street study area, only 1 intersection was examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - During the existing LN peak, no intersection operates at LOS E or LOS F.
  - During the projected No Action Alternative LN peak, no intersection would operate at LOS E or LOS F.

[27] This location is treated separately because it is between the Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan Study Area and the Lincoln Tunnel—Manhattan study area.

LOWER EAST SIDE—MANHATTAN STUDY AREA

In the Lower East Side study area, 3 intersections were examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing MD peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing PM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - The Synchro model for these intersections did not include LN data and based upon the lower overall nighttime existing conditions and No Action Alternative volumes, no further evaluation was warranted.

LITTLE DOMINICAN REPUBLIC—MANHATTAN STUDY AREA

In the Little Dominican Republic—Manhattan study area, 1 intersection was examined:

- AM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative AM peak, no intersection would operate at LOS E or LOS F.
- MD Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative MD peak, no intersection would operate at LOS E or LOS F.
- PM Peak:
  - During the existing AM peak, no intersection operates at LOS E or LOS F.
  - During the No Action Alternative PM peak, no intersection would operate at LOS E or LOS F.
- LN Peak:
  - The Synchro model for these intersections did not include LN data and based upon the lower overall nighttime existing conditions and No Action Alternative volumes, no further evaluation was warranted.

4B.6.3 Environmental Consequences

POTENTIAL TRAFFIC EFFECTS AT INTERSECTIONS

Based on the BPM analysis, Tolling Scenario D was identified as having the most number of intersection locations with a potential increase of 50 or more vehicles. Therefore, all 102 intersections were analyzed for Tolling Scenario D. An additional analysis was performed in the Downtown Brooklyn study area for Tolling Scenario C since that tolling scenario produced a larger number of intersections with an increase of 50 or more vehicles.

The Synchro model was used to analyze the No Action Alternative and CBD Tolling Alternative at each intersection during the AM, MD, PM and LN peak hours.[28] The change in average intersection delays was used to assess potential traffic effects. TBTA adopted an increase of more than 5 seconds average intersection delay at LOS E or F as the criteria for determining the significance of traffic effects under SEQRA. Increases in intersection delays greater than 5 seconds are not considered an adverse effect if the resulting LOS is D or better.

Table 4B-30 summarizes the results of the intersection analyses identifying those intersections where the SEQRA criteria used by TBTA of more than 5 seconds increase in delay would be exceeded. Potential adverse traffic effects were identified at a total of 4 intersections out of 102 intersections analyzed during one or more peak hours. Signal-timing improvements would mitigate any potential adverse traffic effects at all locations.

Table 4B-30. Potential Traffic Effects at Intersections With and Without Signal-Timing Improvements

TOLLING SCENARIO D STUDY AREA	INTERSECTION NAME	ANALYSIS PERIOD	WITHOUT IMPROVEMENTS SEQRA Impact?	WITH IMPROVEMENTS SEQRA Impact?
Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan	Trinity Place and Edgar Street	MD	Yes	No
Queens-Midtown Tunnel—Manhattan	East 36th Street and Second Avenue	MD	Yes	No
	East 37th Street and Third Avenue	LN	Yes	No
Robert F. Kennedy Bridge—Manhattan	East 125th Street and Second Avenue	AM	Yes	No
		PM	Yes	No

Source: WSP USA, 2022.
Note: Results of analysis for all intersections can be found in **Appendix 4B.5, "Transportation: Traffic LOS, CBD Tolling Alternative with Mitigation."**

DOWNTOWN BROOKLYN STUDY AREA

A detailed traffic analysis was performed at three intersections within this study area. The results of the analysis for the AM, MD, and PM peak hours, showed that none of the intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an

[28] Pre-COVID-19-pandemic intersection counts were available at only 64 of the 102 intersections analyzed during the LN peak.

adverse traffic effect; therefore, there would not be an adverse traffic impact in the Downtown Brooklyn study area.

HUGH L. CAREY TUNNEL AND HOLLAND TUNNEL—LOWER MANHATTAN STUDY AREA

A detailed traffic analysis was performed at 15 intersections within this study area. The results of the analysis for the AM, MD, and PM peak hours, without and with traffic signal-timing improvements, are described below at the potentially affected locations.

Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan Study Area—Without Signal-Timing Improvements

AM PEAK HOUR (8:00 a.m. to 9:00 a.m.)

No intersections with an increase in delay would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the AM peak hour; therefore, there would not be an adverse traffic impact during the AM peak hour.

MD PEAK HOUR (1:00 p.m. to 2:00 p.m.)

One intersection would have a potential increase in delays that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect as described below:

- **SEQRA Impacts:**
  - **Trinity Place (NB-SB) and Edgar Street (EB):** Under the No Action Alternative, this intersection would operate at LOS C, with an overall intersection delay of 24.7 seconds. With the CBD Tolling Alternative, the overall intersection delay would increase by 65.5 seconds to 90.2 seconds, due to the addition of 98 vehicles to the intersection. Under the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect the increase in average intersection delay would exceed the allowable increase in delay.

PM PEAK HOUR (5:00 p.m. to 6:00 p.m.)

No intersections with an increase in delay would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the PM peak hour; therefore, there would not be an adverse traffic effect during the PM peak hour.

Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan Study Area—With Signal-Timing Improvements

With traffic signal-timing improvements no intersections would have potential increases in delay that exceed the SEQRA threshold used to determine whether there would be an adverse traffic effect.

MD PEAK HOUR (1:00 p.m. to 2:00 p.m.)

- **SEQRA Impacts:**
  - **Trinity Place (NB–SB) and Edgar Street (EB):** With signal retiming, this intersection would operate at LOS C with a delay of 32.4 seconds, which would be 7.7 seconds greater than the No Action Alternative. This would result in a delay increase below the *SEQRA* threshold and there would be no adverse effect.

HUGH L. CAREY TUNNEL—RED HOOK STUDY AREA

A detailed traffic analysis was performed at two intersections within this study area. The results of the analysis for the AM, MD, PM, and LN peak hours showed that none of the intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect in the Hugh L. Carey Tunnel—Red Hook study area.

HOLLAND TUNNEL—JERSEY CITY, NEW JERSEY, STUDY AREA

A detailed traffic analysis was performed at four intersections within this study area. The results of the analysis for the AM, MD, and PM peak hours showed that none of the intersections would have an increase in delay that would exceed the SEQRA criteria used by TBTA.

LINCOLN TUNNEL—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at nine intersections within the study area. The results of the analysis for the AM, MD, and PM peak hours showed that none of the intersections had an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the Lincoln Tunnel—Manhattan study area.

EAST SIDE AT 60TH STREET—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at 19 intersections in the study area. The results of the analysis for the AM, MD, PM, and LN peak hours showed that none of the intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the East Side 60th Street—Manhattan study area.

WEST SIDE AT 60TH STREET—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at 19 intersections in the study area. The results of the analysis for the AM, MD, PM, and LN peak hours showed that none of the intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the West Side 60th Street - Manhattan study area.

QUEENS-MIDTOWN TUNNEL—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at six intersections within the study area. The results of the analysis for the AM, MD, PM, and LN peak hours, with and without traffic signal-timing improvements, are described below at the potentially affected locations.

Queens-Midtown Tunnel—Manhattan—Without Signal-Timing Improvements

AM PEAK HOUR (8:00 a.m. to 9:00 a.m.)

No intersections had an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the AM peak hour; therefore, there would not be an adverse traffic impact during the AM peak hour.

MD PEAK HOUR (1:00 p.m. to 2:00 p.m.)

One intersection would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect. The exceedances are described below:

- SEQRA Impacts:
  - **East 36th Street (EB) and Second Avenue (SB):** This intersection would operate at LOS F, with an overall intersection delay of 106.1 seconds, under the No Action Alternative. With the CBD Tolling Alternative, the overall intersection delay would increase by 15 seconds to 121.1 seconds, due to the addition of 16 vehicles to the intersection. Under the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect, the increase in delay would exceed the maximum allowable increase in delay.

PM PEAK HOUR (5:00 p.m. to 6:00 p.m.)

No intersections had an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the PM peak hour; therefore, there would not be an adverse traffic impact during the PM peak hour.

LN PEAK HOUR (9:00 p.m. to 10:00 p.m.)

One intersection would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect. The exceedances are described below:

- SEQRA Impacts:
  - **East 37th Street (WB) and Third Avenue (NB):** This intersection would operate at LOS C, with an overall intersection delay of 21.8 seconds, under the No Action Alternative. With the CBD Tolling Alternative, the overall intersection delay would increase by 41.1 seconds to 62.9 seconds, due to the addition of 62 vehicles to the intersection. Under the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect, the increase in delay would exceed the maximum allowable increase in delay.

Queens-Midtown Tunnel—Manhattan Study Area—With Signal-Timing Improvements

With traffic signal-timing improvements no intersections would have potential increases in delay that exceed the SEQRA threshold used to determine whether there would be an adverse traffic effect.

MD PEAK HOUR (1:00 p.m. to 2:00 p.m.)

- SEQRA Impacts:
  - **East 36th Street (EB) and Second Avenue (SB):** With signal retiming, this intersection would operate at LOS F with a delay of 109.7 seconds, which would be 3.6 seconds greater than the No Action Alternative. This would result in a delay increase below the SEQRA threshold and there would be no adverse effect.

LN PEAK HOUR (9:00 p.m. to 10:00 p.m.)

- SEQRA Impacts:
  - **East 37th Street (WB) and Third Avenue (NB):** With signal retiming, this intersection would operate at LOS C with a delay of 26.5 seconds, which would be 4.7 seconds greater than the No Action Alternative. This would result in a delay increase below the SEQRA threshold and there would be no adverse effect.

QUEENS-MIDTOWN TUNNEL/ED KOCH QUEENSBORO BRIDGE—LONG ISLAND CITY STUDY AREA

A detailed traffic analysis was performed at 13 intersections within this study area. The results of the analysis for the AM, MD, and PM peak hours showed that none of the intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the Queens—Midtown Tunnel/Ed Koch Queensboro Bridge—Long Island City study area.

RFK BRIDGE—QUEENS STUDY AREA

A detailed traffic analysis was performed at three intersections within the study area. The results of the analysis for the AM, MD, PM, and LN peak hours showed that no intersections would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the RFK Bridge—Queens study area.

RFK BRIDGE—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at two intersections within the study area. The results of the analysis for the AM, MD, PM, and LN peak hours, without and with traffic signal-timing improvements, are described below at the potentially affected locations.

RFK Bridge—Manhattan Study Area—Without Signal-Timing Improvements

AM PEAK HOUR (8:00 a.m. to 9:00 a.m.)

One intersection would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the AM peak hour. All exceedances are described below:

- SEQRA Impacts:
  - **East 125th Street (EB–WB), Second Avenue (SB), RFK Bridge Exit (SW):** This intersection would operate at LOS C, with an overall intersection delay of 34.9 seconds, under the No Action Alternative. With the CBD Tolling Alternative, the overall intersection delay would increase by 20.4 seconds to 55.3 seconds, due to the addition of 17 vehicles to the intersection. Under the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect, the increase in delay would exceed the maximum allowable increase in delay.

MD PEAK HOUR (1:00 p.m. to 2:00 p.m.)

No intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the MD peak hour.

PM PEAK HOUR (5:00 p.m. to 6:00 p.m.)

One intersection would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the PM peak hour. All exceedances are described below:

- SEQRA Impacts:
  - **East 125th Street (EB–WB), Second Avenue (SB), RFK Bridge Exit (SW)—Southwest-bound Left:** This intersection would operate at LOS C, with an overall intersection delay of 25 seconds, under the No Action Alternative. With the CBD Tolling Alternative, the overall intersection delay would increase by 52.2 seconds to 77.2 seconds, due to the additional vehicles to specific lane groups. Under the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect, the increase in delay would exceed the maximum allowable increase in delay.

LN PEAK HOUR (9:45 p.m. to 10:45 p.m.)

No intersections would have an increase in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect during the LN peak hour.

RFK Bridge—Manhattan Study Area—With Signal-Timing Improvements

With signal-timing improvements in place, no intersections would have potential increases in delay that would exceed the SEQR threshold.

AM PEAK HOUR (8:00 a.m. to 9:00 a.m.)

- SEQRA Impacts:
  - **East 125th Street (EB-WB), Second Avenue (SB), RFK Bridge Exit (SW):** With signal retiming, this intersection would operate at LOS D with a delay of 37.8 seconds, which would be 2.9 seconds greater than the No Action Alternative. This would result in a delay increase below the SEQRA threshold and there would be no adverse effect.

PM PEAK HOUR (5:00 p.m. to 6:00 p.m.)

- SEQRA Impacts:
  - **East 125th Street (EB-WB), Second Avenue (SB), RFK Bridge Exit (SW):** With signal retiming, this intersection would operate at LOS D with a delay of 36.2 seconds, which would be 11.2 seconds greater than the No Action Alternative. This would result in a LOS improvement that does not exceed the SEQRA threshold and there would be no adverse effect.

RFK BRIDGE—BRONX STUDY AREA

A detailed traffic analysis was performed at two intersections within the study area. The results of the analysis for the AM, MD, PM, and LN peak hours showed that no intersections would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the RFK Bridge—Manhattan study area.

WEST SIDE HIGHWAY/ROUTE 9A AT WEST 24TH STREET STUDY AREA[29]

A detailed traffic analysis was performed at one intersection within the study area. The results of the analysis for the AM, MD, PM, and LN peak hours showed that no intersections would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact at this location.

LOWER EAST SIDE—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at three intersections within the study area. The results of the analysis for the AM, MD, and PM peak hours showed that no intersections would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact in the Lower East Side study area.

LITTLE DOMINICAN REPUBLIC—MANHATTAN STUDY AREA

A detailed traffic analysis was performed at one intersection within the study area. The results of the analysis for the AM, MD, and PM peak hours showed that no intersections would have potential increases in delay that would exceed the SEQRA threshold used by TBTA to determine whether there would be an adverse traffic effect; therefore, there would not be an adverse traffic impact at this location.

4B.6.4 Summary of Local Intersection Performance for Scenario(s) with Highest Increase in Traffic

A total of 102 intersections were analyzed during the AM, MD, PM, and, as applicable, LN peak hours in 15 study areas. These study areas and intersections were chosen for analysis based upon the likelihood of potential traffic increases and impacts.

Table 4B-31 presents a summary of the number of analyzed signalized intersections that would be expected to have an increase, decrease, or no change in delay under the analyzed tolling scenario with the highest increase in traffic volumes. The results indicate that most intersections would see reductions in delay or there would be no change in delay while there would be 73 instances (about 20 percent of all analyses) where the delay would increase. Prior to mitigation, 5 locations (about 1 percent of all analyses) would exceed the SEQRA thresholds. **Table 4B-31** shows there would be no locations where changes in delay would create adverse effects based on the SEQRA criteria of greater than a 5-second increase in average delay that could not be addressed by incorporating signal-timing improvements into the Project. Under SEQRA (thresholds used by state agencies[30]), the criteria used for determining the significance of adverse

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[29] This location is treated separately because it is between the Hugh L. Carey and Holland Tunnel—Lower Manhattan study area and the Lincoln Tunnel—Manhattan study area.

[30] *Miller Highway Reconstruction EIS* (NYSDOT 1993) used a criteria of 10 seconds or more increase in average intersection delay per vehicle at LOS E/F.
Hunts Point Access Improvements EIS (NYSDOT 2019) used a criteria of 10 seconds or more increase in delay per vehicle and a deterioration in LOS to E/F.
Fulton Street Transit Center EIS (MTA 2004) used a criteria of 10 seconds or more increase in average vehicle delay at LOS E/F.
Toll Policy EAs (TBTA 2005–2021) used a criteria of greater than a 5 second increase in average vehicle delay at LOS E/F.
Long Island Jewish Medical Center Modernization Program Final Generic EIS (Dormitory Authority of the State of New York 2009) used a criteria of greater than a 5 second increase in average intersection approach delay at LOS E/F.

traffic effects at intersections generally varies from an increase in delay of 5 to 10 seconds per vehicle at a deteriorated LOS E or LOS F. Increases in average delays at intersections resulting in LOS D or better are not considered significant.

Table 4B-31. Summary of Local Intersection Performance With Improvements

STUDY AREA	INTERSECTIONS	TOTAL COUNT	DELAY CHANGE (COUNT)			IMPACT COUNT (SEQRA)
			Increase	Decrease	No Change	
Downtown Brooklyn*	Signalized Intersections	12	3	9	0	0
Hugh L. Carey Tunnel and Holland Tunnel—Lower Manhattan	Signalized Intersections	45	16	28	1	0
Hugh L. Carey Tunnel—Red Hook	Signalized Intersections	8	4	3	1	0
Holland Tunnel—New Jersey**	Signalized Intersections	12	0	12	0	0
Lincoln Tunnel—Manhattan	Signalized Intersections	27	1	26	0	0
East Side at 60th Street—Manhattan	Signalized Intersections	76	7	61	8	0
West Side at 60th Street—Manhattan	Signalized Intersections	76	9	66	1	0
Queens-Midtown Tunnel—Manhattan	Signalized Intersections	24	8	15	1	0
Queens-Midtown Tunnel/Ed Koch Queensboro Bridge—Long Island City	Signalized Intersections	39	9	19	11	0
Robert F. Kennedy Bridge***	Signalized Intersections	28	9	10	9	0
West Side Highway/ Route 9A at West 24th Street	Signalized Intersections	4	0	4	0	0
Lower East Side—Manhattan	Signalized Intersections	9	4	5	0	0
Little Dominican Republic - Manhattan	Signalized Intersections	3	3	0	0	0
TOTAL	**Signalized Intersections**	**363**	**73**	**258**	**32**	**0**

Source: WSP USA, 2022.
Note: Numbers may not add up due to rounding.
* The Downtown Brooklyn study area was also analyzed for Tolling Scenario C, which was projected to have higher increases in traffic volumes than Tolling Scenario D. The results from Tolling Scenario C analysis are shown for Downtown Brooklyn study area.
** New Jersey locations are outside the jurisdiction of SEQRA.
*** RFK Bridge consists of the RFK–Bronx, RFK–Queens, and RFK–Manhattan study areas.

In summary, based upon the analysis of potential changes in traffic patterns, including reductions in traffic volumes and diversions associated with the range of tolling scenarios, the overall change in LOS and delay at the 102 intersections analyzed would be modest. **Figure 4B-14 through Figure 4B-17** present the study area intersections and summarize the potential effects of the Project with and without signal-timing improvements. There were four intersections (with a total of five instances) where the incremental traffic volumes would result in potential adverse effects using the SEQRA criteria with increases in average intersection delays exceeding 5 seconds without the implementation of standard traffic signal-timing improvements.

Based on a detailed traffic analysis during the AM, MD, PM, and LN peak hours at 102 key intersections most likely to experience increases in traffic volumes and delays under Tolling Scenario D with the largest increases in local traffic volumes, there would be only minor traffic effects, which can be addressed by incorporating signal-timing adjustments.[31] Similar minor traffic effects are not anticipated for Tolling Scenarios A, B, C, or G. It is expected that, with the sponsoring agencies' commitment to monitor traffic conditions under all tolling scenarios, and make appropriate signal-timing changes if necessary, there would be no anticipated adverse effects from implementing the Project for any of the tolling scenarios when considering the SEQRA criteria for determining potential adverse traffic effects.

The Project Sponsors will undertake pre- and post-implementation monitoring at the four intersections with identified potential adverse effects during the first year after implementation of the Project, with post-implementation monitoring starting no sooner than three months after the start of operations to account for an initial period of fluctuation in travel behavior.[32] The monitoring would be used to validate the need for, and design of, potential mitigations. In line with the SEQRA criteria, the threshold for determining whether there is an adverse effect is an increase in average intersection delays exceeding 5 seconds, as described above. The Project Sponsor commits to using a toolbox of traffic operations and street design strategies (e.g., signal-timing/phasing changes, lane assignment changes, changes to curbside regulations, etc.) to mitigate adverse effects associated with the adopted tolling scenario, to the extent practicable. In addition, the robust post-implementation biennial Evaluation Report mandated by the Traffic Mobility Act will include traffic data collection at intersections in and around the Manhattan CBD and other locations of interest in the form of ATR and camera-based Vehicle Classification and Turning Movement Counts. These data will be used to identify and quantify actual traffic effects associated with the adopted tolling scenario and to inform the development of appropriate mitigation measures, if needed. Depending upon the tolling scenario selected and future unforeseen operational and geometric changes at certain intersections, it is possible that some residual traffic effects at those intersections may remain.

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31 Appropriate signal-timing improvement measures would be undertaken post-implementation. The signal-timing improvements described in this document represent what may need to be done under the analyzed tolling scenario, but because the tolling scenario is to be determined by the Traffic Mobility Review Board, the actual scope and need for signal-timing improvements may change. The Project Sponsors would monitor traffic conditions at the study locations and NYCDOT would implement appropriate signal-timing changes if adverse effects are observed.

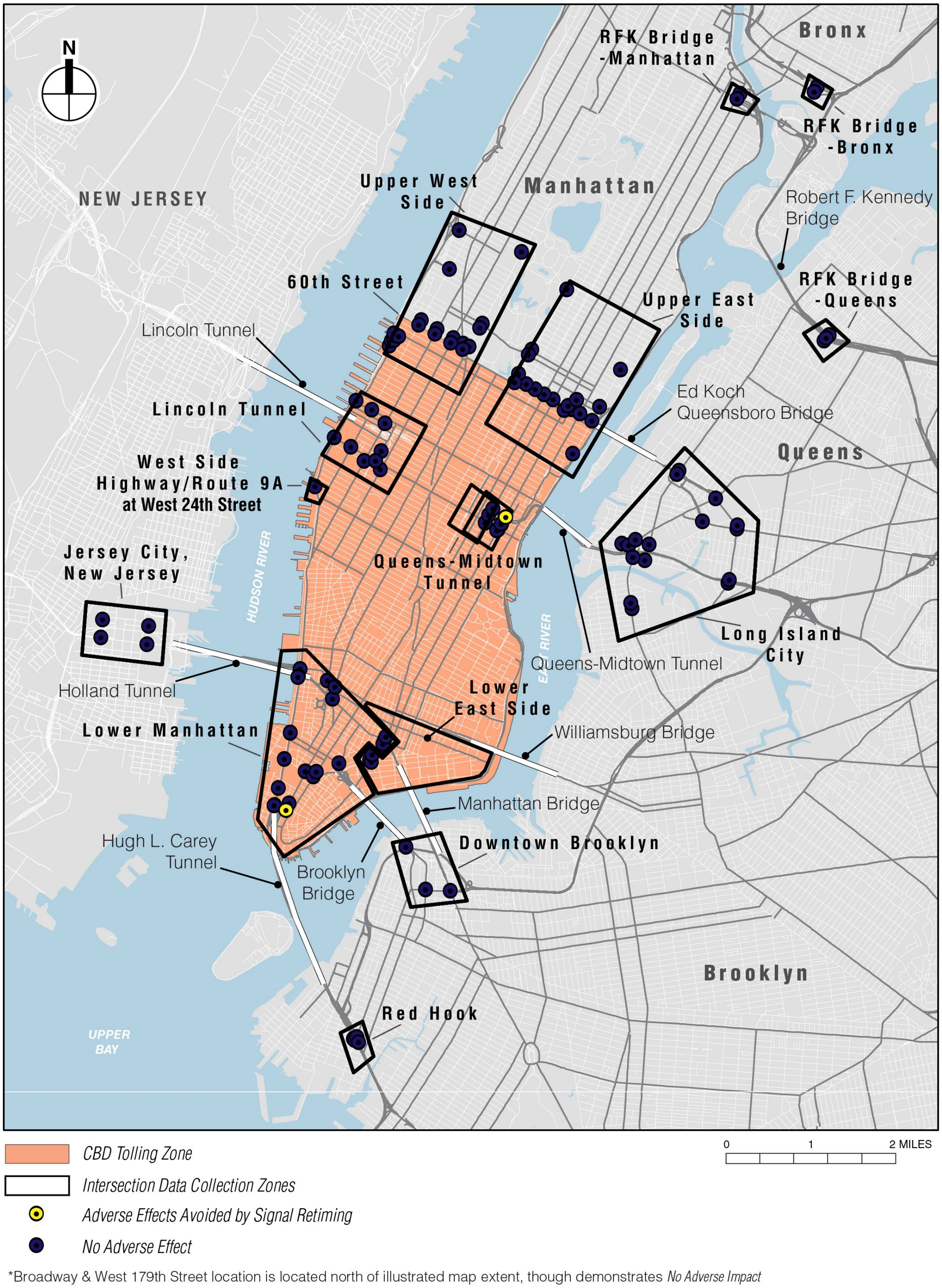
32 For London's congestion zone, a Transit Cooperative Research Program report noted that traffic patterns stabilized at six weeks after charging began. See Chapter 14, "Road Value Pricing" in *Transit Cooperative Research Program Report 95: Traveler Response to Transportation System Changes*. p. 14 to 13. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c14.pdf.

Figure 4B-14. Potential Adverse Traffic Effects at Local Intersections AM Period

*Broadway & West 179th Street location is located north of illustrated map extent, though demonstrates *No Adverse Impact*

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Figure 4B-15. Potential Adverse Traffic Effects at Local Intersections MD Period



Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Figure 4B-16. Potential Adverse Traffic Effects at Local Intersections PM Period

*Broadway & West 179th Street location is located north of illustrated map extent, though demonstrates *No Adverse Impact*

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

Figure 4B-17. Potential Adverse Traffic Effects at Local Intersections Late Night (LN) Period

Source: ESRI, NYC Open Data, NYMTC 2020 TransCAD Highway Network.

4B.7 CONCLUSION

Chapter 1, "Introduction" succinctly describes the level of congestion experienced by travelers to the Manhattan CBD. The low travel speeds and unreliable travel times to, from, and within the Manhattan CBD increase auto commute times, erode worker productivity, reduce bus and paratransit service quality, raise the cost of deliveries and the overall cost of doing business, and delay emergency vehicles. A 2018 analysis by Partnership for New York City—an organization that represents the city's business leadership and largest private-sector employers—predicted that congestion in the New York City region would cost businesses, commuters, and residents $100 billion over the next 5 years.[33] Thus, there is a need to reduce vehicle congestion in the Manhattan CBD to improve the reliability and efficiency of the transportation system.

In general, the Project would reduce traffic at key Manhattan CBD crossings, the approach roadways, and at intersections within the Manhattan CBD as well as intersections outside of the Manhattan CBD. However, under certain tolling scenarios, where crossings credits would be applied at currently tolled facilities, there is a potential of traffic diversion to facilities offering a toll credit. In some locations, this is beneficial as it can aid in addressing traffic imbalances already in place as certain drivers take longer routes to avoid tolls (notably at the East River Bridges). However, by raising the overall toll these same crossing credits can cause potential for circumferential diversions, leading to increased traffic at the Verrazzano-Narrows Bridge and the George Washington Bridge for through Manhattan CBD trips between Brooklyn, Queens, and Long Island and points in New Jersey or west.

Highway corridors and intersections determined to be potentially affected by CBD tolling were identified based upon modeling runs using the regional BPM for all tolling scenarios, consultation with NYCDOT and NYSDOT, and review of previous tolling studies.

Tolling Scenario D—with the highest crossing credits, exemptions, and discounts—was determined to be representative of the tolling scenarios with the highest potential for diversions and increases in traffic at certain Manhattan CBD crossings, Manhattan CBD highway approaches, intersections within and outside of the Manhattan CBD, and circumferential routes bypassing the Manhattan CBD. Therefore, detailed traffic analyses were performed for Tolling Scenario D. In a few cases, additional traffic analyses were performed for other tolling scenarios at specific locations where the projected increases in traffic volumes were higher.

HIGHWAY ANALYSIS

A total of 10 highway corridors were identified within the 28-county New York/New Jersey metropolitan area with a potential for increased traffic and adverse effects using the BPM to screen highways with potential adverse effects for all tolling scenarios. These 10 highway corridors were analyzed using a Vissim

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33 Partnership for New York City. January 2018. *$100 Billion Cost of Traffic Congestion in Metro New York*. https://pfnyc.org/wp-content/uploads/2018/01/2018-01-Congestion-Pricing.pdf. The report defined the New York City region as New York, Kings, Queens, Bronx, Richmond, Nassau, Suffolk, Westchester, Putnam, and Rockland Counties, New York.

microsimulation model, the HCS, or applying a speed and volume increase criteria where a traffic model and/or reliable pre-COVID19-pandemic traffic data were not available.

Although the overall effects of the CBD Tolling Alternative along highways used to access the Manhattan CBD would be beneficial for all tolling scenarios, potential adverse traffic effects along 3 of the 10 highway corridors analyzed were identified under some of the tolling scenarios during certain time periods as described below:

- Trans-Manhattan/Cross Bronx Expressway—westbound during the MD peak hour
- Long Island Expressway—westbound during the MD peak hour
- FDR Drive between East 10th Street and Brooklyn Bridge—northbound and southbound during the PM peak hour

Given the few locations where there is a potential for adverse traffic effects along highways leading to and from the Manhattan CBD and circumferential highways, the offsetting reductions in traffic volumes and improvements in travel times along routes from which traffic would divert, and the overall Project benefits in the Manhattan CBD and regionally due to a reduction in vehicular travel, the Project when viewed holistically would not have an adverse effect on traffic along the highway corridors used to access the Manhattan CBD and along circumferential routes.

Adverse effects that would arise if Tolling Scenario D or another similar tolling scenario were implemented will be minimized through implementing Transportation Demand Management measures such as ramp metering, motorist information, signage, signal timing changes, and/or targeted toll policy modifications to reduce diversions. The Project Sponsors will undertake monitoring of traffic patterns specifically tailored to the adopted tolling scenario—commencing prior to implementation (to establish a baseline), with data collection approximately 3 months after the start of project operations—to determine whether the predicted adverse effects are occurring and to determine the appropriate Transportation Demand Management measures (or improvement in existing Transportation Demand Management measures) to be implemented. The monitoring program will examine changes in traffic volumes, changes in speeds, and changes in delays along the affected highway corridors. Volume changes will be determined from before/after traffic counts (where available); speed changes will be determined from actual before/after speeds based on data provided by StreetLight Data, Inc.; and the change in delay along major highway corridors will be determined based on actual speeds based on data provided by StreetLight Data, Inc. The monitoring program will inform the development and implementation of appropriate Transportation Demand Management measures and possible adjustments to the tolling policy should traffic volumes increase by more than 5 percent and delays increase more than 2.5 minutes.

INTERSECTION ANALYSIS

A total of 102 intersections were analyzed for the tolling scenarios with the largest increase in traffic applicable to each of the 15 study areas during the AM, MD, PM, and LN hours. These intersections were selected for analysis based on an evaluation of potential highway diversions as described above.

Most intersections would experience a decrease in traffic volumes and delays under all tolling scenarios. However, under the analyzed tolling scenarios, there would be increases in average delays at 4 of the 102 intersections analyzed that would exceed the greater-than-5-second threshold at LOS E/F used for determining adverse traffic effects under SEQRA. Signal-timing adjustments would reduce the projected increase in delays below the threshold or improve the LOS to D or better. Therefore, standard mitigation measures would avoid adverse traffic effects that could result from the CBD Tolling Alternative.

The robust post-implementation biennial Evaluation Report mandated by the Traffic Mobility Act will include traffic data collection at intersections in and around the Manhattan CBD and other locations of interest in the form of ATR and camera-based Vehicle Classification and Turning Movement Counts. These data will be used to identify and quantify actual traffic effects associated with the adopted tolling scenario. If any unforeseen adverse effects on traffic at local intersections are observed, appropriate signal timing mitigation measures will be developed and implemented consistent with NYCDOT policy.

Table 4B-32. Summary of Effects of the CBD Tolling Alternative on Highways and Local Intersections

TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
				A	B	C	D	E	F	G		
Traffic – Highway Segments	The introduction of the CBD Tolling Program may produce increased congestion on highway segments approaching on circumferential roadways used to avoid Manhattan CBD tolls, resulting in increased delays and queues in midday and PM peak hours on certain segments in some tolling scenarios: ▪ Westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel (midday) ▪ Approaches to westbound George Washington Bridge on I-95 (midday) ▪ Southbound and northbound FDR Drive between East 10th Street and Brooklyn Bridge (PM) ▪ Other locations will see an associated decrease in congestion particularly on routes approaching the Manhattan CBD.	10 highway segments (AM)	Highway segments with increased delays and queues in peak hours that would result in adverse effects	0 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D)							Yes	**Mitigation needed.** The Project Sponsors will implement a monitoring plan prior to implementation with post-implementation data collected approximately three months after the start of operations and including thresholds for effects; if the thresholds are reached or crossed, the Project Sponsors will implement Transportation Demand Management (TDM) measures, such as ramp metering, motorist information, signage at all identified highway locations with adverse effects upon implementation of the Project. Post-implementation, the Project Sponsors will monitor effects and, if needed, TBTA will modify the toll rates, crossing credits, exemptions, and/or discounts to reduce adverse effects.
		10 highway segments (midday)		2 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
		10 highway segments (PM)		1 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
Intersections	Shifts in traffic patterns, with increases in traffic at some locations and decreases at other locations, would change conditions at some local intersections within and near the Manhattan CBD. Of the 102 intersections analyzed, most intersections would see reductions in delay.	**363 locations (All day)**	Number of instances of intersections with an increase in volumes of 50 or more vehicles in the peak hours.	**9**	**10**	**24**	**50**	**48**	**50**	**10**	Yes	**Mitigation needed.** The Project Sponsors will monitor those intersections where adverse effects were identified and implement appropriate signal timing adjustments to mitigate the effect, per NYCDOT's normal practice. **Enhancement** Refer to the overall Project enhancement on monitoring at the end of this table.
		102 locations (AM)		2	2	3	3	3	3	2		
		102 locations (midday)		1	2	4	16	16	17	0		
		102 locations (PM)		1	1	1	10	9	9	1		
		57 locations (overnight)		5	5	16	21	20	21	5		
	Potential adverse effects on four local intersections in Manhattan: Trinity Place and Edgar Street (midday); East 36th Street and Second Avenue (midday); East 37th Street and Third Avenue (midday); East 125th Street and Second Avenue (AM, PM)	4 locations	Locations with potential adverse effects that would be addressed with signal timing adjustments	0	0	0	4	4	4	0		

OVERALL PROJECT ENHANCEMENT. The Project Sponsors commit to ongoing monitoring and reporting of potential effects on the Project, including for example, traffic entering the Manhattan CBD, taxi/FHV vehicle-miles traveled in the Manhattan CBD; transit ridership from providers across the region; bus speeds within the Manhattan CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent possible. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed.

4C. Transit

This subchapter describes the effects of implementing the CBD Tolling Alternative on transit. Analyses of potential effects on traffic conditions, parking, pedestrians, and bicycle usage are presented in other subchapters of **Chapter 4, "Transportation."** A summary of the affected environment and No Action Alternative conditions and assessment of the environmental consequences of the Project based on the incremental changes in transit ridership between the No Action Alternative and CBD Tolling Alternative is provided below.

4C.1 INTRODUCTION

New York City is home to 8.4 million residents and 4.6 million jobs.[1, 2] The Manhattan CBD is a destination for millions of daily trips and as established in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the vast majority of these trips are made by public transportation. The high-density economic center of Manhattan is connected to the region by transit with a range of modes and service providers, all of which transport millions of workers, residents, and visitors daily to and from the Manhattan CBD. These transit services include local and express subways, commuter and intercity rail, local and express buses, Select Bus Service, intercity buses, ferries, an aerial tramway at Roosevelt Island, and paratransit. **Table 4C-1** lists the 10 busiest subway stations, and **Table 4C-2** lists the 10 busiest lines by ridership entering the Manhattan CBD. (**Figure 4C-1** highlights MTA's service within New York City, and **Section 4C.3** provides an overview of regional transit service and operators.)

Transit is the primary mode of travel to the Manhattan CBD; therefore, the continued investment in transit is critical to mobility and accessibility of the Manhattan CBD and the region.[3] Existing funding sources are insufficient to pay for the transit improvement and modernization projects identified in the MTA 2020-2024 Capital Program and subsequent capital programs that are needed for subway, bus, and commuter rail services. The New York State Legislature adopted the MTA Reform and Traffic Mobility Act to provide stable and reliable funding to repair and revitalize the transit system.

To assess the transit system for potential adverse effects as a result of the Project, future conditions with the No Action Alternative and CBD Tolling Alternative were projected using the Best Practice Model (BPM), a regional travel demand model developed and managed by the New York Metropolitan Transportation Council (NYMTC). As described in more detail in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the BPM provides regional transportation demand (including transit ridership) for the AM peak period defined as between 6:00 a.m. and 10:00 a.m. The modeled change or increment between the No Action Alternative and the CBD Tolling Alternative for projected inbound trips toward the Manhattan CBD provide the primary basis for the analysis presented in this subchapter. **Section 4C.4.2.2** presents a summary of effects across all tolling scenarios and a determination of the representative tolling

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1 U.S. Census Bureau. American Community Survey, 2015-2019.

2 U.S. Census Bureau, 2012–2016 Census Transportation Planning Package.

3 **Chapter 1, "Introduction,"** provides additional context on the importance of transit to the Manhattan CBD and the region and the need for transit funding, which the Project provides.

scenario with the highest incremental increases in ridership. **Section 4C.2** presents a description of the methodologies used for the assessment of potential adverse effects.

Table 4C-1. Busiest Subway Stations (Annual Total Ridership, 2019)

RANK	STATION/COMPLEX	LINES SERVED	RIDERSHIP
1	Times Sq/42 St/PABT	N, Q, R, W, S; Nos. 1, 2, 3, 7; A, C, E	65,020,294
2	Grand Central – 42 St	S; Nos. 4, 5, 6, 7	45,745,700
3	34 St – Herald Sq	B, D, F, M, N, Q, R, W	39,385,436
4	14 St – Union Sq	L, N, Q, R, W; Nos. 4, 5, 6	32,385,260
5	Fulton St	A, C, J, Z; Nos. 2, 3, 4, 5	27,715,365
6	34 St – Penn Station	Nos. 1, 2, 3	25,967,676
7	34 St – Penn Station	A, C, E	25,631,364
8	59 St – Columbus Circle	A, B, C, D; No. 1	23,040,650
9	Chambers St, WTC/Park Pl/Cortlandt	A, C, E; Nos. 2, 3; R, W	20,820,549
10	Lexington Av-53 St/51 St	E, M; No. 6	18,957,465

Source: MTA
Note: Data is from 2019, the last full year since the onset of the COVID-19 pandemic. Station ridership is the annual total ridership for 2019; PABT = Port Authority Bus Terminal.

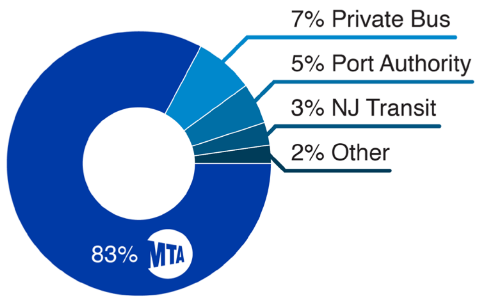
Table 4C-2. Busiest Subway Lines at the Entrance to the Manhattan CBD (2019, AM Peak Period)

RANK	SUBWAY LINE	RIDERSHIP	NO. PEAK-PERIOD SUBWAY TRAINS
1	B, D, N, Q Local	119,435	162
2	Broadway/Seventh Av Express	89,330	125
3	E/M (Queens)	87,258	139
4	Eighth Av Express	84,317	130
5	No. 7 (Queens)	81,066	176
6	N, Q, R (Queens)	67,047	78
7	L	66,760	62
8	Lexington Av Express	63,486	80
9	A, C Local	62,937	65
10	F	48,069	86

Source: WSP, Best Practice Model 2021
Note: Data is from 2019, the last full year since the onset of the COVID-19 pandemic. Ten busiest subway lines are listed based on cordon ridership total per subway line in the AM peak period (6:00 a.m. to 10:00 a.m.).

Figure 4C-1. New York City Transit System Highlights

Transit Trips Entering Manhattan CBD
by operator



Source: NYMTC Hub Bound Travel Data Report, 2019

MTA and its subsidiaries and affiliates provide the bulk of transit trips in the region. They comprise **25** subway lines, over **300** bus routes, and **14** commuter rail routes/branches.

1.7 Billion Annual Ridership

5.5 Million Average Weekday Subway Ridership

2.2 Million Average Weekday Bus Ridership

6,600+ Subway Cars

472 Stations serving 25 subway lines

24/7 Service

Source: MTA, 2019

While the BPM provides a regionwide basis to estimate demand by all modes of travel over time and from changes to the transportation network, **Section 4C.3** describes existing transit service as documented in NYMTC's *Hub Bound Travel Data Report 2019*, which is the most comprehensive and route-specific data source to describe travel to the Manhattan CBD. Like the BPM used for this EA, the *Hub Bound Travel Data Report 2019* baseline was developed prior to the COVID-19 pandemic, so it represents a reasonable estimate of the No Action Alternative in 2023 as travel demand returns to pre-COVID-19 pandemic levels. However, because the *Hub Bound Travel Data Report 2019* is not directly comparable to the BPM results for the No Action Alternative, this subchapter's analyses of potential effects are based on the BPM results for the Action Alternative compared with BPM results for the No Action Alternative.

Section 4C.4 assesses the incremental change between the No Action Alternative and the CBD Tolling Alternative in 2023.[4] The BPM results for the No Action Alternative were used as the baseline for this analysis because they reflect transit ridership prior to the COVID-19 pandemic that is now beginning to rebuild but is anticipated to remain below the levels modeled in the BPM.

4C.1.1 Traveling To and Within the Manhattan CBD

Nearly 3.9 million commuters enter the Manhattan CBD each day, across a variety of modes including numerous transit operators that are described in **Section 4C.3**.[4] With a long development history that pre-dates the automobile, a multitude of transit options are available. Transit accounts for 75.8 percent of daily trips into the Manhattan CBD (not including walk or bike trips); subway alone accounts for 58 percent of trips.[5] Except for one census tract in Breezy Point, Queens, every other census tract in New York City is within a half mile of at least one transit service. The transit system serving the region and the Manhattan CBD is described in detail in Chapter 4, Section 4.2 (Transit Access to the Manhattan CBD), and it includes subways (MTA), Port Authority Trans-Hudson (PATH), commuter rail, buses, ferries, and tram.

For travel within the Manhattan CBD, there are numerous options other than private automobiles. Indeed, 80 percent of Manhattan CBD residents do not own or have ready access to a vehicle.[6] As noted above, numerous subway and bus routes serve the Manhattan CBD. There is a network of bicycle lanes and a widely available bike-share program, and the Manhattan CBD is very walkable.

Most businesses do not offer on-site, free parking, and curbside parking is limited. Driving from place to place within the Manhattan CBD is not typical except for commercial deliveries. Taxis and for-hire vehicles (FHVs, a category that includes app-based services) provide point-to-point service within the Manhattan CBD and are convenient for trips that would otherwise involve multiple transit routes and modes or a long walk (i.e., crosstown trips between the east and west sides of Manhattan). However, even short taxi or FHVs trips may be costly. Therefore, many people make their longer local trips within the

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4 The BPM's long-range 2045 analysis year assessment includes MTA Capital Program projects and projects programmed in the NYMTC Transportation Improvement Program. In light of the scale of those projects relative to line-haul capacity and station configurations, detailed analysis is not provided for the 2045 analysis year. Instead, an overview of incremental change (systemwide boardings) at the 2045 horizon year is provided.

5 New York Metropolitan Transportation Council, *Hub Bound Travel Data Report 2019.*

6 This data is from the CTPP data product based on the 2012–2016 ACS. The CTPP provides custom tables describing residence, workplace, and trips from home to work. The U.S. Census Bureau has not updated the CTPP to reflect more recent American Community Survey data.

Manhattan CBD by subway or bus, and many others travel by bicycle. Walking is the typical choice for shorter trips or even longer trips that involve multiple transit modes or transfers.

4C.2 METHODOLOGY AND ASSUMPTIONS

Information presented in the NYMTC *Hub Bound Travel Data Report 2019*, which summarizes weekday trips entering and exiting the Manhattan CBD by all modes, was used to describe the affected environment. Data for that report was collected in fall 2019 and include full-day and hourly trips. This year is assessed as the final full year before the onset of the COVID-19 pandemic.[7]

The analysis presented compares the forecast difference (or "incremental change") in transit ridership that would occur between the CBD Tolling Alternative and the No Action Alternative. Information on projected ridership for the No Action Alternative and CBD Tolling Alternative was based on the results of the regional transportation modeling conducted for the Project using the BPM.[8] **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** provides more information on the modeling process and corresponding model results. The analysis in this subchapter considers effects on transit line-haul capacity, which is the capacity of a transit mode at its peak ridership point, and on specific transit stations. These assessments are consistent with the methodologies outlined in the *City Environmental Quality Review* (*CEQR) Technical Manual*. The *CEQR Technical Manual* recommends a tiered approach in evaluating a project's effects on transit ridership.

4C.2.1 Application of the New York City Environmental Quality Review for Assessment of Transit Effects

New York City agencies use the CEQR process to determine what effect, if any, a discretionary action they approve may have on the environment. The first version of the *CEQR Technical Manual* was published in 1993 and has undergone numerous updates over the years, with the latest edition released at the end of 2021. The *CEQR Technical Manual* discusses methodologies that may be used to analyze specific impact categories. The methodologies have been developed by the expert staffs of various city agencies, working with consultants. CEQR is New York City's process for implementing New York State's Environmental Quality Review Act. It considers the unique characteristics of New York City and establishes evaluation criteria that are suitable for assessing environmental effects in New York City. Most New York City-based NEPA reviews use the available state and local guidance appropriate to evaluate the potential for adverse effects. Since SEQRA has no impact determination criteria for transit, the guidance provided in the *CEQR Technical Manual* provides a means of appropriately examining and disclosing these effects in a dense urban setting.

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7 The study of transportation conditions for purposes of environmental review is normally conducted using stabilized baselines of typical ridership and usage conditions. Although normalcy is slowly being restored, COVID-19 effects on the regional transit system still persist and are expected to remain for some time, likely well into 2024, after the planned implementation of the Project (based on McKinsey analysis for MTA). As such, only the pre-COVID-19 environment can now be considered a valid baseline for study. MTA 2021 Budget and 2021–2024 Financial Plan Adoption Materials. MTA Finance Committee/MTA Board. December 16, 2020. https://new.mta.info/document/25291.

8 BPM assumes public transit fares remain consistent with consumer price index. Due to the importance of transit in the region, ridership is relatively inelastic to fare increases. MTA historical data show real fares (adjusted for inflation) have decreased over time.

4C.2.1.1 USE OF CEQR THRESHOLDS TO TARGET TRANSIT ANALYSES

Based on operating experience from various New York City agencies and the results of extensive numbers of impact assessments conducted on transit facilities, CEQR guidance establishes assessment thresholds whereby detailed analyses are recommended for locations or transit lines where incremental trip generation thresholds are exceeded; if the applicable threshold is not exceeded, no adverse effects are anticipated. The methodologies stipulated in the 2020 *CEQR Technical Manual* are described below.

The methodologies to evaluate line-haul capacity include the following:

- For subways and commuter rail:
  - An increase in ridership on a single subway line that is fewer than 200 new passengers at the maximum load point in the peak hour in a single direction of travel does not have the potential to result in adverse effects.
  - A quantitative analysis of effects on line-haul capacity was performed for any transit services for which the BPM results indicated that the CBD Tolling Alternative would add more new passengers than those thresholds.
  - The next step is to evaluate the number of incremental passengers per train and per train car.
  - If a line remains under its guideline capacity in the future with the CBD Tolling Alternative implemented, the corresponding CBD Tolling Alternative-induced ridership increases would not be considered an adverse effect.
  - If a line is forecasted to operate above guideline capacity and the CBD Tolling Alternative is expected to yield five or more incremental passengers per car, then the ridership increase would constitute an adverse effect.
- For buses:
  - An increase in ridership that is fewer than 50 passengers per hour in a single direction of travel for a bus route does not have the potential to result in adverse effects because such an increase would not be considered perceptible with the level of bus service provided.
  - If the threshold is exceeded, the next step is to evaluate the number of incremental passengers per trip and the volume-to-capacity (v/c) ratio for that bus route.
  - A v/c ratio under 1.00 would not be considered an adverse effect.

The methodologies to evaluate capacity of stations include the following:

- An increase in ridership at a subway station or station complex that is fewer than 200 new passengers in the peak hour does not have the potential to result in adverse effects.
- If a project would result in the addition of 200 or more new passengers at a station in the peak hour (excluding cross-platform transfers), then further analyses could be warranted to assess the potential for adverse effects on station elements such as stairs, escalators, fare collection areas, etc.
- If a station would experience an increase of fewer than 200 peak-hour passengers, further analysis is typically not warranted.

Due to operating characteristics similar to the subway, including hours of operation, headways, boardings, standing capacity, and for consistency, PATH capacity and stations were both evaluated using CEQR criteria. In coordination with Metro-North Railroad (Metro-North) and the LIRR, CEQR methodologies were used to assess ridership of commuter rail lines and stations. This analysis recognizes that five additional passengers within a train car in its most crowded point would be noticeable. Similarly, analyses of stations for the New Jersey Transit Corporation (NJ TRANSIT) and PATH were performed using CEQR guidelines for consistency and because NJ TRANSIT and the Port Authority of New York and New Jersey (PANYNJ) do not have an alternative guideline. The CEQR analysis guidelines were also evaluated for NJ TRANSIT and other suburban buses that enter the Manhattan CBD.

The line haul and station analysis primarily considers the AM peak period based on concentration of ridership. For station element analyses, potential effects in the PM peak hour were also considered to account for differences in circulation and flow within the stations. The BPM only provides forecast trip increments for the four-hour AM peak period, the incremental AM and PM peak-hour trips were estimated, in coordination with New York City Transit (NYCT), by applying reasonable factors to the BPM results.

For any station exceeding the 200-passenger increment threshold, an additional assessment of station characteristics was undertaken to determine if a qualitative assessment would suffice to conclude that the CBD Tolling Alternative would not have potential adverse effects or if more quantitative analyses were warranted. Appendix 4C-5, "Transportation: Supporting Documentation for Transit Analyses" provides more details on the qualitative and quantitative analysis of transit stations, which were developed in consultation with NYCT.

4C.3 AFFECTED ENVIRONMENT

4C.3.1 Regional Transit Environment

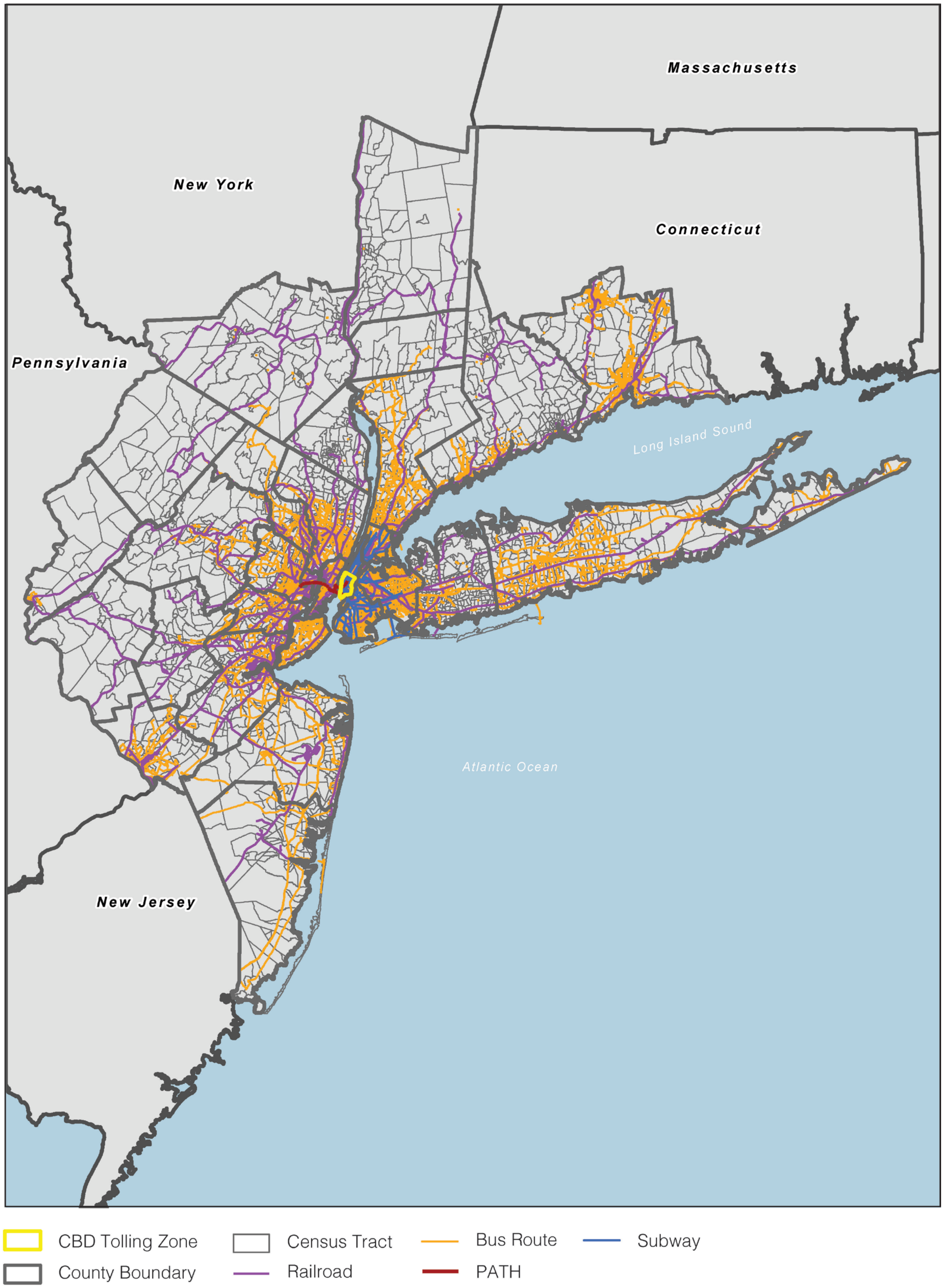
The 28-county study area is rich with transit service (Figure 4C-2). While Section 4C.3.2 focuses on transit options to and from the Manhattan CBD, additional transit options exist throughout the study area. The following is an overview of the regional transit environment.

4C.3.1.1 CONNECTICUT

Much of Connecticut's commuter rail network in Fairfield and New Haven Counties is focused on hub-bound travel; however, the reverse-commute market from New York City to Fairfield County is significant, along with intrastate travel throughout the Metro-North New Haven Line. Branch lines to New Canaan, Danbury, and Waterbury provide additional connections along with the CTrail Hartford Line from New Haven to Hartford.

Local bus services are provided by several operators within (and between) Fairfield and New Haven Counties in Connecticut. Numerous routes connect communities within Connecticut, with concentrations of service in urban areas such as Stamford, Norwalk, Bridgeport, New Haven, and Waterbury. Bus markets between these communities are often distinct from rail markets, particularly where rail branch line services are less frequent or less favorable to intrastate travel.

Figure 4C-2. Transit Services in the 28-County Regional Study Area



Sources: Environmental Services Research Institute (ESRI) 2020, NYC Open Data, MTA, NYSDOT 2021, NJ Geographic Information Network Open Data, NJ Transit 2021, Westchester County, CT Transit 2021

Note: Map reflects publicly available datasets only. Additional transit services are available in Nassau, Rockland, and other counties.

4C.3.1.2 NEW JERSEY

Commuter rail services in northern New Jersey largely focus on New York-bound travel; however, intrastate ridership is significant and serves a variety of urban areas and activity centers including Newark, Hoboken, Trenton, and Metropark, among others. The NJ TRANSIT rail network is heavily integrated with local and regional bus networks, light rail, PATH, and ferries, supporting reverse-commute activity from New York City as well.

Local and regional bus service is prevalent throughout northern New Jersey with concentrations in major urban areas such as Hudson County and New Jersey's largest cities, including Newark, Paterson, Jersey City, and Elizabeth. NJ TRANSIT operates most local bus service, complemented by some contract and private carrier routes, along with county and municipal operations, including paratransit, senior, and human services transportation. Private jitney services are also prevalent in Hudson, Bergen, and Passaic Counties, serving both local and interstate customers.

4C.3.1.3 NEW YORK

Commuter rail in Nassau, Suffolk, Rockland, Orange, Dutchess, Putnam, and Westchester Counties is largely focused on travel to New York City. Each east-of-Hudson line is used for intercounty and intracounty travel and for reverse-commute travel from New York City to major employment centers such as White Plains and Stamford, Connecticut.

Extensive local bus networks exist in New York counties adjacent to New York City, notably the Bee-Line and Nassau Inter-County Express (NICE) bus networks in Westchester and Nassau Counties, respectively. Bus transit is also prevalent throughout the region in counties such as Suffolk, Dutchess, Putnam, Orange, and Rockland.

Bee-Line bus service focuses on the suburban and urban portions of southern Westchester County, with hubs in White Plains, Yonkers, Mount Vernon, and New Rochelle. Bee-Line routes connect a wide array of communities and offer multimodal connections to commuter rail, subway, and regional bus services.

Nassau County buses connect communities and activity centers with hubs including (but not limited to) Hempstead, Great Neck, Mineola, and Hicksville. Many hubs include intermodal connections at commuter rail stations, while some routes also serve the Jamaica hub in Queens. Connections are also available to Suffolk County buses in Hicksville. Other New York county bus systems are smaller in scale but offer similar functionality.

While many routes provide multimodal connections at commuter rail stations (and some subway stations), a significant focus of these networks is intracounty travel. Each bus system offers opportunities to transfer to New York City-bound transit or travel within the counties between activity and population centers.

4C.3.1.4 NEW YORK CITY

As previously stated, a multitude of transit options exist within New York City, though the New York City subway is the primary commute option. There are almost three times as many subway riders as bus riders according to pre-COVID-19 pandemic data (approximately 5.5 million average weekday subway riders versus 2.2 million average weekday bus riders).

As the most convenient and affordable means of travel for most New Yorkers, commuters are unlikely to change modes if the subway or station they regularly use is crowded periodically. They may need to wait for the next train, which is typically 5 to 15 minutes away. Moreover, the availability of express and local services throughout the system provides duplicity of service along lines into the Manhattan CBD such that additional capacity is available, especially during peak periods.

4C.3.2 Summary of Transit Service by Provider

4C.3.2.1 DESCRIPTION OF TRANSIT OPERATORS AND SERVICES

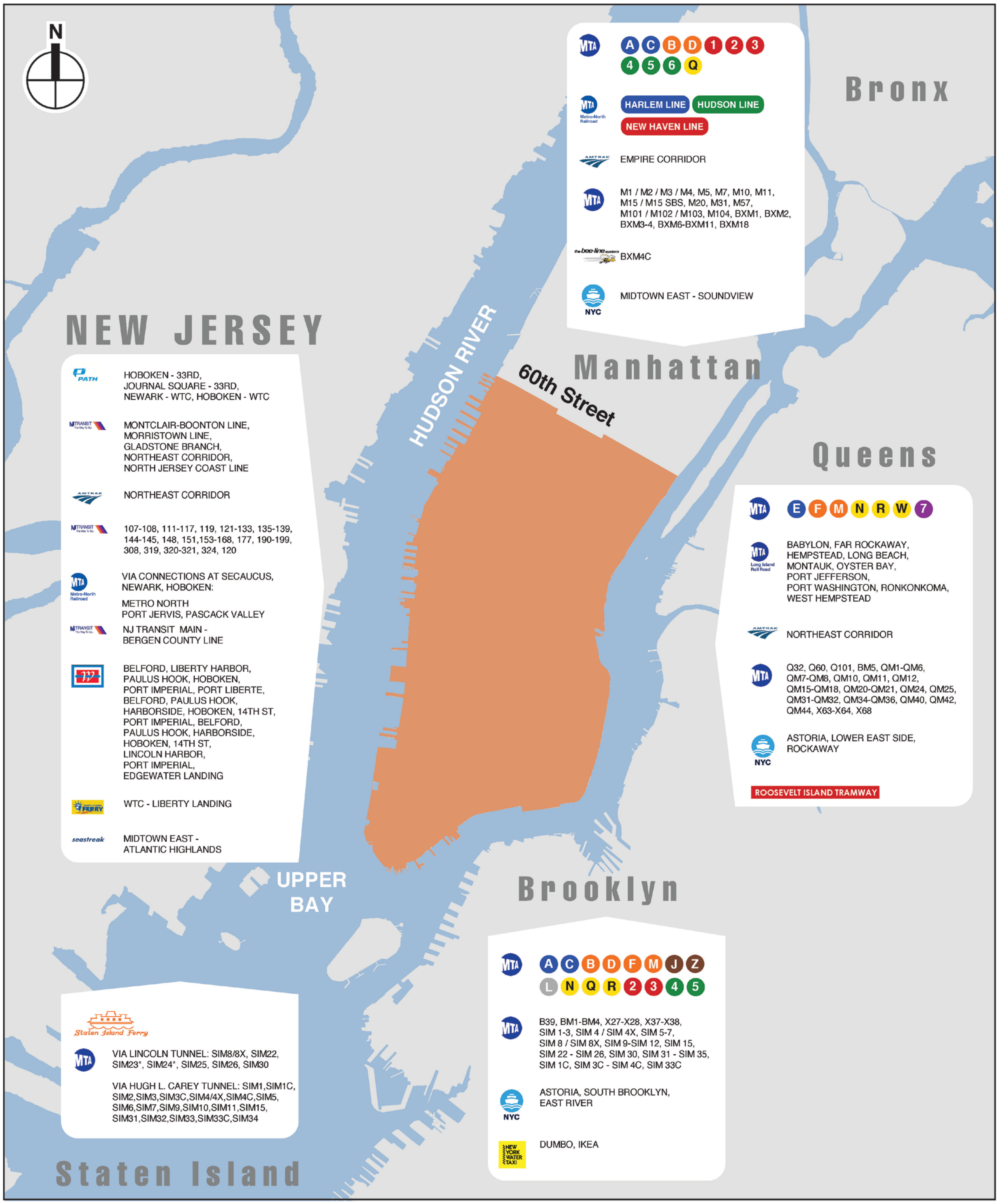
The transit modes and services available to the Manhattan CBD are illustrated on Figure 4C-3. The transit system serving the region and the Manhattan CBD is described in detail in Chapter 4, Section 4.2 (Transit Access to the Manhattan CBD), and it includes subways (MTA), PATH, commuter rail, buses, ferries, and tram.

Each of the operators highlighted within Figure 4C-3 is listed or described below. Consistent with *Hub Bound Travel Data Report 2019* data, which serve as the basis for existing conditions, the following service level estimates reference 2019 data to reflect pre-COVID-19 pandemic conditions:

- MTA: MTA and its subsidiaries and affiliates—LIRR, Metro-North, NYCT, and MTA Bus—provide the bulk of transit trips to the Manhattan CBD. The New York City subway system is the single largest transit provider.
  - MTA subway. The New York City subway is the most widely used transit mode for access to the Manhattan CBD by residents of New York City.[9] There are 25 individual subway routes that cross into the Manhattan CBD, carrying about 1.35 million AM peak-period riders in and out of the Manhattan CBD on a typical weekday.

[9] The subway does not provide access to the Manhattan CBD from Staten Island. The Staten Island Railway (Figure 4C-3) provides rapid-transit within the island.

Figure 4C-3. Transit Routes to/from the Manhattan CBD (2019)



Notes: Private bus operators connect commuters to various locations within the Manhattan CBD; those routes are not displayed here.
* Operated by Academy Bus

Manhattan CBD *(Excluding West Side Highway/Route 9A and FDR Drive)*

Transit by Sector

Source: NYMTC *Hub Bound Travel Data Report 2019*

- **MTA buses.** NYCT and MTA Bus[10] operate an array of local and express buses and Select Bus Service within New York City (Bus maps for each borough are available in **Appendix 4C-1** and at https://new.mta.info/maps). NYCT operates 234 local, 73 express, and 20 Select Bus Service routes, while MTA Bus operates another 90 express, 44 local, and 3 Select Bus Service routes. From the public's perspective, the two operators are nearly indistinguishable. Therefore, this subchapter refers to the combined services as "MTA buses." MTA buses provide local services into and out of the Manhattan CBD largely at 60th Street as well as local and express bus services from outer boroughs. Local service across the 60th Street boundary consists predominantly of Manhattan-based local services running north/south, serving the Upper East Side, Upper West Side, Harlem, Washington Heights, and Inwood. Local services are also provided to and from Queens via the Ed Koch Queensboro Bridge and to and from Brooklyn via the Williamsburg Bridge. Express bus routes connect the Manhattan CBD with the Bronx, Brooklyn, Queens, and Staten Island. These express bus routes tend to serve areas with fewer or no direct subway connections to the Manhattan CBD. MTA buses carry about 42,245 passengers across the boundary of the Manhattan CBD during the AM peak period on a typical weekday.[11]
- **MTA commuter rail**:
  - LIRR runs commuter rail services to Long Island with service to and from Penn Station New York and service to Atlantic Terminal in Brooklyn, as well as Jamaica, Hunters Point Avenue, and Long Island City in Queens, where passengers can connect with subways or ferries to Manhattan. (The East Side Access project will bring LIRR service into Grand Central Terminal and is expected to open around late 2022). LIRR serves 124 stations across its 11 branches: Montauk, Port Jefferson, Ronkonkoma, Babylon, West Hempstead, Long Beach, Hempstead, Oyster Bay, Far Rockaway, Port Washington, and the Main Line. These branches include 10 stops within the City Terminal Zone (1 in Manhattan at Penn Station New York; 3 in Brooklyn; 6 in Queens[12]). On a typical weekday, more than 89,000 riders cross into the Manhattan CBD via LIRR during the AM peak period. (The LIRR system map is available in **Appendix 4C-1**).
  - Metro-North provides commuter rail service for Westchester, Putnam, and Dutchess Counties in New York State (east of Hudson), Rockland and Orange Counties in New York State (west of Hudson) and Fairfield and New Haven Counties in Connecticut. Three east-of-Hudson lines terminate at Grand Central Terminal: the Hudson, Harlem, and New Haven lines. (The Penn Station Access project will connect Penn Station New York with the New Haven line, among other improvements. It is expected to take 63 months to complete). These three lines on a typical weekday carry about 85,000 passengers across the Manhattan CBD during the AM peak period.
  - NJ TRANSIT operates west-of-Hudson services (Port Jervis and Pascack Valley Lines) under contract to and from Hoboken Terminal in New Jersey and are considered part of the New Jersey sector for this analysis. West-of-Hudson travel to Penn Station New York is possible via

[10] The Manhattan and Bronx Surface Transit Operating Authority, as a subsidiary of NYCT, is also included in these numbers.
[11] Because data was collected in 2019, ongoing MTA NYCT bus network redesign projects for each borough have not been incorporated into the affected environment description.
[12] Mets-Willets Point Station in Queens operates only for special-event service.

a transfer to NJ TRANSIT rail in Secaucus, New Jersey.[13] (The Metro-North system map is provided in **Appendix 4C-1**).

- **PANYNJ:** PANYNJ operates commuter rail transit service between New York City and New Jersey via the PATH trains (service map available in **Appendix 4C-1**).[14] The routes originate from Hoboken, Jersey City, and Newark with New York City terminals at the World Trade Center and West 33rd Street. PATH service in Manhattan includes one train stop in Lower Manhattan and four stops between Greenwich Village and Midtown. PATH service has an AM peak-period ridership of about 100,000 passengers on a typical weekday. PATH ridership into the Manhattan CBD also includes NJ TRANSIT, Newark Light Rail, and Hudson-Bergen Light Rail customers who transfer to PATH in Newark, Jersey City, and Hoboken.

  PANYNJ also owns and operates the PABT at West 42nd Street and Eighth Avenue, as well as the George Washington Bridge Bus Station (GWBBS) at Broadway between West 178th and West 179th Streets, but it does not operate any of the bus services to and from these locations. Many New Jersey bus passengers transfer at the GWBBS to the New York City subway system to travel to the Manhattan CBD.

- **NJ TRANSIT:** NJ TRANSIT operates commuter rail and bus services into and out of the Manhattan CBD. Five NJ TRANSIT rail lines provide direct service to Penn Station New York. (The other NJ TRANSIT rail lines provide transfers to Penn Station New York at Newark and Secaucus, New Jersey, or to other destinations in the Manhattan CBD via PATH or ferries from Hoboken, New Jersey.) The NJ TRANSIT commuter rail system map is available in **Appendix 4C-1**.

  Numerous NJ TRANSIT bus routes serve Manhattan via the Lincoln Tunnel to the PABT. NJ TRANSIT also runs one bus route to Lower Manhattan via the Holland Tunnel. Some NJ TRANSIT bus routes serve the GWBBS in Upper Manhattan, where most passengers transfer to the A subway line (or No. 1 subway line several blocks away) to reach the Manhattan CBD. On a typical weekday, NJ TRANSIT commuter rail serves about 68,133 passengers while its bus operations carry about 148,364 passengers during the AM peak period.

  NJ TRANSIT also owns and operates the Hudson-Bergen Light Rail, which connects the communities of Bayonne, Jersey City, Hoboken, Weehawken, Union City, and North Bergen, Newark Light Rail, and the River Line, connecting Trenton and Camden, New Jersey. Hudson-Bergen Light Rail provides a transfer point to NJ TRANSIT rail, bus, PATH, and ferry services at Hoboken.

- **Private Bus Operators**: Various private bus operators serve the PABT, GWBBS, and on-street locations in the Manhattan CBD from origins in New Jersey, southern New York (west of the Hudson River), and eastern Pennsylvania. Private jitney buses operate from Hudson, Bergen, and Passaic Counties in New Jersey to the Manhattan CBD at the PABT and on-street around the bus terminal. Hampton Jitney operates daily bus service between eastern Long Island, New York and the Manhattan CBD as well as Upper Manhattan, using on-street stops in the Manhattan CBD. Additional long-distance bus operators such as Megabus, Peter Pan Bus, and Greyhound[15] also commission routes serving these corridors. Of

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[13] Metro-North west-of-Hudson transfers constitute a small percentage of all west-of-Hudson transit trips routes.

[14] Although PATH is Federally classified as a commuter rail system, based on headways, stations, and boardings, and consistent with the NYMTC *Hub Bound Travel Data Report 2019*, it has been categorized as a subway system for this analysis.

[15] Greyhound also operates a commuter service to New York from a park-and-ride facility in southern New Jersey.

the private operators that participated in the 2015 PABT/GWBBS Continuous Bus Survey, 40 percent provided commuter service (defined through measures of distance and bus frequency), and all private operators collectively provided 27 percent—about 20,000 passengers—of AM peak-hour inbound PABT trips on a typical weekday.[16]

- **Amtrak:** Amtrak provides intercity rail service between Penn Station New York and destinations nationwide.[17] Amtrak's Northeast Corridor directly links Penn Station New York with Boston to the north, Washington, D.C., to the south, and key cities in between. The Empire Corridor links New York City with Albany and points west toward Buffalo, with the bulk of service provided between New York City and Albany. While Amtrak primarily serves long-distance travelers, some commuters also use these services as an alternative to commuter rail services provided by Metro-North or NJ TRANSIT. On a typical weekday, AM peak-period ridership on Amtrak in and out of Penn Station New York is about 6,700 passengers.
- **NICE**: NICE bus is the local bus system serving Nassau County and connecting passengers with western Suffolk County and Queens. It serves 48 MTA LIRR stations and 5 MTA NYCT subway stations that provide connectivity to the Manhattan CBD. (There is no NICE service directly to the Manhattan CBD.) Notable transfer points include but are not limited to Jamaica Center, 179th Street-Flushing, Far Rockaway (to MTA buses); Flushing, Jamaica, Far Rockaway (to NYCT subways); and Mineola Intermodal Transfer Center, Hicksville, Freeport, and Great Neck (to LIRR commuter rail). Prior to the COVID-19 pandemic, daily ridership of NICE service exceeded 100,000.[18]
- **Westchester County Department of Transportation/Bee-Line:** Westchester County's Bee-Line bus system operates a weekday-only direct express bus service from several suburban communities to the Manhattan CBD via 11 round trips each weekday, serving about 160 passengers in the AM peak period on a typical weekday. Bee-Line also provides connecting local bus services to NYCT subway service in the Bronx.
- **NYCDOT Staten Island Ferry:** NYCDOT provides free ferry service between Lower Manhattan and Staten Island via the Staten Island Ferry, with AM peak-period ridership of 19,866 inbound and outbound passengers on a typical weekday.
- **NYC Ferry:** The New York City Economic Development Corporation operates several NYC Ferry routes, which were originally introduced in 2017. As of 2019, these routes provide service between Manhattan, the Bronx, Brooklyn, and Queens. Expansion of this service in 2021 included a new route between Staten Island, Battery Park City, and Midtown at West 39th Street. A new route is planned between Wall Street/Pier 11 and Coney Island in Brooklyn, along with other route extensions and new stops. As

16 2015 PABT/GWBBS Continuous Bus Survey, which was prepared for the PANYNJ by VHB.

17 Amtrak is categorized as suburban rail (here, commuter rail) in the NYMTC *Hub Bound Travel Data Report 2019* and is therefore described under **Section 4C.2**. Because these travelers are such a small proportion of Manhattan CBD commuters, they are not noted within **Section 4C.3**.

18 LongIsland.com. 2019. "Nassau Inter-County Express (NICE)." https://www.longisland.com/business/nassau-inter-county-express-nice.html.

of fall 2019,[19] average daily ridership during peak months across all NYC Ferry routes (inbound and outbound) was about 23,000 passengers.[20]

- **Other Private Ferry Services:** Other ferry operators provide service to and from the Manhattan CBD. With the exception of New York Water Taxi, all providers offer routes between Manhattan and New Jersey. The New York Water Taxi operates around Lower Manhattan and Brooklyn. New York Water Taxi destinations include the South Street Seaport, Battery Park, and Midtown Manhattan, along with the DUMBO neighborhood in Brooklyn.

  Other operators include New York Waterway, Seastreak, and Liberty Landing Ferry. New York Water Taxi operates mostly as a tour operation, except for the IKEA route to and from Brooklyn. The New York Waterway ferry alone provides service to about 32,000 passengers on a typical weekday (inbound and outbound).[21]

- **Roosevelt Island Tramway:** The Roosevelt Island Tramway serves as a direct connection between Roosevelt Island and the rest of Manhattan via an aerial tram directly to the north of the Ed Koch Queensboro Bridge. (Access between Roosevelt Island and the Manhattan CBD is also provided by a stop on the F subway line, and the Roosevelt Island stop on the East River ferry line.) The tramway carries 859 passengers in the AM peak period into the Manhattan CBD on a typical weekday.

4C.3.2.2 RIDERSHIP DISTRIBUTION

Table 4C-3 presents the NYMTC *Hub Bound Travel Data Report 2019* daily weekday ridership[22] estimates by key transit service providers to the Manhattan CBD, as well as total trips by service provider.

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[19] 2019 data for comparison to NYMTC *Hub Bound Travel Data Report 2019* of the same year.

[20] New York City Economic Development Corporation. 2018. *NYC Ferry Quarterly Update 7/1/17 - 9/30/17.* September 17. https://images.ferry.nyc/wp-content/uploads/2018/09/13143041/NYC-Ferry-2017-Q3-Quarterly-Update.pdf. NYC Ferry data is collected and published quarterly; this report includes ridership statistics from July through September 2019.

[21] AMNY. 2019. "Coast Guard suspends New York Waterway ferries over safety issues." https://www.amny.com/transportation/coast-guard-suspends-ny-waterway-ferries-over-safety-issues/.

[22] NYMTC *Hub Bound Travel Data Report 2019* presents person-trips into the Manhattan CBD, which is equivalent to the ridership at that location; the BPM similarly measures passenger load at a location unless otherwise noted.

Table 4C-3. Transit Ridership to and from the Manhattan CBD by Service Provider (AM Peak Period) (2019)

SERVICE PROVIDER	INBOUND PERSON-TRIPS		TOTAL PERSON-TRIPS[3]	
	Number of Trips	Percentage of Trips	Number of Trips	Percentage of Trips
Subway				
New York City Transit	962,665	91.9%	1,257,761	92.6%
Port Authority Trans-Hudson (PATH)	84,317	8.1%	100,515	7.4%
TOTAL	**1,046,982**	**100.0%**	**1,358,276**	**100.0%**
Commuter and Intercity Rail				
Long Island Rail Road	84,580	37.2%	89,500	35.8%
Metro-North Railroad	79,154	34.8%	85,582	34.2%
West of Hudson/NJ TRANSIT	60,295	26.5%	68,133	27.3%
Amtrak[2]	3,361	1.5%	6,711	2.7%
TOTAL	**227,390**	**100.0%**	**249,926**	**100.0%**
Buses				
New Jersey[1]	116,186	76.0%	148,364	77.8%
New York City Transit/MTA Bus	36,501	23.9%	42,245	22.1%
Westchester County DOT/Bee-Line	160	0.1%	160	0.0%
TOTAL	**152,847**	**100.0%**	**190,769**	**100.0%**
Ferries/Tramway[4]				
Staten Island Ferry	**16,881**	**49.2%**	**20,028**	**51.1%**
Roosevelt Island Tramway/Other Ferry	**17,430**	**50.8%**	**19,143**	**48.9%**
TOTAL	**34,311**	**100.0%**	**39,171**	**100.0%**

Source: NYMTC *Hub Bound Travel Data Report 2019*

1 New Jersey bus trips include NJ TRANSIT, MTA buses via Staten Island, and private carriers.

2 Amtrak is classified under “commuter rail” for existing conditions data, consistent with the *Hub Bound Travel Data Report 2019* classification.

3 Total includes inbound and outbound person-trips.

4 The *Hub Bound Travel Data Report 2019* does not present operator data for ferry/tramway. All ferry trips from Staten Island can be assumed to be via Staten Island Ferry because this was the only transit service operating to the Manhattan CBD from Staten Island in 2019. The ferry number presented above contains cyclists aboard the ferry.

4C.3.3 Transit Ridership Overview

As summarized in **Table 4C-4**, approximately 75.2 percent of the more than 7 million daily person-trips into and out of the Manhattan CBD are made using transit (because transit accessibility is critical for low income commuters, **Chapter 17, "Environmental Justice"** provides an additional detailed assessment of transit ridership by income).[23] Based on the *Hub Bound Travel Data Report 2019*, the majority of these transit trips (57.5 percent of all trips into and out of the Manhattan CBD) are by subway. Commuter rail also serves a substantial proportion of trips made to the Manhattan CBD, followed by bus service. The proportion of transit trips is highest during the AM peak period, when 83.3 percent of trips are made via transit (**Table 4C-5**), which is why the analyses in this subchapter were conducted for the AM peak period. The AM peak period has the highest concentration of person- and vehicle-trips under baseline conditions and is typically used for assessing the effects of large-scale regional transportation projects.

In total, MTA bus services account for approximately 1.6 percent of all trips into and out of the Manhattan CBD. NJ TRANSIT bus service carries about 5.3 percent of all trips. Other private bus carriers (such as Greyhound, Coach USA, Academy, DeCamp, and Lakeland) with service to the PABT and on-street in Manhattan account for less than 1 percent of all trips into and out of the Manhattan CBD. The remaining 1.7 percent of Manhattan CBD transit trips are by ferry service (provided primarily by the Staten Island Ferry along with NYC Ferry, and private ferry companies) and the Roosevelt Island Tramway.

Table 4C-4. Daily Person-Trips by Mode to and from the Manhattan CBD on an Average Weekday (2019)

MODE	NUMBER OF PERSON-TRIPS	PERCENTAGE OF TOTAL
Transit		
Subway	4,398,284	57.5%
Commuter and Intercity Rail	685,330	9.0%
Buses	532,307	7.0%
Ferries	126,425	1.7%
Tramway	5,516	0.1%
Subtotal	5,747,862	75.2%
Non-Transit		
Auto/Taxi/Truck/Van	1,835,842	24.0%
Bicycle	65,588	0.8%
TOTAL	**7,649,292**	**100.00%**

Source: NYMTC *Hub Bound Travel Data Report 2019*
Note: Data includes inbound and outbound trips. Staten Island Ferry person-trips include onboard bicyclists.

23 For purposes of describing the share of Manhattan CBD-bound trips that are made using transit, bicycle and pedestrian trips were not included. On an average weekday about 67,000 bicycle trips (less than 1 percent) enter the Manhattan CBD daily (per the *Hub Bound Travel Data Report 2019*). Pedestrian trips are not included in the *Hub Bound Travel Data Report 2019*.

Table 4C-5. AM Peak-Period Person-Trips to and from the Manhattan CBD by Mode on an Average Weekday (2019)

MODE	NUMBER OF PERSON-TRIPS	PERCENTAGE OF TOTAL
Transit		
Subway	1,358,276	61.59%
Commuter and Intercity Rail	249,926	11.34%
Buses	190,769	8.7%
Ferries	38,084	1.7%
Tramway	1,087	0.1%
Subtotal	1,838,142	83.3%
Non-Transit		
Auto/Taxi/Truck/Van	356,022	16.1%
Bicycle	12,862	0.6%
TOTAL	**2,207,026**	**100.00%**

Source: NYMTC *Hub Bound Travel Data Report 2019*
Note: Data includes inbound and outbound trips. Staten Island Ferry person-trips do include count of onboard bicycles.

4C.3.4 Existing Volumes Entering the Manhattan CBD (2019)

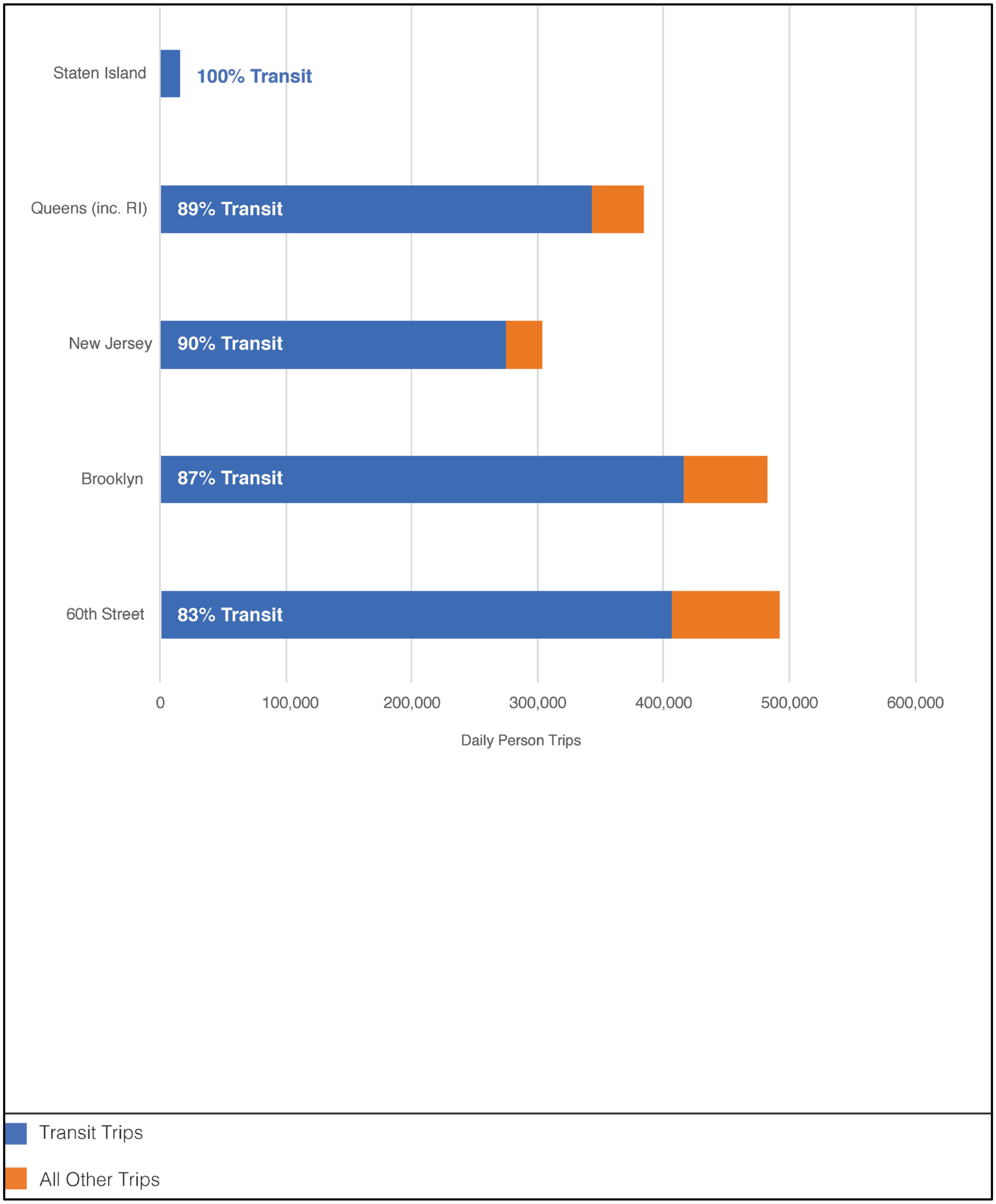
This section briefly describes existing (2019) transit ridership for trips into and out of the Manhattan CBD from the five geographic sectors that the *NYMTC Hub Bound Travel Data Report* uses to organize trips. These are defined according to entry and exit from the Manhattan CBD: Manhattan north of 60th Street, Queens, Brooklyn, Staten Island, and New Jersey/west of Hudson.[24] **Figure 4C-4** shows the distribution and mode of all transit crossings (in relation to the total trips).

As shown on **Figure 4C-4 and Figure 4C-5,** the Manhattan – 60th Street sector carries the most total trips as well as the second-most transit trips of the five sectors. Even so, with 83 percent of trips from this sector made by transit, the Manhattan/60th Street sector has a lower proportion of its total trips made by transit than Queens (89 percent), New Jersey (90 percent), and Brooklyn (87 percent).[25]

24 The boundary of the Manhattan CBD according to the *Hub Bound Travel Data Report* consists of 60th Street (including at the Franklin D. Roosevelt [FDR] Drive and West Side Highway/Route 9A), the East and Hudson Rivers, and New York Harbor. This boundary generally matches the boundaries defined for the Manhattan CBD, except that the Manhattan CBD does not include the FDR Drive and the West Side Highway/Route 9A.

25 While the Ed Koch Queensboro Bridge ramps were considered as within the 60th Street sector (for autos/trucks/taxi trips), bus trips over the bridge as analyzed in this subchapter were considered within the Queens sector. Similarly, the F subway line entering from Roosevelt Island/Queens was categorized as coming from the Queens sector, although the subway tunnel actually crosses the 60th Street cordon line.

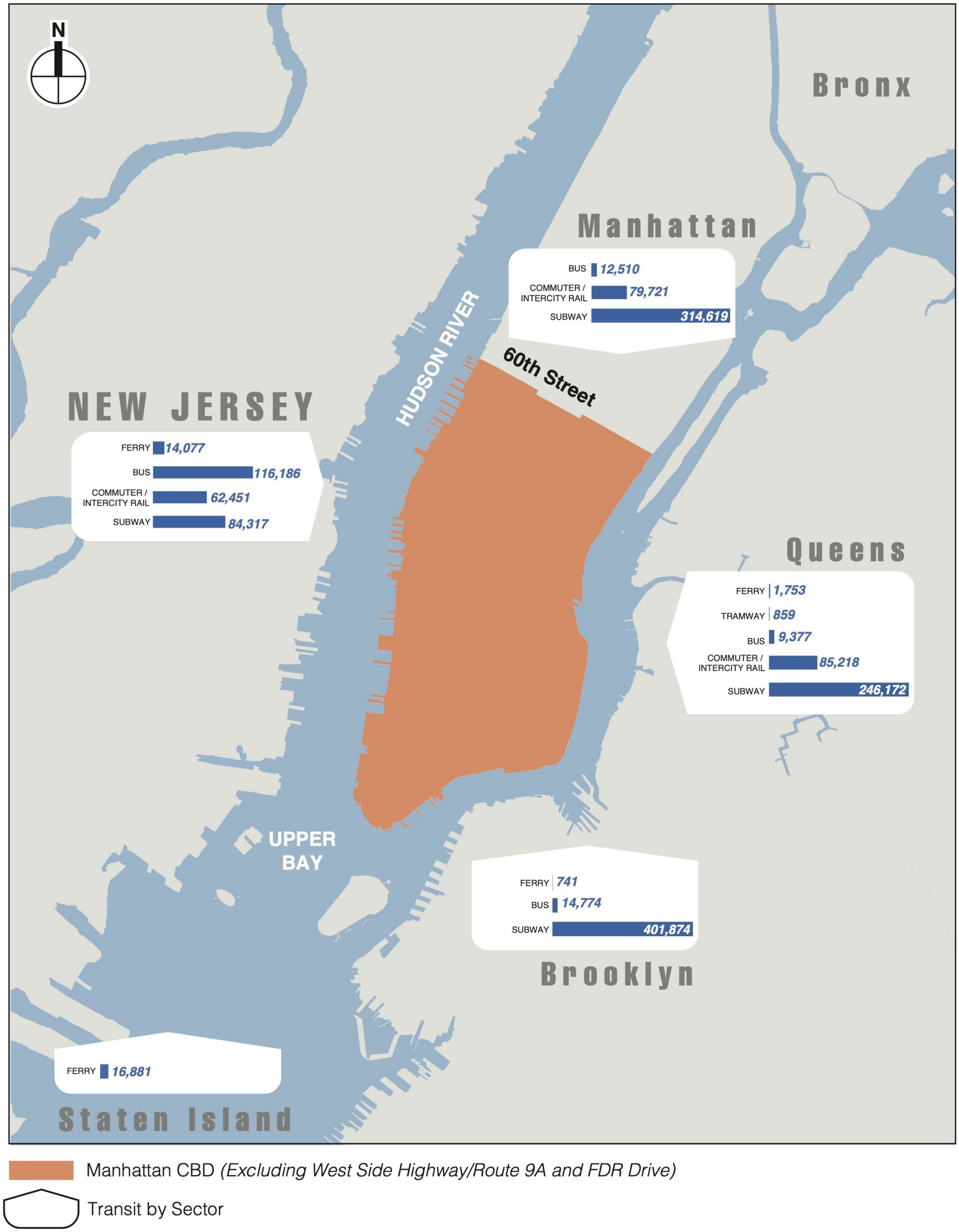
Figure 4C-4. Inbound AM Peak-Period Trips by Sector



Source: NYMTC *Hub Bound Travel Data Report 2019*

Note: The *Hub Bound Travel Data Report 2019* does not provide vehicle data for Staten Island because vehicles arrive to the Manhattan CBD via Brooklyn or New Jersey; similarly Staten Island trips on express buses that run through New Jersey and Brooklyn without stopping there, as well as bus-to-subway transfers in Brooklyn, are counted in those sectors. Therefore the only direct trips shown for this table are transit trips via Staten Island ferry.

Figure 4C-5. Transit Modes into the Manhattan CBD by Volume at the Cordon Crossing (AM Peak Period)



Source: NYMTC *Hub Bound Travel Data Report 2019*

The Staten Island sector has the smallest number of total trips. (The actual proportion of transit riders from this sector is lower since the *Hub Bound Travel Data Report* does not provide vehicle data for Staten Island because vehicles arrive to the Manhattan CBD via Brooklyn or New Jersey.) Staten Island trips on express buses that run through New Jersey and Brooklyn without stopping there, as well as bus-to-subway transfers in Brooklyn, are counted in those sectors.[26] Therefore, the only direct trips between Staten Island and the Manhattan CBD are via the ferry.

Appendix 4C-3 describes AM peak period ridership for each sector in greater detail.

4C.4 ENVIRONMENTAL CONSEQUENCES

4C.4.1 No Action Alternative

The evaluation of environmental consequences in this subchapter compares the CBD Tolling Alternative to the No Action Alternative in 2023. Because the *Hub Bound Travel Data Report 2019* used to describe the affected environment in **Section 4C.3** is not directly comparable to the BPM results for 2023 for the No Action Alternative, this subchapter does not provide a discussion of the change in conditions between the affected environment discussed earlier and the No Action Alternative. The No Action Alternative conditions modeled from the BPM are compared to the CBD Tolling Alternative below.

BPM results were used to identify anticipated transit usage for the No Action Alternative in 2023 and 2045. The 2045 model includes background growth based on the projected overall growth in employment and population in the region and is consistent with the NYMTC 2045 Long Range Plan. More background on regional transportation effects is provided in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling."** For the No Action Alternative, the transit system within and outside of the Manhattan CBD would be comparable to current availability and utility of the transit system.

4C.4.2 CBD Tolling Alternative

As set forth in **Section 4C.4.2.2**, all tolling scenarios would generate an increase in transit ridership compared to the No Action Alternative. The representative tolling scenarios with the highest incremental ridership increases are used to assess potential adverse effects in the following two areas:

- Line-Haul Assessment – The projected change in ridership at the maximum load point for each transit service is assessed for the CBD Tolling Alternative's effects on line-haul capacity (the capacity of a transit mode at its peak ridership point) for any increases that pass the screening threshold for detailed analysis, as discussed in **Section 4C.2**. The assessment is conducted for transit services by the delineated sector crossings into the Manhattan CBD as established in **Section 4C.4**.
- Station Assessment – A station-level assessment is provided for any transit station (including subway, PATH, or commuter rail) that exceeds CEQR thresholds of increased ridership of more than 200 passengers in a peak hour, also as discussed in **Section 4C.2**.

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26 The average weekday ridership of Staten Island express bus routes was 32,909 in 2019 (the same year as the *Hub Bound Travel Data Report 2019*), which is close to the total number of daily riders on the Staten Island Ferry. MTA data is available at http://web.mta.info/nyct/facts/ridership/ridership_bus.htm.

4C.4.2.1 CHANGE IN RIDERSHIP BY MODE AND OPERATOR

Table 4C-6 summarizes projected future ridership by all transit modes in 2023—for the No Action Alternative and CBD Tolling Alternative (Tolling Scenarios A through G) for the AM peak period—based on the results of the BPM.

While most of the analysis in this subchapter covers the year 2023, Table 4C-8 provides information for the horizon year 2045 in a format parallel to Table 4C-6 to show the longer-term projected level of environmental consequences based on BPM results.

All tolling scenarios would result in an increase in overall transit ridership of between 1.25 percent (Tolling Scenario A) and 1.77 percent (Tolling Scenario E) compared to the No Action Alternative for the entire regional study area. The rate of change across the tolling scenarios varies by about 33,000 trips, with the lowest projected increase occurring under Tolling Scenario A and the highest under Tolling Scenario E. This indicates that higher toll rates (Tolling Scenarios D, E, and F) would result in a higher shift to transit than lower toll rates (Tolling Scenarios A, B, and G). Tolling Scenario C reflects a middle area with higher tolls and more crossing credits than Tolling Scenarios A, B, and G, but lower tolls and fewer crossing credits than Tolling Scenarios D, E, and F. A table provides a percentage change summary for all the major transit elements evaluated in this subchapter including New York City subways that carry the majority of regional transit riders as well as commuter railroads, buses, ferries, and other transit services. A slightly higher increment is projected for Metro-North and ferry ridership under Tolling Scenario F. By 2045, transit ridership as a whole is projected to increase by several hundred thousand boardings (given assumptions in the NYMTC regional model).[27]

4C.4.2.2 COMPARISON ACROSS TOLLING SCENARIOS

Representative Tolling Scenario

The assessment identifies the representative tolling scenario with the highest incremental increase in ridership for specific transit elements. These transit elements are primarily drawn from Tolling Scenarios D, E, and F because these tolling scenarios are projected to experience the largest increases in transit ridership. (Tolling Scenario C has been identified as the representative case with the highest incremental increase in ridership for Newark Penn Station for both PATH and NJ TRANSIT.)

Analysis of Transit Lines and Transit Stations

Transit lines and transit stations were each analyzed using the representative tolling scenario with the highest incremental ridership increase to determine the maximum level of potential effects. For transit lines, the potential effects were measured by how train or bus loading (i.e., line-haul) conditions are expected to change. For transit stations, the potential effects were measured by the anticipated usage changes at fare control areas (FCA) (i.e., turnstiles and gates separating free and fare zones) and vertical circulation elements (VCE) (i.e., stairs and escalators).

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27 These increases are due to the NYMTC socioeconomic forecasts for the 28-county region. Most NJ TRANSIT rail boardings and alightings are contained within New Jersey at stations including Newark Penn Station, Secaucus Junction, and Hoboken Terminal. This results in only about 2,000 new alightings at Penn Station New York.

Table 4C-6. Transit Ridership: No Action Alternative and CBD Tolling Alternative (2023 AM Peak Period)

MODE	NO ACTION ALTERNATIVE	TOLLING SCENARIO A	TOLLING SCENARIO B	TOLLING SCENARIO C	TOLLING SCENARIO D	TOLLING SCENARIO E	TOLLING SCENARIO F	TOLLING SCENARIO G
Subway	3,138,960	3,184,961	3,187,374	3,192,428	3,199,370	3,203,052	3,199,783	3,197,389
New York City Transit	3,005,224	3,050,101	3,052,683	3,056,840	3,063,552	3,066,614	3,063,577	3,061,455
Port Authority Trans-Hudson (PATH)	133,736	134,860	134,691	135,588	135,818	136,438	136,206	135,934
Commuter and Intercity Rail	454,520	456,755	457,863	459,632	461,634	463,108	462,013	458,867
Long Island Rail Road	142,651	143,452	143,989	144,244	144,733	145,544	144,560	144,084
Metro-North Railroad	152,203	153,128	153,437	154,108	154,850	154,296	155,020	153,491
NJ TRANSIT	159,666	160,175	160,437	161,280	162,051	163,268	162,433	161,292
Buses	2,689,564	2,718,960	2,717,506	2,724,787	2,724,456	2,727,512	2,726,657	2,718,457
MTA buses	2,037,319	2,063,136	2,062,997	2,068,001	2,067,753	2,069,107	2,068,898	2,062,926
NJ TRANSIT	471,109	474,344	473,456	474,079	474,279	476,321	475,663	474,260
Other	181,136	181,480	181,053	182,707	182,424	182,084	182,096	181,271
Other Transit	58,635	60,073	60,225	60,467	60,474	60,475	60,712	60,246
Ferries	57,548	58,966	59,120	59,358	59,363	59,360	59,598	59,140
Tramway	1,087	1,107	1,105	1,109	1,111	1,115	1,114	1,106
TOTAL	**6,341,679**	**6,420,749**	**6,422,968**	**6,437,314**	**6,445,934**	**6,454,147**	**6,449,165**	**6,434,959**

Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019*

Note: Data total over a 4-hour period, defined as total boardings, which include transfers. (Because this ridership estimate includes transfers, the ridership reported is greater than MTA NYCT MetroCard data that is widely available.) The BPM includes MTA buses, NJ TRANSIT buses, smaller regional bus carriers, and private carriers. (Other smaller carriers and private carriers are included under “Other Buses.”) Tramway volumes were calculated using an incremental change factor derived from Queens/Roosevelt Island sector change per each tolling scenario.

Table 4C-7. Percentage Change in Transit Ridership: No Action Alternative and CBD Tolling Alternative (2023 AM Peak Period)

MODE	TOLLING SCENARIO A	TOLLING SCENARIO B	TOLLING SCENARIO C	TOLLING SCENARIO D	TOLLING SCENARIO E	TOLLING SCENARIO F	TOLLING SCENARIO G
Subway	**1.5%**	**1.5%**	**1.7%**	**1.9%**	**2.0%**	**1.9%**	**1.8%**
New York City Transit	1.5%	1.6%	1.7%	1.9%	2.0%	1.9%	1.8%
Port Authority Trans-Hudson (PATH)	0.8%	0.7%	1.4%	1.6%	2.0%	1.8%	1.6%
Commuter and Intercity Rail	**0.5%**	**0.7%**	**1.1%**	**1.6%**	**1.9%**	**1.6%**	**1.0%**
Long Island Rail Road	0.6%	0.9%	1.1%	1.5%	2.0%	1.3%	1.0%
Metro-North Railroad	0.6%	0.8%	1.3%	1.7%	1.4%	1.9%	0.8%
NJ TRANSIT	0.3%	0.5%	1.0%	1.5%	2.3%	1.7%	1.0%
Buses	**1.1%**	**1.0%**	**1.3%**	**1.3%**	**1.4%**	**1.4%**	**1.1%**
MTA buses	1.3%	1.3%	1.5%	1.5%	1.6%	1.6%	1.2%
NJ TRANSIT	0.7%	0.5%	0.6%	0.7%	1.1%	1.0%	0.7%
Other	0.2%	0.0%	0.9%	0.7%	0.5%	0.5%	0.1%
Other Transit	**2.5%**	**2.7%**	**3.1%**	**3.1%**	**3.1%**	**3.5%**	**2.7%**
Ferries	2.5%	2.7%	3.1%	3.2%	3.1%	3.6%	2.7%
Tramway	1.8%	1.7%	2.0%	2.2%	2.6%	2.5%	1.7%
TOTAL	**1.2%**	**1.3%**	**1.5%**	**1.6%**	**1.8%**	**1.7%**	**1.5%**

Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019* (Tramway), and Analysis by FHI Studio

Note: Data total over a 4-hour period, defined as percentage change in total systemwide boardings. The BPM includes MTA buses, NJ TRANSIT buses, other smaller regional bus carriers, and private carriers. (Other smaller carriers and private carriers are included under “Other Buses.”) Tramway volumes were calculated using the average growth over a five-year period with an incremental change factor derived from Queens/Roosevelt Island sector change per each tolling scenario.

Table 4C-8. Transit Ridership: No Action Alternative and CBD Tolling Alternative (2045 AM Peak Period)

MODE	NO ACTION ALTERNATIVE	TOLLING SCENARIO A	TOLLING SCENARIO B	TOLLING SCENARIO C	TOLLING SCENARIO D	TOLLING SCENARIO E	TOLLING SCENARIO F	TOLLING SCENARIO G
Subway	3,505,040	3,556,434	3,552,926	3,559,460	3,569,286	3,576,311	3,572,538	3,557,745
New York City Transit	3,344,746	3,394,538	3,390,882	3,397,112	3,406,542	3,413,503	3,409,708	3,395,715
Port Authority Trans-Hudson (PATH)	160,294	161,896	162,044	162,348	162,744	162,808	162,830	162,030
Commuter and Intercity Rail	566,908	571,260	571,648	572,767	575,243	575,760	575,845	571,840
Long Island Rail Road	182,379	183,350	183,968	183,855	184,739	184,062	184,856	183,867
Metro-North Railroad	206,505	208,301	208,346	208,583	209,623	210,064	210,407	208,441
NJ TRANSIT	178,024	179,609	179,334	180,329	180,881	181,634	180,582	179,532
Buses	2,958,354	2,990,051	2,985,086	2,991,552	2,997,750	2,998,714	2,997,420	2,988,399
MTA buses	2,182,751	2,209,043	2,206,110	2,211,296	2,215,888	2,217,583	2,214,448	2,210,288
NJ TRANSIT	562,497	567,619	566,723	567,631	567,841	568,634	569,748	566,447
Other	213,106	213,389	212,253	212,625	214,021	212,497	213,224	211,664
Other Transit	**59,817**	**61,265**	**61,172**	**61,428**	**61,770**	**61,960**	**61,625**	**60,941**
Ferries	58,663	60,097	60,006	60,256	60,594	60,780	60,444	59,775
Tramway	1,154	1,168	1,166	1,172	1,176	1,180	1,181	1,166
TOTAL	**7,090,119**	**7,179,010**	**7,170,832**	**7,185,207**	**7,204,049**	**7,212,745**	**7,207,428**	**7,178,925**

Source: WSP; Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019*

Note: Data total over a 4-hour period, defined as total boardings, which include transfers. (Because this ridership estimate includes transfers, the ridership reported is greater than MTA NYCT MetroCard data that is widely available.) The BPM includes MTA buses, NJ TRANSIT buses, smaller regional bus carriers, and private carriers. (Other smaller carriers and private carriers are included under “Other Buses.”) Tramway volumes were calculated using an incremental change factor derived from Queens/Roosevelt Island sector change per each tolling scenario.

Analysis primarily considered AM peak ridership based on concentration of ridership. For station element analyses, potential effects in the PM peak hour were also considered to account for differences in circulation and flow within the stations.

The overall effects by tolling scenario are summarized below, along with the identification of the representative tolling scenario with the highest incremental increase in ridership used in the detailed assessment of environmental consequences (see Section 4C.4).

For assessing capacity of *transit lines* (line haul), incremental shifts to transit were analyzed based on the representative tolling scenario with the highest incremental ridership at the tolling boundary. Table 4C-9 shows the number of lines exceeding the threshold for triggering detailed analysis, across all tolling scenarios. Tolling Scenarios D, E, and F are projected to have the largest number of lines with ridership increases over 200 passengers,[28] with the highest increases among lines over the threshold under Tolling Scenarios E and F.

Table 4C-10 and Table 4C-11 show that of the seven modeled tolling scenarios, Tolling Scenario E is projected to have the largest number of stations exceeding thresholds in both the AM and PM peak hours, with a slightly lower number of stations exceeding thresholds under Tolling Scenarios A, D, F, and G. Because Tolling Scenario E projected the highest transit system ridership, it was selected as the tolling scenario for detailed analysis of stations requiring further analysis (except at one location in Newark, New Jersey—for both PATH and NJ TRANSIT—where Tolling Scenario C was selected for its greater station ridership increase). The incremental ridership at stations in the selected tolling scenario (Tolling Scenario E) is comparable to the increments in Tolling Scenarios D and F, and, therefore, representative of those tolling scenarios as well; the incremental increase in ridership in Tolling Scenarios A, B, C, and G are predominantly lower than in Tolling Scenarios D, E, and F.

4C.4.2.3 CHANGE IN RIDERSHIP AND EVALUATION OF LINE-HAUL CAPACITY BY SECTOR

This section assesses the incremental change in ridership (at the boundary of the Manhattan CBD), followed by maximum load point for each sector using the methodologies described in Section 4C.2. Table 4C-9 summarizes the increases across all sectors. Each row of the incremental change tables provided for each of the sectors crossing into the Manhattan CBD represents a particular link to the Manhattan CBD (such as buses entering via the Hugh L. Carey Tunnel, crossing the Brooklyn cordon) and provides the passenger load for the No Action Alternative and CBD Tolling Alternative, as well as the highest incremental change projected for the particular transit line on the representative tolling scenario predicted to result in the largest incremental increase in passenger demand. This series of sector tables presents AM peak period, inbound-only trips crossing the cordon line.

[28] CEQR identifies a threshold of 200 incremental riders per line as recommending further detailed analysis of line haul capacity (described further in Section 4C.2.1.1).

Table 4C-9. Transit Lines Triggering Detailed Line-Haul Analysis and Average Incremental Ridership Increase Across Tolling Scenarios (AM Peak Hour)

TOLLING SCENARIO	PORT AUTHORITY TRANS-HUDSON (PATH)		NEW YORK CITY TRANSIT SUBWAY		COMMUTER RAIL		BUS		TOTAL
	Number of Lines Exceeding Threshold	Average Incremental Ridership Increase	Number of Lines Exceeding Threshold	Average Incremental Ridership Increase	Number of Lines Exceeding Threshold	Average incremental Ridership Increase	Number of Lines Exceeding Threshold	Average Incremental Ridership Increase	Number of Lines Exceeding Threshold
A	0	—	1	290	0	—	0	—	**1**
B	0	—	1	231	2	296	0	—	**3**
C	0	—	3	244	1	376	0	—	**4**
D	0	—	5	248	3	315	0	—	**8**
E	1	234	5	265	4	282	0	—	**10**
F	0	—	7	249	3	326	0	—	**10**
G	1	242	1	235	1	232	0	—	**3**

Source: WSP, Best Practice Model 2021
Note: Average incremental ridership increase is the average increase in passengers among stations with hourly passenger increments over the 200 passenger threshold. Following CEQR guidance, subway and commuter rail lines with a projected net hourly increase of 200 or more passengers trigger detailed line-haul analysis. Bus lines with a projected net hourly increase of 50 or more passengers also trigger detailed line-haul analysis.

Table 4C-10. Transit Stations Triggering Detailed Analysis and Average Incremental Ridership Increase Across Tolling Scenarios (AM Peak Hour)

TOLLING SCENARIO	PORT AUTHORITY TRANS-HUDSON (PATH)		NEW YORK CITY TRANSIT SUBWAY		COMMUTER RAIL		TOTAL
	Number of Stations Exceeding Threshold	Average Incremental Ridership Increase	Number of Stations Exceeding Threshold	Average Incremental Ridership Increase	Number of Stations Exceeding Threshold	Average Incremental Ridership Increase	Number of Stations Exceeding Threshold
A	0	—	15	307	2	201	**19**
B	0	—	15	319	3	412	**18**
C	1	240	15	340	4	440	**19**
D	2	223	16	380	3	532	**20**
E	2	290	18	382	3	621	**23**
F	2	268	16	386	4	539	**22**
G	1	266	13	325	4	267	**18**

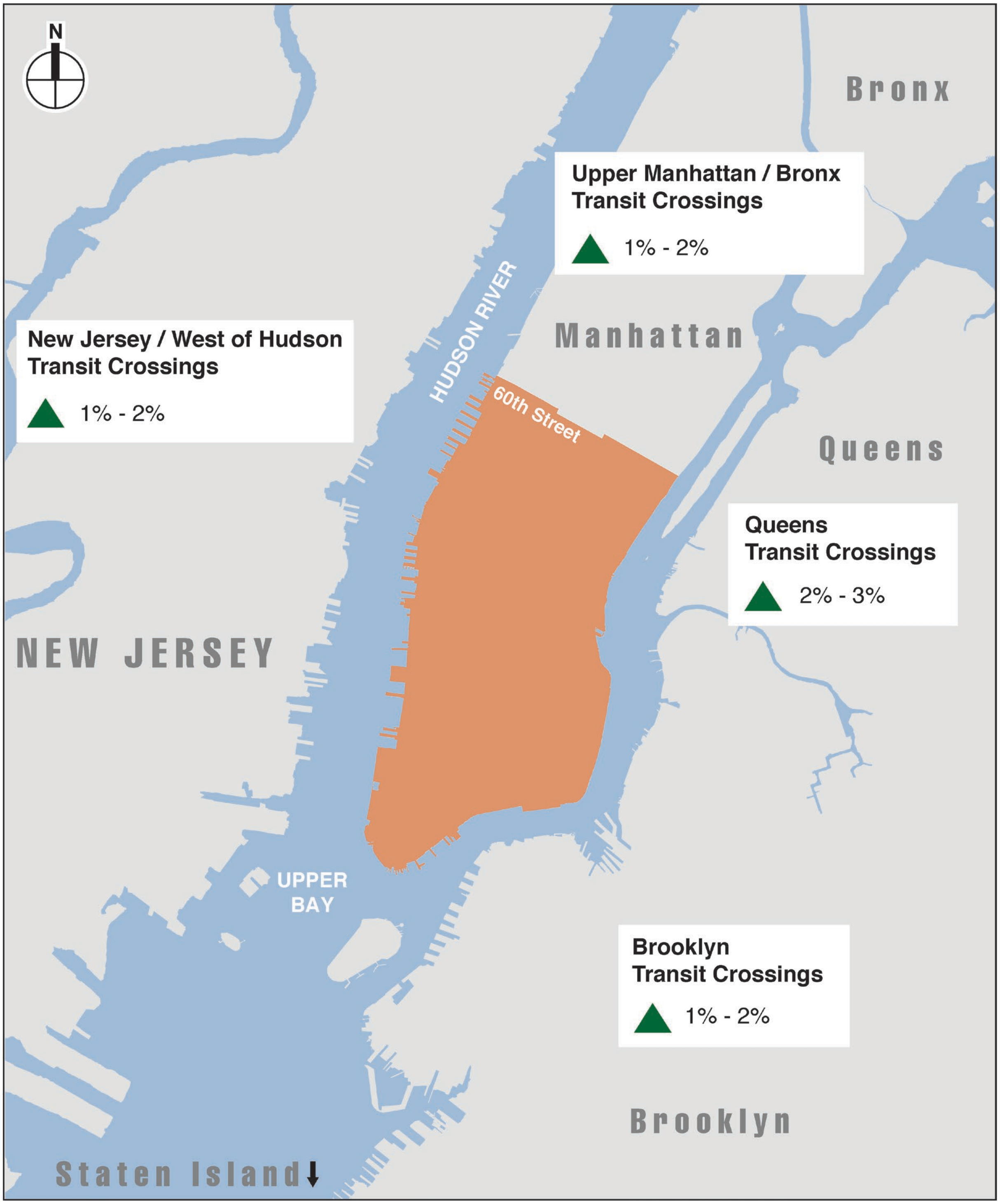
Source: WSP, Best Practice Model 2021
Note: Average incremental ridership increase is the average increase in passengers among stations with hourly passenger increments over the 200 passenger threshold. Following CEQR guidance, stations with a projected net hourly increase of 200 passengers trigger detailed station analysis. No bus stops triggered detailed analysis.

Table 4C-11. Transit Stations Triggering Detailed Analysis and Average Incremental Ridership Increase Across Tolling Scenarios (PM Peak Hour)

TOLLING SCENARIO	PORT AUTHORITY TRANS-HUDSON (PATH)		NEW YORK CITY TRANSIT SUBWAY		COMMUTER RAIL		TOTAL
	Number of Stations Exceeding Threshold	Average Incremental Ridership Increase	Number of Stations Exceeding Threshold	Average Incremental Ridership Increase	Number of Stations Exceeding Threshold	Average Incremental Ridership Increase	Number of Stations Exceeding Threshold
A	0	—	16	323	2	305	**20**
B	0	—	15	343	3	365	**18**
C	1	259	16	356	4	408	**20**
D	2	241	16	409	3	572	**20**
E	2	313	18	411	3	669	**24**
F	2	289	16	416	4	582	**25**
G	1	287	15	330	4	267	**20**

Source: WSP, Best Practice Model 2021
Note: Following CEQR guidance, stations with a projected net hourly increase of 200 passengers trigger detailed station analysis.
PM incremental ridership is based on a higher PM peak-hour factor, resulting in slightly different increments than with the AM peak hour in **Table 4C-4**.

Figure 4C-6. Projected Change in Transit Crossings Entering the Manhattan CBD by Sector (2023 AM Peak Period)



Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019.*
Note: Figure shows range of incremental percentage increases across all tolling scenarios. Tramway volumes were calculated using an incremental change factor derived from Queens/Roosevelt Island sector change per each tolling scenario.

Each sector also includes an assessment of maximum passenger load at the individual line level, based on *CEQR Technical Manual* guidance, which identifies a peak hour within the 4-hour peak period.[29] In these tables, lines are grouped by transit link location, and passenger load per line is associated with the tolling scenario with the highest ridership at the Manhattan CBD boundary. In cases where the line or bus meets the threshold of further analysis based on peak-hour volumes, details on trains or buses per hour, cars per train, and incremental new passengers at these two levels are provided.

Manhattan – 60th Street

With the CBD Tolling Alternative, the number of transit trips crossing into the Manhattan CBD at the 60th Street boundary would increase slightly (in the AM peak period), with an average incremental growth of 2.2 percent across the sector. For most transit lines, the greatest increase would occur under Tolling Scenario E (**Table 4C-12**).

Table 4C-12. Projected Transit Ridership by Route at the Boundary between 60th Street and the Manhattan CBD (2023 AM Peak Period, Inbound)

	NO ACTION ALTERNATIVE	REPRESENTATIVE TOLLING SCENARIO		CHANGE	PERCENTAGE CHANGE
Subway					
Broadway (Nos. 1/2/3)	74,725	76,571	E	1,846	2.5%
Lexington Avenue (Nos. 4/5/6)	89,537	91,610	E	2,073	2.3%
Eighth Avenue (A/C/B/D)	88,153	90,086	E	1,933	2.2%
Second Avenue (Q)	24,502	25,119	E	617	2.5%
Commuter Rail (Metro-North Railroad)					
Hudson, Harlem, New Haven	97,340	99,258	E	1,918	2.0%
Buses					
York Avenue (M31)	282	285	E	3	1.0%
Second Avenue (M15, M15-SBS)	3,032	3,062	E	30	1.0%
Lexington Avenue (BXM1, M101)	1,610	1,626	E	16	1.0%
Fifth Avenue (BXM10, BXM11, BXM18, BXM3, BXM4B, BXM6, BXM7, BXM7A, BXM9, M01, M02, M03, M04)	5,748	5,805	E	57	1.0%
Broadway (BXM2, M05, M07, M10, M104, M20)	1,209	1,221	E	12	1.0%
Columbus Avenue (M11)	314	317	E	3	1.0%
West End Avenue (M57)	315	318	E	3	1.0%
Ferries/Tramway					
Ferries	1,106	1,122	E/F	16	1.5%

Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019*
Note: Bus routes listed as identified in BPM. Bus volumes are calculated via average leave load at the bus stop before it crosses into the Manhattan CBD. Amtrak is not included in the BPM for modeled future conditions, because it is not considered a commuter transit choice in the BPM.

[29] In coordination with MTA, an AM peak-hour factor of 26 percent was identified for NYC Transit subway and all bus ridership (and was used for other transit operators as well). Based on identification of the peak-hour per commuter rail operator, a factor of peak-period ridership for the peak hour was derived: 41 percent for LIRR, 43 percent for Metro-North, 43 percent for NJ TRANSIT.

For subways, the lowest percentage change would occur on the Eighth Avenue Line (2.2 percent) and the largest increases would occur on the Broadway and Second Avenue Lines (2.5 percent). Ridership on the Second Avenue Line would increase by the smallest number, though the percentage increase would be within the range of other lines.

Bus ridership would remain largely equivalent to the No Action Alternative, with increases of up to about 120 new riders across the 27 bus lines in the AM peak period (less than 2 percent). No individual bus route for this sector is projected to increase by 50 or more riders in the inbound peak hour. This increase would be below the CEQR threshold for further analysis, and no adverse effects on bus ridership are expected for the representative tolling scenario nor any of the tolling scenarios.

Table 4C-13 presents projected ridership changes on these transit lines at their maximum load point.[30] Three subway lines would exceed the CEQR threshold of an increase of 200 or more passengers in the peak hour, including the No. 1 subway line (projected to increase by 232 passengers), the No. 2 subway line (projected to increase by 210 passengers), and the No. 6 subway line (projected to increase by 288 passengers). The Metro-North commuter lines crossing at 60th Street are also expected to increase by over 200 passengers with an additional 311, 272, and 211 new passengers on the Harlem, Hudson, and New Haven lines, respectively. No other transit lines are projected to exceed 200 passenger increases at the maximum load point, indicating that there would be no adverse effects anticipated as a result of the CBD Tolling Alternative at these locations.

Table 4C-14 provides the additional assessment necessary to evaluate maximum load points that exceed 200 new passengers in the peak hour. The table provides the peak-hour increment broken down into an estimated number of new passengers per train and new passengers per car. CEQR guidance provides that an increase of fewer than 5 passengers per car would be considered as having no adverse effect. Based on the scheduled number of between 6 and 17 peak-hour trains and the standard number of 10 cars per train, the subway lines are projected to have increases of less than 5 passengers with between 1.13 (No. 6 line) and 2.89 (No. 2 line). For Metro-North commuter lines, the range is 1.26 (New Haven) to 2.99 (Hudson) new passengers per car, which is also below the CEQR line-haul capacity criteria for adverse effects. Metro-North scheduled service includes 18 peak-hour trains with an average of 8 cars on the Harlem line, 21 scheduled trains with an average of 8 cars on the New Haven line, and 13 peak-hour trains with an average of 7 cars on the Hudson line. In summary, no adverse effects are anticipated on line-haul for the 60th Street sector.

30 As noted in Section 4C.2, the maximum load point was calculated for the representative tolling scenario. Additional analysis was conducted for any subway or commuter rail routes where 200 or more new passengers were predicted and for any bus route where 50 or more new bus riders were predicted in the AM peak hour. This was calculated for inbound passenger volumes destined for the Manhattan CBD.

Table 4C-13. Projected New Passenger-Trips at Maximum Load Point for Routes Crossing into the Manhattan CBD at the 60th Street Boundary, (2023 AM Peak Period and Hour)

MODE	NEW PASSENGER-TRIPS Peak Period	NEW PASSENGER-TRIPS Peak Hour
Subway		
Broadway		
No. 1	892	232
No. 2	807	210
No. 3	530	138
Lexington Avenue		
No. 4	558	145
No. 5	348	90
No. 6	870	226
Eighth Avenue		
A	690	179
B	387	101
C	220	57
D	636	165
Second Avenue (Q)	603	157
Commuter Rail (Metro-North Railroad)		
Harlem	722	311
Hudson	632	272
New Haven	494	212
Buses		
York Avenue *(1 route)*	9	2
Second Avenue *(2 routes)*	48	12
Lexington Avenue *(4 routes)*	38	10
Fifth Avenue *(13 routes)*	103	27
Broadway *(4 routes)*	29	7
Columbus Avenue *(1 route)*	7	2
West End Avenue *(1 route)*	8	2

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: MTA NYCT data was used to analyze maximum load points for bus routes as of 2019. The tolling scenario used to derive this analysis matches the representative tolling scenario in Table 4C-12.

Table 4C-14. Projected Incremental Ridership Increases at Maximum Load Point for Routes Crossing into the Manhattan CBD at the 60th Street Boundary (2023 AM Peak Hour)

	NEW PASSENGER-TRIPS		SCHEDULED TRAINS		NEW PASSENGER-TRIPS	
MODE	Peak Period	Peak Hour	Trips/Hour	Cars/Train	Per Train	Per Car
Subway						
No. 1	892	232	19	10	13.64	1.36
No. 2	628	210	12	10	28.88	2.89
No. 6	870	226	20	10	11.31	1.13
Commuter Rail (Metro-North Railroad)						
Harlem	722	311	18	8	17.26	2.16
Hudson	632	272	13	7	20.92	2.99
New Haven	494	229	21	8	10.12	1.26

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: The tolling scenario used to derive this analysis matches the representative tolling scenario in **Table 4C-12**.

Queens/Roosevelt Island

With the CBD Tolling Alternative, in 2023 subway trips from Queens are projected to increase by less than 5 percent in the AM peak period in all tolling scenarios, with most subway lines having the largest increase in ridership under Tolling Scenario E. The N/R/W subway corridor would see the largest percentage increase (3.3 percent) at the boundary with the Manhattan CBD, which translates to 1,609 new riders, and the E/M subway lines would have the largest increase in numbers of passengers, with 1,889 new passengers between the two routes (an increase of 2.4 percent) (**Table 4C-15**).

Table 4C-15. Projected Transit Ridership at the Boundary between Queens/Roosevelt Island and the Manhattan CBD (2023 AM Peak Period, Inbound)

	NO ACTION ALTERNATIVE	REPRESENTATIVE TOLLING SCENARIO		CHANGE	PERCENTAGE CHANGE
Subway					
60th Street Tunnel (N/R/W)	48,940	50,548	E	1,609	3.3%
53rd Street Tunnel (E/M)	78,555	80,444	E	1,889	2.4%
Steinway Tunnel (No. 7)	68,283	70,122	E	1,839	2.7%
63rd Street Tunnel (F)	53,897	54,970	E	1,073	2.0%
Commuter Rail (Long Island Rail Road)					
All Routes	83,870	85,825	E	1,955	2.3%
Buses					
Queens-Midtown Tunnel* (BQM1, BM5, QM1, QM1A,QM2, QM3 QM4, QM5, QM6, QM7, QM8, QM10, QM11, QM12, QM15, QM16, QM17, QM18, QM20, QM21, QM24, QM25, QM31, QM32, QM34, QM35, QM36, X63, X64, X68)	8,601	8,695	E	94	1.1%
Ed Koch Queensboro Bridge (Q101, Q32, Q60)	777	786	E	9	1.1%
Ferries/Tramway					
Ferries	5,561	5,733	E	172	3.1%
Roosevelt Island Tramway**	859	878	E	22	2.6%

Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019*

Note: Bus routes are listed as identified in the BPM. Bus volumes are calculated via average leave load at the bus stop before it crosses into the Manhattan CBD. Amtrak is not included in the BPM for modeled future conditions, because it is not considered a commuter transit choice in the BPM.

* Forecasts for Queens-Midtown Tunnel ridership have been estimated from the *Hub Bound Travel Data Report 2019* using the growth factor for all bus boardings per tolling scenario.

** Forecasts for ridership on the Roosevelt Island Tramway have been estimated using a growth factor based on a rate calculated using historic data collected through NYMTC. Tolling scenario ridership projections were based on the rate of change for all transit in the sector as modeled in the BPM.

Bus routes that enter the Manhattan CBD from Queens/Roosevelt Island would see the greatest ridership increases under Tolling Scenarios E and F. These routes are projected to increase by a relatively small number of passengers; buses crossing the Queens-Midtown Tunnel and Ed Koch Queensboro Bridge are not projected to see an increase of 50 or more new passengers. For LIRR ridership, the greatest rate of change would occur with Tolling Scenario E. Ferry trips and the Roosevelt Island Tramway would play a smaller role in the transportation system for trips entering the Manhattan CBD from the Queens/Roosevelt Island sector.

Table 4C-16 shows the increment at the maximum load point for each transit line entering the Manhattan CBD, and Table 4C-17 shows the results of the detailed analysis of line-haul capacity for transit lines. Each line on the N/R/W corridor from Queens/Roosevelt Island would not have an increase of more than 200 passengers in the peak hour and therefore do not warrant further analysis. Three subway lines connecting Queens to the Manhattan CBD would exceed the threshold of 200 new passengers in the AM peak hour. The E subway line ridership is projected to increase by 228 passengers, which would be 1.52 new passengers per car. The M subway line ridership, projected to increase by 264 passengers, would add 2.93 passengers per car. The additional 279 passengers on the F subway line would translate to 1.86 new passengers per car, which is lower than the impact threshold of 5 or more new passengers per car. The No. 7 local subway line is projected to increase by 377 riders in the AM peak hour—equivalent to 2.45 new passengers per car, which would be lower than the threshold for an adverse effect. For the LIRR, only the Babylon Branch with 331 new peak-hour passengers is projected to have an increase of greater than 200 passengers. Based on the scheduled 10 trains in the peak hour with an average of 10 cars per train, this results in 3.31 new passengers per car on average, which remains below the adverse effect threshold of 5 new passengers per car. No bus routes from Queens are projected to increase by over 50 passengers. In summary, none of the passenger increases on transit lines from Queens/Roosevelt Island would result in an adverse effect.

Table 4C-16. Projected New Passenger-Trips at Maximum Load Point for Routes Crossing into the Manhattan CBD from Queens/Roosevelt Island, (2023 AM Peak Hour)

MODE	PEAK PERIOD	AM PEAK HOUR
Subway		
60th Street Tunnel (R)	657	171
60th Street Tunnel		
N	386	100
W	369	96
53rd Street Tunnel		
M	1,014	264
E	876	228
Steinway Tunnel		
No. 7 (Local)	1,449	377
No. 7 (Express)	600	156
63rd Street Tunnel (F)	1,073	279
Commuter Rail (Long Island Rail Road)		
Babylon	808	331
Far Rockaway	147	60
Hempstead	127	52
Long Beach	50	20
Montauk	18	8
Oyster Bay	32	13
Port Jefferson	276	113
Port Washington	368	151
Ronkonkoma	232	95
West Hempstead	0	0
Buses		
Queens-Midtown Tunnel *(33 routes)*	94	25
Ed Koch Queensboro Bridge *(3 routes)*	41	11

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: The tolling scenario used to derive this analysis matches the representative tolling scenario in Table 4C-15. The projected ridership changes have been rounded to zero (0) for estimates at or below zero, to account for variability/noise in the BPM for lines where existing ridership is already relatively low. MTA NYCT data was used to analyze maximum load points for bus routes as of 2019.

Table 4C-17. Projected Incremental Ridership Increases at Maximum Load Point for Queens/Roosevelt Island (2023 AM Peak Hour)

MODE	NEW PASSENGER-TRIPS		SCHEDULED TRAINS		NEW PASSENGER-TRIPS	
	Peak Period	Peak Hour	*Trips/Hour*	*Cars/Train*	Per Train	Per Car
Subway						
53rd Street Tunnel						
M	1,014	264	9	10	29.28	1.93
E	876	228	15	10	15.18	1.52
Steinway Tunnel						
No. 7 (Local)	1,449	377	14	11	26.90	2.45
63rd Street Tunnel (F)	1,073	279	15	10	18.60	1.86
Commuter Rail (Long Island Rail Road)						
Babylon	808	331	10	10	33.1	3.31

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: The tolling scenario used to derive this analysis matches the representative tolling scenario in **Table 4C-15**. Because no bus routes met the threshold of 50 new passengers, none are included in this table.

Brooklyn

With the CBD Tolling Alternative, subway, ferry and bus ridership between Brooklyn and the Manhattan CBD would see increases under all tolling scenarios (**Table 4C-18**). These increases would be less than 4 percent on any given subway line or ferry and approximately 6 percent for buses. During the AM peak period, Tolling Scenario F would increase subway ridership from Brooklyn the most (although the tolling scenario projections would have limited variation). Projected incremental passengers range from 1.3 to 2.7 percent for subway lines. The largest increases in bus ridership would occur under Tolling Scenario B with 136 riders (a nearly 9 percent increase).

Table 4C-18. Projected Transit Ridership by Routes at the Boundary between Brooklyn and the Manhattan CBD (2023 AM Peak Period, Inbound)

	NO ACTION ALTERNATIVE	REPRESENTATIVE TOLLING SCENARIO		CHANGE	PERCENTAGE CHANGE
Subway					
Canarsie Tunnel (L)	42,607	43,583	F	976	2.3%
Williamsburg Bridge (J/M/Z)	37,216	38,411	F	1,195	3.2%
Rutgers Street Tunnel (F)	37,006	37,921	F	915	2.5%
Manhattan Bridge (B/D/N/Q)	100,921	103,654	D	2,734	2.7%
Cranberry Street Tunnel (A/C)	66,013	67,173	F	1,160	1.8%
Clark Street Tunnel (Nos. 2/3)	29,316	30,073	E	757	2.6%
Montague Street Tunnel (R)	10,143	10,301	F	158	1.6%
Joralemon Street Tunnel (Nos. 4/5)	28,696	29,446	D	750	2.6%
Buses					
Hugh L. Carey Tunnel (BM1, BM2, BM3, BM4)	4,376	4,421	B	45	1.0%
Williamsburg Bridge (B39)	29	29	B	0	1.0%
Ferries/Tramway					
Ferries	3,462	3,513	F	51	1.5%

Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019*; analysis prepared by WSP and FHI Studio.

Note: MTA NYCT data was used to analyze bus routes as of 2019. Bus volumes are calculated via average leave load at a bus stop before a bus crosses into the Manhattan CBD.

No bus routes with an origin point in Brooklyn are projected to see an increase of more than 50 new passengers in the AM peak hour, the CEQR threshold for further analysis, indicating that there would be no adverse effect from the change in ridership.

As summarized in **Table 4C-19**, the A, D, F, and L subway lines are projected to have an increase of more than 200 riders in the AM peak hour, while the incremental change would be below 200 riders for the Manhattan-bound Nos. 2/3; Nos. 4/5; and C, J/M, N/Q, and R subway lines.

Table 4C-19. Projected New Passenger-Trips at Maximum Load Point for Routes Crossing into the Manhattan CBD from Brooklyn (2023 AM Peak Period and Hour)

MODE	AM PEAK PERIOD	AM PEAK HOUR
Subway		
Clark Street Tunnel		
No. 2	165	43
No. 3	345	90
Joralemon Street Tunnel		
No. 4	664	173
No. 5	588	153
Cranberry Street Tunnel		
A	859	224
C	334	87
Rutgers Street Tunnel (F)	1,033	269
Canarsie Tunnel (L)	976	254
Williamsburg Bridge		
J	674	175
M	502	130
Manhattan Bridge		
B	616	160
D	867	226
N	634	165
Q	685	178
Montague Street Tunnel (R)	640	166
Buses		
Hugh L. Carey Tunnel *(6 routes)*	45	12
Williamsburg Bridge *(1 route)*	0	0

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: MTA NYCT data was used to analyze maximum load points for bus routes as of 2019. The tolling scenario used to derive this analysis matches the representative tolling scenario in Table 4C-18.

Table 4C-20 summarizes the maximum load point analysis for the four subway lines exceeding the 200-passenger increase in the AM peak hour:

- The A subway line with a projected increase of 224 passengers and 1.64 new passengers per subway car on average
- The D subway line with 226 new passengers or about 2.82 per car
- The F subway line with 269 new passengers or 2.07 per car
- The L subway line with 254 new passengers or 1.59 per car

These increases are all below the threshold increment of 5 or more new passengers per car, and there would be no anticipated adverse effect on any transit lines entering the Manhattan CBD from Brooklyn.

Table 4C-20. Projected Incremental Ridership Increases at Maximum Load Point for Brooklyn (2023 AM Peak Hour)

MODE	NEW PASSENGER-TRIPS		SCHEDULED TRAINS		NEW PASSENGER-TRIPS	
	Peak Period	Peak Hour	Trips/Hour	Cars/Train	Per Train	Per Car
Subway						
Cranberry Street Tunnel (A)	858	224	17	8	13.13	1.64
Rutgers Street Tunnel (F)	1,033	269	13	10	20.67	2.07
Canarsie Tunnel (L)	976	254	20	8	12.69	1.59
Manhattan Bridge (D)	867	226	10	8	28.18	2.82

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: The tolling scenario used to derive this analysis matches the representative tolling scenario in **Table 4C-18**. Because no bus routes met the threshold of 50 new passengers, none are included in this table.

Staten Island

With the CBD Tolling Alternative, passenger-trips by ferry from Staten Island to the Manhattan CBD during the AM peak period are projected to increase by about 7 percent under the representative tolling scenario (**Table 4C-21**). Many of these passengers could be transferring to buses and subways in the Manhattan CBD, which is accounted for in the BPM results.

Table 4C-21. Projected Transit Ridership by Routes Crossing into the Manhattan CBD from Staten Island (2023 AM Peak Period, Inbound)

	NO ACTION	REPRESENTATIVE TOLLING SCENARIO		CHANGE	PERCENTAGE CHANGE
Ferry	17,768	19,002	C	1,234	6.9%
Buses					
Hugh L. Carey Tunnel (SIM1, SIM2, SIM3, SIM4, SIM5, SIM6, SIM7, SIM9, SIM10, SIM11, SIM15, SIM31, SIM31, SIM32, SIM33, SIM34, SIM35)	10,236	10,837	C	601	5.9%
Lincoln Tunnel (SIM8, SIM22, SIM25, SIM26, SIM30)	2,906	3,049	C	143	4.9%

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: MTA NYCT data was used to analyze bus routes as of 2019. (Staten Island Express Bus Routes SIM23 and SIM24 were operated by Academy Bus Company via contract with the New York City Economic Development Corporation in 2019, but as of January 2022, the routes are now operated by MTA Bus.) Bus volumes are calculated via the average leave load at the bus stop before it crosses into the Manhattan CBD. Due to rounding, some numbers in this table may not add up.

Ridership on express bus routes from Staten Island via New Jersey would increase under the representative tolling scenario, with an increase of 5.9 percent on buses via Brooklyn and 4.9 percent on buses via New Jersey. This translates to fewer than 50 new passengers on all buses; no bus routes with an origin point in Staten Island are projected to see an increase of more than 50 new passengers in the AM peak hour. Therefore, no adverse effects are anticipated from the representative tolling scenario nor any of the CBD Tolling Alternative scenarios.

The Staten Island Ferry serves commuters who transfer from the Staten Island Railway or from local buses, who bike or walk to the ferry terminal, and who arrive by vehicle. Rides on the ferry are also a popular tourist activity. It is expected that ridership on the new NYC Ferry St. George route (launched in 2021) would divert some travelers who previously used the Staten Island Ferry, because the NYC Ferry would provide a convenient connection to western Midtown Manhattan for some commuters in place of a transfer to the subway in Lower Manhattan to reach Midtown. No adverse effects on Staten Island Ferry service levels are expected as a result of the CBD Tolling Alternative.[31]

Table 4C-22 shows the increment at the maximum load point for Staten Island express buses that travel within Brooklyn and New Jersey to enter the Manhattan CBD. No bus routes within this sector are projected to experience over 50 new passengers.

Table 4C-22. Projected New Passenger-Trips at Maximum Load Point for Staten Island Express Bus Routes (2023 AM Peak Period and Hour)

MODE	AM PEAK PERIOD	AM PEAK HOUR
Bus		
Staten Island express via Hugh L. Carey Tunnel *(16 routes)*	447	116
Staten Island express via Lincoln Tunnel *(5 routes)*	66	17

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: MTA NYCT data was used to analyze maximum load points for bus routes as of 2019. The tolling scenario used to derive this analysis matches the representative tolling scenario in **Table 4C-21**.

New Jersey/West of Hudson

The CBD Tolling Alternative would result in modest increases in ridership on transit services from the New Jersey/west-of-Hudson sector (**Table 4C-23**). The largest change as a percentage, would occur on PATH service to Midtown Manhattan (33rd Street), which would see 1,555 new passengers in the AM peak period with Tolling Scenario E, an increase of 3.8 percent. PATH service to Lower Manhattan (World Trade Center) would have a smaller increase, with an estimated 1,201 new passengers in the AM peak period (an increase of 1.7 percent). Ridership would increase by 2.3 percent under Tolling Scenario E for NJ TRANSIT rail service. For buses from New Jersey, ridership would increase less than 2 percent, with 1,656 new passengers on buses through the Lincoln and Holland Tunnels with the representative tolling scenario for each (Tolling Scenarios E and D, respectively). Privately operated ferries would see the greatest increases under Tolling Scenario D, with a projected increase of 207 new passengers.

31 Based on an analysis of the projected increase in morning peak hour ridership on the Staten Island Ferry and based on the capacity of each ferry and the frequency of operation, adverse effects are not anticipated from the Project.

Table 4C-23. Projected Transit Ridership by Routes at the Boundary between New Jersey/West-of-Hudson and Manhattan CBD (2023 AM Peak Period, Inbound)

	NO ACTION	REPRESENTATIVE TOLLING SCENARIO		CHANGE	PERCENTAGE CHANGE
Subway					
PATH (33rd Street)	40,731	42,286	E	1,555	3.8%
PATH (World Trade Center)	71,773	72,974	F	1,201	1.7%
Commuter Rail					
NJ TRANSIT	59,721	61,068	E	1,348	2.3%
Buses					
Lincoln Tunnel*	106,849	108,390	E	1,541	1.4%
Holland Tunnel*	6,431	6,547	D	116	1.8%
Ferries/Tramway					
Ferries	8,123	8,329	D	207	2.5%

Source: WSP, Best Practice Model 2021 and NYMTC *Hub Bound Travel Data Report 2019;* analysis prepared by WSP and FHI Studio.

Note: Metro-North west-of-Hudson service connects to the Manhattan CBD via a transfer at Secaucus Junction. Those riders represent a small proportion of total west-of-Hudson trips and are included under the Commuter Rail/NJ TRANSIT classification in these results summaries.

* Bus routes listed as identified in BPM:
NJ TRANSIT Lincoln Tunnel: #107, #108, #112, #113, #114, #115, #116, #117, #119, #122, #123, #125, #126, #127, #128, #129, #130, #131, #132, #133, #135, #136, #137, #138, #139, #144, #145, #148, #151, #153, #154, #155, #156, #157, #158, #159, #160, #161, #162, #163, #164, #165, #166, #167, #168, #177, #190, #191, #192, #193, #194, #195, #196, #197, #199, #319, #320, #321, #324
NJ TRANSIT Holland Tunnel: #120
Other Carriers Lincoln Tunnel: Bergen County/Suffern, CC Route 77, DC Route 32, DC Route 33, DC Route 44, DC Route 66, DC Route 88, DC Route 99, Jackson – Midtown, Jackson – PABT, Lincroft/Exit 109 – PABT, LK 46/80 to PABT, LK 46/80 to Wall St., LK 78 to PABT, LK 80 to PABT, Monsey – Midtown, MZ, Orange – Chester/Midtown, Orange – Newburgh/West Pt, Orange xPA84, Palisades, Pkwy Exp – PABT, PNC Center – PABT, Route 100 to PABT, Route 300/8A to Midtown, Route 300/8A to PABT, Route 35 – PABT, Route 36 – PABT, Route 400 Express to PABT, Route 500 to Midtown, Route 55 – Bloomfield, RT 11A, Rt 14 – PABT, RT 20 – PABT, RT 21, RT 45, RT 46, RT 47, RT 49, RT 9 – PABT, Sayreville – Midtown, TB North, TB South
Other Carriers Holland Tunnel: Jackson – Downtown, Lincroft/Exit 109 – Wall St, Pkwy Exp – Wall St, PNC Center, Red Bank, Route 300/8A, Route 36 – Wall St, Route 600 to Wall St, Route 9 to Wall St, Sayreville – Wall St, TB North to Wall St, West Caldwell

Table 4C-24 shows the increment of passengers at the maximum load point for transit lines entering the Manhattan CBD via New Jersey. The 33rd Street PATH line from Hoboken would have an increase of 234 new passengers in the AM peak hour, which is above the CEQR 200 passenger increase per peak-hour threshold for line-haul analysis. Based on BPM results, no bus routes would have increases of more than 50 new passengers in the AM peak hour in the representative tolling scenario.[32] Although total NJ TRANSIT commuter rail ridership would increase by more than 200 passengers overall, no individual routes would increase by more than 200 new passengers.

[32] Although the BPM projects ridership for individual routes, these route-specific projections do not have a high level of accuracy; therefore, increases are discussed relative to the route "family" for this assessment, although it is likely that route patterns do not all cover all bus stops for the route family.

Table 4C-24. Projected New Passenger-Trips at Maximum Load Point for Routes Crossing into the Manhattan CBD from New Jersey/West of Hudson (2023 AM Peak Period and Peak Hour)

MODE	AM PEAK PERIOD	AM PEAK HOUR
Subway		
PATH (33rd Street)		
Hoboken Line	898	234
Journal Square Line	657	171
PATH (World Trade Center)		
Hoboken Line	605	157
Newark Line	596	155
Commuter Rail (NJ TRANSIT)*		
Montclair-Boonton Line	305	125
Morris & Essex Line	273	112
Northeast Corridor Line	420	172
North Jersey Coast Line	309	127
Buses		
Lincoln Tunnel (104 routes)	1,462	380
Holland Tunnel (13 routes)	91	24

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: The tolling scenario used to derive this analysis matches the representative tolling scenario in **Table 4C-23**.
* Metro-North west-of-Hudson commuter trains (Port Jervis, Pascack Valley) transfer at Secaucus Junction to enter the Manhattan CBD and are therefore incorporated into NJ TRANSIT incremental passenger-trips.

As shown in **Table 4C-25**, the increases on the PATH 33rd Street Hoboken line are estimated to result in an average increase of about 3.34 new passengers per car, which is below the 5-passenger threshold, indicating that there would be no adverse effect. In summary, no transit line originating in New Jersey would result in an adverse effect on maximum load point for the representative tolling scenario and, therefore, for any tolling scenario.

Table 4C-25. Projected Incremental Ridership Increases at Maximum Load Point for New Jersey/West of Hudson (2023 AM Peak Hour)

MODE	NEW PASSENGER-TRIPS		SCHEDULED BUSES/TRAINS		NEW PASSENGER-TRIPS	
	Peak Period	Peak Hour	Trips/Hour	Cars/Train	Per Train/Bus	Per Car
Subway						
PATH (33rd Street)						
Hoboken	898	234	10	7	23.35	3.34

Source: WSP, Best Practice Model 2021; analysis prepared by WSP and FHI Studio.
Note: The tolling scenario used to derive this analysis matches the representative tolling scenario in **Table 4C-23**.

4C.4.2.4 EVALUATION OF BUSES ACROSS SECTORS

In early public outreach, concerns regarding increases in bus ridership that could result from Project implementation were expressed. Commenters asked if additional buses would be needed to account for ridership increases. Based on the line-haul capacity analysis results, which examined bus ridership at the point where the route would be the most crowded, no buses would cross the threshold for requiring detailed line-haul analysis; therefore, no adverse effects on bus lines are projected. This means that no new buses would be required to support ridership increases stemming from the Project.

Local Bus Ridership

As shown in **Table 4C-26**, overall bus ridership is projected to increase slightly due to the Project, from 1.0 percent (in Tolling Scenario B) to 1.4 percent (in Tolling Scenarios E and F). The analysis considered the change in overall bus ridership due to the Project, examining the aggregation of bus ridership into three groupings or categories of bus routes: "cordon" bus routes (which pass through the Manhattan CBD tolling cordon or boundary); "feeder" bus routes (which serve at least one rail station); and "local" bus routes (which do not cross the Manhattan CBD cordon or serve a rail station).

Table 4C-26. Projected Change in Bus Ridership Among Scenarios Compared to No Action Alternative (2023 AM Peak Period)

TYPE OF BUS ROUTE	TOLLING SCENARIO A	TOLLING SCENARIO B	TOLLING SCENARIO C	TOLLING SCENARIO D	TOLLING SCENARIO E	TOLLING SCENARIO F	TOLLING SCENARIO G
Change in ridership vs. No Action Alternative							
Cordon bus routes	4,554	3,657	5.543	6,470	7,806	6,105	4,886
Feeder bus routes	23,813	23,577	28,877	27,523	29,047	29,770	23,082
Local bus routes	977	681	676	748	977	1,159	741
Total Change vs. No Action Alternative	**29,345**	**27,916**	**35,097**	**34,742**	**37,830**	**37,034**	**28,709**
Percentage change in ridership vs. No Action Alternative							
Cordon bus routes	1.0%	0.8%	1.2%	1.4%	1.6%	1.3%	1.0%
Feeder bus routes	1.1%	1.1%	1.4%	1.3%	1.4%	1.4%	1.1%
Local bus routes	1.2%	0.8%	0.8%	0.9%	1.2%	1.4%	0.9%
Total Change vs. No Action Alternative	**1.1%**	**1.0%**	**1.3%**	**1.3%**	**1.4%**	**1.4%**	**1.1%**

Source: WSP, Best Practice Model 2021.
Note: Data total over a 4-hour period, defined as total boardings, which include transfers. (Because this ridership estimate includes transfers, the ridership reported is greater than MTA NYCT MetroCard data that is widely available.) The BPM includes MTA buses, NJ TRANSIT buses, smaller regional bus carriers, and private carriers. (Other smaller carriers and private carriers are included under "Other Buses.")

Based on BPM results for 2023, the projected systemwide increases in bus ridership for the morning peak period across the seven tolling scenarios (A, B, C, D, E, F, and G) would range between 0.7 and 1.6 percent for cordon, feeder, and local bus routes. For any given tolling scenario, local buses routes would mostly have a lower percentage increase than feeder or cordon routes. Under Tolling Scenario A, B, and F, some local bus routes would have a higher percentage increase than feeder routes, or both feeder and cordon routes.

With each bus accommodating 54 to 85 passengers, such increases would, on average, amount to no more than one or two additional passengers per bus. This level of increase in bus ridership is generally imperceptible and is anticipated as a 1.0 to 1.4 percent average increase, systemwide.

A closer look was taken at subway stations that may serve as important transfer points between buses and subways, to examine whether the increased bus ridership could be more pronounced at those locations. Twenty-three subway stations (see Table 4C-27 and Table 4C-28) are projected to serve more than 200 additional passengers in the AM peak hour under the CBD Tolling Alternative. Five stations outside Manhattan are projected to see increases above the 200-passenger increment threshold (Court Square, Atlantic Av – Barclays Center, Flushing-Main Street, Broadway Junction, 168 St – Washington Heights), with increments between 204 and 332 in the AM peak hour.

At most of the 23 subway stations identified above, based on inputs from NYCT operations planners, approximately 10 percent of the total increment of subway passengers would be a result of transfers to/from buses. This proportion was applied to estimate the amount of passenger volumes attributed to bus-to-subway or subway-to-bus transfers that would traverse station fare control area and vertical circulation elements.

4C.4.2.5 TRANSIT STATION ASSESSMENT

This section provides an assessment of the CBD Tolling Alternative's effect on specific transit stations where the number of passengers would exceed the CEQR threshold of 200 incremental peak-hour passengers. As indicated in Section 4C.4.2, this assessment uses Tolling Scenario E as the representative tolling scenario with the largest increase in transit ridership overall relative to the No Action Alternative. The results of this analysis provide an understanding of the likely range of anticipated adverse effects from the proposed Project and identify potential improvement strategies to address these effects.

Under the CBD Tolling Alternative, the regional transit system is projected to see overall increases of under 2 percent increase although ridership increases would vary by mode and station. This analysis considers whether projected increases in passenger volumes at specific stations would adversely affect facility elements used by passengers and whether improvements at those stations would be necessary to avoid potential adverse effects.

According to the *CEQR Technical Manual,* transit station analyses may be warranted if a proposed project is expected to generate 200 new passenger movements in a peak hour at a given station. Based on BPM results for 2023, the transit stations where the CBD Tolling Alternative (Tolling Scenario E) would add more than 200 new passengers during the peak hour (including all transfers, boardings, and alightings) were identified. Passengers transferring between cross-platform lines were not included because transferring passengers would not interact with FCA and VCE station circulation elements (turnstiles, stairs, escalators). However, transfers to another line within the same station complex or transfers to/from bus routes outside of the station were included because these incremental movements could affect the function of station circulation elements.

Locations of Stations Exceeding Threshold

Based on the BPM results for 2023, 26 commuter rail and subway stations are projected to have ridership increases of more than 200 new passengers with most stations located within New York City. For locations where the CEQR screening assessment indicates that further analysis is warranted, the *CEQR Technical Manual* calls for evaluation of capacity of the notable FCA and VCE station elements in the path of travel. Table 4C-27 shows projected AM peak-hour increments, and Table 4C-28 provides the corresponding PM peak-hour increments. (PM increments were estimated in coordination with NYCT by applying a different peak-hour factor onto the BPM AM peak-period results.)

Five of the stations meeting the threshold are affiliated with cross-Hudson trips—either in New Jersey or the Manhattan CBD. In New Jersey, three transit stations would have an increase of more than 200 passengers: Secaucus Junction Station, Hoboken Terminal, and Newark Penn Station. The other two stations are at New Jersey-serving hubs inside the Manhattan CBD. At Secaucus—one of a few major transfer points between northern New Jersey and Rockland and Orange Counties, New York—commuters primarily transfer rather than enter the station from the street. Hoboken Terminal is an important transfer point between PATH and NJ TRANSIT, where the increase in ridership would be fairly evenly split between the two services). At Newark Penn Station, a major hub and transfer station for NJ TRANSIT train and bus service and PATH, the CBD Tolling Alternative would also add a projected 148 new passengers for PATH and 181 passengers for NJ TRANSIT.

The increases at each of these hubs also include a substantial transfer volume. Of the 23 stations where the new passengers resulting from the CBD Tolling Alternative would exceed the screening threshold within New York City, nearly two-thirds are within the Manhattan CBD (Figure 4C-7). In addition, four stations are in Queens, two are in Brooklyn, and two are in Upper Manhattan/the Bronx (Table 4C-27). At some of these stations, planned or programmed improvements independent of the CBD Tolling Alternative will increase station capacity. Measures to be implemented by private developers related to the City of New York's recent rezoning of East Midtown will provide capacity improvements at some East Side subway stations. Other MTA capital improvements are planned at various stations which may alleviate relatively minor ridership increases.

Among those identified to incur incremental trips exceeding the CEQR analysis threshold, the largest increases are expected to occur at the Manhattan CBD's large station complexes. These stations accommodate substantial transfer movements among different subway lines that serve various parts of the city. They also accommodate intermodal transfers, in the case of Grand Central Terminal and Penn Station New York with commuter rail lines, and in the case of Times Square with commuter bus routes that serve the greater metropolitan area.

Table 4C-27. Transit Stations with More than 200 Projected New Passengers in the AM Peak Hour (Tolling Scenario E, 2023)

STATION NAME	OPERATOR	LINE	NO ACTION Ons/Offs	TOLLING SCENARIO E Ons/Offs	NET ONS/OFFS	NET PERCENTAGE CHANGE	LOCATION
New York-Penn Station	LIRR/NJ TRANSIT	—	61,663	63,043	1,380	2.2%	Manhattan CBD
Times Sq-42 St/42 St-Port Authority Bus Terminal	NYCT	Nos. 1, 2, 3, 7, and A, C, E, N, Q, R, S, W	67,299	68,655	790	1.2%	Manhattan CBD
Grand Central-42 St	NYCT	Nos. 4, 5, 6, 7, and S	40,779	41,858	761	1.9%	Manhattan CBD
New York-Grand Central Terminal	Metro-North	—	42,262	43,301	619	1.4%	Manhattan CBD
14 St-Union Square	NYCT	Nos. 4, 5, 6, and L, N, Q, R, W	40,216	41,263	585	1.5%	Manhattan CBD
Secaucus	NJ TRANSIT	—	10,279	10,834	555	5.4%	New Jersey
Hoboken Terminal	NJ TRANSIT	—	10,000	10,501	501	5.0%	New Jersey
Fulton St	NYCT	Nos. 2, 3, 4, 5, and A, C, J, Z	19,681	20,242	495	2.5%	Manhattan CBD
Lexington Av/59 St	NYCT	Nos. 4, 5, 6, and N, R, W	34,441	35,181	455	1.3%	Manhattan CBD
Lexington Av/53 St – 51 St	NYCT	No. 6, and E, M	15,758	16,205	395	2.5%	Manhattan CBD
42 St-Bryant Park-5 Av	NYCT	No. 7, and B, D, F, M	23,759	24,291	342	1.4%	Manhattan CBD
Broadway-Lafayette St and Bleecker St	NYCT	No. 6, and B, D, F, M	25,368	25,991	341	1.3%	Manhattan CBD
Court Square	NYCT	No. 7, and E, G, M	21,824	22,330	332	1.5%	Queens
59 St-Columbus Circle	NYCT	No. 1, and A, B, C, D	36,042	36,727	326	0.9%	Manhattan CBD
34 St-Herald Sq	NYCT	B, D, F, M, N, Q, R, W	30,662	31,230	319	1.0%	Manhattan CBD
Hoboken Terminal (PATH)	PANYNJ	—	7,433	7,749	316	4.2%	New Jersey
Atlantic Av-Barclays Center	NYCT	Nos. 2, 3, 4, 5, and B, Q, D, N, R	34,379	35,016	313	0.9%	Brooklyn
Port Authority Bus Terminal	PANYNJ	—	23,393	23,694	301	1.3%	Manhattan CBD
14 St (Sixth Av/Seventh Av)	NYCT	No. 1, 2, 3, and F, M, L	18,085	18,476	268	1.5%	Manhattan CBD
World Trade Center Station	PANYNJ	—	20,864	21,129	264	1.3%	Manhattan CBD
Flushing-Main St	NYCT	No. 7	14,839	15,100	261	1.8%	Queens
Broadway Junction	NYCT	A, C, J, L, Z	20,441	20,888	245	1.2%	Queens
Canal St (6, J, N, Q, R, Z)	NYCT	No. 6, and N, Q, R, W, J, Z	11,000	11,283	230	2.1%	Manhattan CBD
34 St-Penn Station	NYCT	A, C, E	12,321	12,553	213	1.7%	Manhattan CBD

STATION NAME	OPERATOR	LINE	NO ACTION Ons/Offs	TOLLING SCENARIO E Ons/Offs	NET ONS/OFFS	NET PERCENTAGE CHANGE	LOCATION
168 St-Washington Heights	NYCT	No. 1, and A, C	11,155	11,437	204	2.5%	Manhattan
Newark Penn Station	NJ TRANSIT	—	20,390	20,571	181	0.9%	New Jersey
Newark Penn Station (PATH)	PANYNJ	—	9505	9,653	148	1.6%	New Jersey

Source: WSP, Best Practice Model 2021

Note: All stations with free connections have aggregated volumes. Peak-hour incremental change was calculated as an average 26 percent peak-hour to peak-period ratio in the AM for NYCT subways, PATH trains, and buses; 43 percent peak-hour to peak-period ratio for Metro-North and NJ TRANSIT; and 41 percent peak-hour to peak-period ratio for LIRR. Net ons/offs include subway-to-bus, subway-to-subway, and bus-to-subway transfers and is not a direct calculation of Tolling Scenario E minus No Action Alternative incremental trips.

Table 4C-28. Transit Stations with More than 200 Projected New Passengers in the PM Peak Hour (Tolling Scenario E, 2023)

STATION NAME	OPERATOR	LINE	NO ACTION Ons/Offs	TOLLING SCENARIO E Ons/Offs	NET ONS/OFFS	NET PERCENTAGE CHANGE	LOCATION
New York-Penn Station	LIRR/NJ TRANSIT	—	61,663	63,043	1,380	2.2%	Manhattan CBD
Times Sq-42 St/42 St-Port Authority Bus Terminal	NYCT	Nos. 1, 2, 3, 7 and A, C, E, N, Q, R, S, W	72,476	73,936	851	1.2%	Manhattan CBD
Grand Central-42 St	NYCT	Nos. 4, 5, 6, 7 and S	43,916	45,078	820	1.8%	Manhattan CBD
14 St-Union Square	NYCT	Nos. 4, 5, 6, and L, N, Q, R, W	43,309	44,437	630	1.4%	Manhattan CBD
Grand Central Terminal	Metro-North	—	42,682	43,301	619	1.4%	Manhattan CBD
Secaucus	NJ TRANSIT	—	10,279	10,834	555	5.4%	New Jersey
Fulton St	NYCT	Nos. 2, 3, 4, 5, and A, C, J, Z	21,195	21,799	533	2.4%	Manhattan CBD
Hoboken	NJ TRANSIT	—	10,000	10,501	501	5.0%	New Jersey
Lexington Ave/59 St	NYCT	Nos. 4, 5, 6, and N, R, W	37,090	37,888	490	1.3%	Manhattan CBD
Lexington Av/53 St and 51 St	NYCT	No. 6, and E, M	16,970	17,452	425	2.4%	Manhattan CBD
42 St-Bryant Park-5 Av	NYCT	No. 7, and B, D, F, M	25,587	26,160	369	1.4%	Manhattan CBD
Broadway-Lafayette St and Bleecker St	NYCT	No. 6, and B, D, F, M	27,319	27,990	368	1.3%	Manhattan CBD
Court Square	NYCT	No. 7, and E, G, M	23,503	24,048	354	1.5%	Queens
59 St-Columbus Circle	NYCT	No. 1, and A, B, C, D	38,814	39,552	351	0.9%	Manhattan CBD
Hoboken Terminal (PATH)	PANYNJ	—	8,005	8,345	340	4.2%	New Jersey
Atlantic Av-Barclays Center	NYCT	Nos. 2, 3, 4, 5, and B, Q, D, N, R	37,024	37,710	338	0.9%	Brooklyn
34 St-Herald Sq	NYCT	B, D, F, M, N, Q, R, W	33,021	33,632	344	1.0%	Manhattan CBD
Port Authority Bus Terminal	PANYNJ	—	25,192	25,517	325	1.3%	Manhattan CBD
14 St (Sixth Av/Seventh Av)	NYCT	Nos. 1, 2, 3, and F, M, L	19,476	19,898	288	1.5%	Manhattan CBD
World Trade Center Station	PANYNJ	—	22,469	22,754	285	1.3%	Manhattan CBD
Flushing-Main St	NYCT	7	15,980	16,262	281	1.8%	Queens
Broadway Junction	NYCT	A, C, J, Z	22,013	22,494	264	1.2%	Queens
Canal St	NYCT	No. 6, and N, Q, R, W, J	11,846	12,151	247	2.0%	Manhattan CBD
34 St-Penn Station	NYCT	A, C, E	13,268	13,519	229	1.7%	Manhattan CBD

STATION NAME	OPERATOR	LINE	NO ACTION Ons/Offs	TOLLING SCENARIO E Ons/Offs	NET ONS/OFFS	NET PERCENTAGE CHANGE	LOCATION
168 St-Washington Heights	NYCT	No. 1, and A, C	12,013	12,317	219	1.8%	Manhattan
Newark Penn Station	NJ TRANSIT	—	20,390	20,571	181	0.9%	New Jersey
Newark Penn Station	PANYNJ	—	10,236	10,396	160	2.0%	New Jersey

Source: WSP, Best Practice Model 2021

Note: All stations with free connections have aggregated volumes. Peak-hour incremental change was calculated as an average 28 percent peak-hour to peak-period ratio in the PM for NYCT subways, PATH trains, and buses; 43 percent peak-hour to peak-period ratio for Metro-North and NJ TRANSIT; and 41 percent peak-hour to peak-period ratio for LIRR. Net ons/offs include subway-to-bus, subway-to-subway, and bus-to-subway transfers and is not a direct calculation of Tolling Scenario E minus No Action Alternative incremental trips.

Figure 4C-7. Transit Stations Identified for Detailed Station Analysis (2023, Tolling Scenario E – Representative Tolling Scenario)

Source: WSP, Best Practice Model 2021

Qualitative Analysis of NYC Stations

Some of the stations with over 200 anticipated new passengers due to the Project have large-scale station improvements either recently constructed, being implemented, or in process, which will significantly change circulation patterns and capacity at these stations. Consultation undertaken with NYCT—which took into account these current and/or future station improvements, as well as station size and available access points, existing usage levels, and baseline data availability—concluded that a qualitative evaluation of the stations below is appropriate as the projected incremental trips, in the context of ongoing improvements, would not have the potential to result in adverse effects. For more information, see the methodology for performing qualitative assessments above in Section 4C.2.1.1.

Grand Central Terminal (serving Metro-North) is projected to have a net increase of 619 peak-hour passengers under Tolling Scenario E, which constitutes a 1.4 percent increase in Metro-North ridership at this East Midtown hub (see Table 4C-27). Additionally, the **42nd St – Grand Central** subway station is projected to see a net increase of 761 peak-hour passengers under Tolling Scenario E. About two-thirds of these are the Nos. 4/5/6 line passengers, followed by about 30 percent of passengers using the No. 7 train. The remaining 5 percent are passengers using the 42nd Street Shuttle (S).

Several improvements have recently been completed at the Grand Central Terminal commuter rail and subway stations. Over the years, the North End Access project has provided Metro-North commuter rail passengers at Grand Central Terminal with more direct access to destinations north of the Terminal, and additional access points are planned for future development sites. The anticipated completion of the East Side Access project will provide a new LIRR connection to the East Side with a new concourse below the existing Terminal and the new One Vanderbilt development. The 42 St. Connection Project, completed in 2021, has added capacity to several stairs between the terminal and subway and between the subway and street, along with additional turnstiles and platform area serving the 42nd Street Shuttle (S), and modernized the escalators and elevator. Other than the escalator and elevator work, these changes will improve transfer moves, which are the largest portion of the projected increment for these stations, although they will not increase overall capacity. Similarly, the Lexington Avenue line station that is one stop north of Grand Central Station—the Lexington Av/53 St–51 St Station—is expected to undergo substantial improvements as part of the on-going build-out of the Greater East Midtown Rezoning initiatives. This station, which is projected to incur a net increase of 395 peak-hour passengers under Scenario E, spans three City blocks linking two separate station complexes (i.e., 51st St [No. 6 train] and Lexington Av-53 St [E/M trains]).

Accordingly, the projected incremental trips would be dispersed across a large number of station elements, many of which will undergo substantial improvements. Hence, in consultation with NYCT, quantitative analyses of the Grand Central commuter rail terminal and subway station, as well as the Lexington Av/53 St–51st St Station, were determined to be not warranted. Considering the improvements that would be in place and which were designed to improve existing operations and accommodate future growth, the projected increments from the Project, dispersed across this station, would not be expected to have the potential to result in adverse effects.

The **PABT** is projected to see a net increase of 301 passengers in the AM peak hour, which is an increase of 1.3 percent. AM Peak Period ridership of the PABT was 84,000 in 2015 according to the Continuous Bus Study, roughly 26 percent of which (21,840) occurred during the AM peak hour. Because the projected increments would be distributed across a large transit complex, including a portion captured in the Times Square Station analyses, a quantitative analysis of the bus terminal (which is not expected to show material differences between future no action and with action conditions) was determined to not be warranted. The CBD Tolling Alternative is, hence, not expected to result in adverse effects on circulation elements within this facility.

Under Tolling Scenario E, the **Penn Station New York** (LIRR, NJ TRANSIT, Amtrak) Station is projected to experience a net increase of 1,380 passengers (a 2.2 percent increase) and the **34 St-Penn Station** (Eighth Avenue A, C, E lines) a net increase of 213 passengers (a 1.9 percent increase). The **34 St-Herald Square** Station is projected to see an increase of 319 passengers (a 1.9 percent increase). The 34 St-Penn Station (Seventh Avenue 1, 2, 3 lines) is not projected to experience a net increase of over 200 passengers.

- With respect to Penn Station New York and 34-Penn Station, according to the April 2021 Penn Station Master Plan, https://new.mta.info/document/37416 , daily Penn Station ridership was approximately 600,000 in 2019.[33] Roughly 30 percent of that ridership occurred in the AM peak period (180,000), and 26 percent of AM peak ridership (40,680) occurred during the AM peak hour. Considering the expansiveness of Penn Station New York and its adjacent subway stations, as well as the recently completed Moynihan Station, the incremental pedestrian trips would be dispersed across a myriad of different pedestrian paths and a large number of station circulation elements, and would not be perceptible to those already using the station.
- At 34 St – Herald Square Station, turnstyle data shows daily ridership of approximately 250,000 in October 2019.[34] Roughly 30 percent of that ridership occurred in the AM peak period (75,000), and 26 percent of AM peak ridership (19,500) occurred during the AM peak hour. The under 400 incremental passengers would traverse a large network of street-level entrances and underground passageways extending from West 32nd to West 35th Streets across Broadway and Sixth Avenue.
- Accordingly, incremental ridership increases from the Project are unlikely to result in perceptible changes to operations at these transit facilities. Hence, in consultation with NYCT, quantitative analyses of the Penn Station New York commuter rail terminal and the adjacent/adjoining 34th Street subway stations were determined to be not required, and the Project is not expected to result in adverse effects on circulation elements within these facilities.

33 39 percent LIRR (237,000); 31 percent NJ TRANSIT (187,000); 24 percent subway and others, including local office workers and others patronizing in station retail (142,000) and 6 percent Amtrak (34,000). April 2021 Penn Station Master Plan. https://new.mta.info/document/37416.

34 MTA Turnstile data. http://web.mta.info/developers/turnstile.html.

Fulton Street Station is projected to see an increase of 560 passengers in the AM peak hour, which is a 2.8 percent increase relative to the station's No Action Alternative ridership. The incremental number of passengers among the A/C, Nos. 2/3, and Nos. 4/5 lines are comparable, with the highest projected volumes on the A/C lines. Access to these lines is made via many station entrances spanning several city blocks east–west and north–south. Additionally, all lines within this station are connected via underground passageways; therefore, the projected increments would be well distributed across many station elements, such that the increase in trips at any individual station element is likely to be imperceptible. Moreover, the Fulton Street Transit Center renovations, completed in 2014, which included additional stair capacity off each platform, opening of new entrances, and reconstruction of upper mezzanine areas that improved ease of transfers within the station, provided additional capacity to accommodate future growth in ridership. Accordingly, in consultation with NYCT, a quantitative analysis was determined to be not required, and the Project is not expected to result in adverse effects at this station.

Quantitative Analysis of Stations

For the remaining stations, a quantitative station analysis was conducted at 18 transit stations: 13 NYCT stations, 2 NJ TRANSIT stations, and 3 PATH stations (operated by PANYNJ).

Quantitative Analysis of Transit Stations – NYCT Stations

An analysis of existing AM and PM peak-hour service levels at station elements was prepared to describe the operating conditions of the 13 stations and identify station elements that are already operating near capacity or at congested levels. These study locations were selected in coordination with NYCT. For each station's selected analysis locations, NYCT was consulted on the appropriate application of friction and surge factors and the analyses were prepared in accordance with the guidance presented in the *CEQR Technical Manual*. As summarized in **Table 4C-29 and Table 4C-30**, approximately 15 percent of the station elements (86 in the AM peak hour and 81 in the PM peak hour out of 564 station elements) analyzed for the 13 stations currently operate at or above capacity, at level of service (LOS) D or worse. The detailed analysis results described above are presented in **Appendix 4C-7, "Transportation: Level of Service Tables – New York City" and Appendix 4C-8, "Transportation: Level of Service Tables – NJ TRANSIT and PATH Stations."**

For the No Action Alternative, no additional background growth was applied on top of 2019 ridership levels since the existing condition incorporates a return to pre-COVID-19 pandemic transit ridership. According to an analysis by McKinsey & Company, commissioned by MTA, ridership may reach 80 percent to 92 percent of pre-pandemic levels by end of 2024.[35] As summarized in **Table 4C-31 and Table 4C-32**, approximately 14 percent to 15 percent of the station elements (86 in the AM peak hour and 81 in the PM peak hour out of 563 station elements) analyzed for the 13 stations would operate at or above capacity, at LOS D or worse.

35 MTA 2021 Budget and 2021–2024 Financial Plan Adoption Materials. MTA Finance Committee/MTA Board. December 16, 2020. https://new.mta.info/document/25291.

Table 4C-29. Existing Conditions Level of Service for Analyzed Stations Elements (2019 AM Peak Hour)

STATION	COUNT OF VERTICAL CIRCULATION ELEMENTS				COUNT OF FARE CONTROL AREA ELEMENTS			
	LOS A, B, C	LOS D	LOS E	LOS F	LOS A, B, C	LOS D	LOS E	LOS F
14 St-Union Square	27	9	2	6	12	0	0	0
42 St-Times Square/PABT	51	6	11	4	17	0	0	0
42 St-Bryant Park/Fifth Av	29	4	3	1	9	0	0	0
Bleecker St-Broadway/Lafayette St	28	0	0	1	10	0	0	0
Atlantic Av-Barclays Center	16	1	1	0	8	0	0	0
14 St-Sixth/Seventh Av	59	2	1	1	16	0	0	0
Flushing-Main St	10	4	1	3	3	0	0	0
Canal St (N, Q, R, W, J, Z, 6)	30	2	1	0	9	0	0	0
168 St-Washington Heights	31	0	1	0	4	0	0	0
59 St-Columbus Circle	25	2	0	0	7	0	0	0
Broadway Junction	10	4	1	0	1	0	0	0
Court Square	24	0	2	1	8	0	0	0
Lexington Av/59 St	24	5	2	4	10	0	0	0

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

Table 4C-30. Existing Conditions Level of Service for Analyzed Station Elements (2019 PM Peak Hour)

STATION	COUNT OF VERTICAL CIRCULATION ELEMENTS				COUNT OF FARE CONTROL AREA ELEMENTS			
	LOS A, B, C	LOS D	LOS E	LOS F	LOS A, B, C	LOS D	LOS E	LOS F
14 St-Union Square	27	10	3	4	12	0	0	0
42 St-Times Square/PABT	49	10	10	3	17	0	0	0
42 St-Bryant Park/Fifth Av	31	4	0	2	9	0	0	0
Bleecker St-Broadway/Lafayette St	24	4	0	1	10	0	0	0
Atlantic Av-Barclays Center	13	5	0	0	8	0	0	0
14 St-Sixth/Seventh Av	60	3	0	0	16	0	0	0
Flushing-Main St	13	2	2	1	3	0	0	0
Canal St (N, Q, R, W, J, Z, 6)	31	2	0	0	9	0	0	0
168 St-Washington Heights	31	1	0	0	4	0	0	0
59 St-Columbus Circle	26	1	0	0	7	0	0	0
Broadway Junction	13	2	0	0	1	0	0	0
Court Square	26	1	0	0	8	0	0	0
Lexington Av/59 St	25	4	2	4	10	0	0	0

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

Table 4C-31. No Action Alternative Level of Service for Analyzed Station Elements (2023 AM Peak Hour)

STATION	COUNT OF VERTICAL CIRCULATION ELEMENTS				COUNT OF FARE CONTROL AREA ELEMENTS			
	LOS A, B, C	LOS D	LOS E	LOS F	LOS A, B, C	LOS D	LOS E	LOS F
14 St-Union Square	27	9	2	6	12	0	0	0
42 St-Times Square/PABT	51	6	11	4	16	0	0	0
42 St-Bryant Park/Fifth Av	29	4	3	1	9	0	0	0
Bleecker St-Broadway/Lafayette St	28	0	0	1	10	0	0	0
Atlantic Av-Barclays Center	16	1	1	0	8	0	0	0
14 St-Sixth/Seventh Av	59	2	1	1	16	0	0	0
Flushing-Main St	10	4	1	3	3	0	0	0
Canal St (N, Q, R, W, J, Z, 6)	30	2	1	0	9	0	0	0
168 St-Washington Heights	31	0	1	0	4	0	0	0
59 St-Columbus Circle	25	2	0	0	7	0	0	0
Broadway Junction	10	4	1	0	1	0	0	0
Court Square	24	0	2	1	8	0	0	0
Lexington Av/59 St	24	5	2	4	10	0	0	0

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

Table 4C-32. No Action Alternative Level of Service for Analyzed Station Elements (2023 PM Peak Hour)

STATION	COUNT OF VERTICAL CIRCULATION ELEMENTS				COUNT OF FARE CONTROL AREA ELEMENTS			
	LOS A, B, C	LOS D	LOS E	LOS F	LOS A, B, C	LOS D	LOS E	LOS F
14 St-Union Square	27	10	3	4	12	0	0	0
42 St-Times Square/PABT	49	10	10	3	16	0	0	0
42 St-Bryant Park/Fifth Av	31	4	0	2	9	0	0	0
Bleecker St-Broadway/Lafayette St	24	4	0	1	10	0	0	0
Atlantic Av-Barclays Center	13	5	0	0	8	0	0	0
14 St-Sixth/Seventh Av	60	3	0	0	16	0	0	0
Flushing-Main St	13	2	2	1	3	0	0	0
Canal St (N, Q, R, W, J, Z, 6)	31	2	0	0	9	0	0	0
168 St-Washington Heights	31	1	0	0	4	0	0	0
59 St-Columbus Circle	26	1	0	0	7	0	0	0
Broadway Junction	13	2	0	0	1	0	0	0
Court Square	26	1	0	0	8	0	0	0
Lexington Av/59 St	25	4	2	4	10	0	0	0

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

As described above, the implementation of the Project would result in measurable increases in subway trips at the 13 analyzed subway stations and the analyses presented in this subchapter depict conditions under the representative tolling scenario with the highest level of incremental ridership increases for subway operations. These increments were used in the station trip assignments described above and overlaid onto the station analysis elements for the quantitative analyses. As summarized in **Table 4C-33 and Table 4C-34**, approximately 15 percent to 16 percent of the station elements (88 in the AM peak hour and 85 in the PM peak hour out of 563 station elements) analyzed for the 13 stations would operate at or above capacity, at LOS D or worse, for Tolling Scenario E.

Table 4C-33. CBD Tolling Alternative Level of Service for Analyzed Station Elements (2023 AM Peak Hour)

STATION	COUNT OF VERTICAL CIRCULATION ELEMENTS				COUNT OF FARE CONTROL AREA ELEMENTS			
	LOS A, B, C	LOS D	LOS E	LOS F	LOS A, B, C	LOS D	LOS E	LOS F
14 St-Union Square	26	9	3	6	12	0	0	0
42 St-Times Square/PABT	50	6	11	5	16	0	0	0
42 St-Bryant Park/Fifth Av	29	4	3	1	9	0	0	0
Bleecker St-Broadway/Lafayette St	28	0	1	0	10	0	0	0
Atlantic Av-Barclays Center	16	1	0	1	8	0	0	0
14 St-Sixth/Seventh Av	59	1	2	1	16	0	0	0
Flushing-Main St	10	4	1	3	3	0	0	0
Canal St (N, Q, R, W, J, Z, and No. 6)	30	2	1	0	9	0	0	0
168 St-Washington Heights	31	0	1	0	4	0	0	0
59 St-Columbus Circle	25	2	0	0	7	0	0	0
Broadway Junction	10	4	1	0	1	0	0	0
Court Square	24	0	2	1	8	0	0	0
Lexington Av/59 St	24	5	2	4	10	0	0	0

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

Table 4C-34. CBD Tolling Alternative Level of Service for Analyzed Station Elements (2023 PM Peak Hour)

STATION	COUNT OF VERTICAL CIRCULATION ELEMENTS				COUNT OF FARE CONTROL AREA ELEMENTS			
	LOS A, B, C	LOS D	LOS E	LOS F	LOS A, B, C	LOS D	LOS E	LOS F
14 St-Union Square	27	9	4	4	12	0	0	0
42 St-Times Square/PABT	48	10	10	4	16	0	0	0
42 St-Bryant Park/Fifth Av	31	4	0	2	9	0	0	0
Bleecker St-Broadway/Lafayette St	24	4	0	1	10	0	0	0
Atlantic Av-Barclays Center	13	5	0	0	8	0	0	0
14 St-Sixth/Seventh Av	60	2	1	0	16	0	0	0
Flushing-Main St	12	3	2	1	3	0	0	0
Canal St (N, Q, R, W, J, Z, and No. 6)	31	2	0	0	9	0	0	0
168 St-Washington Heights	31	1	0	0	4	0	0	0
59 St-Columbus Circle	26	1	0	0	7	0	0	0
Broadway Junction	13	2	0	0	1	0	0	0
Court Square	25	1	1	0	8	0	0	0
Lexington Av/59 St	24	4	3	4	10	0	0	0

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

Based on criteria prescribed in the *CEQR Technical Manual*, without Project improvements, potential adverse effects were predicted at 4 VCEs and no FCAs across the 13 analyzed stations for the representative tolling scenario (Table 4C-35). Comparing projected ridership increases across various tolling scenarios, it is anticipated that some tolling scenarios may have relatively less potential for potential adverse effects (further described below). At stations where adverse effects are anticipated monitoring will be undertaken and the following mitigation measures will be pursued should they be needed:

- Times Square Station (PM only)
  - *VCE:* Interborough Rapid Transit (IRT) Mezzanine Level (ML) Stair 6/8 (Stair ML6/ML8) – stairway connecting IRT mezzanine to uptown Nos. 1, 2, 3 subway platform. The adverse effects identified for the Stair ML6/ML8 will be avoided or relieved by removing the center handrail and standardizing the riser, so that the stair meets code without the handrail. (NYCT has confirmed code compliance.) Implementing this mitigation measure will improve the PM peak-hour conditions from LOS F (with a v/c ratio of 1.70) to LOS E (with a v/c ratio of 1.64) and avoid the predicted potential adverse effect. Upon monitoring and evaluation of ridership at this station, TBTA will coordinate with MTA to construct this improvement if the projected ridership materializes.

Table 4C-35. NYCT Station Elements Where Adverse Effects and Accompanying Project Improvements Have Been Identified (CBD Tolling Alternative, 2023 AM/PM Peak Hour)

STATION	ELEMENT	ELEMENT DESCRIPTION	PEAK HOUR OF CONCERN	NO ACTION ALTERNATIVE			CBD TOLLING ALTERNATIVE			IDENTIFIED IMPROVEMENT
				Peak-Hour Volume	V/C Ratio	Level of Service	Peak-Hour Volume	V/C Ratio	Level of Service	
42 St-Times Sq/PABT	IRT ML6/ML8	Stairway connecting IRT mezzanine to uptown Nos. 1, 2, and 3 subway platform	PM	4,680	1.65	E	3,802	1.70	F	Remove center hand rail and standardize the riser.
Flushing – Main St	E456	Street escalator at north side of Roosevelt Avenue between Main Street and Union Street	AM	2,984	1.18	D	3,040	1.21	D	Increase escalator speed to 120 feet per minute.
Union Sq	E219	Escalator connecting the Canarsie line platform to the IRT mezzanine	AM	2,496	1.26	D	2,519	1.27	D	Increase escalator speed to 120 feet per minute.
Court Sq	Flushing P2/P4	Stair between paid zone and Manhattan-bound No. 7 train	AM	3,825	1.84	F	3,955	1.90	F	Construct new stair from the northern end of the No. 7 platform to the street.

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

- Flushing-Main Street Station (AM only)
  - VCE: Escalator 456 (E456) – located on the east side of the station providing access from the street to the mezzanine. The E456 escalator, which was replaced and operates at a speed of 100 feet per minute (fpm), can be safely operated at 120 fpm. (NYCT has confirmed code compliance). Without the improvement, this escalator would operate at LOS D (with a v/c ratio of 1.21). Implementing this operational change will improve the forecast AM peak-hour condition) to LOS D (with a v/c ratio of 1.08) and avoid the predicted potential adverse effect. Upon monitoring and evaluation of ridership at this station, TBTA will coordinate with MTA to implement this improvement if the projected ridership materializes.
- 14 St - Union Square Station (AM only)
  - VCE: Escalator 219 (E219) – connecting the Canarsie line platform to the IRT mezzanine. The E219 escalator, which was installed in 2020 and operates at a speed of 100 fpm, can be safely operated at 120 fpm. (NYCT has confirmed code compliance). Without the improvement, this escalator would operate at LOS D (with a v/c ratio of 1.27). With the implementation of this operational change, the forecast AM peak-hour condition will be improved to LOS D (with a ratio of 1.15) and avoid the predicted potential adverse effect. Upon monitoring and evaluation of ridership at this station, TBTA will coordinate with MTA to implement this improvement if the projected ridership materializes.
- Court Square Station (AM only)
  - VCE: Flushing Platform Stair 2/4 (Stair P2/P4) Stair – accessing Manhattan-bound No. 7 train. The adverse effects identified for this stairway will be mitigated by building a new stair from the northern end of the No. 7 platform to the street, along with a new fare control area. Doing so will distribute pedestrian flow away from Stair P2/P4. Implementation of this mitigation measure would improve the AM peak-hour conditions from LOS F, with a v/c ratio of 1.90, to LOS E, with a v/c ratio of 1.56 and avoid the predicted potential adverse effect. The improvement (the new stair and fare control area) is listed in the Special Long Island City Mixed Use District, Court Square Subdistrict, administered by the New York City Department of City Planning (NYCDCP). The Subdistrict language assigns transit improvement projects to projected developments on three blocks—this improvement is tied to a site on the southernmost block, which is on the east side of 23rd Street between 45th Road and 45th Avenue, Queens, New York. NYCT maintains ongoing coordination with NYCDCP about potential qualifying developments within the Subdistrict, and MTA approval for the design of the subway improvement and certification by the Chairperson of the City Planning Commission are both required. Thus, it is possible that this mitigation will be built by an outside developer in coordination with NYCT before the impact occurs. Upon monitoring of ridership at this station, if the projected ridership is anticipated to materialize and this station improvement has not been constructed via outside developers, or if construction by an outside developer is not likely in the foreseeable future from when the impact is triggered, TBTA will coordinate with NYCT to construct this new stair. The monitoring plan will allow for sufficient time to implement the mitigation to ensure that the adverse effect does not occur.

Implementation of the potential stairway and escalator improvements at 42nd Street-Times Square/PABT, Main Street-Flushing, Court Square, and 14th Street-Union Square Stations have been reviewed by NYCT for feasibility and will be further coordinated and finalized through NYCT, in compliance with requirements under the Americans with Disabilities Act.

In contrasting the projected increases in passenger volumes among the various tolling scenarios, it can be expected that Tolling Scenarios D and F would yield the same or comparable adverse effects that could be addressed with the same Project improvements identified for the representative tolling scenario. While these adverse effects and need for Project improvements may also materialize for Tolling Scenarios A, B, C, and G, the severity of the adverse effects and extent of Project improvements needed is likely to be relatively less than the other three tolling scenarios (D, E, and F) and varies by station element as a function of projected net passenger increase at the station. Nevertheless, to ensure the Project does not create an adverse effect at any of the four NYCT station elements described above, monitoring at all four NYCT station elements will be undertaken regardless of the tolling scenario selected. Monitoring of actual conditions before and after Project implementation will determine if the potential Project mitigation measures identified are warranted for implementation.

The operating agencies will monitor changes in ridership levels during the first year after implementation of the Project (starting no sooner than two months after implementation) to account for a potential initial period of fluctuation in travel behavior.[36] The changes in ridership levels will be used in accordance with the thresholds defined by the *CEQR Technical Manual* to determine whether forecast adverse effects at specific station elements would materialize and whether improvement strategies—which, if implemented, would achieve an adequate level of improvement to avoid the predicted adverse effects—should be pursued.

Within a year after implementation of the CBD Tolling Program, should ridership at the stations be projected to increase at or above the level anticipated for effects to occur, the mitigation measures described above will be constructed. Because some of these strategies are likely to require additional planning, design, and construction, it is possible that short-term, adverse effects may occur while these improvements are being designed and constructed. The operating agencies will also advance planning and design efforts subsequent to approval of the Project to expedite the implementation of improvement strategies if they are deemed warranted by the above monitoring efforts.

<u>Detailed Analysis of Transit Stations – NJ TRANSIT Stations</u>

Analyses of stations for NJ TRANSIT were performed using CEQR guidelines for consistency and because NJ TRANSIT does not have an alternative guideline. Two NJ TRANSIT stations, Secaucus Junction and Hoboken Terminal, would meet the CEQR criteria for detailed analysis with 200 or more Project-generated trips in a peak hour with Tolling Scenario E, the representative tolling scenario for transit analyses. In

[36] For London's congestion zone, a Transit Cooperative Research Program report noted that traffic patterns stabilized at six weeks after charging began. See Chapter 14, "Road Value Pricing" in *Transit Cooperative Research Program Report 95: Traveler Response to Transportation System Changes*. p. 14-13. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c14.pdf.

addition, Newark Penn Station would experience an increase of more than 200 peak-hour trips with Tolling Scenario C.

At Hoboken Terminal and Newark, the connected PATH stations would also experience increases of more than 200 peak-hour trips, and in those cases, most of the increase consists of transfers between NJ TRANSIT rail and PATH trains.

NJ TRANSIT trains at Hoboken Terminal are distributed to 17 tracks which are accessed via nine at-grade platforms. The platforms are accessed directly from an at-grade concourse at the south end of the tracks and at-grade platforms without any requirement for vertical circulation. Therefore, NJ TRANSIT areas of the station do not contain many capacity constrained pedestrian elements (such as stairs or escalators). As Project-generated passengers would be widely dispersed in the terminal and there are no VCEs in the NJ TRANSIT area, no further analysis was performed for the NJ TRANSIT areas of Hoboken Terminal. (Analysis of PATH station elements at Hoboken Terminal is discussed below.)

For the Secaucus Junction and Newark Penn Station, Project-generated incremental pedestrian volumes were assigned to VCEs along likely paths of travel. Detailed analysis was conducted for elements that are projected to see an increase of 100 or more people in the AM or PM peak hour, because it was deemed unlikely that elements with smaller incremental increases would experience an adverse effect from the Project. This threshold was borne out by the analysis because the elements that exceeded the 100-person threshold also did not experience significant adverse effects.

BPM model outputs indicate that most Project-generated trips at Secaucus Junction would be transferring from eastbound Main Line trains to eastbound Northeast Corridor trains in the morning and the reverse direction in the evening, with a small number also transferring between buses and Northeast Corridor trains. While passengers making these connections are distributed to multiple stairs and escalators, there would be a concentration of activity on the three escalators to the platform serving Northeast Corridor Tracks A and B just north of the fare control area at the mezzanine level. Analysis was also conducted for the next set of stairs and escalators to Tracks 2, A, B, and 3 north of the fare control area.

At Newark Penn Station, most Project-generated trips would be transferring from eastbound NJ TRANSIT trains to eastbound PATH trains in the morning and the reverse direction in the evening. In the morning, these transfers would be primarily cross-platform from Tracks 1 and 2 to the eastbound PATH platform without using any vertical circulation. The small number who would transfer from Track A to PATH would use vertical circulation but would result in very small incremental volumes on those elements. During the evening, most Project-generated trips would transfer from the arriving PATH platform H down a ramp to the platform serving Tracks 3 and 4. A smaller number of passengers would transfer down another ramp to the platform serving Track 5. An analysis was conducted of the ramp to Platforms 3 and 4 in the PM peak period only.

For the No Action Alternative, no growth factor was applied because the baseline conditions incorporate a return to pre-COVID-19 pandemic transit ridership. Therefore, levels of service are the same in the existing condition and No Action Alternative.

The LOS on the ramp analyzed at Newark Penn Station (**Table 4C-36**), would continue to operate at LOS A with the Project. Of the eight elements analyzed at Secaucus Junction, one escalator and one stair would decline from LOS A to LOS C with the proposed action. However, based on criteria prescribed in the *CEQR Technical Manual*, no significant adverse effects were predicted at the NJ TRANSIT stations.

Table 4C-36. Level of Service on NJ TRANSIT Station Elements (Peak Hour)

STATION/ELEMENT	EXISTING (2019)		NO ACTION ALTERNATIVE (2023)		CBD TOLLING ALTERNATIVE (2023)	
	AM	PM	AM	PM	AM	PM
Newark, Ramp to Tracks 3 and 4	N/A	A	N/A	A	N/A	A
Secaucus, Escalator 1a to Platform A/B	A	A	A	A	B	A
Secaucus, Escalator 1b to Platform A/B	A	A	A	A	C	A
Secaucus, Escalator 1c to Platform A/B	B	A	B	A	B	A
Secaucus, Stair 2a to Platform 3	A	N/A	A	N/A	A	N/A
Secaucus, Escalator 2b to Platform 3	A	N/A	A	N/A	A	N/A
Secaucus, Stair 3 to Platform A/B	A	A	A	A	C	C
Secaucus, Stair 4a to Platform 2	N/A	A	N/A	A	N/A	A
Secaucus, Escalator 4b to Platform 2	N/A	A	N/A	A	N/A	A

Source: Analysis prepared by AKRF, FHI Studio, and WSP.
Note: N/A = Not applicable

Detailed Analysis of Transit Station – PATH Stations

Analyses of stations for PATH were performed using CEQR guidelines for consistency and because PANYNJ does not have an alternative guideline. Three PATH stations—World Trade Center, Newark Penn Station, and Hoboken Terminal—would meet the CEQR criteria for detailed analysis with 200 or more Project-generated trips in a peak hour with Tolling Scenario E. At Hoboken and Newark, most of the Project-generated increase consists of transfers between PATH and NJ TRANSIT trains.

The PATH World Trade Center Station consists of five tracks accessed from four platforms. Each of the platforms is accessed by multiple stairs and escalators in relatively close proximity. Distribution of Project-generated passengers to the various elements results in low incremental volumes on each element. Due to the number of platforms and circulation elements, no individual circulation element would receive more than 100 new trips in a peak hour. Based on distribution and low incremental volumes added to individual elements, more detailed analysis was not performed for circulation elements in the station.

At Newark Penn Station, originating PATH trains depart eastbound on a track that is at the same level as the NJ TRANSIT rail tracks. Departing trains are accessible from platforms on both sides of this track, which are directly accessible from the platforms serving NJ TRANSIT Tracks 1 and 2. PATH trains arrive and terminate westbound at a track on the upper level. Access to both PATH platforms is provided via stairs, escalators, and two ramps that are in the NJ TRANSIT controlled areas of the station and were addressed by the analysis for those areas, described above.

The PATH Hoboken Station is connected to the Hoboken Terminal NJ TRANSIT trains by two stairs located within the Terminal building and two smaller stairs located just outside the north wall of the Terminal. Most passengers transferring between PATH and NJ TRANSIT use the two inside stairs due to their larger size and visibility from within the terminal or the PATH station. The PATH station also has two stairs on the north side of the station providing access to Hudson Place and the Hoboken community.

Project-generated trips were assigned to the two key stairs providing connection to Hoboken Terminal, street stairs serving the community, and additional stairs that connect a mezzanine level to each of the three platforms. Although only Stair 01/02, connecting the PATH station to Hoboken Terminal, would experience more than 100 Project-generated trips during either peak hour, a detailed analysis was performed both for that Stair 01/02 and Stair 05, which also connects to the terminal. **Table 4C-37** indicates existing, No Action Alternative, and CBD Tolling Alternative LOS on the two stairs analyzed at the PATH Hoboken Station.

Table 4C-37. Level of Service on PATH Hoboken Station Elements (AM and PM Peak Hours)

STATION/ELEMENT	EXISTING (2019)		NO ACTION ALTERNATIVE (2023)		CBD TOLLING ALTERNATIVE (2023)	
	AM	PM	AM	PM	AM	PM
Hoboken Stair 01/02	LOS D	LOS D	LOS D	LOS D	LOS E	LOS D
Hoboken Stair 05	LOS A	LOS A	LOS A	LOS A	LOS A	LOS A

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

The implementation of the Project would result in measurable increases in volumes on the various stairs at the PATH Hoboken Station with the representative tolling scenarios. Based on criteria prescribed in the *CEQR Technical Manual*, an adverse effect was predicted during the AM peak hour at Stair 01/02 for Tolling Scenario E, the tolling scenario with the highest projected ridership.

In contrasting the projected increases in passenger volumes among the various tolling scenarios, there could be considerable differences in the projected passenger increases, which could lead to potential adverse effects (**Table 4C-38**). While Tolling Scenarios E and F (the tolling scenarios with the highest tolls) would yield the passenger increases sufficient to result in adverse effects, Tolling Scenarios A, B, C, D, and G are not predicted to result in adverse effects in this location.

Table 4C-38. Projected Net Passenger Increase at Hoboken Stair 01/02 (All Scenarios, AM Peak Hour)

	TOLLING SCENARIO A	TOLLING SCENARIO B	TOLLING SCENARIO C	TOLLING SCENARIO D	TOLLING SCENARIO E	TOLLING SCENARIO F	TOLLING SCENARIO G
Projected Passenger Increase	45	72	122	164	240	205	139
Determin-ation of Adverse Effect	None	None	None	None	Likely	Likely	None

Source: Analysis prepared by AKRF, FHI Studio, and WSP.

If Tolling Scenario E or F is selected by the TBTA Board, the Project Sponsors will monitor ridership at this station during the first year after Project implementation to evaluate whether projected ridership has materialized due to the Project. The specific plan for monitoring is being developed in coordination with PANYNJ (PATH) and NJ TRANSIT. As outlined in the plan, if a comparison of Stair 01/02 passenger volumes one month prior and two months after implementation shows an incremental change that is greater than or equal to 205 passengers, the Project Sponsors will continue coordination with PANYNJ (PATH) and NJ TRANSIT to implement improved wayfinding and supplemental temporary personnel to direct passengers if needed. These mitigation measures are expected to improve circulation and more evenly distribute passengers among the station's stairs, including PATH Stairs 03 and 05. Through consultation and in coordination with NJ TRANSIT and PANYNJ (PATH), if it is determined that the predicted adverse effects on Stair 01/02 would materialize, the committed improvements will be implemented to alleviate the adverse effect.

4C.5 CONCLUSION

Ridership increases resulting from the Project would affect a limited number of subway lines and subway stations within the regional transit system (and no bus or commuter rail lines or stations). Even in the tolling scenarios with the highest incremental ridership increases, the increases in ridership on the transit lines (line-haul capacity) would not be high enough to be considered adverse effects.

The station screening analysis resulted in some forecast increases of over 200 passengers in MTA subway stations and commuter rail hubs connecting to the Manhattan CBD, but most subway stations and all other commuter rail stations are projected to see relatively small increases. Based on criteria prescribed in the *CEQR Technical Manual*, without Project improvements, potential adverse effects were predicted at 4 VCEs and no FCAs across the 13 analyzed NYCT stations; and at 1 VCE and no FCAs across the 4 analyzed NJ TRANSIT and PATH stations for Tolling Scenario E. These are further described in **Table 4C-39**, along with accompanying project improvements.

Improvements that could alleviate the predicted potential adverse effects include increasing escalator speeds, adding additional wayfinding to distribute passengers, and stair improvements, depending upon location. With the implementation of these improvements, the adverse effects would be ameliorated. In the case of the predicted adverse effect in New Jersey under certain tolling scenarios, planned improvements have been coordinated with NJ TRANSIT and PANYNJ (PATH); coordination will continue for a detailed monitoring program and implementation of improvements, should they be warranted.

Contrasting the projected increases in passenger volumes among the various tolling scenarios, Tolling Scenarios D and F are expected to yield the same or comparable adverse effects that could be addressed with the same Project improvements that are identified for Tolling Scenario E, the representative tolling scenario with the highest incremental ridership increases. While these adverse effects and need for Project improvements may also materialize for Tolling Scenarios A, B, C, and G, the severity of the adverse effects and extent of Project improvements needed may not be needed or may be less than for Tolling Scenario E, depending upon the location.

In consideration of reduced ridership on the subway due to the COVID-19 pandemic, TBTA and the other sponsoring agencies have committed to monitoring before and after Project implementation at the select locations at which adverse effects are predicted under the analyzed tolling scenario. If ridership at those station elements increases (in comparison to pre-implementation ridership) at or above the level anticipated, the Project Sponsors will implement the mitigation measures described above. Because strategies at two NYCT VCEs may require additional planning, design, and construction, the operating agencies will advance planning and design efforts subsequent to approval of the Project to expedite the implementation of improvement strategies if they are warranted by the above monitoring efforts. Short-term, adverse effects may temporarily occur during this construction or implementation process.

Table 4C-39. Summary of Effects of the CBD Tolling Alternative on Transit

<table>
<tr><th rowspan="2">TOPIC</th><th rowspan="2">SUMMARY OF EFFECTS</th><th rowspan="2">LOCATION</th><th rowspan="2">DATA SHOWN IN TABLE</th><th colspan="7">TOLLING SCENARIO</th><th rowspan="2">POTENTIAL ADVERSE EFFECT</th><th rowspan="2">MITIGATION AND ENHANCEMENTS</th></tr>
<tr><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th><th>G</th></tr>
<tr><td rowspan="10">Transit Systems</td><td rowspan="10">▪ The Project would generate a dedicated revenue source for investment in the transit system.
▪ Transit ridership would increase by 1 to 2 percent systemwide for travel to and from the Manhattan CBD, because some people would shift to transit rather than driving. Increases in transit ridership would not result in adverse effects on line-haul capacity on any transit routes.</td><td>New York City Transit</td><td rowspan="10">% Increase or decrease in total daily transit ridership systemwide</td><td colspan="7">1.5%–2.1%</td><td rowspan="10">No</td><td rowspan="10">No mitigation needed. No adverse effects</td></tr>
<tr><td>PATH</td><td colspan="7">0.8%–2.0%</td></tr>
<tr><td>Long Island Rail Road</td><td colspan="7">0.6%–2.0%</td></tr>
<tr><td>Metro-North Railroad</td><td colspan="7">0.6%–1.9%</td></tr>
<tr><td>NJ TRANSIT Commuter Rail</td><td colspan="7">0.3%–2.3%</td></tr>
<tr><td>MTA/NYCT Buses</td><td colspan="7">1.3%–1.6%</td></tr>
<tr><td>NJ TRANSIT Bus</td><td colspan="7">0.5%–1.1%</td></tr>
<tr><td>Other buses (suburban and private operators)</td><td colspan="7">0.0%–0.9%</td></tr>
<tr><td>Ferries (Staten Island Ferry, NYC Ferry, NY Waterway, Seastreak)</td><td colspan="7">2.5%–3.5%</td></tr>
<tr><td>Roosevelt Island Tram</td><td colspan="7">1.7%–4.1%</td></tr>
<tr><td rowspan="9">Bus System Effects</td><td rowspan="9">Decreases in traffic volumes within the Manhattan CBD and near the 60th Street boundary of the Manhattan CBD would reduce the roadway congestion that adversely affects bus operations, facilitating more reliable, faster bus trips.</td><td>Manhattan local buses</td><td rowspan="9">% Increase or decrease at maximum passenger load point</td><td colspan="7">Increases of 0.5%–1.2%</td><td rowspan="9">No</td><td rowspan="9">No mitigation needed. No adverse effects</td></tr>
<tr><td>Bronx express buses</td><td colspan="7">-1.6% to 2.2%</td></tr>
<tr><td>Queens local and express buses (via Ed Koch Queensboro Bridge)</td><td colspan="7">2.0%–2.8%</td></tr>
<tr><td>Queens express buses (via Queens-Midtown Tunnel)</td><td colspan="7">-1.3% to 4.1%</td></tr>
<tr><td>Brooklyn local and express buses</td><td colspan="7">1.3%–2.6%</td></tr>
<tr><td>Staten Island express routes (via Brooklyn)</td><td colspan="7">3.7%–4.5%</td></tr>
<tr><td>Staten Island express routes (via NJ)</td><td colspan="7">1.0%–2.8%</td></tr>
<tr><td>NJ/West of Hudson buses (via Holland Tunnel)</td><td colspan="7">- 1.4% to 1.4%</td></tr>
<tr><td>NJ/West of Hudson buses (via Lincoln Tunnel)</td><td colspan="7">0.4%–1.5%</td></tr>
</table>

TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO A	B	C	D	E	F	G	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Transit Elements	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations: ▪ Hoboken Terminal, Hoboken, NJ PATH station ▪ Times Sq-42 St/42 St-Port Authority Bus Terminal subway station in the Manhattan CBD (N, Q, R, W, and S; Nos. 1, 2, 3, and 7; and A, C, E lines) ▪ Flushing-Main St subway station, Queens (No. 7 line) ▪ 14th Street-Union Square subway station in the Manhattan CBD (Nos. 4, 5, and 6; and L, N, Q, R, W lines) ▪ Court Square subway station, Queens (No. 7 and E, G, M lines)	Hoboken Terminal–PATH station (NJ) Stair 01/02	Net passenger increases or decreases at stair in the peak hour	45	72	122	164	240	205	139	Yes	**Mitigation needed for Tolling Scenarios E and F.** TBTA will coordinate with NJ TRANSIT and PANYNJ to monitor pedestrian volumes on Stair 01/02 one month prior to commencing tolling operations to establish a baseline, and two months after Project operations begin. If a comparison of Stair 01/02 passenger volumes before and after implementation shows an incremental change that is greater than or equal to 205, then TBTA will coordinate with NJ TRANSIT and PANYNJ to implement improved signage and wayfinding to divert some people from Stair 01/02, and supplemental personnel if needed.
		42 St-Times Square–subway station (Manhattan) Stair ML6/ML8 connecting mezzanine to uptown 1/2/3 lines subway platform	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	59%	68%	82%	100%	82%	56%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to remove the center handrail and standardize the riser, so that the stair meets code without the hand rail. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.
		Flushing-Main St subway station (Queens)–Escalator E456 connecting street to mezzanine level	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	116%	91%	108%	116%	100%	133%	72%	Yes	**Mitigation needed**. TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the speed from 100 feet per minute (fpm) to 120 fpm.
		Union Sq subway station (Manhattan)–Escalator E219 connecting the L subway line platform to the Nos. 4/5/6 line mezzanine	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	82%	87%	102%	100%	95%	61%	Yes	**Mitigation needed**. TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the escalator speed from 100 fpm to 120 fpm.
		Court Sq subway station (Queens)–Stair P2/P4 to Manhattan-bound No. 7 line	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	98%	90%	102%	104%	100%	117%	97%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to construct a new stair from the northern end of the No. 7 platform to the street. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.

4D. Parking

4D.1 INTRODUCTION

This subchapter describes the potential effects of implementing the CBD Tolling Alternative on parking, including curbside parking (on-street parking) and parking lots and garages (off-street parking) in the regional study area for the Project. The analysis to determine potential effects includes assessments of commuter parking demand on on-street parking and off-street parking, where present; at commuter and intercity rail stations providing service along routes terminating at or near the Manhattan CBD; and at bus facilities, light-rail and subway facilities, ferry facilities, and a tramway facility in the 28-county regional study area. Separately, in New York City outside the Manhattan CBD and in the Manhattan CBD, general parking utilization and availability as well as the potential demand associated with the Project are described. This subchapter considers the Project's potential increase in demand to determine whether the Project could lead to shortfalls in parking supply.[1]

4D.2 METHODOLOGY

The analysis of the potential effects of the Project on parking conditions considered locations where transportation modeling predicts an increase in vehicle trips that would result from the Project (see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**).

Consistent with the other analyses in this EA, the parking analysis was conducted using data collected prior to the COVID-19 pandemic. The analysis employs the methodologies outlined in the City of New York's CEQR Technical Manual.[2]

The *CEQR Technical Manual* recommends a tiered approach to evaluating a project's effects on parking demand and supply based on the vehicular trips generated by a project in total, and then at individual intersections. The first step in the tiered analysis is to determine whether a project could result in 50 or more additional vehicle trips during the peak hour in total. If surpassed, the second step in the tiered analysis is to determine whether a project could result in 50 or more additional vehicle trips during the

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1 In addition, post-implementation, the Project's effects on parking supply and demand in New York City in and around the Manhattan CBD is required to be evaluated by New York City, and a report must be completed 18 months after the Project commences.

2 The MTA Reform and Traffic Mobility Act exempts the Project from the requirements of the New York State Environmental Quality Review Act, New York CEQR, the New York City Uniform Land Use Review Procedure, and any other local law of the City of New York of like or similar effect. NYCDOT and other New York City (NYC) agencies use the parking assessment methodology in environmental review documents to assess the potential effects of public and private projects on the supply of and demand for parking in NYC. The parking methodology is also used at times in geographies outside NYC in environmental review documents, such as when the lead agency is based in NYC. The City of New York first published the *CEQR Technical Manual* in 1991 and has released several versions since then to update methodologies based on new information and practical experience. The *CEQR Technical Manual* can be found at https://www1.nyc.gov/site/oec/environmental-quality-review/technical-manual.page.

peak hour at any individual intersection.[3] According to the *CEQR Technical Manual* methodology, that level of new vehicle trips may be large enough to result in a corresponding increase in demand for parking spaces at facilities within a quarter-mile[4] of a project, and detailed analysis of the projected increase in demand for parking relative to existing parking capacity and utilization at individual parking facilities is appropriate at such locations.

The analysis of the Project's potential effects on parking began with a review of the New York Metropolitan Transportation Council (NYMTC) Best Practice Manual (BPM) results for the Project to identify commuter rail stations and park-and-ride facilities where there would be 50 or more new vehicle trips in the peak hours resulting from the Project and, if warranted, additional analysis would be conducted.

Next, should the aforementioned tiered evaluation identify that a detailed parking analysis is warranted, the *CEQR Technical Manual* presents the methodology for determining adverse parking effects. These effects could be considered adverse depending on the location, utilization, and available supply of existing parking capacity according to surveys, and projected increase in parking demand from a project. In some circumstances, projects could adversely affect parking conditions when the demand for parking generated by a project cannot be accommodated by available parking supply, and in other circumstances, this effect would not be categorized as adverse but would be disclosed as a parking shortfall. The *CEQR Technical Manual* identifies certain neighborhoods of New York City as areas where a parking shortfall would not constitute an adverse effect because of the many other alternative modes of transportation there (i.e., where there are subway stations within a quarter-mile[5]) that do not limit trip-making to solely driving and parking. These neighborhoods are defined as "Parking Zones 1 and 2" in the *CEQR Technical Manual*. In these zones, when a project creates or exacerbates demand for parking exceeding parking supply, this is considered a shortfall but not an adverse effect.[6] Parking Zones 1 and 2 encompass all of Manhattan (including Roosevelt Island) and all or parts of the neighborhoods of the South Bronx in the Bronx, Flushing, Jamaica, Long Island City/Astoria in Queens; and Downtown Brooklyn and Greenpoint/Williamsburg in Brooklyn (**Figure 4D-1**).

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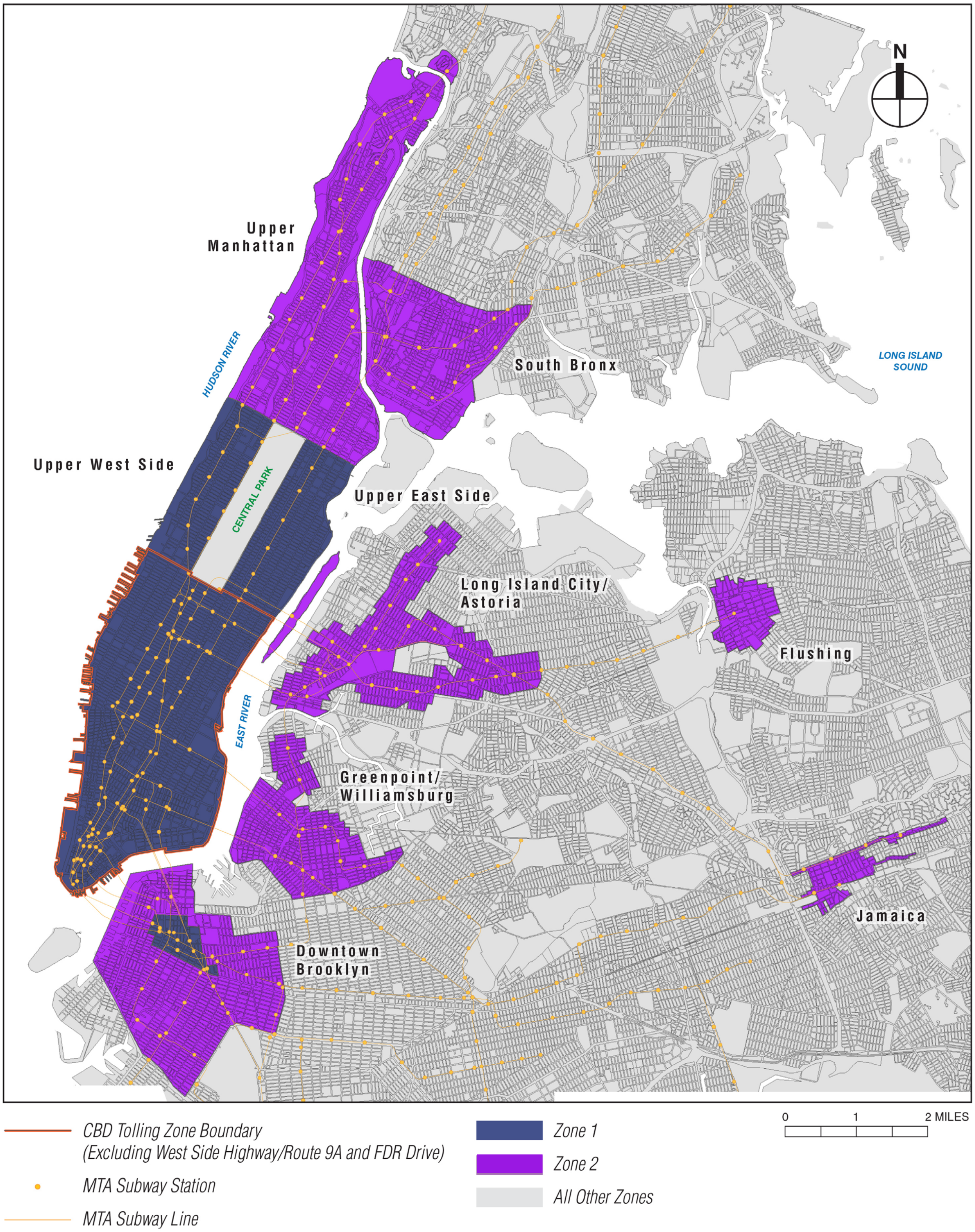
3 According to the *CEQR Technical Manual*, "if the proposed project would generate fewer than 50 peak hour vehicle trips, the need for further traffic analysis would be unlikely." This is because the added traffic congestion from fewer than 50 vehicle trips per hour would likely fall below the published CEQR thresholds defining significant adverse traffic impacts. However, it also states that "proposed projects affecting congested intersections have at times been found to create significant adverse traffic impacts when their trip generation is fewer than 50 peak hour vehicle trips, and therefore, the lead agency, upon consultation with NYCDOT may require analysis of such intersections of concern."

4 The *CEQR Technical Manual* states, "in general, a quarter-mile walk (taking approximately 5 to 10 minutes) is considered the maximum distance from primary off-site parking facilities to the project site," and further explains that parking availability, the destination type, and geography of the area can increase or decrease the maximum distance people are willing to walk from parking to a destination.

5 Based on the FHWA's *Pedestrian Safety Guide for Transit Agencies*, most people are willing to walk for 5 to 10 minutes (or approximately one-quarter to one-half mile) to a transit stop, and people may be willing to walk considerably longer distances when accessing heavy rail services. https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/ch4.cfm#a.

6 City of New York Mayor's Office of Environmental Coordination. 2020. *City Environmental Quality Review Technical Manual*. Chapter 16, "Transportation," pp. 16 to 67.

Figure 4D-1. *City Environmental Quality Review Technical Manual* Parking Zones



Source: City of New York 2020 *City Environmental Quality Review Technical Manual*, Map 16-2.

In addition, project-related shortfalls in parking may not constitute an adverse effect if other parking is available within a reasonable walking distance. Outside of Parking Zones 1 and 2, increases in parking demand that result in parking shortfalls can constitute adverse effects when the resulting parking shortfall exceeds more than half of the available on-street and off-street parking spaces within a quarter-mile of the location where the shortfall would occur. This determination should take into consideration the availability and extent of transit in the area and its proximity to the new parking demand, features of a project that result in vehicle trip reductions, and travel modes of customers in the area.

4D.3 AFFECTED ENVIRONMENT

4D.3.1 Regional Study Area

The regional study area for this EA includes 28 counties in the New York metropolitan area, which are the main catchment area for trips to and from the Manhattan CBD (see **Chapter 3, "Environmental Analysis Framework," Section 3.3.1.1**). The region has an extensive public transit network that includes commuter and intercity rail providing service along routes terminating at or near the Manhattan CBD, buses operating throughout the region, light rail and subways, ferries, and a tramway. **Subchapter 4C, "Transportation: Transit,"** provides a description of transit services throughout the regional study area, including those that serve the Manhattan CBD.

As described in **Section 4D.1**, the analysis includes an assessment of commuter parking demand at on-street parking and off-street parking, where present, at and near public transit facilities in the regional study area, where the Project's commuter parking effects are anticipated to be most concentrated. Specifically, transportation modeling predicts that increases in vehicular trips to public transit would be highest at and near commuter rail and park-and-ride facilities, and, relatively, that there would be much lower increases in vehicular trips to subway stations, light rail, and other modes of public transit without dedicated commuter parking facilities nearby. Therefore, this subsection evaluates parking utilization and demand at and near commuter rail and park-and-ride facilities, and other subsections discuss general parking utilization and capacity in New York City outside the Manhattan CBD, and in the Manhattan CBD, related to the Project.

While approximately 29 percent of the regional workforce commutes to work via public transit, this share is substantially higher for commuters to jobs in New York City (approximately 56 percent of workers with jobs in New York City use public transportation to travel to work) and is even greater for commuters to jobs in the Manhattan CBD (more than 85 percent of workers with jobs in the Manhattan CBD use public transportation to travel to work (see **Tables 6-5 and 6-6** in **Chapter 6, "Economic Conditions"**).[7]

Most of the approximately 400 intercity and commuter rail stations[8] in the regional study area have parking lots and garages for rail passengers to use. The parking facilities at rail stations vary in size from small

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7 Sources: Regional and New York City workforce data from American Community Survey 2015–2018 5-year estimates, U.S. Census Bureau; CBD data from Census Transportation Planning Package, 2012–2016, U.S. Census Bureau.

8 Metro-North Railroad map. 2022. http://web.mta.info/mnr/html/mnrmap.htm; Long Island Rail Road map. 2022. http://web.mta.info/lirr/Timetable/lirrmap.htm; and New Jersey Transit Commuter Rail map including PATH, Newark, and Hudson Bergen Light Rail. 2022. https://d2g63oyneaimm8.cloudfront.net/sites/default/files/pdfs/rail/Rail_System_Map.pdf.

surface lots to large, multilevel garages and are owned by the transit agency, a private operator, or the municipality where the station is located. Commuter rail stations typically charge a fee to park. Some facilities restrict use to residents of the municipality, some require a monthly permit for their use, and some are available to the general public. An individual rail station might have a combination of parking operators and multiple types of fee structures within one or at multiple parking facilities.

In addition, several other rail and non-rail transit hubs in the regional study area have parking facilities for their customers, such as the PATH Journal Square Station and various commuter park-and-ride lots with access to bus service into New York City. While most commuters using commuter rail and park-and-ride lots drive either alone or in a carpool to the transit facility, others walk, bike, or are dropped off there by local buses, shuttles, and private or for-hire vehicles.

Typically, parking facilities at the regional study area's commuter rail stations and transit hubs are well-used. Many are at capacity (or at least at "effective capacity," when a user perceives an off-street parking facility is full, which for commuter rail parking facilities is typically considered at or exceeding 85 percent utilization), and some facilities have waiting lists for additional parking demand that the parking operators (i.e., transit agency, municipality, or private entity that controls the facility) maintain. Based on information from the Metropolitan Transportation Authority for the Long Island Rail Road and Metro-North Railroad and from NJ TRANSIT, average pre-COVID-19 pandemic parking utilization at transit facilities across the regional study area ranged from approximately 75 percent to 100 percent of capacity, with many individual facilities reaching their effective capacity (see Tables 4D.1.1, 4D.1.2, and 4D.1.3 in Appendix 4D.1, "Transportation: Parking Utilization at Commuter Rail Stations in the Regional Study Area").

4D.3.2 New York City Outside the Manhattan CBD

As described in Section 4D.1, general parking utilization and capacity are discussed in this subsection to characterize the potential effects of the Project on parking. Many neighborhoods throughout New York City have curbside parking on major and minor streets. This parking is subject to regulations that limit long-term parking in business districts and that prohibit parking on some busy streets during peak periods to create capacity for traffic or buses. In addition, neighborhoods throughout New York City are subject to New York City's alternate-side parking regulations, which prohibit parking during certain times to allow street cleaning. In recent years, several New York City programs that promote repurposing on-street parking spaces with other uses have reduced the number of on-street parking spaces. These include Citi Bike, NYCDOT's bike share program, which places bike share docking stations in former on-street parking spaces; Neighborhood Loading Zone, which dedicates more curb space to commercial loading/unloading; Open Restaurants, which allows restaurants and other food-service establishments to convert on-street parking spaces to customer seating as a temporary program during the COVID-19 pandemic enabled through an emergency order; and the Open Streets program using the same emergency order as Open Restaurants, which allows certain street segments to be temporarily closed to through vehicles. New York City is currently transitioning the temporary Open Restaurants and Open Streets programs to be permanent, so the reduced number of on-street parking spaces resulting from those temporary programs is anticipated to continue. Throughout New York City, curbside parking is generally heavily used, with high demand and few available spaces during most times of the day. Although a specific survey was not conducted for this Project or can be cited, parking surveys performed as part of traffic studies in New York City typically show high levels of weekday daytime utilization for on-street parking. Consequently, on-street spaces are generally not a reliable source of parking and finding available parking spaces that are not already occupied can involve substantial time searching for an available space.

The neighborhoods closest to the Manhattan CBD, including the Upper East Side (i.e., East 59th Street to East 96th Street, from Central Park to the East River), the Upper West Side (i.e., West 59th Street to West 110th Street, from Central Park to the Hudson River), Long Island City in Queens, and Williamsburg and Downtown Brooklyn in Brooklyn, have curbside parking on local streets subject to the regulations noted above. This parking is typically heavily used. **Figure 4D-2** shows the locations of these neighborhoods. Some commercial centers in Brooklyn and Queens, including Long Island City, Flushing, and Jamaica in Queens, have public off-street parking facilities, and these too are typically heavily used.

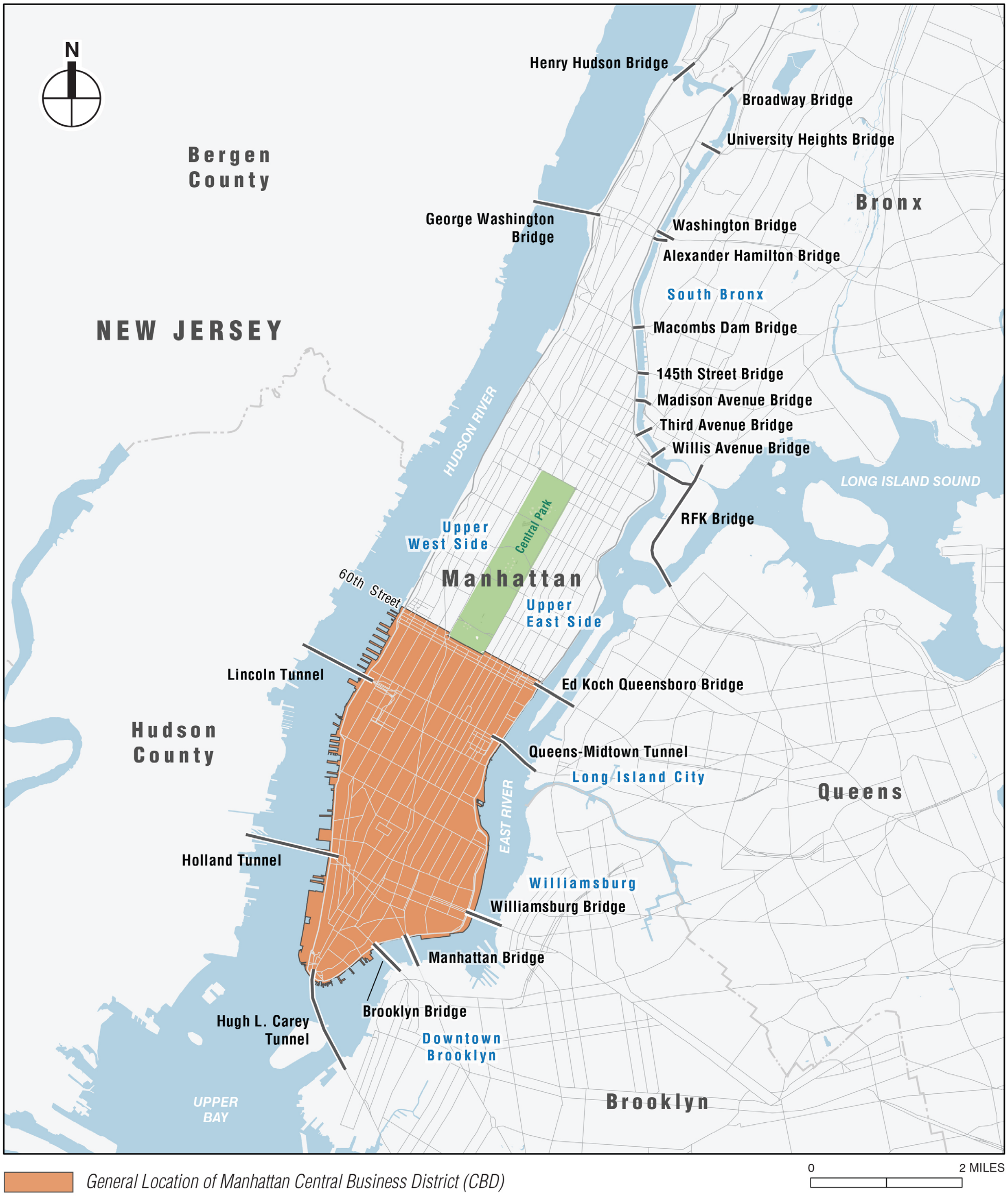
4D.3.3 Manhattan CBD

As described in **Section 4D.1,** general parking utilization and capacity are discussed in this subsection to characterize the potential effects of the Project on parking. Curbside parking exists throughout the Manhattan CBD. To provide for bus lanes on some north–south avenues, curbside parking is generally restricted during and between the weekday AM and PM peak commuter hours but is allowed overnight and on weekends. Numerous special parking regulations are within the Manhattan CBD, but in general, parking is allowed on both curbsides of the east–west streets, except for two-way, primary crosstown streets such as 14th Street, 23rd Street, 34th Street, 42nd Street, and 57th Street and near the entrances to and exits from bridges and tunnels connecting to the Manhattan CBD. Parking on major avenues and on side streets within Midtown Manhattan is generally metered to limit parking duration, and parking on all streets is subject to New York City's alternate-side parking regulations, which prohibit parking during certain times to allow street cleaning. The Manhattan CBD is subject to the same programs (e.g., Citi Bike, Neighborhood Loading Zone, Open Restaurants, and Open Streets) that have reduced and will continue to reduce the amount of on-street parking in New York City outside of the Manhattan CBD (see **Section 4D.3.2)**. Throughout the Manhattan CBD, curbside parking is in high demand and is heavily used, with limited available spaces during most times of typical weekdays. Additionally, metered parking rates regulated by NYCDOT are priced higher in the Manhattan CBD than elsewhere in New York City.

The Manhattan CBD has approximately 600 off-street parking facilities (surface lots and parking garages) with a total capacity of nearly 90,000 parking spaces. While a specific survey was not conducted for this Project, surveys for numerous development projects in the Manhattan CBD areas of Lower Manhattan and Midtown[9] over the past several years have found that off-street parking facilities were at or near capacity on weekdays throughout the Manhattan CBD. In many parts of the Manhattan CBD near shopping and entertainment venues (e.g., Rockefeller Center and the Theater District) as well as major institutional uses (e.g., hospitals and museums), off-street parking facilities are heavily used in the evenings and on weekends. In addition to off-street parking for periodic use by the public, many off-street parking facilities also provide monthly parking for residents of the Manhattan CBD and commuters.

9 Source: Recently completed Environmental Impact Statements for projects proposed in the Manhattan CBD, including *Phased Redevelopment of Governors Island South Island Development Zones Final Second Supplemental Generic EIS* (2021), *Two Bridges Large Scale Residential Development Final EIS* (2018), and *Greater East Midtown Rezoning Final EIS* (2017).

Figure 4D-2. General Location of Neighborhoods Near the Manhattan Central Business District



General Location of Manhattan Central Business District (CBD)

Note: The MTA Reform and Traffic Mobility Act defines the Manhattan CBD as the area south of and inclusive of 60th Street but excluding the West Side Highway/Route 9A and the FDR Drive

Source: ArcGIS Online, https://www.arcgis.com/index.html.

4D.4 ENVIRONMENTAL CONSEQUENCES

4D.4.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program. The No Action Alternative would not substantially change demand for on-street and off-street parking in the regional study area, or within or outside the Manhattan CBD compared to existing conditions. In the No Action Alternative, the demand for parking facilities and curbside spaces within and outside the Manhattan CBD would likely be comparable to current conditions, with limited available capacity, especially near heavily used transit stations.

4D.4.2 CBD Tolling Alternative

REGIONAL STUDY AREA

The BPM results show that all tolling scenarios for the CBD Tolling Alternative would decrease vehicle trips entering and leaving the Manhattan CBD with a corresponding increase in transit trips to the Manhattan CBD. There would be as much as a 9.2 percent decrease in Vehicle Miles Traveled (VMT) to as little as a 7.6 percent decrease in VMT for the Manhattan CBD from the Project, compared to the No Action Alternative (see Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"). There would be as little as a 0.7 percent increase in transit share to as much as a 1.6 percent increase in transit share from the Project, compared to the No Action Alternative. Consequently, there would be a decrease in demand for parking within the Manhattan CBD and an increase in demand for parking at the region's transit stations and commuter park-and-ride locations.

As discussed in Subchapter 4C, "Transportation: Transit," the evaluation of the effects of the CBD Tolling Alternative on transit ridership (subway, commuter rail, and bus passengers) outside the Manhattan CBD considered groups of stations together, rather than individual stations. In addition, projected transit ridership increases as reported by the BPM at individual transit stations (including commuter rail or bus stations, park-and-ride facilities, and subway stations) were also evaluated to forecast the number of new vehicle trips they would create at each of the localized station groupings. As described in Section 4D.3 transportation modeling predicts that increases in vehicular trips to public transit would be highest at and near commuter rail and park-and-ride facilities, and, relatively, there would be much lower increases in vehicular trips to subway stations, light rail, and other modes of public transit without dedicated commuter parking facilities nearby. Although there could initially be some modest level of vehicular traffic searching for parking in neighborhoods outside the Manhattan CBD to avoid the toll, the behavior would most likely be short-lived as part of the adjustment process. Time spent by motorists searching unsuccessfully for free, available parking just outside the Manhattan CBD boundary would eventually result in the outcomes anticipated by the transportation modeling, which forecasts an overall reduction in vehicular traffic and an increase in transit use in the regional study area.

Based on the BPM results, the increase in commuters at individual stations or park-and-ride facilities outside the Manhattan CBD would be distributed throughout the region, and no locations would have increases in vehicle trips of 50 or more vehicles in the peak hour for any tolling scenario. In the Regional Study Area outside New York City, the increase in transit ridership from the Project would primarily be served by commuter rail and bus. Commuter and intercity rail make up 11.4 percent of AM peak-period person-trips to and from the Manhattan CBD on an average weekday (see Subchapter 4C, "Transportation: Transit"). As stated in Subchapter 4C state, "MTA bus services account for approximately 1.6 percent of all trips into and out of the Manhattan CBD. NJ TRANSIT bus service carries about 5.3 percent of all trips. Other private bus carriers (such as Greyhound, Coach USA, Academy, DeCamp, and Lakeland) with service to the Port Authority Bus Terminal and on-street in Manhattan account for less than 1 percent of all trips into and out of the Manhattan CBD." Therefore, the 0.7 to 1.6 percent increase in transit usage from the Project (see Table 4A-8 in Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling") would be distributed among 400 commuter rail stations consisting of Metro-North, LIRR, and NJ TRANSIT, The PATH service, MTA bus, NJ TRANSIT Bus, and private carriers, which would not generate more than 50 vehicles per hour at any transit station or commuter park-and-ride location. Moreover, the new vehicle trips at stations would include some customers who would be dropped off without parking and therefore would not add to the demand for parking. Because other modes of public transit in the regional study area (e.g., subways, light rail) would incur even fewer additional vehicle trips as a result of the Project, those locations would also not exceed 50 more vehicles in the peak hour for any tolling scenario. Consequently, using the tiered methodology of the *CEQR Technical Manual* for analysis of parking, no detailed analysis of parking is warranted, and it can therefore be concluded that no adverse effect would occur to parking conditions at locations in the regional study area.

Although there would be no adverse effect on parking utilization based on the *CEQR Technical Manual* methodology, the Project would generate parking demand near some public transit facilities in the regional study area, which would exceed supply if the facility is currently at or over capacity.

NEW YORK CITY OUTSIDE THE MANHATTAN CBD

With the CBD Tolling Alternative, the number of commuters and visitors to the Manhattan CBD who would use transit for their journey would increase in all tolling scenarios. As described in Subchapter 4A, the change in the transit mode share would range from an increase of 1.0 percent (Tolling Scenario B) to 2.3 percent (Tolling Scenario E). Some of these new transit users would drive to transit stations in New York City outside the Manhattan CBD to access transit to complete their journey. However, based on lower auto ownership rates and lack of parking availability in New York City, as compared to the regional study area outside New York City, the driving trips to parking would be at far lower numbers than commuter rail and park-and-ride facilities described in the regional study area. Consequently, the CBD Tolling Alternative would slightly increase the number of drivers who would seek parking near transit facilities in New York City outside the Manhattan CBD.

Based on the BPM results, the increase in the number of travelers at individual transit facilities in New York City outside the Manhattan CBD would be widely distributed. Within New York City, the 0.7 to 1.6 percent increase in transit usage from the Project would be distributed among commuter rail and subway stations within New York City. Subways, which carry 61.9 percent of these commuters, most often do not have dedicated parking facilities and little to no available on-street or off-street parking nearby. Parking at commuter rail stations within New York City is also very limited. Moreover, the new vehicle trips at transit facilities would include some customers who would be dropped off without parking and therefore would not add to the demand for parking. According to Metro-North Railroad and Long Island Rail Road data, approximately 50 percent and 60 percent of transit passengers, respectively, drive and park to access stations, on average, during the AM peak period.

Applying an average, regional vehicle occupancy factor of 1.10 from 2012 to 2016 Census Transportation Planning Products Reverse Journey to Work data to the new transit riders that are distributed across transit stations within the study area, no station would exceed 32 vehicles per hour (vph) at commuter rail stations or 28 vph at subway stations. Consequently, using the tiered methodology of the *CEQR Technical Manual*, no adverse effect would occur to parking conditions at locations in New York City outside the Manhattan CBD.

There is potential that the CBD Tolling Alternative would increase parking demand immediately outside the Manhattan CBD in the neighborhoods just north of the Manhattan CBD boundary at 60th Street (the Upper East Side and Upper West Side); see **Figure 4D-2** for their locations. Modeling conducted for this Project using the BPM shows that the number of cars on each of the avenues immediately north of 60th Street would decrease under all tolling scenarios; therefore, there would not be an increase in parking demand in those neighborhoods. However, there may be economic considerations and, as described in **Chapter 6, "Economic Conditions," Section 6.4.3.2,** if an increase in demand were to occur just north of the 60th Street Manhattan CBD boundary, that demand would be accommodated either by the existing off-street parking spaces where available or—if there were capacity constraints—through upward adjustments in parking fees. These factors would likely offset potential changes in parking behavior resulting from the CBD Tolling Alternative. In any case, as noted earlier in the discussion of the *CEQR Technical Manual* methodology used to assess parking changes associated with projects in New York City, increases in parking demand that cause parking shortfalls in Parking Zones 1 and 2 are not considered adverse effects (see **Figure 4D-1**).

Although there would be no adverse effect on parking utilization based on the *CEQR Technical Manual* methodology, the Project would generate parking demand outside the Manhattan CBD, which could exceed supply if the area is currently at or over capacity. To further examine the potential effects of the Project on parking supply and demand, the MTA Reform and Traffic Mobility Act states that the City of New York must study the effects of the Project on parking within and around the Manhattan CBD, and a report must be completed 18 months after the Project commences.

MANHATTAN CBD

The CBD Tolling Alternative would decrease the number of daily private vehicle trips to the Manhattan CBD under all tolling scenarios. As shown in **Table 4A-9 in Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the decrease in vehicle trips would range from 15,536 trips by private vehicle (drive alone or carpool) in Tolling Scenario A to approximately 41,936 trips by private vehicle (drive alone or carpool) in Tolling Scenario E. The decrease in vehicle trips would also result in a decrease in parking demand in the Manhattan CBD. While the demand for parking spaces in the Manhattan CBD from residents within the Manhattan CBD would likely generally remain unchanged, the demand from those driving into the Manhattan CBD each day from other locations would decrease in comparison to the No Action Alternative. This reduction would be spread across the approximately 600 off-street parking facilities with nearly 90,000 parking spaces in the Manhattan CBD as well as the numerous on-street parking spaces in the Manhattan CBD. (Chapter 6, "Economic Conditions," provides an analysis of the potential economic effects of the CBD Tolling Alternative on the off-street parking industry in the Manhattan CBD.) Therefore, the CBD Tolling Alternative would not create or exacerbate a parking shortfall in the Manhattan CBD.

4D.5 CONCLUSION

Most of the parking facilities near transit stations are well-used with limited available capacity, and the Project would generate parking demand near some public transit facilities in the regional study area, which would exceed supply if the facility is currently at or over capacity. The increase in commuters at individual stations or park-and-ride facilities would be distributed throughout the region, and no locations would have increases in vehicle trips of 50 or more vehicles in the peak hour for any tolling scenario. Therefore, no adverse effect on parking conditions would occur at locations in the regional study area.

The Project would generate parking demand outside the Manhattan CBD, which could exceed supply if the area is currently at or over capacity. To further examine the potential effects of the Project on parking supply and demand, the MTA Reform and Traffic Mobility Act states that the City of New York must study the effects of the Project on parking within and around the Manhattan CBD, and a report must be completed 18 months after the Project commences.

While the demand for parking spaces in the Manhattan CBD from residents within the Manhattan CBD would likely generally remain unchanged, the demand from those driving into the Manhattan CBD each day from other locations would decrease in comparison to the No Action Alternative.

Table 4D-1 summarizes the effects of the CBD Tolling Alternative on parking.

Table 4D-1. Summary of Effects of the CBD Tolling Alternative on Parking

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
All tolling scenarios would result in a reduction in parking demand within the Manhattan CBD of a similar magnitude to the reduction in auto trips into the Manhattan CBD. With a shift from driving to transit, there would be increased parking demand at subway and commuter rail stations and park-and-ride facilities outside the Manhattan CBD.	Reduction in parking demand due to reduction in auto trips to the Manhattan CBD; small changes in parking demand at transit facilities outside the Manhattan CBD, corresponding to increased commuter rail and subway ridership	No	**No mitigation needed.** No adverse effects.

4E. Pedestrians and Bicycles

4E.1 INTRODUCTION

This subchapter describes the potential effects of the CBD Tolling Alternative on pedestrian circulation; bicycle routes and bicycle infrastructure; and vehicular, pedestrian, and bicycle safety.

The regional study area for this subchapter includes commuter and intercity rail stations providing service along routes terminating within or near the Manhattan CBD, and bus stations, light rail and subway stations, ferry stops, and a tramway station ("transit stations") in the 28-county regional study area. Transportation modeling predicts that increases in pedestrian and bicycle trips to/from public transit would be highest at and near commuter rail and subway stations with higher ridership and high occurrences of walk/bike mode share, and this subchapter examines the potential effects of implementing the CBD Tolling Alternative at such locations. The modeling shows that there would be lower increases in new trips on light rail, buses, ferries, and other modes of public transit with lower ridership and/or higher occurrences of vehicular mode share.

The first part of this subchapter summarizes potential changes in pedestrian circulation near transit stations in the regional study area that would result in an increase in passenger activity from the Project. The second part of this subchapter presents a qualitative assessment of the Project's effects on existing and future bicycle facilities (i.e., on-street bicycle lanes or shared-lane routes), including bicycle trips generated by the Project's forecast increased activity at and near transit stations. The final section of this subchapter is an assessment of vehicular, bicycle, and pedestrian safety for intersections where detailed pedestrian analyses were performed.

4E.2 PEDESTRIAN CIRCULATION

4E.2.1 Methodology

The analysis of pedestrian circulation in this subchapter considers the potential for increased crowding on sidewalks, corners, and crosswalks at or around transit stations where the CBD Tolling Alternative is predicted to increase the number of passengers. This would occur because of changes to travel patterns, where some people would no longer drive to the Manhattan CBD and instead use transit to travel there.

This analysis was conducted using the methodologies and effects criteria outlined in the City of New York's *CEQR Technical Manual*. The FHWA and NYSDOT have design criteria for pedestrian facilities, but the guidance does not lay out procedures to identify potential adverse effects from project-generated increases in foot or bicycle traffic in dense urban areas such as New York City. It should be noted that *CEQR Technical Manual* guidance does not conflict with the Federal and state design criteria for pedestrian and bicycle facilities.

Using the *CEQR Technical Manual* methodologies, the analysis included the following steps:

- Based on the New York Metropolitan Transportation Council (NYMTC) Best Practice Manual (BPM) results for the Project (**Subchapter 4C, "Transportation: Transit"**), the analysis identified all transit stations where the CBD Tolling Alternative would result in 200 or more new pedestrian trips in the busiest hour for any tolling scenario. (The busiest hour is the "peak hour," and was based on observed pedestrian conditions; this was not necessarily the same peak hour that was used for the traffic analyses discussed in **Subchapter 4B, "Transportation: Highways and Local Intersections."**)
- For transit stations where the CBD Tolling Alternative would result in 200 or more new pedestrian trips in the peak hour for any tolling scenario, the analysis identified specific locations—such as at a particular intersection—that would have an increase of 200 or more new pedestrian trips in the peak hour. Based on the *CEQR Technical Manual* methodology, this is the level of new pedestrian trips with the potential to result in an adverse effect on pedestrian flows. For these transit stations, additional analysis was conducted of the effects of additional pedestrians resulting from the Project.
- For transit stations where the CBD Tolling Alternative would result in 200 or more new pedestrian trips at a specific location in the peak hour for any tolling scenario, the analysis involved assigning those trips along the most direct and logical routes to workplaces, residences, and other key destinations to identify individual pedestrian elements that would experience an increase in pedestrian activity in the peak hour. Pedestrian elements are defined as the street components used by people walking, including sidewalks, crosswalks, and street corners (called "corner reservoirs"[1]). Transit elements such as subway station control area, stairs, escalators, and platforms that are not considered pedestrian elements are described in **Subchapter 4C, "Transportation: Transit"**; therefore, these elements are excluded from the discussion below. This quantified analysis used the methodologies presented in the 2010 *Highway Capacity Manual*. Using these methodologies, the primary performance measure for pedestrian circulation is pedestrian space, expressed as square feet per pedestrian (SFP), which indicates the quality of pedestrian movement and comfort. The calculation of SFP was based on the pedestrian volumes by direction, the effective sidewalk or walkway width, and pedestrians' average walking speeds. The SFP formed the basis for a sidewalk level of service (LOS) analysis.[2]
- At transit stations where the increase in pedestrians would be fewer than 200 people in the peak hour at any specific location, no adverse effect would occur to pedestrian conditions for any tolling scenario, based on the *CEQR Technical Manual* guidance.

As part of the analyses, data regarding existing pedestrian volumes as well as traffic operations and volumes (for turning vehicles that conflict with pedestrians within a crosswalk) were collected in June and October 2019 at locations identified later in this subchapter. These data were collected during the weekday AM,

[1] As described in **Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses,"** corner reservoirs are the corner areas of sidewalks, serving both standing pedestrians (queued to cross a street) and circulating pedestrians (crossing the street or moving around the corner).

[2] As described in **Appendix 4E**, LOS is a scale used to describe the operations of traffic, transit, or pedestrian facilities based on quantified information. LOS ranges from A (uncongested) to F (substantially congested/poor operation). The specific parameters used to define LOS vary by the type of analysis.

midday, and PM peak periods (7:00 a.m. to 10:00 a.m., 11:00 a.m. to 2:00 p.m., and 4:00 p.m. to 7:00 p.m., respectively). Inventories of total and effective widths, crosswalk lengths, street furniture, and other obstructions were conducted to provide appropriate inputs for the operational analyses. NYCDOT provided official traffic signal timings for the analysis locations.

An annual background growth rate of 0.50 percent was conservatively applied to estimate the No Action Alternative pedestrian volumes in the Manhattan CBD at the specific locations analyzed (to account for discrete trip-making from large development projects underway near the analysis locations). Note that this subchapter did apply a background growth factor while **Subchapter 4B, "Transportation: Highways and Local Intersections," and Subchapter 4C, "Transportation: Transit,"** did not because, on a broader basis, the pre-COVID-19 pandemic traffic and transit conditions would be representative of the 2023 analysis year. MTA anticipates that transit ridership—and therefore pedestrian activity surrounding transit stations—will reach previous levels several years after the 2020 decline in ridership.[3]

Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses," presents details on the *CEQR Technical Manual* analysis methodologies, including adverse effect criteria**.**

TOLLING SCENARIO SELECTED FOR THIS PEDESTRIAN ANALYSIS

The tolling scenario that would result in the greatest increase in new pedestrian trips at transit stations within the Manhattan CBD was used for quantified analysis.[4] Based on the BPM results (**Subchapter 4C, "Transportation: Transit"**), the representative tolling scenario with the most effects is Tolling Scenario E, which is modeled to result in the largest number of new transit riders and therefore would add the highest pedestrian volumes on the sidewalks, street corners, and crosswalks adjacent to transit stations within the Manhattan CBD. Other tolling scenarios would generate fewer new pedestrian trips. (See **Chapter 2, "Project Alternatives,"** for a description of the tolling scenarios evaluated.)

LOCATIONS FOR PEDESTRIAN ANALYSIS

As discussed earlier in this subchapter, the first steps in the analysis were to identify transit stations throughout the 28-county region where the CBD Tolling Alternative would add 200 or more new pedestrian trips in the peak hour, and then to identify any of those transit stations where the CBD Tolling Alternative would add 200 or more new pedestrian trips on any individual pedestrian element. **Figure 4E-1** shows the pedestrian analysis study area. Most transit stations in the region—both within and outside the Manhattan CBD—would have an increase of fewer than 200 peak-hour pedestrian trips under the CBD Tolling Alternative. Based on the BPM results, the CBD Tolling Alternative (Tolling Scenario E) would result in more than 200 new peak-hour pedestrian trips at the 16 transit stations identified in **Table 4E-1**.

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3 As described in **Subchapter 4C, "Transportation: Transit,"** public transit ridership may reach 80 to 92 percent of pre-pandemic levels by end of 2024 according to an MTA-commissioned analysis prepared by McKinsey & Company.

4 As described in **Chapter 2, "Project Alternatives,"** this document evaluates multiple tolling scenarios to identify the range of potential effects that could occur from implementing the Project. These tolling scenarios have a range of different toll amounts and toll structures, such as crossing credits, discounts, and/or exemptions. Ultimately, the TBTA Board would determine the toll amounts and toll structure to be implemented, which might differ from the tolling scenarios evaluated in this document.

Figure 4E-1. Pedestrian Analysis Study Area

Sources: ArcGIS Online, https://www.arcgis.com/index.html.

Table 4E-1. Transit Station Pedestrian Trip Assessment

TRANSIT STATIONS THAT WOULD HAVE MORE THAN 200 NEW PEDESTRIANS PER HOUR	INDIVIDUAL PEDESTRIAN ELEMENT THAT WOULD HAVE MORE THAN 200 NEW PEDESTRIANS PER HOUR
1. 14 Street–Union Square, Manhattan CBD (Nos. 4/5/6, and L/N/R/Q/W subway lines)	No
2. Herald Square/Penn Station New York, Manhattan CBD, includes the following: a. 34 Street–Herald Square subway station (B/D/F/ M/N/Q/R/W subway lines) b. 34 Street–Penn Station subway station (Nos. 1/2/3 subway lines) c. 34 Street–Penn Station subway station (A/C/E subway lines) d. 33rd Street Station (PATH) e. New York Pennsylvania Station (Amtrak, LIRR, NJ TRANSIT)	Yes
3. 42 Street–Bryant Park, Manhattan CBD (B/D/F/M subway lines and connection to Fifth Avenue [No. 7 subway line])	No
4. 47-50 Streets–Rockefeller Center, Manhattan CBD (B/D/F/M subway lines)	No
5. Broadway–Lafayette Street, Manhattan CBD (B/D/F/M and No. 6 subway lines)	No
6. Canal Street, Manhattan CBD (J/N/Q/R/W/Z and No. 6 subway lines)	No
7. Canal Street, Manhattan CBD (A/C/E subway lines)	No
8. World Trade Center/Fulton Street, Manhattan CBD, includes the following: a. Fulton Street subway stations (Nos. 2/3/4/5 and A/C/J/Z subway lines) b. World Trade Center Station (PATH) c. Cortlandt Street Station (R/W subway lines)	Yes
9. Flushing Main Street, Queens County, New York (No. 7 subway line)	No
10. Atlantic Terminal, Kings County (Brooklyn), New York, includes the following: a. Atlantic Avenue–Barclays Center subway station (Nos. 2/3/4/5 and B/D/N/Q/R/W subway lines) b. Atlantic Terminal (LIRR)	No
11. Grand Central Terminal, Manhattan CBD, includes the following: a. 42 Street–Grand Central subway station (Nos. 4/5/6/7 and S subway lines) b. Grand Central Terminal (Metro-North Railroad)	No
12. Lexington Avenue/53 Street, Manhattan CBD (E/M subway lines and connection to 51 Street [No. 6 subway line])	No
13. Second Avenue, Manhattan CBD (F/M subway lines)	No
14. Wall Street, Manhattan CBD (Nos. 2/3 subway lines)	No
15. Secaucus, Hudson County, New Jersey (NJ TRANSIT)	No
16. Hoboken Terminal, Hudson County, New Jersey (PATH and NJ TRANSIT)	No

Source: BPM Results

Following the steps described in the discussion of methodology, the following two areas (**Table 4E-1 and Figure 4E-1**) would have more than 200 new pedestrians in the peak hour at an individual pedestrian element (i.e., crosswalk, sidewalk, or corner reservoir):

- Herald Square/Penn Station New York
- World Trade Center/Fulton Street

Although 34 Street–Herald Square and 34 Street–Penn Station are separate stations, the effect of predicted pedestrian trips resulting from the CBD Tolling Alternative at these two stations were considered together, because the stations are in proximity to one another and many of the pedestrian routings to and from each station would overlap. Similarly, pedestrian trips resulting from the CBD Tolling Alternative at the Cortlandt Street Station (R/W subway lines), WTC Cortland Street (1), and World Trade Center (PATH and E subway line) were considered together with Fulton Street because many of the pedestrian routings to and from each station would be in proximity and would share primary pedestrian routes. Therefore, Herald Square/Penn Station New York and World Trade Center/Fulton Street were considered as areas rather than stations in the pedestrian conditions analysis.

4E.2.2 Affected Environment

Existing pedestrian and traffic data were collected in June and October 2019 at the analysis locations adjacent to Herald Square/Penn Station New York and World Trade Center/Fulton Street. As previously described, the count data is conservative for characterizing existing (2021) pedestrian conditions. Peak-hour pedestrian volumes were tabulated from the peak-period pedestrian data collected in June 2019. Based on the collected data, the weekday AM and PM peak hours of pedestrian volumes at both analysis areas were 8:15 a.m. to 9:15 a.m. and 5:00 p.m. to 6:00 p.m., respectively, representing the peak work arrival and departure times in and around the transit facilities. (Midday pedestrian circulation would not vary because the predominant Project-generated change in activity would be during the weekday AM and PM peak hours when commuters would use transit in higher numbers. During the midday peak hour, commuters would mainly have the same pedestrian travel patterns irrespective of how the Project would change the mode shift in the AM and PM peak-hour work trip.) Using the methodology presented for pedestrian circulation, this section summarizes, and **Table 4E-2** presents, the LOS analysis results for the study area pedestrian elements near the two transit station areas**. Figure 4E-2** presents the locations of all analyzed pedestrian elements. (**Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses,"** presents the pedestrian LOS tables and peak-hour pedestrian volume figures.)

Table 4E-2. Existing (2021) Conditions Pedestrian Analysis Results (2019)

TRANSIT STATION AREA	PEAK HOUR	PEDESTRIAN ELEMENT	NUMBER OF ANALYSIS LOCATIONS	NUMBER OF LOCATIONS THAT OPERATE AT			
				LOS C OR BETTER	LOS D	LOS E	LOS F
Herald Square/Penn Station New York	AM	Sidewalks	6	5	1	0	0
		Corner Reservoirs	5	5	0	0	0
		Crosswalks	3	1	0	2	0
	PM	Sidewalks	6	5	1	0	0
		Corner Reservoirs	5	5	0	0	0
		Crosswalks	3	1	0	1	1
World Trade Center/Fulton Street	AM	Sidewalks	1	1	0	0	0
		Corner Reservoirs	1	1	0	0	0
	PM	Sidewalks	1	1	0	0	0
		Corner Reservoirs	1	1	0	0	0

Source: AKRF, Inc.

The following two sections provide further detail on the pedestrian elements and results presented in the above table, and briefly describe the process by which the pedestrian elements were selected for detailed analysis using the previously presented methodology.

HERALD SQUARE/PENN STATION NEW YORK

The detailed assignment of pedestrian trips near Herald Square/Penn Station New York resulted in 2,051 new pedestrian trips in both AM and PM peak hours, which would result in 200 or more peak-hour pedestrian trips at the following 14 pedestrian elements:

- North sidewalk of West 34th Street between Seventh and Eighth Avenues
- West sidewalk of Eighth Avenue between West 35th and West 34th Streets
- North sidewalk of West 34th Street between Broadway and Seventh Avenue
- North sidewalk of West 34th Street between Seventh Avenue and Broadway
- North sidewalk along West 34th Street between Sixth and Fifth Avenues
- North sidewalk of West 32nd Street between Sixth and Seventh Avenues
- Northwest corner of Eighth Avenue and West 34th Street
- Southwest corner of Eighth Avenue and West 34th Street
- Northeast corner of Eighth Avenue and West 34th Street
- Northeast corner of Sixth Avenue and West 34th Street
- Northeast corner of Seventh Avenue and West 32nd Street
- North crosswalk of Eighth Avenue and West 34th Street
- North crosswalk of Sixth Avenue and West 34th Street
- North crosswalk of Seventh Avenue and West 32nd Street

Most of these pedestrian elements operate at LOS D (which is considered marginally acceptable) operations or better. The following locations operate at congested LOS E or LOS F conditions:

- The north crosswalk of Sixth Avenue and West 34th Street operates at LOS E in the AM peak hour and LOS F in the PM peak hour.
- The north crosswalk of Seventh Avenue and West 32nd Street operates at LOS E during the AM and PM peak hours.

WORLD TRADE CENTER/FULTON STREET

Based on the detailed assignment of pedestrian trips near World Trade Center/Fulton Street (1,222 new pedestrian trips in the peak hour), the CBD Tolling Alternative would result in 200 or more peak-hour pedestrian trips at the following two pedestrian elements:

- West sidewalk along Broadway between Liberty and Cortlandt Streets
- Northwest corner of Broadway and Liberty Street

Both pedestrian elements operate at acceptable LOS C or better during both peak hours.

4E.2.3 Environmental Consequences

NO ACTION ALTERNATIVE

Under the No Action Alternative, the Project Sponsors would not implement a vehicular tolling program. Pedestrian volumes would be similar to pre-pandemic levels as described above. (No Action Alternative pedestrian volumes were increased by 0.5 percent to reflect potential growth from new development in the area.) In the No Action Alternative, all the analysis locations would continue to operate at the same LOS as existing conditions. (**Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses,"** presents the detailed pedestrian LOS tables and peak-hour pedestrian volume figures.)

CBD TOLLING ALTERNATIVE

The CBD Tolling Alternative would result in increased pedestrian activity near transit stations throughout the regional study area. However, the increased volumes at many locations would not adversely affect pedestrian circulation or the LOS of sidewalks, corners, and crosswalks. At most transit stations presented in **Table 4E-1**, the volume of pedestrian trips would be distributed among different station entrances and different locations around the station, and the CBD Tolling Alternative would not result in adverse effects on pedestrian conditions. Additionally, because the additional volume of pedestrian trips generated by the Project adjacent to all other transit facilities in the regional study area would be even lower than at commuter rail and subway stations presented in **Table 4E-1**, the CBD Tolling Alternative would not result in adverse effects on pedestrian conditions at other transit facilities.

For the Herald Square/Penn Station New York and World Trade Center/Fulton Street areas, the projected increments for Tolling Scenario E would exceed 200 trips in the peak hour; therefore, an analysis was conducted to identify any adverse effects on pedestrian circulation. The pedestrian volumes generated by Tolling Scenario E were added to the No Action Alternative volumes to determine the CBD Tolling Alternative volumes (**Table 4E-3**). (**Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses,"** presents the detailed pedestrian LOS tables and peak-hour pedestrian volume figures.)

Table 4E-3. CBD Tolling Alternative 2023 Pedestrian Analysis Results

TRANSIT STATION AREA	PEAK HOUR	PEDESTRIAN ELEMENT	NUMBER OF ANALYSIS LOCATIONS	NUMBER OF LOCATIONS THAT WOULD OPERATE AT			
				LOS C OR BETTER	LOS D	LOS E	LOS F
Herald Square/Penn Station New York	AM	Sidewalks	6	4	2	0	0
		Corner Reservoirs	5	5	0	0	0
		Crosswalks	3	1	0	2	0
	PM	Sidewalks	6	5	1	0	0
		Corner Reservoirs	5	5	0	0	0
		Crosswalks	3	1	0	1	1
World Trade Center/Fulton Street	AM	Sidewalks	1	1	0	0	0
		Corner Reservoirs	1	0	1	0	0
	PM	Sidewalks	1	1	0	0	0
		Corner Reservoirs	1	1	0	0	0

Source: AKRF, Inc.

Herald Square/Penn Station New York

As under existing and No Action Alternative conditions, with implementation of the CBD Tolling Alternative, all analysis locations near Herald Square/Penn Station New York would operate at marginally acceptable LOS D or better except for the following:

- The north crosswalk of Sixth Avenue and West 34th Street would operate at LOS E in the AM peak hour and LOS F in the PM peak hour.
- The north crosswalk of Seventh Avenue and West 32nd Street would operate at LOS E during the AM and PM peak hours.

Although there would be no change in the number of congested LOS E or LOS F pedestrian elements with or without the Project, there would be slight deteriorations in SFP values. Based on the *CEQR Technical Manual* adverse effects criteria (**Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses"**), the CBD Tolling Alternative could potentially result in adverse pedestrian effects near Herald Square/Penn Station New York, as follows:

- The west sidewalk of Eighth Avenue between West 34th and West 35th Streets would operate at LOS D with a decrease of 3.2 SFP in the AM peak hour and 2.9 SFP in the PM peak hour compared to the No Action Alternative.
- The Sixth Avenue and West 34th Street north crosswalk would operate at LOS E with a decrease of 2.2 SFP in the AM peak hour and at LOS F with a decrease of 0.8 SFP in the PM peak hour compared to the No Action Alternative.
- The Seventh Avenue and West 32nd Street north crosswalk would operate at LOS E with a decrease of 1.3 SFP in the AM peak hour compared to the No Action Alternative.

Figure 4E-2 shows the locations of adverse effects. The adverse effects at these three locations will be mitigated through standard measures that will be implemented as part of the Project under any tolling scenario, if needed. None of these measures would affect existing bicycle infrastructure in the street. Any additional vehicular traffic generated by increased transit activity related to the Project at transit hubs in the 28-county regional study area is not anticipated to measurably reduce safety conditions because this modest increased activity would be along routes already traveled by high volumes of traffic. Increased pedestrian space on sidewalks and crosswalks can be achieved via physical widening and/or removing or relocating obstructions. **Table 4E-4** shows the recommended measures and predicted conditions with their implementation. While potential measures are shown, each specific treatment for attaining increased pedestrian space at the affected locations will be developed in coordination with NYCDOT prior to its implementation. The Project Sponsors will undertake monitoring at the locations near Herald Square/Penn Station with identified potential adverse effects, including pre-implementation baselining and monitoring before and after the first year after implementation of the Project, starting no sooner than two months after implementation to account for a potential initial period of fluctuation in travel behavior.[5]

[5] For London's congestion zone, a Transit Cooperative Research Program report noted that traffic patterns stabilized at six weeks after charging began. See Chapter 14, "Road Value Pricing" in *Transit Cooperative Research Program Report 95: Traveler Response to Transportation System Changes*. p. 14-13. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c14.pdf.

Figure 4E-2. Adverse Pedestrian Effects near Herald Square/Penn Station New York

Sources: ArcGIS Online, https://www.arcgis.com/index.html.

Table 4E-4. No Action Alternative, CBD Tolling Alternative, and CBD Tolling Alternative with Improvement Measures—Pedestrian Level of Service Analysis—Herald Square/Penn Station New York

LOCATION	PROJECT IMPROVEMENT MEASURES	NO ACTION		CBD TOLLING		CBD TOLLING (IMPROVED)	
		SFP	LOS	SFP	LOS	SFP	LOS
Weekday AM Peak Hour							
West sidewalk along Eighth Avenue between West 34th Street and West 35th Street	Provide 0.5 feet of additional width by removing constricting sidewalk obstruction (relocate movable planter so it is not directly across from parking sign pole; easy to implement).	31.5	D	28.3	D	31.4	D
Sixth Avenue and West 34th Street: north crosswalk	Widen the crosswalk by 2 feet (easy to implement).	12.8	E	10.6	E	11.8	E
Seventh Avenue and West 32nd Street: north crosswalk	Widen the crosswalk by 1 foot (easy to implement).	12.7	E	11.4	E	12.0	E
Weekday PM Peak Hour							
West sidewalk along Eighth Avenue between West 34th Street and West 35th Street	Provide 0.5 feet of additional width by removing constricting sidewalk obstruction (relocate movable planter so it is not directly across from parking sign pole; easy to implement).	28.6	D	25.7	D	28.7	D
Sixth Avenue and West 34th Street: north crosswalk	Widen the crosswalk by 2 feet (easy to implement).	6.8	F	6.0	F	6.8	F

Source: AKRF, Inc.

The monitoring results will be compared to the No Action SFP and LOS as well as the *CEQR Technical Manual* thresholds described above to validate the need for, and design of, mitigations such as crosswalk restriping, movable obstruction relocation, and other improvements as necessary to ensure there will be no adverse effects. Table 4E-4 also notes the relative ease of implementation of each recommended measure.

World Trade Center/Fulton Street

With implementation of the CBD Tolling Alternative, the west sidewalk of Broadway between Liberty and Cortlandt Streets during the AM and PM peak hours and the northwest corner of Broadway and Liberty Street during the PM peak hour would operate at LOS C or better. The northwest corner of Broadway and Liberty Street would operate at LOS D in the AM peak hour with a decrease of 1.9 SFP as compared to LOS C in the No Action Alternative. Based on the expected LOS and the *CEQR Technical Manual* adverse effects criteria, the CBD Tolling Alternative would not result in any adverse pedestrian effects at pedestrian elements near World Trade Center/Fulton Street.

4E.3 BICYCLES

4E.3.1 Methodology

Neither the New York State Environmental Quality Review Act nor the *CEQR Technical Manual* describe a methodology for quantitative capacity analysis of bicycle facilities or identification of adverse effects on bicycle facilities. Because the BPM is not capable of estimating new bicycle trips from the CBD Tolling Alternative, it was assumed that 2 percent of the AM and PM peak-hour Project-generated transit-to-walk trips to Manhattan CBD transit stations would be bicycle trips (reflecting the greatest concentration of potential new bicycle trips throughout the region). This distribution of bicycle mode share is based on the New York Metropolitan Transportation Council's *Hub Bound Travel Data Report 2019*, which presents data showing that 2 percent of all trips entering and leaving the Manhattan CBD on a typical weekday were made by bicycle. Using this assumption, a qualitative assessment of existing and future on-street bicycle facilities, including the expected increase in bicycle trips at Herald Square/Penn Station New York and World Trade Center/Fulton Street, was prepared. The qualitative assessment compares the inventory of existing and proposed bicycle facilities surrounding station areas that would generate the highest volume of bicycle trips from the Project to the estimated volume of peak-hour bicycle trips generated by the Project to determine the potential for adverse effects.

4E.3.2 Affected Environment

In recent years, New York City has expanded its bicycle network, including new bicycle lanes and upgrades to existing bicycle lanes. The network is well established within and around the Manhattan CBD. **Figure 4E-3** shows the City of New York's bicycle map for the Manhattan CBD. NYCDOT plans to continue adding new bicycle lanes and enhancing existing ones throughout the city both in and outside the Manhattan CBD.

In the Manhattan CBD, several north–south avenues and many cross-streets have bicycle lanes that provide delineated bicycle travel adjacent to or separated from vehicular traffic. The bicycle network also connects to dedicated bicycle paths on the bridges to Brooklyn, Queens, and the Bronx, via the Staten Island Ferry to Staten Island, and across the George Washington Bridge to New Jersey. Encircling much of Manhattan, dedicated bikeways or shared-use paths extend through the length of most of Hudson River Park and the West Side Highway/Route 9A from the southern tip of Manhattan to the island's northern boundary with few gaps. Dedicated bikeways or shared-use paths also extend along much of the East Side along the East River waterfront.[6] North–south avenues (First, Second, Sixth, Seventh, Eighth, and Ninth Avenues) have bicycle lanes, and crosstown (east–west) bicycle lanes through the Manhattan CBD generally run in pairs on adjacent one-way streets, with small intervals between pairs.

6 https://www1.nyc.gov/html/dot/downloads/pdf/nyc-bike-map-2021.pdf.

Figure 4E-3. Bicycle Routes in the Manhattan CBD

Source: NYCDOT and New York City Department of City Planning. May 2021. 2021 NYC Bike Map.

NYCDOT implemented bicycle infrastructure improvements in 2021 and has planned additional improvements in the near future. The CBD Tolling Alternative would not affect or prevent any of these planned improvements. The following recently implemented or planned pedestrian and bicycle improvements are within and near the Manhattan CBD:[7]

- Future conversion of Queensboro Bridge south and north outer roadways from a vehicular travel lane to pedestrian walkway and existing shared-use path to exclusive bike lane, respectively
- Conversion of a vehicular travel lane on the Brooklyn Bridge to a bicycle lane
- Creation of protected bicycle lane and parking along the following:
  - Columbus Avenue bicycle lane islands between West 59th Street and West 62nd Street
  - East 60th, East 61st, and East 62nd Streets between Fifth Avenue and York Avenue for Queensboro Bridge access
- Creation of bike lane adjacent to the median of Broadway from Columbus Circle to West 72nd Street

New York City has the nation's largest bicycle-sharing program—Citi Bike. People can rent bicycles at a kiosk or use a mobile app to pick up and return bicycles at any Citi Bike station. Approximately 1,300 Citi Bike stations with 20,000 bicycles are in New York City and approximately 260 Citi Bike stations with 6,000 bicycles are in the Manhattan CBD.[8] NYCDOT and Lyft (the operator of Citi Bike) plan to expand the system to serve additional neighborhoods by 2024. Citi Bike's Phase 3 plan will double the size of the Citi Bike service area and triple the number of shared bicycles.

4E.3.3 Environmental Consequences

NO ACTION ALTERNATIVE

In the No Action Alternative, there would not be a vehicular tolling program, and any changes in bicycling would likely result from background growth, improvements in cycling infrastructure and Citi Bike service, or new development in an area.

CBD TOLLING ALTERNATIVE

As described in **Section 4E.2.1**, the CBD Tolling Alternative would result in increases in peak-hour pedestrian volumes high enough to warrant detailed pedestrian analysis near the Herald Square/Penn Station New York and World Trade Center/Fulton Street transit hubs. Because expected higher bicycle use would be concentrated at transit hubs with the highest projected increases in pedestrian trips, these two areas have been assessed for bicycle effects. With up to 2,051 and 1,222 new pedestrian trips predicted in the peak hours, 41 and 24 new hourly bicycle trips would be generated by the Project at Herald Square/Penn Station New York and World Trade Center/Fulton Street, assuming a 2 percent bike share, respectively. Because there would be an average of fewer than one new bicycle trip per minute, these increases would be negligible compared to the magnitude of existing bicycle use adjacent to the two transit station complexes.

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7 NYCDOT, "Current Projects," https://www1.nyc.gov/html/dot/html/about/current-projects.shtml.
8 Citi Bike, https://www.citibikenyc.com/.

Outside the Manhattan CBD, the shift to bicycle use because of the CBD Tolling Alternative would not be substantial. It would be about 2 percent or less within New York City based on the assumptions above for stations within the Manhattan CBD. According to Long Island Rail Road and Metro-North Railroad data, less than 1 percent of commuters bike to their stations, Although the BPM cannot predict such activity, a small proportion of commuters would shift from automobiles to bicycles for their daily trips, depending on distance, available bicycle facilities, comfort, and other factors. Therefore, the total additional bicycle trips associated with the CBD Tolling Alternative would not result in any adverse effects on bicycle operations outside the Manhattan CBD.

4E.4 VEHICULAR AND PEDESTRIAN SAFETY

4E.4.1 Methodology

Pursuant to methodologies outlined in the *CEQR Technical Manual*, vehicular and pedestrian safety assessments were prepared for the same intersections for which detailed pedestrian analyses were conducted, adjacent to the areas of Herald Square/Penn Station New York and World Trade Center/Fulton Street. Crash data were obtained from NYCDOT for the most recent three-year period for which data are available (January 1, 2015, to December 31, 2017). The data quantify the total number of reportable crashes (defined as involving fatality, injury, or more than $1,000 in property damage), as well as a yearly breakdown of vehicular crashes with pedestrians and bicycles at each location.

Additionally, the curb pedestrian ramps at the corners selected for detailed analysis were assessed based on the Americans with Disabilities Act (ADA) regulations. The direction, location, and type of corner pedestrian ramps were evaluated to identify if the ramps meet minimum ADA compliance.

4E.4.2 Affected Environment

During the 2015–2017 period, the crash data reveals that 167 reportable crashes, consisting of 1 fatality, 116 injuries, and 63 pedestrian/bicyclist-related crashes occurred at the intersections in the areas of Herald Square/Penn Station New York and World Trade Center/Fulton Street. A rolling total of crash data[9] identifies three high-crash locations:

- West 34th Street at Eighth Avenue
- West 34th Street at Seventh Avenue
- West 34th Street at Sixth Avenue/Broadway

Each of these intersections experience high pedestrian volumes throughout the day.

To assess minimum ADA compliance of curb pedestrian ramps in the affected environment, observations were conducted using street view images captured in July and August 2021. At the northwest, northeast,

[9] As described in **Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses,"** high-crash locations are defined as locations where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent three-year period for which data are available. NYCDOT crash data does not contain non-reportable crashes, which make up a negligible portion of intersection crashes, because nearly all involve property damage exceeding $1,000 or an injury or fatality.

and southwest corners of Eighth Avenue and West 34th Street, northeast corners of Sixth Avenue and West 34th Street and Seventh Avenue and West 32nd Street, and northwest corner of Broadway and Liberty Street, none of the curb pedestrian ramps meet minimum ADA compliance. Additional information is provided in **Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses."** NYCDOT has an ongoing Pedestrian Ramp Program,[10] which is dedicated to upgrading and installing pedestrian ramps throughout New York City.

Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses," shows the total crash characteristics by intersection, as well as a breakdown of pedestrian and bicycle crashes by year and location. For the three high-crash locations, an examination of each pedestrian/bicyclist-related incident was conducted, along with a field audit of each intersection's geometric and operational conditions. These efforts, as detailed in **Appendix 4E, "Transportation: Supporting Documentation for Pedestrian Analyses,"** showed that causes for the recorded crashes vary and are mostly attributed to inattentiveness of and failure to yield—by motorists but also by pedestrians and bicyclists. As part of the City of New York's Vision Zero[11] initiative, many additional safety measures have been added to roadways and intersections across New York City.

4E.4.3 Environmental Consequences

NO ACTION ALTERNATIVE

In the No Action Alternative, there would not be a vehicular tolling program, and any changes in safety conditions at high-crash intersections or non-compliant ADA curb pedestrian ramps would likely result from changes in activity resulting from background growth or new development in an area.

CBD TOLLING ALTERNATIVE

The CBD Tolling Alternative would result in slight increases in pedestrian volumes at the three identified high-crash locations. The Project would not exacerbate safety concerns at the locations, which already experience high pedestrian volumes throughout the day. The CBD Tolling Alternative would also not result in substantial increases in pedestrian volumes or exacerbate safety concerns at other locations in the Manhattan CBD that do not already experience high pedestrian volumes throughout the day. Three locations near Herald Square could realize a degradation in the LOS because of the CBD Tolling Alternative, but the widening of a sidewalk through the removal of sidewalk obstructions and the widening of two crosswalks will address this potential degradation in the LOS. The CBD Tolling Alternative would not result in substantially modified geometric or operational traffic, pedestrian, or bicycle conditions, with or without recommended improvement measures, which would therefore not exacerbate safety concerns. Also, because of fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety. Therefore, the CBD Tolling Alternative would not result in any adverse effects on vehicular, pedestrian, and bicycle safety, and mitigation measures to address vehicular, pedestrian, and bicycle safety are not necessary.

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10 https://www1.nyc.gov/html/dot/html/pedestrians/pedramps.shtml.
11 https://www1.nyc.gov/content/visionzero/pages/.

4E.5 CONCLUSION

Using methodology presented in the *CEQR Technical Manual*, a detailed assessment of increases in pedestrian activity was warranted for areas around the Herald Square/Penn Station New York and World Trade Center/Fulton Street transit hubs in Manhattan.

- Herald Square/Penn Station New York in Midtown Manhattan where Penn Station New York (Amtrak and commuter rail), three subway stations serving multiple subway routes, a Port Authority Trans-Hudson (PATH) station, and commuter and local bus routes are located

- World Trade Center/Fulton Street in Lower Manhattan where a PATH station, multiple subway stations serving multiple subway routes, and local bus routes are located

Based on detailed analysis of the pedestrian elements at these locations that would experience more than 200 new peak-hour trips, there would be no adverse effect on pedestrian circulation except at three locations in the Harold Square/Penn Station study area. These effects would occur at two crosswalks on one sidewalk, and they will be mitigated with measures that are routinely implemented throughout the city. The Project Sponsors will monitor the affected locations before and after completion of the Project to validate the analysis results and will implement the necessary mitigation to alleviate adverse effects.

The bicycle network is well established within and around the Manhattan CBD, and additional bicycle trips generated by the Project would be negligible compared to the magnitude of existing bicycle use adjacent to transit station complexes. Therefore, the CBD Tolling Alternative would not result in any adverse effects on bicycle operations.

The CBD Tolling Alternative would not exacerbate safety concerns at the three identified high-crash locations within the study area, nor would it exacerbate safety concerns at other locations within or outside the Manhattan CBD that do not already experience high pedestrian volumes throughout the day. The CBD Tolling Alternative would not result in substantially modified geometric or operational traffic, pedestrian, or bicycle conditions that would exacerbate safety concerns. Because fewer vehicular trips would be entering and exiting the Manhattan CBD, the CBD Tolling Alternative could result in reduced traffic volumes at these locations, which could reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall increase in safety.

Table 4E-5 summarizes the effects of the CBD Tolling Alternative on pedestrians and bicycles.

Table 4E-5. Summary of Effects of the CBD Tolling Alternative on Pedestrians and Bicycles

TOPIC	SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Pedestrian Circulation	Increased pedestrian activity on sidewalks outside transit hubs because of increased transit use. At all but one location in the Manhattan CBD (Herald Square/Penn Station), the increase in transit riders would not generate enough new pedestrians to adversely affect pedestrian circulation in the station area. Outside the Manhattan CBD, transit usage at individual stations would not increase enough to adversely affect pedestrian conditions on nearby sidewalks, crosswalks, or corners.	Adverse effects on pedestrian circulation at one sidewalk segment and two crosswalks	Yes	**Mitigation needed.** The Project Sponsors will implement a monitoring plan at this location. The plan will include a baseline, specific timing, and a threshold for additional action. If that threshold is reached, the Project Sponsors will increase pedestrian space on sidewalks and crosswalks via physical widening and/or removing or relocating obstructions.
Bicycles	Small increases in bicycle trips near transit hubs and as a travel mode, both inside and outside the Manhattan CBD	Small increases in bicycle trips near transit hubs with highest increases in pedestrian trip share; some shifts from automobiles to bicycles	No	**No mitigation needed**. No adverse effects
Safety	No adverse effects	No substantial increases in pedestrian volumes or increased safety concerns, including at existing identified high-crash locations. Overall, fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety.	No	**No mitigation needed.** No adverse effects

5. Social Conditions

This chapter provides an overview of social conditions for the New York City region, the Manhattan CBD, and the neighborhoods where implementation of the CBD Tolling Alternative would have potential environmental consequences related to population characteristics and community cohesion, neighborhood character, and current public policy. This chapter relies on data from **Chapter 4, "Transportation,"** to evaluate the effects of predicted changes in travel behavior resulting from the CBD Tolling Alternative on social conditions.

To present the wide range of topics related to social conditions, the chapter is broken into three subchapters:

- **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion"**
- **Subchapter 5B, "Social Conditions: Neighborhood Character"**
- **Subchapter 5C, "Social Conditions: Public Policy"**

This and other chapters of this EA (in particular **Chapters 2, 3, 6, 15, 17, and Subchapters 4A, 4B, 4C, 4E, 5B, and 5C**) collectively provide information relevant to FHWA's guidance for a Community Impact Assessment.[1] The information is presented in this EA rather than in a stand-alone Community Impact Assessment report, and **Appendix 5A, "Social Conditions: Community Impact Assessment Summary Matrix,"** presents a matrix showing the elements of a Community Impact Assessment and where they can be found in this EA.

1 FHWA. 2018 Update. FHWA-PD-96-036. *Community Impact Assessment: A Quick Reference for Transportation*. www.fhwa.dot.gov/livability/cia/quick_reference/ciaguide_053118.pdf.

5A. Population Characteristics and Community Cohesion

5A.1 INTRODUCTION

This subchapter assesses whether changes to population characteristics or travel patterns resulting from implementation of the CBD Tolling Alternative would affect community cohesion, community facilities and services, and access to employment. It also evaluates the effects of the CBD Tolling Alternative on certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and nondriver populations. **Chapter 17, "Environmental Justice,"** presents an evaluation of the Project's effects on low-income and minority populations and an analysis of whether the Project would result in disproportionately high and adverse effects on minority and low-income populations in accordance with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

5A.2 METHODOLOGY

5A.2.1 Analysis Framework

FHWA's Technical Advisory T6640.8A provides guidance on the content of environmental documents prepared pursuant to NEPA and FHWA's procedures that implement NEPA.[2] In addition, FHWA's *Community Impact Assessment: A Quick Reference for Transportation* (Community Impact Assessment guidance) provides information on how to conduct a Community Impact Assessment and guidance on analyzing community impacts for transportation actions.[3] The Project Sponsors followed the guidance in these documents in preparing the analysis in this chapter. FHWA's Technical Advisory T6640.8A identifies categories of resources that project sponsors should consider when assessing the environmental consequences of their undertakings, and the Community Impact Assessment guidance identifies types of community impacts to consider.

Consistent with FHWA Technical Advisory T66040.8A and the FHWA Community Impact Assessment guidance, this subchapter provides an overview of key population characteristics in the New York City region and evaluates potential effects on community cohesion, community facilities and services, certain social groups, and access to employment.

Community cohesion is the degree to which groups of people with shared attributes or affinities—such as cultural, religious, artistic, or activity-based communities—can form and maintain communities that are not limited to any particular location or neighborhood. Community cohesion is usually expressed as a "sense of belonging" or a level of commitment to a community, or a strong attachment to neighbors,

2 FHWA. October 30, 1987. FHWA Technical Advisory T6640.8A, "Guidance for Preparing and Processing Environmental and Section 4(f) Documents." www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx#aa.

3 FHWA. 2018 Update. FHWA-PD-96-036. *Community Impact Assessment: A Quick Reference for Transportation*. www.fhwa.dot.gov/livability/cia/quick_reference/ciaguide_053118.pdf.

groups, and institutions, usually because of continued appreciation over time. FHWA Technical Advisory T66040.8A defines potential effects on community cohesion as, "[c]hanges in the neighborhoods or community cohesion for the various social groups as a result of the proposed action. These changes may be beneficial or adverse, and may include splitting neighborhoods, isolating a portion of a neighborhood or an ethnic group, generating new development, changing property values, or separating residents from community facilities, etc."[4] In addition, the FHWA Community Impact Assessment guidance identifies types of community impacts, including displacement of residents and adverse effects on public facilities. As such, this subchapter also considers Project effects related to the potential for residential displacement and effects on community facilities and services—such as public or publicly funded schools, libraries, childcare centers, health care facilities, and fire and police protection.

Consistent with FHWA Technical Advisory T66040.8A, this subchapter also addresses potential effects on certain social groups, such as elderly populations, persons with disabilities, transit-dependent populations (those who use transit as their primary mode for some or all trips, irrespective of vehicle ownership), and nondriver populations. Changes in travel patterns and accessibility can affect these population sub-groups as they may rely on certain modes of transportation or certain accessibility patterns.

5A.2.2 Study Area

The analysis of social conditions in this subchapter considers potential effects of the No Action Alternative and CBD Tolling Alternative on the 28-county region and the Manhattan CBD. The 28-county regional study is shown in **Figure 5A-1** and described in **Chapter 3, "Environmental Analysis Framework."** It includes New York City and the surrounding region, which represents the primary catchment area for trips to and from the Manhattan CBD.

5A.2.3 Data Sources

Unless otherwise noted, information on population characteristics is based on the U.S. Census Bureau's 2015–2019 American Community Survey (ACS) 5-Year Estimates. The evaluation of the Project's effects on these population characteristics is based on the results of comprehensive regional transportation modeling conducted for the Project as described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling."**

4 FHWA. October 30, 1987. FHWA Technical Advisory T6640.8A, "Guidance for Preparing and Processing Environmental and Section 4(f) Documents." www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx#aa.

5A.3 AFFECTED ENVIRONMENT

5A.3.1 Regional Context

The New York City metropolitan region is a very large and diverse area of some 12,500 square miles and a regional population of about 22.2 million residents. New York City is the center of the regional study area, which includes portions of three states—New York, New Jersey, and Connecticut—and is home to approximately 22.2 million residents according to the 2015–2019 ACS. **Figure 5A-1** shows the regional study area, with the five counties of New York City at the center, two counties to the east on Long Island, seven counties to the north of New York City in New York and Connecticut, and 14 counties to the west and south in New Jersey. The study area extends approximately 170 miles from east to west and approximately 175 miles from north to south. The region reflects a high level of social and economic diversity and its development patterns range from dense urban core areas in and around New York City to lower density suburban communities and low-density exurban areas.

The regional study area has a wide range of population densities, land uses, and development densities reflecting the long history of settlement patterns, the regional transportation network, and the location of the region's cities, communities, and neighborhoods. Other than large tracts of open space or lands owned by the State or Federal government, there are no unincorporated areas and there are more than 700 incorporated municipalities (boroughs, villages, towns, and cities) within the 28 counties of the regional study area. These incorporated municipalities range from small boroughs and villages—often with fewer than 5,000 residents, larger townships and towns, subregional urban areas, and cities. Large or small, these communities generally provide for essential community facilities and services and maintain their own planning, zoning, and development controls that define the character of the community. New York City is the urban center with its 8.4 million residents and, after New York City, the next largest city in the region is Newark in Essex County, New Jersey, with a population of approximately 281,000, followed by Jersey City in Hudson County, New Jersey, and Yonkers in Westchester County, New York, with populations of 262,000 and 200,000, respectively.

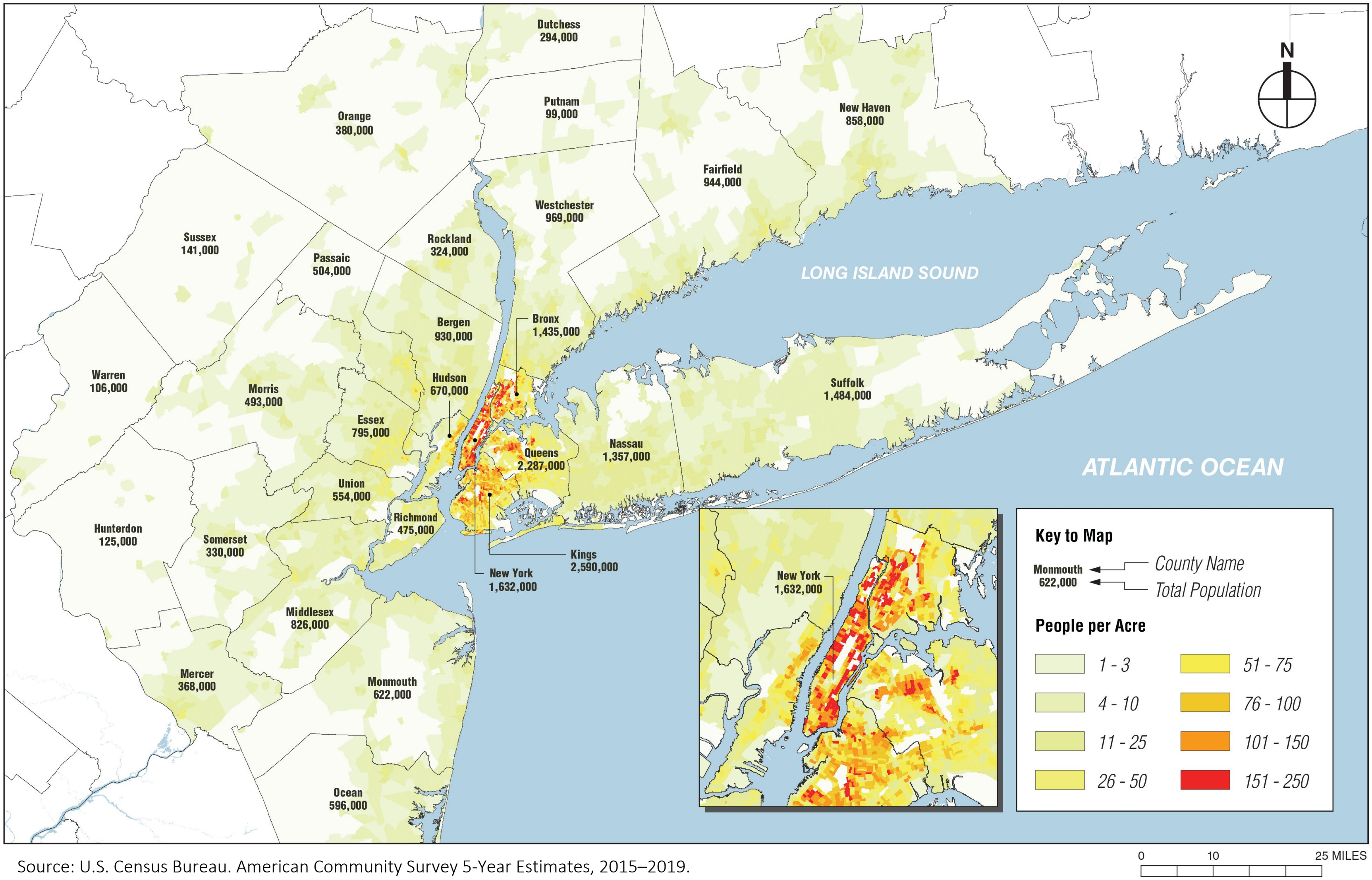
New York City is the most densely populated city in the United States.[5] As shown in **Figure 5A-2**, four of its five boroughs (counties)—the Bronx, Brooklyn, Manhattan, and Queens—are densely populated; in addition, the adjacent county across the Hudson River in New Jersey, Hudson County, is also densely populated. Other counties in the regional study area are more suburban in character, and density decreases at greater distance from New York City. New York City's population of 8.4 million people is approximately 38 percent of the regional population and yet its combined land area of 423 square miles represents only about 3.4 percent of the total land area of the region. The 28-county region is a mature metropolitan region with a long history of development patterns that are reflected in its transportation network and its population distribution.

[5] New York City Department of City Planning. www1.nyc.gov/site/planning/planning-level/nyc-population/newest-new-yorkers-2013.page.

Figure 5A-1. Regional Study Area

Source: ArcGIS Online, https://www.arcgis.com/index.html.

Figure 5A-2. Population and Density



Source: U.S. Census Bureau. American Community Survey 5-Year Estimates, 2015–2019.

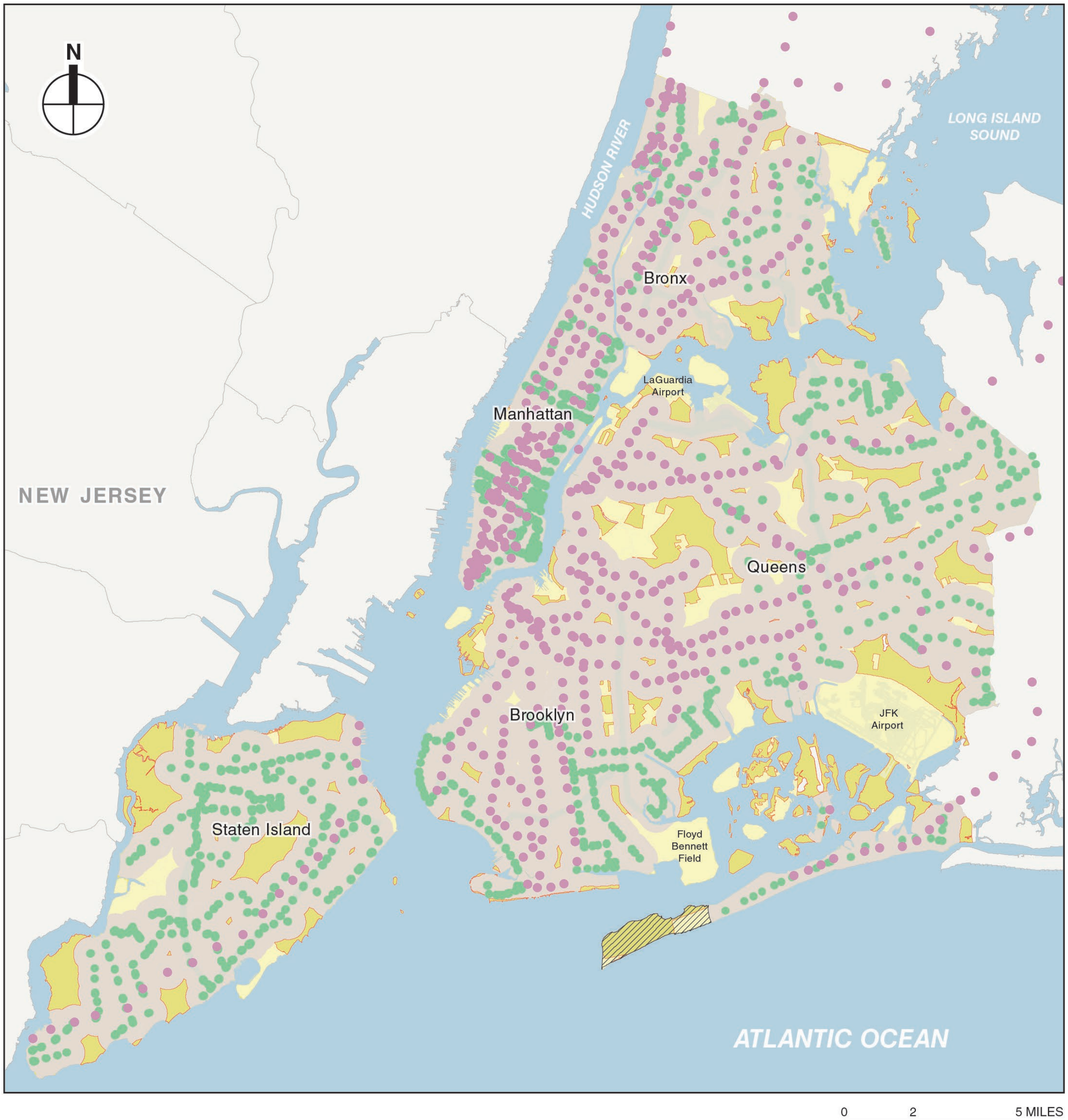
The region has a dense transportation network of highways and public transportation, including commuter rail, subway, light rail, buses, and ferries. Because New York City, and particularly Manhattan, has long been the economic center of the region, the transportation network is predominantly oriented to providing connections to and from Manhattan and New York City overall. Transportation links to Manhattan include the roads and highways that lead to and from the tunnels and bridges linking Manhattan to the region. The historic transportation patterns are most notable in the legacy infrastructure of fixed transportation routes (railroads, subways, and ferries) that connect the region to the city, and all five boroughs of New York City to the Manhattan CBD. The level of density in the urban core is reflected in the extensive transit network, frequent service throughout the region, and 24-hour service on the New York City subway and bus system. As depicted on Figure 5A-3, nearly all areas of New York City are within a half-mile of subway, commuter rail, Select Bus Service (SBS), or express bus service. One-half mile represents an approximately 10-minute walk for an average pedestrian, and therefore indicates the availability of these transportation services. In addition, New York City has a very dense local bus network, and all areas of the city are within a half-mile of a local bus stop other than one neighborhood in Queens (Breezy Point, a gated community in southern Queens). As discussed in Section 5A.3.4, most people use public transportation to travel to and from the Manhattan CBD.

Farther from New York City, the suburban and exurban areas of the regional study area have commuter rail and bus service that lead to New York City, with towns centered around commuter rail stations, but also include a more decentralized road network serving the greater region that developed as the region grew with a more auto-oriented development pattern. The highway network includes roads that do not connect to New York City at all as well as circumferential highways such as I-95, I-287, and I-84 that pass through New York City but largely bypass the Manhattan CBD. The expansion of the larger and decentralized highway network but the limited roadway capacity of the historic links to, from, and within Manhattan is reflected in the chronic congestion in Manhattan as described in Chapter 1, "Introduction."

At the hub of the regional study area, the Manhattan CBD is the traditional economic center of the region. It extends almost 5 miles from the tip of Lower Manhattan on the south to 60th Street on the north, and approximately 2 miles from the Hudson River on the west to the East River on the east. The Manhattan CBD includes the densely developed commercial areas of Lower Manhattan and Midtown Manhattan as well as residential neighborhoods within and around these business-oriented areas. Subchapter 5B, "Social Conditions: Neighborhood Character," provides more detailed discussion of the neighborhoods and geographic areas of the Manhattan CBD.

Other areas of New York City are connected to the Manhattan CBD through the city's extensive transit system, which carries 85 percent of daily commuter trips to and from the Manhattan CBD, as well as by bridges and tunnels connecting the road and highway network to Manhattan. One of the city's five boroughs, Staten Island, is more geographically isolated from the rest of New York City, and is connected by highway bridges to Brooklyn and New Jersey (which carry express buses between Staten Island and Manhattan) and is linked to Manhattan by the iconic Staten Island Ferry. Staten Island is more suburban in character than other parts of New York City with less racial and ethnic diversity than the rest of New York City, and a housing stock with lower density.

Figure 5A-3. New York City Areas Within and Beyond One-Half Mile of Rail Stations, Subway Stations, or Express Bus and Select Bus Service Stops



Subway/Commuter Rail Station

Express Bus/Select Bus Service (SBS) Stop

Area Within 1/2 mile from Subway/Rail Station or Express/SBS Bus Stop

Area More than 1/2 mile from Subway/Rail Station or Express/SBS Bus Stop

Area More than 1/2 mile from Subway/Rail Station or Express/SBS Bus Stop from Which There Are No Car Commuters to the CBD (Many of these are parks, cemeteries, or airports)

Area More than One-Half Mile from Local Bus Stop

Source: U.S. Census Bureau. Census Transportation Planning Package (CTPP), 2012–2016 Estimate.

5A.3.2 Community Cohesion

Community cohesion is the degree to which groups of people with shared attributes or affinities—such as cultural, religious, artistic, or activity-based communities—can form and maintain communities that are not limited to any particular location or neighborhood. Community cohesion and civic life in the regional study area are organized around neighborhoods and communities, including the 700 communities that surround New York City and the hundreds of neighborhoods within New York City that reflect the diversity of the city's population. The regional study area has a wide range of geographic, cultural, religious, artistic, and activity-based communities spread throughout the region, with varying levels of economic, social, and cultural ties to the Manhattan CBD. As distances increase from the Manhattan CBD, fewer residents have direct and daily interactions with the Manhattan CBD, as evidenced by the smaller numbers and proportions of daily commuters to the Manhattan CBD (discussed in **Section 5A.3.4**).

The region's transportation network, including its roadways, sidewalks, and public transportation services, is essential to connecting the communities that define the region, allowing the mobility to access its urban centers, centers of government, cultural institutions, and, most importantly, places of employment. This is particularly true for the Manhattan CBD, which has large share of the region's jobs. As described in more detail in **Chapter 6, "Economic Conditions,"** a meaningful connection to the Manhattan CBD for many people is that it is their place of work. The scale of the social connections in the region and the transportation demands to maintain those connections are immense. According to the 2010/2011 Regional Household Travel Survey, there are approximately 80 million individual trips in the region on an average weekday. Approximately one-third of all daily trips are made for social/recreational purposes, shopping, or school, and approximately one-quarter of all daily trips are for work purposes.[6]

There are thousands of places of worship for many different religions throughout the region, and these remain important local neighborhood anchors not particularly tied to or dependent on regional mobility. In and around the Manhattan CBD, there are similarly dispersed neighborhood places of worship as well as important regional institutions that draw local and regional visitors as well as tourists and visitors from outside the region. Some notable examples include St. Patrick's Cathedral, Trinity Church, Central Synagogue, Othman bin Affan Masjid (Islamic Society of Mid Manhattan), St. Vartan Armenian Cathedral, the Mahayana Buddhist Temple, and many others.[7] In total, the Manhattan CBD has approximately 200 places of worship.[8] Places of worship typically are accessible by transit, and most do not have on-site visitor parking given the densely developed nature of the Manhattan CBD, which indicates that travel by vehicle is not the predominant mode of transportation for their worshippers.

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6 Trip purpose categories included "Work," "School," Social/Recreational," "Shopping," and "Other;" more detailed options comprising "Other" included "Personal Business," "Home to Serving Passengers/Serving Passengers to Home," and "Other." New York Metropolitan Transportation Council and New Jersey Transportation Planning Authority. October 2014. 2010/2011 Regional Household Travel Survey. www.nymtc.org/portals/0/pdf/RHTS/RHTS_FinalExecSummary10.6.2014.pdf.

7 The U.S. Census Bureau does not collect data on religious affiliation in its demographic surveys or decennial census; therefore, data on the population of different religious affiliations in the Manhattan CBD is not available from the census.

8 Based on a review of ArcGIS Online, https://www.arcgis.com/index.html, in combination with Google maps.no com.

5A.3.3 Community Facilities and Services

Community facilities include schools, libraries, childcare centers, health care facilities, and police and fire protection. Throughout the region, most community facilities are locally focused, serving their individual communities, although some have a larger regional draw. Other facilities, such as homeless shelters, food pantries and meal distribution services, jails, community centers, colleges and universities, and religious and cultural facilities, are also community facilities and services and these serve a broader regional need.

5A.3.3.1 LIBRARIES

There are some 200 branch libraries in New York City and hundreds more in individual communities in the region. The region includes some major, central libraries, such as the main library of the New York Public Library system within the Manhattan CBD and the main library of the Brooklyn Public Library system outside the Manhattan CBD, as well as many smaller libraries throughout the region. The regional libraries, like other large cultural institutions with a regional draw, attract visitors with specific needs (i.e., research projects or other specialized tasks).

5A.3.3.2 SCHOOLS

Similarly, schools are decentralized and located throughout the city and region, serving their local communities. In New York City, the New York City Department of Education (NYCDOE) provides transportation to all eligible New York City students in public, charter, and non-public schools. NYCDOE transportation services vary by school and each child’s eligibility for those services. In general, NYCDOE provides student MetroCards for students living more than one-half mile from their school, and may provide yellow school bus service, depending on the age of the student, distance to school, and the student’s disability status.[9] Many students, especially those in Manhattan where school catchment zones are small given the population density, walk or take transit to school.

The Manhattan CBD includes approximately 125 public schools serving some 60,000 students, as well as charter schools and private and parochial schools. Based on recent surveys conducted by the NYCDOE, approximately 8 percent of the public school students who live within the Manhattan CBD use school buses to get to school; the rest use public transit, walk, or bicycle to school.

5A.3.3.3 MEDICAL FACILITIES

Like other services in a community, health clinics, urgent care, doctors’ offices, and community hospitals are present throughout the regional study area and typically serve their local communities. The 28-county study area also has healthcare facilities, including specialists and hospitals, with a larger, regional (and, in some cases, national and international) draw because of the specialty services they provide. Some of these are within the Manhattan CBD and others are outside. For example, specialty hospitals and associated doctors’ offices are located throughout Manhattan, including within the Manhattan CBD on the east side

9 MetroCard is the primary payment method for the New York City subway and New York City and MTA buses. Student MetroCards are distributed by schools to students whose home is one-half mile or farther from their school. These MetroCards allow three free rides each school day between 5:30 a.m. and 8:30 p.m., including free transfers between buses or between the subway and local, limited, and SBS buses.

between East 14th and East 34th Street and outside the Manhattan CBD on the Upper East Side (generally between East 68th and East 106th Streets).

Some people may travel by vehicle from locations outside the Manhattan CBD or by vehicle within the Manhattan CBD to access these facilities. In addition, some residents of the Manhattan CBD may travel by vehicle to access medical facilities outside the Manhattan CBD.

The rate of vehicle use to access medical facilities depends in part on the facilities' distance to a subway station or bus route (as well as other factors, including the patient's mobility and the type of medical service sought). For medical office uses within one-quarter mile of a subway station, approximately 6 percent of trips to these uses are by auto or taxi/FHV modes, according to data from NYCDOT's mode choice surveys. For medical office uses that are beyond one-quarter mile from a subway station, approximately 14 percent of trips are by auto or taxi/FHV modes. Therefore, most medical trips, even those to facilities more than one-quarter mile from a subway station, are made by modes other than auto or taxi/FHV. Several major medical facilities in Manhattan are more than one-quarter mile from a subway station, including New York University Langone Medical Center, the Veterans' Administration New York Harbor Healthcare System, and Bellevue Hospital Center in the Manhattan CBD.

5A.3.3.4 OTHER FACILITIES

Other facilities, such as homeless shelters, food pantries and meal distribution services, jails, community centers, colleges and universities, and religious and cultural facilities, are also community facilities and services. These serve both a local and a broader regional need.

5A.3.4 Population Characteristics and Protected Social Groups

This section summarizes key population characteristics in the regional study area and identifies social groups that are the focus of this analysis: elderly populations, persons with disabilities, transit-dependent populations (those who use transit as their primary mode for some or all trips, irrespective of vehicle ownership), and nondriver populations.

The 28-county regional study area has approximately 22.2 million residents. As shown in **Figure 5A-2** and detailed in **Table 5A-1**, approximately 38 percent of these residents live in New York City; and almost 20 percent in the four closest New Jersey counties (Bergen, Essex, Hudson, and Union) and Nassau County, just east of New York City.

The population of the regional study area has grown by 5 percent since 2000, with New York City adding more than 410,000 people and accounting for 37 percent of that growth. Brooklyn saw the largest population gain in the region, with almost 126,000, followed by the Bronx (102,000), and Manhattan (95,000). Population projections prepared by the New York Metropolitan Transportation Council (NYMTC), the regional Metropolitan Planning Organization (MPO) for the New York City region, projects continued growth in the region, with the population projected to exceed 25 million by 2045. New York City's population is projected to surpass 9 million by 2045.[10]

Table 5A-1. Population Characteristics of the Regional Study Area

GEOGRAPHIC AREAS	TOTAL POPULATION	% MINORITY	% LOW-INCOME	% AGE 65 AND OLDER	% WITH AMBULATORY DIFFICULTY	% HOUSEHOLDS WITH NO ACCESS TO A VEHICLE
New York City	**8,419,316**	**67.9%**	**36.0%**	**14.5%**	**7.0%**	**54.6%**
Bronx County	1,435,068	90.9%	51.0%	12.5%	9.5%	59.1%
Kings County (Brooklyn)	2,589,974	63.6%	39.1%	13.6%	7.0%	55.8%
New York County (Manhattan)	1,631,993	53.1%	28.9%	16.2%	6.5%	77.0%
Queens County	2,287,388	75.0%	31.0%	15.3%	6.2%	36.7%
Richmond County (Staten Island)	474,893	39.0%	23.0%	16.0%	6.2%	16.7%
Long Island Counties	**2,840,341**	**36.1%**	**15.6%**	**17.0%**	**5.1%**	**6.0%**
Nassau County	1,356,509	40.0%	14.5%	17.5%	4.7%	6.9%
Suffolk County	1,483,832	32.4%	16.7%	16.5%	5.2%	5.2%
New York Counties North of New York City	**2,065,938**	**39.3%**	**22.3%**	**16.0%**	**5.7%**	**11.7%**
Dutchess County	293,754	28.5%	21.4%	17.1%	6.7%	7.8%
Orange County	380,085	35.8%	25.8%	13.7%	6.7%	9.8%
Putnam County	98,787	21.3%	12.7%	16.8%	5.4%	4.9%
Rockland County	324,422	36.9%	28.3%	15.6%	4.8%	10.7%
Westchester County	968,890	46.5%	20.2%	16.7%	5.3%	14.5%
New Jersey Counties	**7,060,811**	**46.8%**	**22.5%**	**15.7%**	**5.5%**	**12.3%**
Bergen County	930,390	43.4%	16.1%	17.0%	4.6%	8.3%
Essex County	795,404	69.5%	33.3%	13.5%	6.5%	22.4%
Hudson County	670,046	71.2%	32.8%	11.8%	5.8%	32.6%
Hunterdon County	124,823	14.5%	10.7%	17.9%	3.7%	3.4%
Mercer County	367,922	50.3%	25.0%	15.0%	5.5%	11.2%
Middlesex County	825,920	56.9%	19.4%	14.7%	5.4%	8.0%
Monmouth County	621,659	24.8%	16.3%	17.2%	5.9%	6.9%
Morris County	493,379	28.6%	12.4%	16.8%	4.5%	4.7%
Ocean County	596,415	15.3%	24.8%	22.5%	7.6%	6.3%
Passaic County	503,637	58.7%	32.8%	14.3%	5.1%	16.6%
Somerset County	329,838	43.7%	12.1%	15.3%	4.1%	4.9%
Sussex County	141,483	13.7%	13.6%	16.7%	5.7%	3.5%
Union County	554,033	60.5%	24.8%	14.2%	5.1%	11.8%
Warren County	105,862	18.3%	19.1%	17.6%	6.9%	6.4%
Connecticut Counties	**1,801,439**	**37.7%**	**23.1%**	**16.2%**	**5.5%**	**9.6%**
Fairfield County	943,926	38.3%	20.8%	15.6%	5.1%	7.8%
New Haven County	857,513	37.1%	25.6%	17.0%	6.2%	11.6%
TOTAL	**22,187,845**	**52.0%**	**26.8%**	**15.4%**	**6.0%**	**27.9%**

Source: U.S. Census Bureau, American Community Survey (ACS) 2015–2019 5-Year Estimates.
Note: Low-income residents are those with household incomes of up to 1.99 times the Federal poverty level.

[10] New York Metropolitan Transportation Council. 2015. 2050 Socioeconomic and Demographic Forecasts. www.nymtc.org/DATA-AND-MODELING/SED-Forecasts/2050-Forecasts.

According to the U.S. Census Bureau 2015–2019 ACS 5-Year Estimates, 52 percent of the regional study area's population is minority. Some 67.9 percent of New York City's population identifies as minority and 53.7 percent of the combined residents of the four closest New Jersey counties (Bergen, Essex, Hudson, and Union) and Nassau County are minority. An estimated 26.8 percent of the population in the regional study area have a household income that can be considered low-income.[11] In New York City as a whole, approximately 36.0 percent of the population is low-income and 22.4 percent of the combined population in the four closest New Jersey counties and Nassau County is low-income. Overall, in the New York counties north of New York City, Long Island, and the portions of New Jersey and Connecticut outside of New York City that comprise the remainder of the regional study area, the proportion of minority residents ranges from 13.7 percent to 69.5 percent, with the lowest numbers in the less densely populated New Jersey counties farthest from New York City. Approximately 10.7 percent to 33.3 percent of the population of the counties outside New York City is low-income. **Appendix 5B, "Social Conditions: Supplemental Demographic Information for the Regional Study Area and Manhattan CBD,"** and **Chapter 17, "Environmental Justice,"** provide additional demographic information regarding minority status and income characteristics for the Manhattan CBD and regional study area, respectively.

In the regional study area, approximately 10 percent of the noninstitutionalized population has a disability and approximately 6 percent of the noninstitutionalized population age 5 and older is disabled with ambulatory difficulty.[12] The counties with the highest percentages of population with ambulatory difficulty are Bronx County at 9.5 percent (compared to 6.4 percent in New York State overall) and Ocean County at 7.6 percent (compared to 5.5 percent in New Jersey overall).

About 15 percent of the population in the regional study area is 65 years old or older, representing a 29 percent increase in this age group since the year 2000. Throughout the regional study area, approximately 12 percent to 23 percent of each county's population is 65 years or older; Ocean County, New Jersey, has the highest percentage of elderly residents at 23 percent. Across the regional study area, approximately 22 percent of the population is youth (age 0 to 17) and approximately 63 percent is working age (age 18 to 64).

Roughly 28 percent of households in the regional study area do not have a vehicle available for their use (and, conversely, 72 percent of households have one or more vehicles available), although vehicle access varies widely across the region, as shown in **Table 5A-1** and **Figure 5A-4**.[13] As would be expected given the urban densities of New York City, the proportion of households that do not have access to a vehicle is substantially higher in Manhattan (77 percent in the county as a whole, 80 percent in the Manhattan CBD),

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11 As described in **Chapter 17, "Environmental Justice,"** low-income residents are those with household incomes of up to 1.99 times the Federal poverty level.

12 This census category is defined as "having serious difficulty walking or climbing stairs." This community may depend on vehicular transportation and would have challenges switching to public transit.

13 This discussion relies on data on "Vehicles Available" from the 2015-2019 ACS. These data show the number of passenger cars, vans, and pickup or panel trucks of one-ton (2,000 pounds) capacity or less kept at home and available for the use of household members. Vehicles rented or leased for one month or more, company vehicles, and police and government vehicles are included if kept at home and used for nonbusiness purposes. Motorcycles or other recreational vehicles are excluded. Dismantled or immobile vehicles are excluded. Vehicles kept at home but used only for business purposes also are excluded.

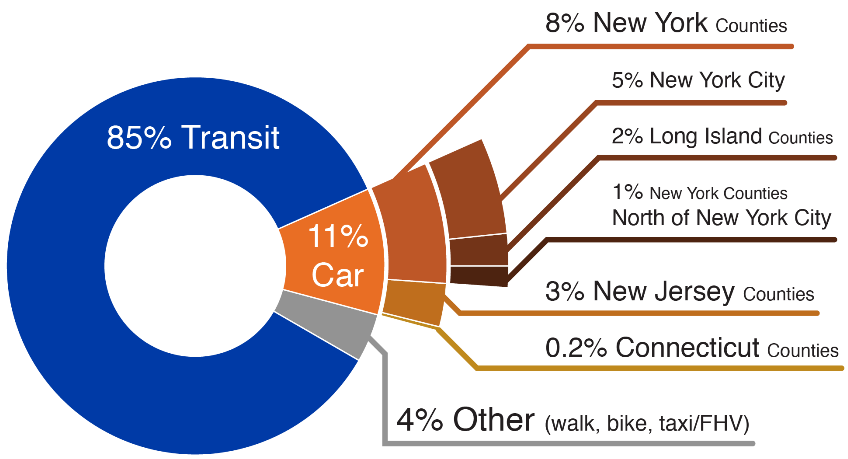
the Bronx (59 percent), and Brooklyn (56 percent), than in the region (28 percent). These households without access to a vehicle are part of the region's transit-dependent population. Vehicle access generally increases with income,[14] resulting in a greater number of all auto trips being made by those reporting a higher income than by households that reported a lower income.[15]

As shown in **Figure 5A-5** (on the following page), the percentage of households with no access to a vehicle generally decreases with distance from the Manhattan CBD. While some counties just outside New York City have vehicle access rates similar to those of New York City counties, these adjacent counties typically have a much lower share of commuters to the Manhattan CBD. For example, Hudson County in New Jersey has an auto ownership rate similar to that of Queens, but it contributes only 5 percent of the commuters to the Manhattan CBD, compared to 17 percent from Queens.

5A.3.5 Access to Employment in the Manhattan CBD

Chapter 1, "Introduction," describes the commuting behaviors of workers commuting to the Manhattan CBD, both by mode and by county of origin (**Figure 5A-4**). Given that the Project would directly affect the use of driving modes to access employment in the Manhattan CBD, this section provides more detail about existing travel mode choices for people who travel to employment in the Manhattan CBD. It also provides a more detailed discussion of the use of driving modes to commute to Manhattan from areas of New York City that do not have convenient transit access, since these areas may have fewer alternative to vehicle access for convenient travel to the Manhattan CBD.

Figure 5A-4. Work Trips Entering Manhattan CBD (by mode and origin)



Source: U.S. Census Bureau, CTPP, 2012-2016 Estimates.

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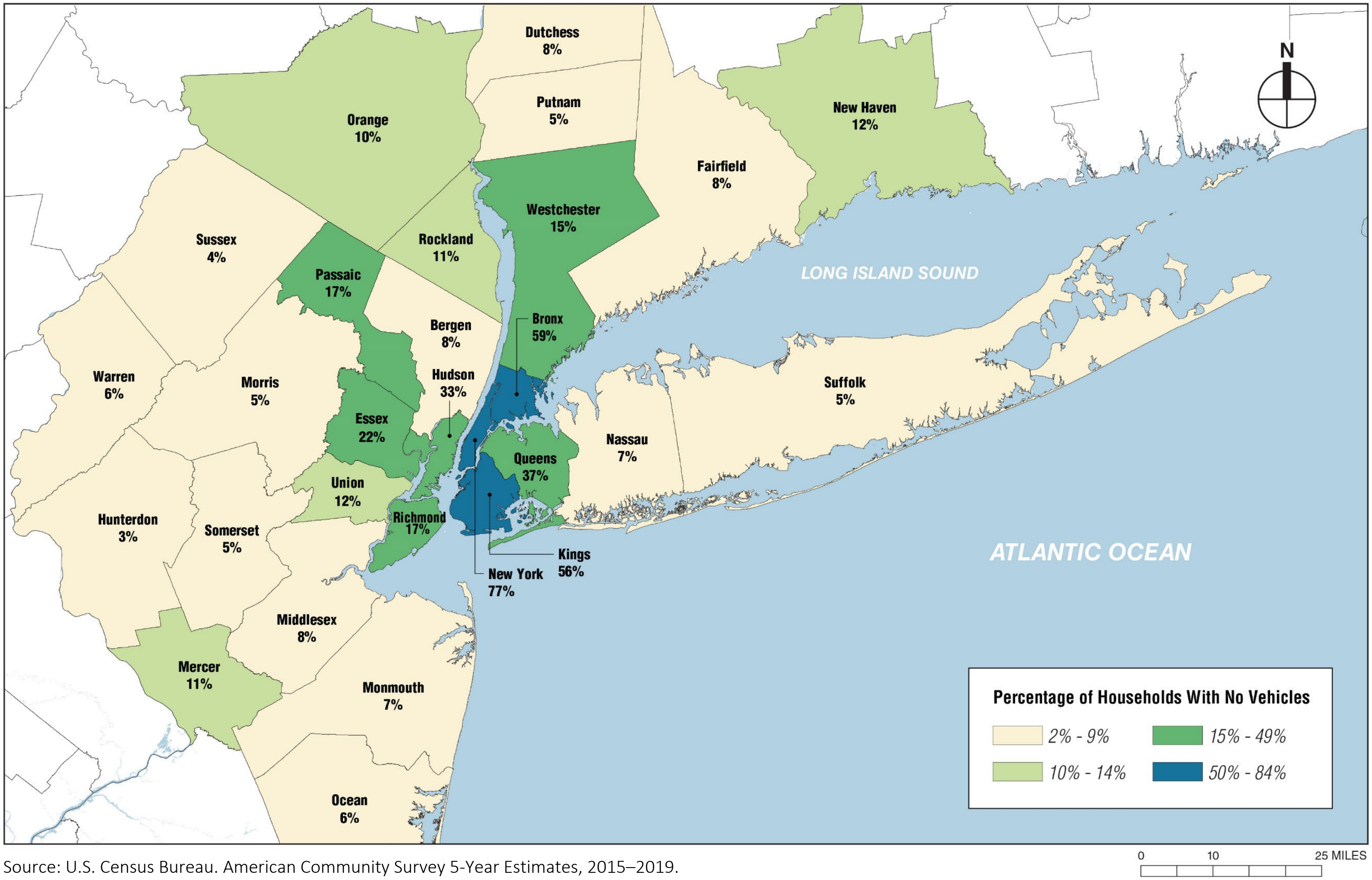
14 FHWA. Status of the Nation's Highways, Bridges, and Transit Conditions & Performance 23rd Edition. Chapter 3, "Travel." https://www.fhwa.dot.gov/policy/23cpr/chap3.cfm#access-to-vehicles.

15 Trip purpose categories included "Work," "School," Social/Recreational," "Shopping," and "Other"; more detailed options comprising "Other" included "Personal Business," "Home to Serving Passengers/Serving Passengers to Home," and "Other." New York Metropolitan Transportation Council and New Jersey Transportation Planning Authority. October 2014. 2010/2011 Regional Household Travel Survey. p. 124 (Table 4-19). www.nymtc.org/portals/0/pdf/RHTS/RHTS_FinalExecSummary10.6.2014.pdf.

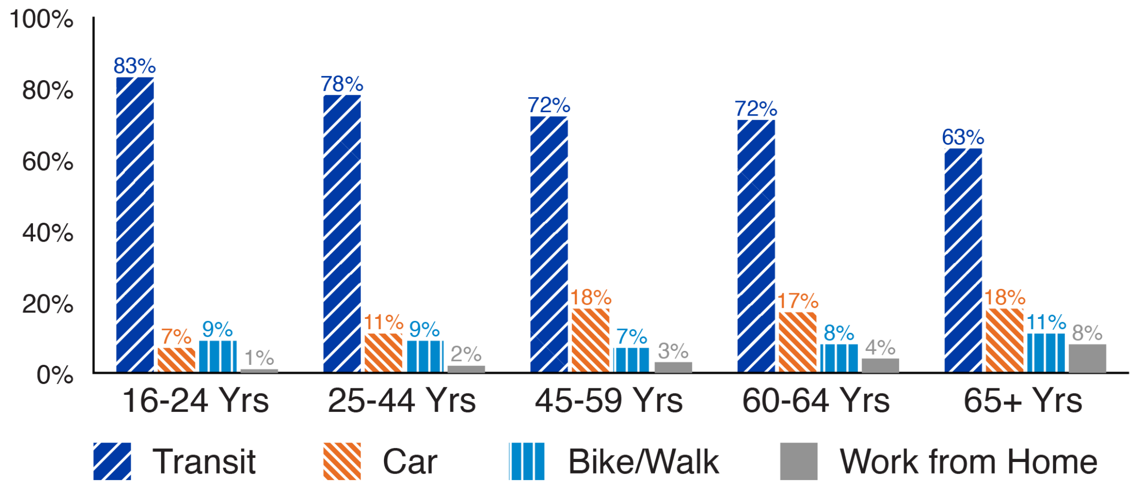
Figure 5A-5. Households in the Regional Study Area with No Vehicle by County



Source: U.S. Census Bureau. American Community Survey 5-Year Estimates, 2015–2019.

Figure 5A-6 provides data on the commute mode choice for travel to work in Manhattan by the age distribution of workers. The most detailed estimates available describe those working in Manhattan as a whole, but these data provide some insight into commute mode and worker age. As **Figure 5A-6** shows, the rate of driving or other auto modes to work is highest for ages 45 and over, with approximately 17 percent to 18 percent of workers commuting to Manhattan by auto. The use of public transportation to commute to work decreases with age, with the lowest rate (63 percent) for workers age 65 and older; even for this age group, the majority of workers use public transportation to commute to work in Manhattan.

Figure 5A-6. Travel Modes to Work (by age of workers)



Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate.

Residents of New York City in particular are most likely to use transit to travel to work in the Manhattan CBD (see **Chapter 1, "Introduction," Figure 1-6**). With a dense network of public transportation options throughout New York City and 24-hour service throughout that network, CTPP data indicate that 88 percent of the New York City residents who travel to work in the Manhattan CBD from outside the CBD use public transportation[16] for their commute. All of New York City is within one-half mile of a commuter rail station, subway station, or bus stop except one small area in southern Queens, a gated community called Breezy Point (see **Figure 5A-3**).

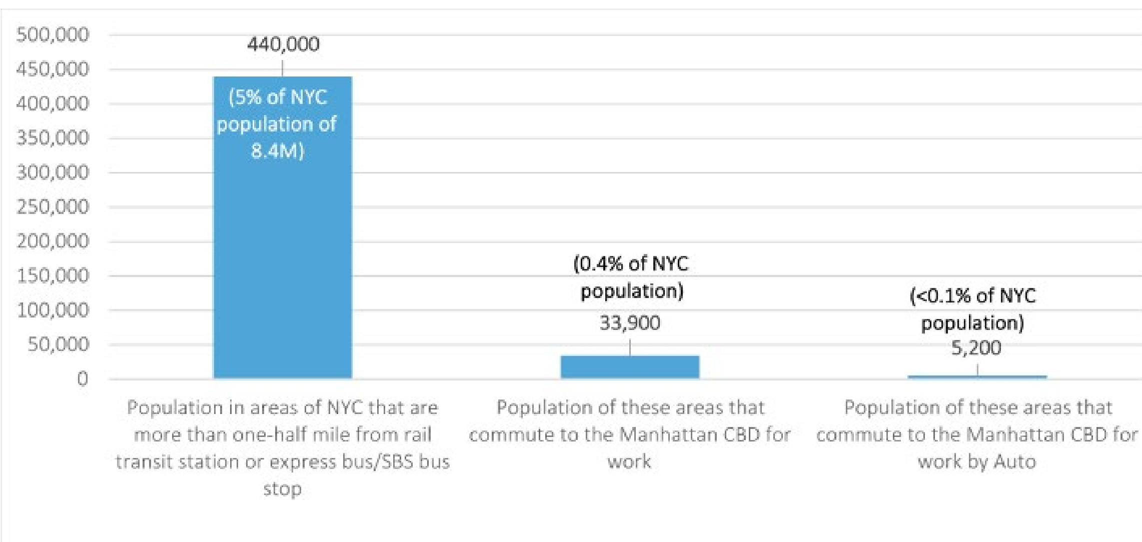
Most of New York City is also within one-half mile of the faster public transportation modes available—commuter rail, subway, express bus, or Select Bus Service (SBS), New York City's growing bus rapid transit system.[17] As shown in **Figure 5A-3**, few neighborhoods in New York City are more than one-half mile from these faster transportation modes. These areas are at the periphery of the city and along the waterfront (and, as noted, do have local bus service). In Manhattan, these areas include the far west side in the West 50s within the Manhattan CBD and on Roosevelt Island outside the Manhattan CBD. In Brooklyn, areas include the neighborhoods of Red Hook, Borough Park, Rugby-Remsen Village, East New York, and Canarsie. In Queens, portions of the Astoria, College Point, South Ozone Park, Auburndale, Springfield Gardens,

[16] Unless otherwise noted, the terms "public transportation" and "transit" are used interchangeably throughout this chapter.
[17] One-half mile represents an approximately 10- to 15-minute walk for an average pedestrian, and therefore indicates the availability of these transportation services.

Breezy Point, Maspeth, and Ridgewood neighborhoods do not have access to faster public transportation via commuter rail, subway, or express bus/SBS service within one-half mile. In the Bronx, portions of the Soundview, Castle Hill, East Tremont, and Wakefield neighborhoods are more than one-half mile from commuter rail, subway, or express bus/SBS service. In Staten Island, these areas are around the shoreline and in central Staten Island. Some of the areas in New York City that are not close to transit are places from which no one commutes by car to the Manhattan CBD (see **Figure 5A-3**).

Approximately 440,000 people (or about 5.2 percent of the city's 8.4 million residents) live in these areas of New York City that are more than one-half mile from the faster public transportation modes of commuter rail, subway, or express bus/SBS service,[18] and approximately of them 33,900 commute to the Manhattan CBD (**Figure 5A-7**). Approximately 5,200 (15 percent) of these commuters to the Manhattan CBD travel by car.[19] These 5,200 car commuters come from locations distributed around the city with the largest concentrations in the Queens neighborhoods of Maspeth, College Point, Middle Village, and Springfield Gardens, the Soundview neighborhood of the Bronx, and Staten Island. Additional residents may be auto commuters who pass through the Manhattan CBD, but the total number of auto trips, even from areas with less convenient public transit access, is small even if these trips are included. **Chapter 17, "Environmental Justice,"** considers the potential effect of implementation of the CBD Tolling Alternative on low-income and minority populations who live in these areas.

Figure 5A-7. Population and Commuters to Manhattan CBD from Areas More than One-Half Mile from Commuter Rail, Subway, or Express Bus Service



Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate.
Note: All areas of New York City other than Breezy Point, Queens, are within a half mile of local bus service.

Outside of New York City, the rest of the regional study area is also well-served by public transportation, including commuter rail, light rail, and public and private bus routes, and as noted previously, most people

18 This population consists of people living within census tracts that are not within one-half mile of the faster public transportation services, when measured from the center of the census tract to the nearest transit stop.
19 2012–2016 CTPP.

who work in the Manhattan CBD use public transportation to travel to and from work. In areas of the regional study area that are farther from New York City and less densely developed and populated, more areas are not within a convenient walking distance of public transportation. However, in those areas, households have a higher rate of access to a vehicle, and residents use or may use their vehicles to access public transportation (e.g., commuter rail stations).

5A.4 ENVIRONMENTAL CONSEQUENCES

5A.4.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program with its associated tolling infrastructure and tolling system equipment. With the No Action Alternative, the study area's settlement patterns, transportation mobility (including chronic congestion in and around the Manhattan CBD) would remain similar to the existing affected environment. Overall demographic trends in terms of population and job growth would experience normal background growth. Community cohesion and access to employment for residents of the region would likely be similar to existing conditions.[20]

5A.4.2 CBD Tolling Alternative

This section describes the potential effects of implementation of the CBD Tolling Alternative on population characteristics and community cohesion, when compared with the No Action Alternative, beginning with a description of the potential benefits of the CBD Tolling Alternative and how they relate to social conditions. The section then evaluates the potential effects of the CBD Tolling Alternative on community cohesion and community facilities and services, its potential benefits or adverse effects to certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and nondriver populations; and its effects on access to employment at the regional level.

5A.4.2.1 POTENTIAL BENEFITS TO SOCIAL CONDITIONS

With implementation of the CBD Tolling Alternative, transportation users in the region would benefit through travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety, and reduced air pollutant emissions. These changes would positively affect community connections and access to employment, education, healthcare, and recreation for residents. The CBD Tolling Alternative would result in the following social benefits:

- **Travel-Time Savings:** People in the region making trips to or within the Manhattan CBD by auto, FHV/taxi, bus, paratransit, or truck would benefit from travel-time savings improvements relative to the No Action Alternative due to decreased congestion within the Manhattan CBD. Part of these travel-time savings benefits would be offset by the increased transportation cost for those trips under the CBD Tolling Alternative in the form of a toll. People traveling by vehicle in the Manhattan CBD would also benefit from travel-time savings due to decreased congestion in the Manhattan CBD and on other roadways. These benefits would occur in all tolling scenarios, with a reduction in vehicles crossing into

20 Existing conditions described in this chapter are for conditions prior to the onset of the COVID-19 pandemic and therefore do not reflect changes to social conditions that may emerge as the pandemic subsides. At this time, it would be speculative to describe long-term (post-pandemic) changes to social conditions.

the Manhattan CBD each day ranging from 15.4 percent to 19.9 percent and a reduction in daily VMT in the Manhattan CBD of 7.1 percent to 9.2 percent (see **Table 4A-5** and **Table 4A-7** in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**). Tolling Scenario E would result in the greatest benefit, with 19.9 percent fewer vehicles entering the Manhattan CBD each day and a reduction of 9.2 percent in VMT relative to the No Action Alternative.

- **Reliability Benefits:** People traveling by auto, taxi/FHV, bus, paratransit, or truck to or within the Manhattan CBD would benefit from improved travel-time reliability due to the reduced congestion. Improvements to transportation system capacity or reliability can have social benefits such as greater ease of making and maintaining social ties and higher quality of life. Reliability of travel time refers to the level of travel time uncertainty. When travel times are unpredictable, travelers typically allow more time for their trip to account for possible delays. By reducing congestion in the Manhattan CBD, the CBD Tolling Alternative would reduce the current uncertainty associated with travel in the Manhattan CBD and allow travelers to reduce the buffer time set aside for their trip. Benefits would accrue not only to automobile passengers but also to bus passengers who would be able to rely on evenly spaced buses with reliable schedules. These benefits would also apply to school bus passengers and users of paratransit services.
- **Safety Benefits:** In all tolling scenarios, the CBD Tolling Alternative would result in fewer vehicles accessing the Manhattan CBD, which would help to reduce conflicts between vehicles and between vehicles and pedestrians and bicyclists, leading to an overall benefit to safety. The reduction in regional VMT because of the CBD Tolling Alternative could also lead to regional safety benefits. Some research indicates that VMT is directly related to the rate of fatal crashes;[21] therefore, the reduction in VMT could lead to a decrease in traffic fatalities in the region. Enhanced safety would benefit social conditions by improving community connectivity, reducing social isolation, and facilitating more physical activity and use of nonmotorized modes of transportation. While the increase in potential safety benefits may be offset to some degree by the propensity for drivers to drive at greater speeds in less congested conditions, experience with the London congestion-based pricing system suggests that the overall effect would be net positive; within the London zone, between 2000 and 2010 traffic collisions decreased by 40 percent per VMT.[22]
- **Accessibility Benefits:** Accessibility can be understood as the attractiveness of a place of origin (how easy it is to get from there to all other destinations) or of a destination (how easy it is to get to there from all other origins). Enhanced accessibility can benefit social conditions by improving community connections and access to employment, education, health care, and recreation. The CBD Tolling Alternative would improve accessibility for travelers throughout the region by decreasing roadway congestion. The CBD Tolling Alternative would also improve accessibility for disabled individuals

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21 Reid Ewing, Shima Hamidi and James Grace. 2016. "Urban Sprawl as a Risk Factor in Motor Vehicle Crashes," *Urban Studies*, Vol. 53/2, pp. 247 to 266. digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=https://www.google.ca/&httpsredir=1&article=1911&context=usgsstaffpub.

22 Davis, Alex. 2015. "London's Congestion Pricing Plan is Saving Lives." *Wired Magazine*. https://www.wired.com/2015/03/londons-congestion-pricing-plan-saving-lives/.

throughout the region by providing benefits to improve paratransit services, such as reduced roadway congestion and travel-time improvements as discussed above.

5A.4.2.2 COMMUNITY COHESION

This section evaluates potential effects to community cohesion resulting from the CBD Tolling Alternative. As noted previously in the discussion of the affected environment, community cohesion and civic life in the regional study area are typically local, organized around neighborhoods and communities, and in most cases are not focused on economic, social, and cultural ties to the Manhattan CBD. Therefore, this analysis focuses on the three primary ways the CBD Tolling Alternative could potentially affect community cohesion through travel pattern changes to and from the Manhattan CBD:

- **Installation of Tolling Infrastructure and Equipment:** The CBD Tolling Alternative would involve the installation of tolling infrastructure and tolling system equipment. This analysis considers whether this infrastructure and equipment would create a physical barrier that could separate or isolate communities.
- **Changes to Travel Patterns:** The CBD Tolling Alternative would change travel patterns and alter people's choices of how to travel into and out of the Manhattan CBD and would encourage more people to use transit to access the Manhattan CBD. The concern with respect to changing travel patterns and greater use of transit services is whether these changes would weaken community cohesion either by making it more difficult for people to physically connect with others throughout the region or by overburdening transit infrastructure that communities rely on for social ties.
- **Potential for Residential Displacement**: The CBD Tolling Alternative would not require any property acquisition or direct displacement of residences. This analysis evaluates whether implementation of the CBD Tolling Alternative would have the potential to result in indirect displacement of residents.

The following subsections address each of these concerns with respect to community cohesion. In addition, **Chapter 17, "Environmental Justice,"** considers these effects on low-income and minority populations.

Installation of Tolling Infrastructure and Equipment

The CBD Tolling Alternative would place tolling infrastructure and tolling system equipment within or adjacent to existing transportation rights-of-way, including sidewalks, and, in very limited instances, public parkland. As discussed in **Chapter 2, "Project Alternatives," Section 2.4.2.2**, the tolling infrastructure would include poles and mast arms, similar to those used for streetlights and traffic lights today; tolling system equipment including reader and meter cabinets and cameras; and signage similar in size and character to signs already present throughout Manhattan. **Chapter 2, "Project Alternatives," Figure 2-3** illustrates the proposed infrastructure; in addition, figures in **Chapter 9, "Visual Resources,"** provide before and after views of selected locations where new tolling infrastructure and tolling system equipment is proposed. The signage would be similar in size and nature to existing signs already in place. Therefore, this tolling infrastructure, tolling system equipment, and signage would not create a physical barrier that could separate or isolate communities, and therefore would not result in adverse effects to community cohesion.

Changes to Travel Patterns

The new toll for vehicles entering or remaining in the Manhattan CBD with the CBD Tolling Alternative would change travel patterns and alter people's choices of how to travel into and out of the Manhattan CBD. This section summarizes the changes in daily trips under the No Action Alternative and with the CBD Tolling Alternative. The transportation modeling conducted for the Project using the Best Practice Model (BPM) provides information on the projected changes in travel patterns between the No Action Alternative and the CBD Tolling Alternative (**Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**). The BPM results include changes in daily journeys, which are the round-trips from origin to destination and back to origin again.[23] The BPM is a regional transportation model used to predict changes in mode and route that would result from modifications to the transportation system, using adopted regional population, labor force, and employment forecasts. The model does not (and cannot) predict changes to the numbers of residents, workers, or jobs in the region but rather assumes that those numbers remain constant.

The section presents the change in total daily journeys to the Manhattan CBD and the change in non-work-related journeys (e.g., daily round trips with any combination or linked trips excluding the journey to work such as school, shopping, medical care, or entertainment purposes) to the Manhattan CBD. The different tolling scenarios would have varying effects on different areas (e.g., New Jersey vs. Long Island), and the particular tolling scenario that would result in the greatest change in trips varies depending on the area. This section presents data on travel patterns for each tolling scenario for each subarea of the regional study area.[24] The travel pattern data presented in this section include all modes of transport, including auto modes, public transportation modes, and walking and biking.[25]

<u>Changes to Total Daily Journeys to the Manhattan CBD by All Modes</u>

Overall, the model results show that all tolling scenarios would result in changes to the distribution of total daily journeys to the Manhattan CBD compared to the No Action Alternative, with an increase in total daily journeys from New Jersey and Long Island and a decrease in total daily journeys from portions of New York north of New York City, and Upper Manhattan, the Bronx, Queens, and Brooklyn. **Table 5A-2** and **Table 5A-3** present data on projected total daily journeys to the Manhattan CBD for each tolling scenario. The largest decrease in travel via all modes (i.e., including auto, public transportation, and walk/bike modes) into the Manhattan CBD would be approximately 3 percent for areas of Manhattan outside the Manhattan CBD under Tolling Scenario D. Daily journeys between New Jersey counties and the Manhattan CBD would increase by 1.9 percent to 3.5 percent and daily journeys between Long Island and the Manhattan CBD would increase by 2.5 percent to 3.7 percent, depending on the tolling scenario. In New York City, daily journeys to and from the Manhattan CBD would decrease in the Bronx, Brooklyn, other areas of Manhattan, and Queens, but would increase in Staten Island. The rest of Manhattan would have the largest percentage

23 More specifically, as described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** a journey is defined as round-trip travel between principal and anchor locations such as home, work, school, retail, and entertainment.

24 Subareas include each New York City county (boroughs), outside the Manhattan CBD, inside the Manhattan CBD, Long Island counties, New York counties north of New York City, New Jersey counties, and Connecticut counties.

25 Modes of transport in the BPM consist of the following: drive alone, high-occupancy vehicle/shared ride, taxi/FHV, commuter rail, other transit (e.g., subway, bus), walk and bike, and school bus.

decrease in daily travel into the Manhattan CBD, with a decrease of approximately 1.5 percent to 2.8 percent, depending on the tolling scenario. Staten Island would experience an increase of approximately 3.8 percent to 7.2 percent in daily journeys to the Manhattan CBD, depending on the tolling scenario, with the absolute number compared to the No Action Alternative of approximately 1,600 to 3,000 new journeys.

Changes to Daily Non-Work-Related Journeys to the Manhattan CBD by All Modes

Table 5A-4 and **Table 5A-5** show the projected change in daily non-work-related travel into the Manhattan CBD by county of origin for all tolling scenarios (by all modes of transport [i.e., auto modes, public transportation modes, and walking/biking]). For non-work-related journeys, the BPM assumes that the total number of these discretionary trips remains steady regionwide, but the destination of non-work-related travel (e.g., for school, shopping, medical care, or entertainment or a combination of such trips) could change because of a change to the transportation network. For all tolling scenarios, the total number of these journeys would remain essentially the same between tolling scenarios (the small differences are due to rounding in the model results), but the destinations of the non-work-related journeys would vary. The largest percentage decreases in non-work-related journeys into the Manhattan CBD would be from New York counties north of New York City, with a decrease of 12 percent under Tolling Scenario E, a decrease of approximately 900 daily journeys. Brooklyn, Queens, and the Bronx would experience smaller percentage decreases of 2.9 percent (Tolling Scenario D), 2.8 percent (Tolling Scenario D), and 4.4 percent (Tolling Scenario E), respectively. Brooklyn and Queens would experience decreases of approximately 2,300 and 1,800 journeys, respectively. Non-work-related journeys to the Manhattan CBD from areas of Manhattan north of 60th Street would also decrease, with the greatest decrease (3,800 daily journeys) under Tolling Scenario D (decrease of 4.3 percent). The BPM projects an increase in non-work-related journeys from New Jersey counties, Long Island, Connecticut counties, and Staten Island to the Manhattan CBD. **Table 5A-5** also shows marginal increases in non-work Manhattan CBD journeys originating within the Manhattan CBD, likely due to reductions in congestion, which would encourage additional non-work journeys within the Manhattan CBD. Overall, in all tolling scenarios, the decrease in non-work-related journeys to the Manhattan CBD would be from origins distributed throughout the 28-county study area, from many different communities throughout the region.

Potential Community Cohesion Effects

The model results indicate that with the CBD Tolling Alternative some areas would have more trips to the Manhattan CBD and some areas would have fewer, as compared to the No Action Alternative. As noted above, the concern with respect to changing travel patterns is whether they would weaken community cohesion by making it more difficult for people to physically connect with others in their community.

Table 5A-2. Total Daily Journeys to/from the Manhattan CBD by Tolling Scenario (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York City	**2,139,533**	**2,131,066**	**2,131,928**	**2,130,513**	**2,125,391**	**2,125,464**	**2,127,367**	**2,128,633**
Bronx	155,745	153,637	154,033	153,142	152,314	152,183	153,269	152,802
Kings (Brooklyn)	406,340	404,134	405,087	403,773	402,173	402,084	404,271	403,533
New York (Manhattan)	1,176,953	1,173,182	1,172,443	1,173,240	1,172,230	1,172,844	1,170,525	1,172,714
Inside Manhattan CBD[1]	879,667	880,292	879,506	882,033	883,365	883,222	880,713	881,592
Outside Manhattan CBD	297,286	292,890	292,937	291,207	288,865	289,622	289,812	291,122
Queens	358,122	355,812	356,002	354,938	354,368	354,350	354,576	355,266
Richmond (Staten Island)	42,373	44,301	44,363	45,420	44,306	44,003	44,726	44,318
Long Island Counties[2]	**160,446**	**165,458**	**166,094**	**164,980**	**164,610**	**165,643**	**164,487**	**166,421**
New York Counties North of New York City[3]	**113,457**	**111,112**	**111,518**	**111,855**	**110,885**	**110,632**	**111,111**	**111,318**
New Jersey Counties[4]	**329,943**	**336,247**	**336,616**	**338,878**	**340,413**	**341,579**	**341,330**	**338,753**
Connecticut Counties[5]	**59,997**	**59,798**	**60,153**	**60,297**	**60,191**	**59,398**	**60,505**	**59,392**
TOTAL	**2,803,376**	**2,803,681**	**2,806,309**	**2,806,523**	**2,801,490**	**2,802,716**	**2,804,800**	**2,804,517**

Source: BPM, WSP 2021.
1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.
2 Long Island counties include Nassau and Suffolk.
3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
5 Connecticut counties include Fairfield and New Haven.

Table 5A-3. Change in Total Daily Journeys to/from the Manhattan CBD Compared to No Action Alternative (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	SCENARIO A		SCENARIO B		SCENARIO C		SCENARIO D		SCENARIO E		SCENARIO F		SCENARIO G	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
New York City	**-8,467**	**-0.4%**	**-7,605**	**-0.4%**	**-9,020**	**-0.4%**	**-14,142**	**-0.7%**	**-14,069**	**-0.7%**	**-12,166**	**-0.6%**	**-10,900**	**-0.5%**
Bronx	-2,108	-1.4%	-1,712	-1.1%	-2,603	-1.7%	-3,431	-2.2%	-3,562	-2.3%	-2,476	-1.6%	-2,943	-1.9%
Kings (Brooklyn)	-2,206	-0.5%	-1,253	-0.3%	-2,567	-0.6%	-4,167	-1.0%	-4,256	-1.0%	-2,069	-0.5%	-2,807	-0.7%
New York (Manhattan)	-3,771	-0.3%	-4,510	-0.4%	-3,713	-0.3%	-4,723	-0.4%	-4,109	-0.3%	-6,428	-0.5%	-4,239	-0.4%
Inside Manhattan CBD[1]	625	0.1%	-161	0.0%	2,366	0.3%	3,698	0.4%	3,555	0.4%	1,046	0.1%	1,925	0.2%
Outside Manhattan CBD	-4,396	-1.5%	-4,349	-1.5%	-6,079	-2.0%	-8,421	-2.8%	-7,664	-2.6%	-7,474	-2.5%	-6,164	-2.1%
Queens	-2,310	-0.6%	-2,120	-0.6%	-3,184	-0.9%	-3,754	-1.0%	-3,772	-1.1%	-3,546	-1.0%	-2,856	-0.8%
Richmond (Staten Island)	1,928	4.6%	1,990	4.7%	3,047	7.2%	1,933	4.6%	1,630	3.8%	2,353	5.6%	1,945	4.6%
Long Island Counties[2]	**5,012**	**3.1%**	**5,648**	**3.5%**	**4,534**	**2.8%**	**4,164**	**2.6%**	**5,197**	**3.2%**	**4,041**	**2.5%**	**5,975**	**3.7%**
New York Counties North of New York City[3]	**-2,345**	**-2.1%**	**-1,939**	**-1.7%**	**-1,602**	**-1.4%**	**-2,572**	**-2.3%**	**-2,825**	**-2.5%**	**-2,346**	**-2.1%**	**-2,139**	**-1.9%**
New Jersey Counties[4]	**6,304**	**1.9%**	**6,673**	**2.0%**	**8,935**	**2.7%**	**10,470**	**3.2%**	**11,636**	**3.5%**	**11,387**	**3.5%**	**8,810**	**2.7%**
Connecticut Counties[5]	**-199**	**-0.3%**	**156**	**0.3%**	**300**	**0.5%**	**194**	**0.3%**	**-599**	**-1.0%**	**508**	**0.8%**	**-605**	**-1.0%**
TOTAL	**305**	**0.0%**	**2,933**	**0.1%**	**3,147**	**0.1%**	**-1,886**	**-0.1%**	**-660**	**0.0%**	**1,424**	**0.1%**	**1,141**	**0.0%**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.

2 Long Island counties include Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

5 Connecticut counties include Fairfield and New Haven.

Table 5A-4. Daily Non-Work-Related Journeys into the Manhattan CBD by County of Origin (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York City	**796,263**	**793,158**	**795,050**	**793,230**	**790,236**	**790,916**	**793,468**	**792,147**
Bronx	41,511	40,239	40,971	40,352	39,707	39,691	40,314	40,401
Kings (Brooklyn)	80,405	79,193	79,998	79,218	78,082	78,373	79,390	78,643
New York (Manhattan)	601,900	601,749	601,362	600,892	600,864	601,196	601,131	601,306
Inside Manhattan CBD[1]	513,511	515,465	514,613	514,979	516,264	516,425	515,506	515,380
Outside Manhattan CBD	88,389	86,284	86,749	85,913	84,600	84,771	85,625	85,926
Queens	61,828	60,638	61,236	60,645	60,069	60,423	61,129	60,413
Richmond (Staten Island)	10,619	11,339	11,483	12,123	11,514	11,233	11,504	11,384
Long Island Counties[2]	**16,566**	**17,188**	**17,314**	**16,675**	**16,568**	**16,789**	**16,724**	**17,382**
New York Counties North of New York City[3]	**7,640**	**7,162**	**7,182**	**7,190**	**6,752**	**6,749**	**6,962**	**7,066**
New Jersey Counties[4]	**46,807**	**48,993**	**49,582**	**50,187**	**49,701**	**49,956**	**50,305**	**50,063**
Connecticut Counties[5]	**1,514**	**1,486**	**1,786**	**1,872**	**1,807**	**1,720**	**1,901**	**1,764**
TOTAL	**868,790**	**867,987**	**870,914**	**869,154**	**865,064**	**866,130**	**869,360**	**868,422**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.

2 Long Island counties include Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

5 Connecticut counties include Fairfield and New Haven.

Table 5A-5. Change in Daily Non-Work-Related Journeys into the Manhattan CBD Compared to No Action Alternative (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	SCENARIO A		SCENARIO B		SCENARIO C		SCENARIO D		SCENARIO E		SCENARIO F		SCENARIO G	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
New York City	**-3,105**	**-0.4%**	**-1,213**	**-0.2%**	**-3,033**	**-0.4%**	**-6,027**	**-0.8%**	**-5,347**	**-0.7%**	**-2,795**	**-0.4%**	**-4,116**	**-0.5%**
Bronx	-1,272	-3.1%	-540	-1.3%	-1,159	-2.8%	-1,804	-4.3%	-1,820	-4.4%	-1,197	-2.9%	-1,110	-2.7%
Kings (Brooklyn)	-1,212	-1.5%	-407	-0.5%	-1,187	-1.5%	-2,323	-2.9%	-2,032	-2.5%	-1,015	-1.3%	-1,762	-2.2%
New York (Manhattan)	-151	0.0%	-538	-0.1%	-1,008	-0.2%	-1,036	-0.2%	-704	-0.1%	-769	-0.1%	-594	-0.1%
Inside Manhattan CBD[1]	1,954	0.4%	1,102	0.2%	1,468	0.3%	2,753	0.5%	2,914	0.6%	1,995	0.4%	1,869	0.4%
Outside Manhattan CBD	-2,105	-2.4%	-1,640	-1.9%	-2,476	-2.8%	-3,789	-4.3%	-3,618	-4.1%	-2,764	-3.1%	-2,463	-2.8%
Queens	-1,190	-1.9%	-592	-1.0%	-1,183	-1.9%	-1,759	-2.8%	-1,405	-2.3%	-699	-1.1%	-1,415	-2.3%
Richmond (Staten Island)	720	6.8%	864	8.1%	1,504	14.2%	895	8.4%	614	5.8%	885	8.3%	765	7.2%
Long Island Counties[2]	**622**	**3.8%**	**748**	**4.5%**	**109**	**0.7%**	**2**	**0.0%**	**223**	**1.3%**	**158**	**1.0%**	**816**	**4.9%**
New York Counties North of New York City[3]	**-478**	**-6.3%**	**-458**	**-6.0%**	**-450**	**-5.9%**	**-888**	**-11.6%**	**-891**	**-11.7%**	**-678**	**-8.9%**	**-574**	**-7.5%**
New Jersey Counties[4]	**2,186**	**4.7%**	**2,775**	**5.9%**	**3,380**	**7.2%**	**2,894**	**6.2%**	**3,149**	**6.7%**	**3,498**	**7.5%**	**3,256**	**7.0%**
Connecticut Counties[5]	**-28**	**-1.8%**	**272**	**18.0%**	**358**	**23.6%**	**293**	**19.4%**	**206**	**13.6%**	**387**	**25.6%**	**250**	**16.5%**
TOTAL	**-803**	**-0.1%**	**2,124**	**0.2%**	**364**	**0.0%**	**-3,726**	**-0.4%**	**-2,660**	**-0.3%**	**570**	**0.1%**	**-368**	**0.0%**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.
2 Long Island counties include Nassau and Suffolk.
3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
5 Connecticut counties include Fairfield and New Haven.

The journeys presented in the BPM results are for travel undertaken between two geographic areas for a particular reason—work, school, shopping, medical care, entertainment, etc. These are activities that indicate social and community ties between two areas. An increase in total daily journeys and daily non-work-related journeys to the Manhattan CBD suggests that a geographic area would potentially have more social ties and stronger community connections to the Manhattan CBD with the CBD Tolling Alternative as compared to the No Action Alternative. As described in the previous subsection, areas that would see increases in daily trips to the Manhattan CBD include New Jersey, Long Island, and Staten Island. The model results also show marginal increases in nonwork-related Manhattan CBD journeys originating within the Manhattan CBD, indicating additional journeys and connections for Manhattan CBD residents likely due to the reduction in congestion in the Manhattan CBD.

A decrease in total daily journeys and daily non-work-related journeys to the Manhattan CBD suggests that a geographic area could have fewer social ties and weaker community connections to the Manhattan CBD with the CBD Tolling Alternative as compared to the No Action Alternative. However, as described earlier, the decreases in total daily journeys and daily non-work-related journeys would be small—in general, decreases of about 4 percent or less depending on the origin geographic area and the tolling scenario. Where decreases of more than 4 percent would occur (e.g., the decrease in daily non-work-related journeys from New York counties north of New York City), the number of forgone journeys would be very small (approximately 900 journeys under Tolling Scenario E), compared to overall number of daily non-work-related journeys to the Manhattan CBD. Moreover, as noted earlier, the decrease in non-work-related journeys to the Manhattan CBD would be from origins distributed throughout the 28-county study area, from many different communities throughout the region. The decrease in total daily journeys and daily non-work-related journeys to the Manhattan CBD and their distribution throughout the region, rather than from particular locations or communities, indicates that most regional social ties and community connections to the Manhattan CBD would be maintained with the CBD Tolling Alternative.

For New York City, the model results predict decreases in total daily journeys and non-work-related journeys to the Manhattan CBD from Brooklyn, Queens, the Bronx, and areas of Manhattan north of 60th Street. In these areas, many different communities, including the physical neighborhoods and other cultural, religious, artistic, or activity-based communities, are closely tied to the Manhattan CBD. The decrease in non-work-related journeys to the Manhattan CBD from areas of Manhattan north of 60th Street, Brooklyn, Queens, and the Bronx, indicate that the CBD Tolling Alternative would discourage some travel into the Manhattan CBD by making driving there more expensive. As previously described, the forgone journeys to the Manhattan CBD from other areas of New York City would be a very small portion of the total daily journeys and non-work-related journeys to the Manhattan CBD from those areas, indicating that community cohesion and connection to the Manhattan CBD would be maintained. As noted earlier in the discussion of the affected environment, most people use transit to make their trips to the Manhattan CBD, and these trips would not be affected by the CBD Tolling Alternative.

All areas of New York City outside the Manhattan CBD have transit access to the Manhattan CBD and would not be isolated from community services or ties within the Manhattan CBD (see **Figure 5A-3**). For example, Manhattan's Chinatown neighborhood is an important destination for New York City's Chinese American community, as are other specific neighborhoods throughout New York City and the region, such as those in Flushing, Queens; and Sunset Park, Bensonhurst, and Sheepshead Bay, Brooklyn. Access to Manhattan's Chinatown may be important for community cohesion among residents of these neighborhoods, and these areas would continue to have transit access to the Manhattan CBD with the CBD Tolling Alternative. Within Manhattan, neighborhoods are highly walkable or accessible via transit across 60th Street into the Manhattan CBD for most people. (For a discussion of effects on vulnerable social groups, including elderly populations, persons with disabilities, and transit-dependent populations, see **Subsection 5A.4.2.4, "Effects on Vulnerable Social Groups,"** later in this subchapter.)

As described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the CBD Tolling Alternative would result in a mode shift to transit across the region, with some of the decline in auto access to the Manhattan CBD translating to increases in transit trips (e.g., commuter rail, subway, bus, tram, and ferry). As discussed in **Subchapter 4C, "Transportation: Transit,"** the CBD Tolling Alternative would not result in adverse effects to the line-haul capacity of transit services serving the Manhattan CBD. None of the passenger increases on rail and subway transit routes or buses entering the Manhattan CBD, or on the Staten Island Ferry, would result in adverse effects related to line-haul capacity.[26] For subway routes, passenger increases would be below the impact threshold increment of 5 or more new passengers per car during the AM peak hour. There would be increased ridership on bus routes that would be accommodated by existing service levels. The CBD Tolling Alternative would also result in an increase in the number of passengers using transit stations in the regional transit system. As discussed in **Subchapter 4C, "Transportation: Transit,"** with improvements, the CBD Tolling Alternative would not result in unmitigated adverse effects on transit stations. Consequently, overall, potential transit ridership increases resulting from the CBD Tolling Alternative would not adversely affect community cohesion by overburdening transit infrastructure.

Notwithstanding the transit accessibility between the Manhattan CBD, New York City, and the regional study area, there would be an additional cost with the CBD Tolling Alternative for individuals who choose to drive, who do not have access to transit, or who must rely on driving to get to the Manhattan CBD. As noted in **Chapter 17, "Environmental Justice,"** and **Chapter 18, "Agency Coordination and Public Participation,"** during early public outreach for the Project in fall 2021, members of the public raised concerns related to the increased cost of travel to the Manhattan CBD for low-income drivers, low- and middle-income families in the Manhattan CBD, and residents of the Manhattan CBD travelling regionally to visit family and friends outside the Manhattan CBD. The costs incurred by individuals driving to the Manhattan CBD would vary widely, depending on individual circumstances and the specific tolling scenario (see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling," Section 4A.4.5**). The greatest cost would be incurred by those who make frequent driving journeys to the Manhattan CBD during peak hours. Driving to and from the Manhattan CBD is already expensive given the very limited availability of free or low-cost parking and the cost of off-street parking or taxi/FHV fares, and it is likely that people

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[26] Transit line-haul capacity is the capacity of a transit mode at its peak ridership point.

who drive regularly have higher incomes.[27] Individuals who drive less frequently would incur lower costs because of the toll.

Potential for Residential Displacement

Another concern related to community cohesion is the potential for a project to affect population and housing characteristics of an area by causing direct or indirect residential displacement.

Direct residential displacement occurs when residents must move from their homes as a direct result of an action. As noted above, the tolling infrastructure and tolling system equipment associated with the CBD Tolling Alternative would be within or adjacent to existing transportation rights-of-way, including sidewalks, and, in very limited instances, public parkland, and would not involve the acquisition of private property or the displacement of any residential uses.

Indirect residential displacement occurs when a change in socioeconomic conditions resulting from a project leads to conditions that require residents to move, such as increased rents or other increases in the cost of living. As noted in **Chapter 17, "Environmental Justice,"** and **Chapter 18, "Agency Coordination and Public Participation,"** during early public outreach for the Project in fall 2021, members of the public voiced concerns about the potential for indirect displacement of low-income residents to occur as a result of the CBD Tolling Alternative.

Indirect residential displacement can occur when a project results in substantial new development that is markedly different from existing uses, development, and activities within a neighborhood, and thus alters one or more of the underlying forces that shape real estate market conditions in an area. The CBD Tolling Alternative would not result in substantial new development or uses that would be markedly different from existing uses and activities within neighborhoods. More importantly, as discussed in this subsection, the CBD Tolling Alternative would not alter socioeconomic conditions related to the following, and therefore would not be likely to result in indirect displacement:

- Potential for residents relocating to avoid the cost of the toll
- Potential for indirect displacement because of increased cost of living within the Manhattan CBD or elsewhere

<u>Potential for Residents Relocating to Avoid the Cost of the Toll</u>

The CBD Tolling Alternative would introduce a new cost for residents of the Manhattan CBD who travel by vehicle into and out of the Manhattan CBD. However, only a small percentage of journeys within and from the Manhattan CBD are by vehicle, and residents who travel by other modes would not pay the toll. As described earlier in this subchapter in the discussion of the affected environment, approximately 20 percent of the residents of the Manhattan CBD have access to a vehicle. Based on the BPM results, approximately 1.0 million total daily journeys would occur within or from the Manhattan CBD under any tolling scenario and in the No Action Alternative, and approximately 10 percent of these journeys would be

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27 FHWA. *Status of the Nation's Highways, Bridges, and Transit. Conditions & Performance. 23rd Edition.* Chapter 3 Travel. Impact of Income Distribution on Travel. October 22, 2020. https://www.fhwa.dot.gov/policy/23cpr/index.cfm.

by driving (either the drive alone, high-occupancy vehicle, or taxi/FHV modes). In addition, residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000 would be entitled to a New York State tax credit equal to the aggregate amount of Manhattan CBD tolls paid during the taxable year, as discussed in **Chapter 2, "Project Alternatives."** Overall, the additional cost of the toll is not expected to substantively affect population characteristics of the Manhattan CBD by inducing CBD residents to relocate to avoid the toll.

For other residents of the regional study area, the new toll with the CBD Tolling Alternative could lead them to relocate out of the region entirely to avoid extra commuting costs. However, this would be unlikely to result in indirect residential displacement. Many factors influence a household's decision about where to live, and each household seeking to avoid the toll would undertake its own decision-making process. Any changes in residential patterns would be broadly distributed throughout the regional study area because of the wide variety of factors that influence a household's decision about where to live, including housing costs, work location and commuting, income, proximity to family and friends, schools, and perceptions about safety and crime. Certain households, such as low-income households or those tied to protected housing units (i.e., housing units that are rent-stabilized, rent-controlled, public housing, Mitchell-Lama rental, or subject to other regulations), may not be able to afford to move. Households seeking to avoid the toll would undertake their own decision-making process balancing these and other factors and reflecting their own unique priorities and preferences, and they would reach different conclusions about whether to relocate and, if so, to where. It is unlikely that the toll would outweigh the other factors that influence a household's decision on where to live such that it would result in indirect residential displacement. Furthermore, areas near the Manhattan CBD, where residents have the most social and community ties to the Manhattan CBD and are most likely to travel regularly to the Manhattan CBD, have high levels of transit access to the Manhattan CBD. Residents of these areas would continue to be able to use transit to access the Manhattan CBD and avoid the toll. Therefore, the CBD Tolling Alternative would not substantively affect population characteristics of the regional study area by incentivizing residents to relocate to avoid the toll.

The new toll with the CBD Tolling Alternative would increase the cost of driving into the Manhattan CBD, which could make residential neighborhoods near transit—including the Manhattan CBD itself—more attractive for residents, because this could help residents avoid the toll. However, this is unlikely to affect real estate market values either within the Manhattan CBD or elsewhere. Similar to residents who might seek to relocate from the Manhattan CBD or regional study area, any changes in residential patterns related to residents moving closer to transit would be broadly distributed throughout the regional study area because of the wide variety of factors that influence a household's decision about where to live. Therefore, no particular area would be likely to see a large inflow or outflow of new residents seeking to avoid the toll, and the CBD Tolling Alternative would be unlikely to result in notable changes in real estate market conditions. Any relocation that may occur because of households seeking to avoid the toll would not have the potential to markedly change the demographic or community character of an area, and therefore would not adversely affect community cohesion.

Potential for Indirect Displacement Because of Increased Cost of Living Within the Manhattan CBD or Elsewhere

During early public outreach for the Project in fall 2021, some commenters raised concerns that the CBD Tolling Alternative would result in increased costs of living within the Manhattan CBD that would result in indirect displacement of low-income residents. However, this is unlikely to occur, because the CBD Tolling Alternative would not result in changes in market conditions that would increase real estate values, so as to result in increased rents; the CBD Tolling Alternative would not result in an increase in the cost of goods within the Manhattan CBD; and low-income residents of the Manhattan CBD would be entitled to a tax credit to offset their tolls.

In terms of increased real estate values, as noted earlier, any changes in residential patterns related to residents moving closer to transit would be broadly distributed throughout the regional study area because of the wide variety of factors that influence a household's decision about where to live. In addition, in areas to which people might move to avoid the toll or be close to transit, the value of residential property and rents is already influenced by the existing proximity to transit. While there could be some additional value to living close to transit (i.e., the value of living near a commuter station) in the future with the CBD Tolling Alternative, there is value to such proximity under existing conditions. The CBD Tolling Alternative itself would not introduce a new residential amenity that could substantively alter rents. Within the Manhattan CBD in particular, residential property values are already well established and influenced by factors such as the area's central location in New York City and its proximity to transit. While some research indicates that a reduction in traffic congestion resulting from congestion pricing could increase residential sales prices and thus could exert upward pressure on rents,[28] the potential social, economic, and environmental benefits from the CBD Tolling Alternative—some of which are detailed in other subsections of this subchapter—would not be substantial enough to markedly influence rents or residential property market conditions given the other factors already influencing New York City's residential real estate market (i.e., its central location and proximity to transit, jobs, cultural amenities, etc.).

Moreover, the substantial number of apartments in the Manhattan CBD that have protected rents (e.g., apartments under the jurisdiction of the New York City Housing Authority and apartments that are protected by New York State's rent control and rent stabilization laws) would not be subject to market-driven prices increases.[29] Furthermore, the Manhattan CBD already has the highest cost of living and highest home prices and rents in the region, and it is unlikely that many individuals would seek to move to the Manhattan CBD specifically to avoid the toll or because of a reduction in congestion. Therefore, the

[28] A study of conditions in London found that reductions in traffic in the congestion zone increased residential sales prices in the congestion zone. Tang, Cheng Keat. 2018. "Essays in the economics of transportation, housing and discrimination." PhD thesis, The London School of Economics and Political Science. etheses.lse.ac.uk/3797/.

[29] Estimates of protected units in the Manhattan CBD are not available, but approximately 58 percent of the renter-occupied households in New York City reside in protected housing units (i.e., housing units that are rent stabilized, rent controlled, public housing, Mitchell-Lama rental, or subject to HUD or other regulation) with a substantial proportion of these units in Manhattan. Source: Waickman, C. R., Jerome, J. B. R., Place, R. *Sociodemographics of Rent Stabilized Tenants*. New York City Department of Housing Preservation and Development. 2018. www1.nyc.gov/assets/hpd/downloads/pdfs/services/rent-regulation-memo-1.pdf.

CBD Tolling Alternative would not substantively affect population characteristics of the Manhattan CBD or other transit hubs by attracting new residents seeking to avoid the toll.

Furthermore, as discussed in **Chapter 6, "Economic Conditions,"** the cost of new tolls with the CBD Tolling Alternative would not be likely to result in an appreciable increase in the cost of goods within the Manhattan CBD. In addition, as noted earlier, residents whose primary residence is inside the Manhattan CBD and whose New York adjusted gross income for the taxable year is less than $60,000 would be entitled to a New York State tax credit equal to the aggregate amount of Manhattan CBD tolls paid during the taxable year.

5A.4.2.3 COMMUNITY FACILITIES AND SERVICES

This section assesses whether the CBD Tolling Alternative would affect access to and operations of community facilities and services, including potential effects on the workforce for community facilities and services.

The analysis considers the effects of the following:

- Costs to community facilities and service providers that rely on vehicles traveling into and out of the Manhattan CBD
- Costs to people who visit community facilities in the Manhattan CBD
- Costs to the workers who drive to work at community facilities and services in the Manhattan CBD
- Changes in traffic patterns, including potential increases in traffic at some locations, which could affect emergency response times (a community service)

Each of these potential effects on community facilities and services is discussed in the following sections. In addition, **Chapter 17, "Environmental Justice,"** considers these effects on minority and low-income populations.

Costs to Community Facilities and Services

A variety of community facilities and services, such as food pantries and meal delivery services, religious facilities, cultural institutions, social service providers, and home healthcare providers, rely on vehicles to transport people, goods, services, supplies, or staff into and out of the Manhattan CBD. As noted in **Chapter 17, "Environmental Justice,"** and **Chapter 18, "Agency Coordination and Public Participation,"** during early public outreach for the Project in fall 2021, some members of the public raised concerns about the increased cost of travel for nonprofit social service providers that operate in the Manhattan CBD. If these community facilities and services are not exempt from paying the toll, or otherwise reimbursed, they would have to absorb the cost of the toll as part of their operating costs to the extent such funds are available or look for new sources of funding to offset these costs. This would be true for providers located within the Manhattan CBD that provide services to people outside of the Manhattan CBD and providers that are located outside the Manhattan CBD but provide services to Manhattan CBD residents. Increased transportation costs could adversely affect the operations of the service providers if the costs cannot be absorbed or offset through the addition of new funding sources. The costs incurred by various community facilities and services because of the toll would depend on the type of vehicle, how frequently their vehicles need to enter and exit the Manhattan CBD, whether the service provider can consolidate activities or shift to off-peak or overnight hours, whether there is a cap on the number of times a toll can be charged, and other factors. (In all tolling scenarios, automobiles and small vans would pay the toll no more than once per day; some tolling scenarios would have a limit on the number of times per day a truck would pay the toll and others would not.) Tolling Scenarios B and F would result in lesser effects on services that provide or rely on truck deliveries since they limit the number of times a truck would be charged the CBD toll on a given day. At the same time, community facilities and services that rely on vehicle travel into and out of the Manhattan CBD would benefit from a less congested roadway network.

One example of a community service that may incur additional cost related to the toll is school bus service to and from school across the Manhattan CBD boundary at 60th Street. As described earlier, most students in Manhattan travel to and from school by walking, biking, or public transit. For the school bus operations that occur, the CBD Tolling Alternative would increase the cost of some bus services for NYCDOE if all school buses are not exempt from the toll. (Those school buses carrying students with disabilities would be exempt from the toll under the legislation that created the CBD Tolling Program.) The City of New York would need to set aside funding for this cost, competing with other resource needs.[30] Whether school buses receive an exemption or not, they would still benefit from reduced roadway congestion and additional funds to improve transit service used by their faculty, staff, and students.

Costs to People who Visit Community Facilities and Services

Throughout the regional study area, most community facilities are locally focused, serving their individual communities, although some have a larger regional draw. Most community facilities and services in the Manhattan CBD are close to transit services, making this a viable mode choice for access to those community facilities and, as noted earlier, most travel to and from the Manhattan CBD is by transit. The clientele who use transit would not have increased costs. There would be a cost with the CBD Tolling Alternative to people who drive to community facilities and services in the Manhattan CBD from outside the Manhattan CBD and also to residents of the Manhattan CBD who drive to community facilities outside the Manhattan CBD.

Examples of the type of community facility user who would be affected by the cost of the toll if they drive would be individuals traveling to medical or healthcare facilities, or potentially to a place of worship. These examples are discussed below. As noted in **Chapter 17, "Environmental Justice,"** and **Chapter 18, "Agency Coordination and Public Participation,"** members of the public raised the increased cost of travel for patients traveling to health care facilities in the Manhattan CBD as a concern during early public outreach conducted in fall 2021.

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30 Private schools using buses that pay the CBD toll would have to absorb the costs or pass them on to their students if buses are tolled; in Tolling Scenarios B and F, school buses would be exempt from the toll and in the other tolling scenarios they would be subject to the toll with no cap or exemption.

As described earlier, the rate of vehicle use to access medical facilities depends in part on the facilities' distance to the subway or bus routes (as well as other factors, including the patient's mobility and the type of medical service sought). For medical office uses within one-quarter mile of a subway station, approximately 6 percent of trips to these uses are by auto or taxi/FHV modes, according to data from NYCDOT's mode choice surveys. For medical office uses that are beyond one-quarter mile from a subway station, approximately 14 percent of trips are by auto or taxi/FHV modes. Therefore, most medical trips, even those to facilities more than one-quarter mile from a subway station, are made by modes other than auto or taxi/FHV. With the CBD Tolling Alternative, people traveling to medical facilities in the Manhattan CBD would either continue to travel by vehicle and incur the toll, switch modes to transit to avoid the toll, or seek new medical and healthcare facilities outside of the Manhattan CBD. It may not be reasonable for some individuals to switch modes or seek new medical and healthcare providers. In that case, the CBD Tolling Alternative could increase the cost for certain individuals to access medical facilities and healthcare providers in the Manhattan CBD, depending on their route choice and the tolling scenario. It should be noted that qualifying vehicles—which would include MTA's paratransit service and taxis and FHVs that provide paratransit service on behalf of MTA—transporting people with disabilities would be exempt from the toll. Therefore, disabled people traveling by a qualifying vehicle to or within the Manhattan CBD would not be charged a toll. However, some disabled people may need to use nonqualifying vehicles to access healthcare and medical facilities. In those cases, the CBD Tolling Alternative would result in an additional cost for disabled individuals to access medical facilities and healthcare providers in the Manhattan CBD. Some of this cost may be covered by Medicaid or other insurance, which covers nonemergency medical transportation in certain situations.

The costs incurred by people driving to access medical or healthcare facilities would vary depending on individual circumstances. The greatest cost would be incurred by those who have frequent, regular medical appointments that they drive to (and for whom transit is not an acceptable alternative), and who are not eligible for paratransit or nonemergency medical transportation under Medicaid or other insurance coverage. Driving to and from the Manhattan CBD is already expensive given the very limited availability of free or low-cost parking and the cost of parking or taxi/FHV fares, and it is likely that people who drive regularly to medical appointments would have higher incomes. Individuals who drive infrequently to medical appointments would incur lower costs because of the toll. The increased cost would be partially offset by the travel-time savings provided by a potentially less congested roadway network.

With respect to people traveling to places of worship, as noted earlier, there are some 200 places of worship for many different religions in and around the Manhattan CBD, and some of these places are regionally important. Places of worship are typically accessible by transit, and most do not have on-site visitor parking given the densely developed nature of the Manhattan CBD, which indicates that travel by vehicle is not the predominant mode of transportation for their worshippers. With the CBD Tolling Alternative, individuals would incur an additional cost to travel by vehicle to a place of worship in the Manhattan CBD, or from within the Manhattan CBD to a place of worship outside the Manhattan CBD. The costs incurred by individuals driving to places of worship would vary depending on individual circumstances, as discussed earlier with respect to medical and healthcare facilities. Individuals who use the bus system would benefit from the reduced congestion with the CBD Tolling Alternative.

Overall, given the wide range of travel options other than driving, the cost for users to drive to community facilities and services would not constitute an adverse effect on the operations of community facilities and services.

Costs to Workers at Community Facilities and Services

Workers at community facilities and services, such as teachers, police officers, or health care workers, may choose to commute by automobile to or from the Manhattan CBD because their work schedule is not conducive for transit use, because they have limited transit options to their place of work, or, in some cases, because they have free parking at their place of work. With the CBD Tolling Alternative, there would be a cost to workers associated with commuting by vehicle if they enter or remain in the Manhattan CBD.

As discussed in more detail in **Chapter 6, "Economic Conditions,"** as a result of the CBD Tolling Alternative, such workers would make one of the following decisions: (1) continue to commute by vehicle and incur the toll cost; (2) switch modes to a nonvehicular option before entering the Manhattan CBD to avoid the toll cost; (3) seek new employment opportunities (or other workplace locations with the same employer) at locations that would not involve incurring the toll; (4) relocate their place of residence to the Manhattan CBD; or (5) telecommute, or telecommute more often, to eliminate or reduce the frequency of incurring the toll. Workers that make decision (1), (2), (4), or (5) or seek other workplace locations with their same employer in decision (3) would continue employment at their respective community facility or service employer, and thus would not affect the provision of community facilities or services. These workers would not result in additional costs to their employers because they would either absorb or avoid the toll. It should be noted that decisions (4) and (5) may not be feasible for many workers at community facilities and services. For decision (4), the potential cost savings associated with eliminating a toll would be far outweighed by other cost-of-living and quality-of-life factors given the relatively high rents and home prices within the Manhattan CBD. For decision (5), telecommuting is not a viable option for many types of work, including many types of community facilities and services work.

Many workers at community facilities and services in the Manhattan CBD would have the option to switch from a vehicle to transit to their place of work because the Manhattan CBD is accessible by transit with a range of modes and service providers, including local and express subways, commuter and intercity rail, local and express buses, intercity buses, and ferries. As noted in **Chapter 6, "Economic Conditions,"** the ease of transit access within the Manhattan CBD allows the subset of Manhattan CBD car commuters who would be discouraged by toll costs and who do not have transit access near their homes, to instead drive to a transit station and complete their commute by transit. As noted earlier, all areas of the Manhattan CBD are within one-half mile of transit service, but one area in the West 50s is not within one-half mile of faster transit modes. As shown in **Table 6-11** in **Chapter 6, "Economic Conditions,"** approximately 0.7 percent of all jobs (or 1,415 jobs) in the Manhattan CBD in the "Education, health, and social services" industry category and approximately 0.1 percent of all jobs (or 65 jobs) in the "Public administration," industry category are located more than one-half mile from faster transit at a subway station or express/SBS bus stop. Furthermore, more than 85 percent of jobs in the Manhattan CBD are held by workers who commute by public transportation; approximately 9 percent of Manhattan CBD jobs are held by workers who drive to work alone.

To the extent that some community facilities and services workers who currently drive to work in the Manhattan CBD would seek new employment (i.e., decision (3) above), this would likely happen over time (for example, as people try new modes of transportation to avoid the toll and perhaps ultimately decide to take a new job elsewhere) such that services would be maintained and, if necessary, employers could elect to provide incentives (such as higher pay or reimbursements) to compensate for the cost of the toll to workers. The cost of higher pay for workers in the Manhattan CBD would increase operating costs for the community facility or service provider.

Emergency Response Times

The CBD Tolling Alternative would result in potential changes in traffic patterns, including potential increases in traffic at some locations, which could affect emergency response times. Shifts in traffic patterns would change conditions at some local intersections within and near the Manhattan CBD. Of the more than 102 local intersections analyzed, most intersections would see reductions in or no change in delay. At intersections where the CBD Tolling Alternative would result in increases in delay, the Project will include implementation of signal-timing adjustments to address that delay. Therefore, the increases in delays at local intersections would not adversely affect emergency response times.

Under Tolling Scenarios D, E, and F, the CBD Tolling Alternative would result in increased traffic volumes approaching the Manhattan CBD on the Long Island Expressway (I-495) leading to the Queens-Midtown Tunnel and the Trans-Manhattan Expressway (I-95) between the Alexander Hamilton Bridge and the George Washington Bridge during the midday and PM peak hours. Although there would be some increase in overall travel time at these locations under these tolling scenarios, emergency response vehicles are not bound by standard traffic controls when responding to emergencies and thus may be able to bypass some highway congestion. Therefore, the increased volumes on certain highway segments would not adversely affect emergency response times. The CBD Tolling Alternative would contribute to improved response times in the Manhattan CBD because it would reduce vehicular congestion in the Manhattan CBD.

5A.4.2.4 EFFECTS ON VULNERABLE SOCIAL GROUPS

This section evaluates the Project's potential effects on certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and nondriver populations. The potential effects of the CBD Tolling Alternative on minority and/or low-income populations is evaluated in **Chapter 17, "Environmental Justice."**

This section draws on the summary of the potential benefits of the CBD Tolling Alternative provided earlier and includes subsections for each of the relevant social groups.

Elderly Individuals

The CBD Tolling Alternative would result in an additional cost to elderly individuals if they travel by auto and enter or remain in the Manhattan CBD. Some elderly people would shift to other modes to avoid the toll, while others would continue to drive and pay the toll, because it is worth the time savings, because they prefer traveling by car, or because they have limited transportation options. The majority (approximately 63 percent) of the approximately 105,000 people age 65 or older who commute to

Manhattan for work take public transit, while approximately 18 percent drive or travel by taxi or FHV.[31] No information is available about travel mode choices for elderly individuals traveling to the Manhattan CBD for non-work-related reasons. As noted in **Chapter 17, "Environmental Justice,"** and **Chapter 18, "Agency Coordination and Public Participation,"** members of the public raised the increased cost of travel for elderly individuals in the Manhattan CBD as a concern during early public outreach conducted in fall 2021.

The costs incurred by elderly individuals driving to the Manhattan CBD would vary depending on how frequently they choose to drive to the Manhattan CBD and at what time of day. As noted earlier, driving to and from the Manhattan CBD is already expensive given the very limited availability of free or low-cost parking and the cost of taxi/FHV fares, and it is likely that people who drive frequently have higher incomes.[32] With the CBD Tolling Alternative, some elderly individuals would likely switch from vehicles to public transit for journeys to the Manhattan CBD, consistent with BPM data that indicate an overall reduction in driving mode share to the Manhattan CBD ranging from 4 percent (with Tolling Scenario B) to 10 percent (with Tolling Scenario E), or approximately 19,900 to 49,500 fewer daily driving journeys to the Manhattan CBD. **Table 4A-8** in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** provides more information on the predicted change in mode share to the Manhattan CBD.

There are various reasons that elderly people drive to the Manhattan CBD, including trips to work, trips to shop, dine, or attend a performance, trips to visit friends or family, and trips to community facilities, including medical appointments. There is a transit alternative to reach many destinations within the Manhattan CBD, including local buses that stop within a block or two of most destinations. People over the age of 65 with a qualifying disability receive a reduced fare on MTA subways and buses, and elderly individuals with a qualifying disability can also receive MTA's paratransit service, including taxis and FHVs operating on behalf of MTA to transport paratransit users.[33] Elderly people who drive to or from the Manhattan CBD and are low-income would be entitled to the same mitigations and enhancements proposed for younger low-income populations with the CBD Tolling Alternative (see **Chapter 17, "Environmental Justice"**). Other elderly individuals who drive to the Manhattan CBD would pay the full toll.

Elderly individuals would benefit from the travel-time and reliability improvements to bus service with the CBD Tolling Alternative, as bus passengers tend to be older than riders on other forms of transit, such as the subway and, as described above, bus passengers in the Manhattan CBD would benefit from travel-time savings due to the decrease in congestion.[34]

Persons with Disabilities

With the CBD Tolling Alternative, qualifying vehicles transporting people with disabilities would be exempt from the toll. As currently designed, qualifying vehicles transporting persons with disabilities includes vehicles with government-issued disability license plates and fleet vehicles owned or operated by

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31 Data on mode of travel to work by age to the Manhattan CBD is not available. Data is available only to the county level.

32 FHWA. Status of the Nation's Highways, Bridges, and Transit Conditions & Performance, 23rd Edition. Chapter 3, "Travel." Last accessed March 21, 2022. https://www.fhwa.dot.gov/policy/23cpr/chap3.cfm#access-to-vehicles.

33 MTA has specific criteria to define qualifying individuals: https://new.mta.info/fares/reduced-fare and https://new.mta.info/accessibility/paratransit/how-to-apply-or-recertify-for-access-a-ride.

34 blog.tstc.org/2014/04/11/nyc-bus-riders-tend-to-be-older-and-poorer-than-subway-riders/.

organizations used exclusively to provide transportation to people with disabilities. Therefore, disabled people traveling by a qualifying vehicle to or within the Manhattan CBD would not be charged a toll. Access-A-Ride paratransit service, which provides public transportation for customers with disabilities or certain qualifying health conditions, would be also exempt from the toll. Some disabled people may rely on travel by nonqualifying vehicles to or within the Manhattan CBD. In that case, the CBD Tolling Alternative would increase the cost for disabled people using nonqualifying vehicles to travel to the Manhattan CBD. As noted earlier, some of the cost to use nonqualifying vehicles for nonemergency medical transportation may be covered by Medicaid in certain situations. As noted in **Chapter 17, "Environmental Justice,"** and **Chapter 18, "Agency Coordination and Public Participation,"** members of the public raised the increased cost of travel for persons with disabilities in the Manhattan CBD as a concern during early public outreach conducted in fall 2021.

The CBD Tolling Alternative would provide benefits to improve paratransit services, such as reduced roadway congestion and travel-time improvements, which would benefit persons with disabilities.

Given the exemption from the toll for qualifying vehicles and the transit and paratransit service improvements, the CBD Tolling Alternative would not adversely affect persons with disabilities.

Transit-Dependent Populations and Nondriver Populations

The CBD Tolling Alternative would benefit transit users in the region, and transit-dependent populations in particular, by creating a new funding source for MTA's 2020–2024 Capital Program and subsequent programs. As described earlier, the CBD Tolling Alternative would result in a mode shift to transit across the region, but this mode shift would not result in adverse effects to the capacity of transit services serving the Manhattan CBD (refer to **Subchapter 4C, "Transportation: Transit"**). Furthermore, the CBD Tolling Alternative would not have unmitigated adverse effects on pedestrian facilities (such as sidewalks and crosswalks) that nondriver populations may rely on, and would result in safety benefits for pedestrians and bicyclists as described earlier. Therefore, potential transit ridership increases due to the CBD Tolling Alternative would not adversely affect transit-dependent populations or nondriver populations.

5A.4.2.5 ACCESS TO EMPLOYMENT

This subsection evaluates the effects of the new CBD toll on access to employment, including for people who travel from elsewhere to jobs in the Manhattan CBD and for residents of the Manhattan CBD who travel to jobs outside the Manhattan CBD.

Changes to Daily Work Journeys to the Manhattan CBD

Table 5A-6 and Table 5A-7 present the number of daily work journeys into the Manhattan CBD from each of the counties in the regional study area for each tolling scenario in comparison to the No Action Alternative. As shown, while the total number of daily work journeys would remain essentially the same (because the number of jobs would be unchanged; the small differences in total journeys are due to rounding in the model results), the distribution of the journeys would change with implementation of the CBD Tolling Alternative.

The CBD Tolling Alternative would result in small shifts in the place of origin for employees with jobs in the Manhattan CBD. More employees would come from New Jersey (a 1.3 to 2.9 percent increase, depending on the tolling scenario), Staten Island (a 2.3 to 3.7 percent increase depending on the tolling scenario), and Long Island (a 1.4 to 2.6 percent increase, depending on the tolling scenario). Fewer employees would come from New York counties north of New York City, with a decrease of 1.7 percent under Tolling Scenario A (a decrease of approximately 1,800 work journeys); Queens, with a decrease of 1.5 percent under Tolling Scenario F (decrease of approximately 3,800 work journeys); the Bronx (a decrease of 1.4 percent under Scenario E); and Brooklyn (a decrease of 1.2 percent under Tolling Scenario E). The largest percentage decrease in daily work journeys to the Manhattan CBD would occur from Connecticut, with a decrease of 2 percent under Tolling Scenario E (a decrease of approximately 1,100 work journeys). These decreases indicate a decrease in jobs held at locations inside the Manhattan CBD by residents of the Bronx, Brooklyn, and Queens; New York counties north of New York City; and Connecticut.

Change in Daily Work Journeys to Non-CBD Locations

Table 5A-8 and Table 5A-9 show the projected change in daily work journeys to locations outside the Manhattan CBD for each county in the regional study area for each tolling scenario. Similar to the work journeys to the Manhattan CBD discussed above, the total number of daily work journeys to non-CBD locations would remain essentially the same (because the number of jobs would be unchanged; the small differences in total journeys are due to rounding in the model results), the distribution of the journeys would change with implementation of the CBD Tolling Alternative.

As shown, the modeling predicts that the number of Manhattan CBD residents who work outside the Manhattan CBD would decrease by up to 2.2 percent under the tolling scenario with the largest decrease (Tolling Scenario E, with a decrease of approximately 800 daily journeys). Specifically, with the No Action Alternative and all tolling scenarios of the CBD Tolling Alternative, approximately 37,000 daily work journeys would originate in the Manhattan CBD bound for locations outside the Manhattan CBD, compared to approximately 165,000 daily work journeys that would originate in the Manhattan CBD and remain there (see Table 5A-6). The reduction under Tolling Scenario E could be due to residents of the Manhattan CBD taking jobs within the Manhattan CBD vacated by non-Manhattan CBD residents who were working in the Manhattan CBD, but who took jobs outside of the Manhattan CBD to avoid the toll.

Table 5A-6. Daily Work Journeys into Manhattan CBD by County of Origin (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York City	**1,008,469**	**1,004,181**	**1,003,479**	**1,002,771**	**1,001,411**	**1,000,751**	**1,001,246**	**1,002,600**
Bronx	97,518	96,911	96,821	96,598	96,359	96,172	96,741	96,409
Kings (Brooklyn)	282,439	280,663	280,595	279,906	279,684	279,165	280,197	280,463
New York (Manhattan)	340,690	339,782	340,032	339,874	340,036	340,401	339,459	339,300
Inside Manhattan CBD[1]	164,814	165,096	164,894	165,304	165,480	165,649	165,289	165,093
Outside Manhattan CBD	175,876	174,686	175,138	174,570	174,556	174,752	174,170	174,207
Queens	260,444	258,756	257,996	257,996	257,335	256,897	256,624	258,367
Richmond (Staten Island)	27,378	28,069	28,035	28,397	27,997	28,116	28,225	28,061
Long Island Counties[2]	**128,802**	**131,412**	**131,993**	**131,253**	**131,272**	**131,777**	**130,636**	**132,202**
New York Counties North of New York City[3]	**101,745**	**99,988**	**100,411**	**100,742**	**100,272**	**100,014**	**100,247**	**100,347**
New Jersey Counties[4]	**264,412**	**268,175**	**267,738**	**269,024**	**271,000**	**272,034**	**271,413**	**269,303**
Connecticut Counties[5]	**57,639**	**57,274**	**57,394**	**57,303**	**57,085**	**56,505**	**57,517**	**56,565**
TOTAL	**1,561,067**	**1,561,030**	**1,561,015**	**1,561,093**	**1,561,040**	**1,561,081**	**1,561,059**	**1,561,017**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.

2 Long Island counties include Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

5 Connecticut counties include Fairfield and New Haven.

Table 5A-7. Change in Daily Work Journeys into Manhattan CBD Compared to No Action Alternative (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	SCENARIO A		SCENARIO B		SCENARIO C		SCENARIO D		SCENARIO E		SCENARIO F		SCENARIO G	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
New York City	**-4,288**	**-0.4%**	**-4,990**	**-0.5%**	**-5,698**	**-0.6%**	**-7,058**	**-0.7%**	**-7,718**	**-0.8%**	**-7,223**	**-0.7%**	**-5,869**	**-0.6%**
Bronx	-607	-0.6%	-697	-0.7%	-920	-0.9%	-1,159	-1.2%	-1,346	-1.4%	-777	-0.8%	-1,109	-1.1%
Kings (Brooklyn)	-1,776	-0.6%	-1,844	-0.7%	-2,533	-0.9%	-2,755	-1.0%	-3,274	-1.2%	-2,242	-0.8%	-1,976	-0.7%
New York (Manhattan)	-908	-0.3%	-658	-0.2%	-816	-0.2%	-654	-0.2%	-289	-0.1%	-1,231	-0.4%	-1,390	-0.4%
Manhattan CBD[1]	282	0.2%	80	0.0%	490	0.3%	666	0.4%	835	0.5%	475	0.3%	279	0.2%
Outside Manhattan CBD	-1,190	-0.7%	-738	-0.4%	-1,306	-0.7%	-1,320	-0.8%	-1,124	-0.6%	-1,706	-1.0%	-1,669	-0.9%
Queens	-1,688	-0.6%	-2,448	-0.9%	-2,448	-0.9%	-3,109	-1.2%	-3,547	-1.4%	-3,820	-1.5%	-2,077	-0.8%
Richmond (Staten Island)	691	2.5%	657	2.4%	1,019	3.7%	619	2.3%	738	2.7%	847	3.1%	683	2.5%
Long Island Counties[2]	**2,610**	**2.0%**	**3,191**	**2.5%**	**2,451**	**1.9%**	**2,470**	**1.9%**	**2,975**	**2.3%**	**1,834**	**1.4%**	**3,400**	**2.6%**
New York Counties North of New York City[3]	**-1,757**	**-1.7%**	**-1,334**	**-1.3%**	**-1,003**	**-1.0%**	**-1,473**	**-1.4%**	**-1,731**	**-1.7%**	**-1,498**	**-1.5%**	**-1,398**	**-1.4%**
New Jersey Counties[4]	**3,763**	**1.4%**	**3,326**	**1.3%**	**4,612**	**1.7%**	**6,588**	**2.5%**	**7,622**	**2.9%**	**7,001**	**2.6%**	**4,891**	**1.8%**
Connecticut Counties[5]	**-365**	**-0.6%**	**-245**	**-0.4%**	**-336**	**-0.6%**	**-554**	**-1.0%**	**-1,134**	**-2.0%**	**-122**	**-0.2%**	**-1,074**	**-1.9%**
TOTAL	**-37**	**0.0%**	**-52**	**0.0%**	**26**	**0.0%**	**-27**	**0.0%**	**14**	**0.0%**	**-8**	**0.0%**	**-50**	**0.0%**

Source: BPM, WSP 2021.

1 Journeys originating in the CBD are internal journeys within the Manhattan CBD.
2 Long Island counties include Nassau and Suffolk.
3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
5 Connecticut counties include Fairfield and New Haven.

Table 5A-8. Daily Work Journeys to Non-CBD Locations by County of Origin (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York City	**1,807,303**	**1,811,591**	**1,812,293**	**1,813,001**	**1,814,361**	**1,815,021**	**1,814,526**	**1,813,172**
Bronx	320,338	320,945	321,035	321,258	321,497	321,684	321,115	321,447
Kings (Brooklyn)	587,782	589,558	589,626	590,315	590,537	591,056	590,024	589,758
New York (Manhattan)	154,301	155,209	154,959	155,117	154,955	154,590	155,532	155,691
Inside Manhattan CBD[1]	37,457	37,175	37,377	36,967	36,791	36,622	36,982	37,178
Outside Manhattan CBD	116,844	118,034	117,582	118,150	118,164	117,968	118,550	118,513
Queens	620,209	621,897	622,657	622,657	623,318	623,756	624,029	622,286
Richmond (Staten Island)	124,673	123,982	124,016	123,654	124,054	123,935	123,826	123,990
Long Island Counties[2]	**1,008,938**	**1,006,328**	**1,005,747**	**1,006,487**	**1,006,468**	**1,005,963**	**1,007,104**	**1,005,538**
New York Counties North of New York City[3]	**658,523**	**660,280**	**659,857**	**659,526**	**659,996**	**660,254**	**660,021**	**659,921**
New Jersey Counties[4]	**2,416,474**	**2,412,711**	**2,413,148**	**2,411,862**	**2,409,886**	**2,408,852**	**2,409,473**	**2,411,583**
Connecticut Counties[5]	**644,072**	**644,437**	**644,317**	**644,408**	**644,626**	**645,206**	**644,194**	**645,146**
TOTAL	**6,535,310**	**6,535,347**	**6,535,362**	**6,535,284**	**6,535,337**	**6,535,296**	**6,535,318**	**6,535,360**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.

2 Long Island counties include Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

5 Connecticut counties include Fairfield and New Haven.

Table 5A-9. Change in Daily Work Journeys to Non-CBD Locations Compared to No Action Alternative (2023, All Modes)

ORIGIN GEOGRAPHIC AREA	SCENARIO A		SCENARIO B		SCENARIO C		SCENARIO D		SCENARIO E		SCENARIO F		SCENARIO G	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
New York City	**4,288**	**0.2%**	**4,990**	**0.3%**	**5,698**	**0.3%**	**7,058**	**0.4%**	**7,718**	**0.4%**	**7,223**	**0.4%**	**5,869**	**0.3%**
Bronx	607	0.2%	697	0.2%	920	0.3%	1,159	0.4%	1,346	0.4%	777	0.2%	1,109	0.3%
Kings (Brooklyn)	1,776	0.3%	1,844	0.3%	2,533	0.4%	2,755	0.5%	3,274	0.6%	2,242	0.4%	1,976	0.3%
New York (Manhattan)	908	0.6%	658	0.4%	816	0.5%	654	0.4%	289	0.2%	1,231	0.8%	1,390	0.9%
Inside Manhattan CBD[1]	-282	-0.8%	-80	-0.2%	-490	-1.3%	-666	-1.8%	-835	-2.2%	-475	-1.3%	-279	-0.7%
Outside Manhattan CBD	1,190	1.0%	738	0.6%	1,306	1.1%	1,320	1.1%	1,124	1.0%	1,706	1.5%	1,669	1.4%
Queens	1,688	0.3%	2,448	0.4%	2,448	0.4%	3,109	0.5%	3,547	0.6%	3,820	0.6%	2,077	0.3%
Richmond (Staten Island)	-691	-0.6%	-657	-0.5%	-1,019	-0.8%	-619	-0.5%	-738	-0.6%	-847	-0.7%	-683	-0.5%
Long Island Counties[2]	**-2,610**	**-0.3%**	**-3,191**	**-0.3%**	**-2,451**	**-0.2%**	**-2,470**	**-0.2%**	**-2,975**	**-0.3%**	**-1,834**	**-0.2%**	**-3,400**	**-0.3%**
New York Counties North of New York City[3]	**1,757**	**0.3%**	**1,334**	**0.2%**	**1,003**	**0.2%**	**1,473**	**0.2%**	**1,731**	**0.3%**	**1,498**	**0.2%**	**1,398**	**0.2%**
New Jersey Counties[4]	**-3,763**	**-0.2%**	**-3,326**	**-0.1%**	**-4,612**	**-0.2%**	**-6,588**	**-0.3%**	**-7,622**	**-0.3%**	**-7,001**	**-0.3%**	**-4,891**	**-0.2%**
Connecticut Counties[5]	**365**	**0.1%**	**245**	**0.0%**	**336**	**0.1%**	**554**	**0.1%**	**1,134**	**0.2%**	**122**	**0.0%**	**1,074**	**0.2%**
TOTAL	**37**	**0.0%**	**52**	**0.0%**	**-26**	**0.0%**	**27**	**0.0%**	**-14**	**0.0%**	**8**	**0.0%**	**50**	**0.0%**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.

2 Long Island counties include Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

5 Connecticut counties include Fairfield and New Haven.

Work journeys originating in Manhattan north of 60th Street and bound for locations other than the Manhattan CBD would increase by approximately 1 percent compared to the No Action Alternative under all tolling scenarios. Similarly, work journeys from Brooklyn, Queens, and the Bronx to non-CBD locations would increase slightly under all tolling scenarios compared to the No Action Alternative. As noted previously, the BPM assumes regional employment would stay the same under the No Action Alternative and the CBD Tolling Alternative. Thus, the increases in work journeys to non-CBD locations from Manhattan north of 60th Street, Brooklyn, Queens, and the Bronx would directly offset (in terms of number of journeys) the decreases in work journeys to the Manhattan CBD shown in **Table 5A-7**. Likewise, the decreases in daily work journeys to locations outside of the Manhattan CBD originating in New Jersey or Long Island under each tolling scenario would be directly offset by the increases in work journeys to the Manhattan CBD shown in **Table 5A-7**.

Potential Effects on Access to Employment

Approximately 1.4 million daily work journeys would travel into the Manhattan CBD from outside the CBD under any tolling scenario (see **Table 4A.2-10** in **Appendix 4A.2, "Transportation: Travel Forecast Scenario Summaries and Detailed Tables,"** and approximately 17 percent of these work journeys would be by driving (either the drive alone, high-occupancy vehicle, or taxi/FHV modes) compared to approximately 18 percent under the No Action Alternative. Although the share of total work journeys by driving would be similar under the No Action Alternative and CBD Tolling Alternative, the number of work journeys by driving modes to and within the Manhattan CBD would decrease by 4 to 10 percent (or 11,800 to 27,000 fewer driving journeys), depending on the tolling scenario (see **Table 6-23** in **Chapter 6, "Economic Conditions"**). Many of these workers, particularly those coming from other areas of New York City, would have transit access to the Manhattan CBD, but they might choose to drive despite the Manhattan CBD toll (for example, because they value the travel-time savings and convenience of driving, or they have work hours that are less conducive for transit).

As noted previously and shown in **Figure 5A-3**, a small portion of New York City does not have convenient access to faster transit modes (commuter rail, subway, or express bus/SBS bus service), although all of the city other than one neighborhood is within one-half mile of transit including local bus service. Approximately 5,200 people currently commute to the Manhattan CBD by car from these areas; as discussed previously, these car commuters are widely distributed throughout the city. For workers in these areas, some commuters could choose to drive instead to a transit hub if parking is available there (see **Subchapter 4D, "Transportation: Parking")**, and others could opt to use local bus service to access commuter rail, subway, or express bus/SBS service. As noted previously, the CBD Tolling Alternative would also result in beneficial effects from the reduction in VMT and enhanced mobility that would result from reduced congestion, which would potentially offset the negative effect of increasing the cost of driving to the Manhattan CBD.

In addition, with the CBD Tolling Alternative, some car commuters with destinations outside the Manhattan CBD who use routes that pass through the Manhattan CBD to their destinations might choose a different route to avoid the CBD toll. This routing decision would be based on consideration of the cost of the toll versus the cost of the alternative routing, which could be a longer distance or more time-consuming. These commuters would still reach their destination and some drivers might use a different route than they do today. With the CBD Tolling Alternative, the number of work journeys to the Manhattan CBD originating from New Jersey and Long Island is projected to increase, and those bound for the Manhattan CBD from Brooklyn, Queens, the Bronx, and Manhattan outside the Manhattan CBD are projected to decrease. These decreases in work journeys to the Manhattan CBD are projected to be offset by increases in work journeys to non-CBD locations, which suggests that the CBD Tolling Alternative would result in small shifts in employment patterns (i.e., generally a change of 2 percent or less as shown in Table 5A-7). Furthermore, the regional study area has a dynamic economy with many employment opportunities across the region. Of the region's total employment of approximately 10.7 million jobs, 1.5 million are in the Manhattan CBD. This demonstrates that ample employment opportunities exist outside the Manhattan CBD for those who choose not to travel to the Manhattan CBD for work.

With respect to Manhattan CBD reverse commuters, the BPM results indicate that, in the aggregate, approximately 37,000 daily work journeys would originate in the Manhattan CBD bound for locations outside the Manhattan CBD with both the No Action Alternative and the CBD Tolling Alternative in all tolling scenarios, and approximately 31 percent to 33 percent of these work journeys (or 11,600 to 12,200) would be by the drive alone, high-occupancy vehicle, or taxi/FHV modes to places of work outside the Manhattan CBD under any tolling scenario, compared to 33 percent with the No Action Alternative. In the tolling scenario with the greatest change in work journeys made to places of work outside the Manhattan CBD (Tolling Scenario E, with a decrease of 835 journeys), the CBD Tolling Alternative would result in up to a 2.2 percent decrease in the number of work journeys from the Manhattan CBD to locations outside the Manhattan CBD compared to the No Action Alternative, which indicates a small effect on overall employment access for residents of the Manhattan CBD. This indicates the small likelihood that Manhattan CBD residents would change job locations from someplace outside the Manhattan CBD to a location within the Manhattan CBD because of the CBD Tolling Alternative. Most Manhattan CBD residents that currently work outside the Manhattan CBD would continue to do so as a result of the CBD Tolling Alternative.

Overall, the CBD Tolling Alternative would not adversely affect access to employment for residents of the regional study area and would not adversely affect social groups or population characteristics of the regional study area. Commuters who travel (by any mode) to, from, or within the Manhattan CBD to access employment would benefit from the reduced congestion resulting from the CBD Tolling Alternative. Furthermore, by creating a new funding source for the MTA 2020–2024 Capital Program and subsequent capital programs, the CBD Tolling Alternative would benefit commuters who use MTA transit services to access employment.

5A.5 CONCLUSION

Transportation users in the region would benefit from the CBD Tolling Alternative through travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety, reduced air pollutant emissions, and a predictable funding source for transit improvements. This would positively affect community connections and access to employment, education, healthcare, and recreation for residents.

All areas of New York City outside the Manhattan CBD have transit access to the Manhattan CBD and would not be isolated from community services or ties within the Manhattan CBD. Even with the robust transit accessibility between the Manhattan CBD, New York City, and the regional study area, however, some people would continue to drive to the Manhattan CBD with the new CBD toll in place. The costs incurred by individuals driving to the Manhattan CBD would vary widely, depending on individual circumstances and the specific tolling scenario. The greatest cost would be incurred by those who make frequent driving journeys to the Manhattan CBD during peak hours. Driving to and from the Manhattan CBD is already expensive given the very limited availability of free or low-cost parking and the cost of off-street parking or taxi/FHV fares, and it is likely that people who drive regularly have higher incomes. Individuals who drive less frequently would incur lower costs because of the toll. Since the majority of trips to and from the Manhattan CBD are made by transit, most people would not be affected, and community cohesion would not be adversely affected.

The CBD Tolling Alternative does not require the acquisition of any private property or occupied structure and therefore would not result in direct residential displacement. Given the myriad of factors that influence real estate costs in the region, the new CBD toll would not have a substantial effect on housing values either in the Manhattan CBD or in other residential neighborhoods near transit. As a result, indirect displacement resulting from the CBD Tolling Alternative would not occur.

Throughout the region, most community facilities and services serve their individual communities and, as a result, the potential effects of the Project on local community facilities would be limited. Nonetheless, a variety of community facilities and services, such as food pantries and meal delivery services, religious facilities, cultural institutions, social service providers, and home healthcare providers, rely on vehicles to transport people, goods, services, supplies, or staff into and out of the Manhattan CBD. Community service providers that are not exempt from the toll and do not have other travel options would have to absorb the cost of the toll. Given the wide range of travel options other than driving, the cost for users to drive to community facilities and services would not constitute an adverse effect on community facilities and services. Workers at community facilities and services, such as teachers, police officers, or health care workers, who currently choose to commute by automobile to or from the Manhattan CBD would have a new cost that may or may not be reimbursed by their employer, but most of these workers have the option to switch from a personal vehicle to transit to their place of work.

The CBD Tolling Alternative would result in potential changes in traffic patterns, including potential increases in traffic at some location. The analysis concludes that neither the increases in delay at local intersections nor the increased volume on certain highway segments would adversely affect emergency response times.

The CBD Tolling Alternative would result in an additional cost to elderly individuals if they travel by auto to and from the Manhattan CBD. Some elderly people would shift to other modes to avoid the toll. Elderly people with a qualifying disability could receive reduced fares on MTA subways and buses or could qualify for MTA paratransit services, which are exempt from the toll. Low-income elderly individuals would benefit from the mitigation measures and enhancements identified for low-income drivers in general.

With the CBD Tolling Alternative, qualifying vehicles transporting people with disabilities would be exempt from the toll, as would paratransit service. Some disabled people may rely on travel by nonqualifying vehicles to or within the Manhattan CBD, and in that case, the CBD Tolling Alternative would increase the cost for those disabled people.

The CBD Tolling Alternative would impose tolls on vehicles entering or remaining in the Manhattan CBD, which could affect individuals who currently drive to work. The number of work trips by driving modes to and within the Manhattan CBD would decrease with the Project, with an offsetting increase in transit travel. Those who continue to drive despite the CBD toll would do so based on the need or convenience of driving and would benefit from the reduced congestion in the Manhattan CBD. Some workers may also choose to forego their work trip to the Manhattan CBD and find other employment and other workers would choose to take on those jobs. The regional study area has a dynamic economy with many employment opportunities spread across the region. Overall, the CBD Tolling Alternative would not adversely affect access to employment for residents of the regional study area.

Table 5A-10 provides a summary of the effects of the CBD Tolling Alternative related to population characteristics and community cohesion.

Table 5A-10. Summary of Effects of the CBD Tolling Alternative on Population Characteristics and Community Cohesion

TOPIC	SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Benefits	Benefits in and near the Manhattan CBD	Benefits in and near the Manhattan CBD related to travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety, reduced air pollutant emissions, and predictable funding source for transit improvements. This would positively affect community connections and access to employment, education, healthcare, and recreation for residents.	No	**No mitigation needed.** Beneficial effects
Community Cohesion	Changes to travel patterns, including increased use of transit, resulting from new toll	Changes to travel patterns, including increased use of transit, as a result of the Project would not adversely affect community cohesion or make it more difficult for people to connect with others in their community, given the extensive transit network connecting to the Manhattan CBD and the small change in trips predicted.	No	**No mitigation needed.** No adverse effects. See **Chapter 17, "Environmental Justice,"** for mitigation related to increased costs for low-income drivers.
Indirect Displacement	No notable changes in socioeconomic conditions or cost of living so as to induce potential involuntary displacement of residents in the Manhattan CBD	The Project would not result in the potential for indirect (involuntary) residential displacement. It would not result in substantial changes to market conditions so as to lead to changes in housing prices, given that real estate values in the Manhattan CBD are already high and the many factors that affect each household's decisions about where to live. In addition, low-income residents of the CBD would not experience a notable increase in the cost of living as a result of the Project because of the lack of change in housing costs, the many housing units protected through New York's rent-control, rent-stabilization, and other similar programs, the tax credit available to CBD residents with incomes of up to $60,000, and the conclusion that the cost of goods would not increase as a result of the Project).	No	**No mitigation needed**. No adverse effects
Community Facilities and Services	Increased cost for community facilities and service providers in the Manhattan CBD, their employees who drive, and clientele who drive from outside the CBD	The Project would increase costs for community service providers that operate vehicles into and out of the Manhattan CBD and for people who travel by vehicle to community facilities and services in the Manhattan CBD, as well as residents of the CBD and employees of community facilities who use vehicles to travel to community facilities outside the CBD. Given the wide range of travel options other than driving, the cost for users to drive to community facilities and services would not constitute an adverse effect on community facilities and services.	No	**No mitigation needed**. No adverse effects

TOPIC	SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Effects on Vulnerable Social Groups	Benefits to vulnerable social groups from new funding for MTA Capital Program	The Project would benefit certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and non-driver populations by creating a funding source for the MTA 2020–2024 Capital Program (and subsequent capital programs and by reducing congestion in the Manhattan CBD). Elderly individuals would benefit from the travel-time and reliability improvements to bus service with the CBD Tolling Alternative, as bus passengers tend to be older than riders on other forms of transit, such as the subway and, as described above, bus passengers in the Manhattan CBD would benefit from travel-time savings due to the decrease in congestion. People over the age of 65 with a qualifying disability receive a reduced fare on MTA subways and buses, and elderly individuals with a qualifying disability can also receive MTA's paratransit service, including taxis and FHVs operating on behalf of MTA to transport paratransit users. Elderly people with disabilities and low-income individuals who drive to the Manhattan CBD would be entitled to the same mitigation and enhancements proposed for low-income and disabled populations, in general (see Table 161). Other elderly individuals who drive to the Manhattan CBD would pay the toll.	No	**No mitigation needed**. No adverse effects
Access to Employment	Increased cost for small number of people who drive to work in the Manhattan CBD	Decrease in work trips by driving modes to and within the Manhattan CBD, with an offsetting increase in transit ridership. Those who would drive despite the CBD toll would do so based on the need or convenience of driving and would benefit from the reduced congestion in the Manhattan CBD. Negligible effect (less than 0.1%) on travel to employment within the Manhattan CBD and reverse-commuting from the CBD due to the wide range of transit options available and the small number of commuters who drive today.	No	**No mitigation needed.** No adverse effects

5B. Neighborhood Character

5B.1 INTRODUCTION

Neighborhood character is an amalgam of various character-defining features of an area. This subchapter describes the analysis of effects of implementing the CBD Tolling Alternative on neighborhood character, relying on the result of the traffic, transit, pedestrians and bicyclists, economic considerations, parklands, historic and cultural resources, visual resources, air quality, and noise analyses prepared for this EA.

5B.2 METHODOLOGY

5B.2.1 Framework for Neighborhood Character Analysis

Neighborhood character is the mix of the various elements that give neighborhoods their distinct personality, context, and feeling. Neighborhood character consists of the attributes, including social and economic characteristics, and assets that make a neighborhood unique and that establish a sense of place for residents, workers, and visitors. Changes in travel patterns can affect neighborhood character by resulting in a notable change in vehicular and/or pedestrian traffic in an area or a related change in vehicle noise or air quality, if that change in turn affects a defining feature of the area's neighborhood character.

Neighborhood character is distinct from community cohesion, which is the degree to which groups of people with shared attributes or affinities—such as cultural, religious, artistic, or activity-based communities—form and maintain communities that are not limited to any location or neighborhood. Project effects on community cohesion are discussed in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion."**

5B.2.2 Study Areas

This subchapter considers whether the CBD Tolling Alternative would affect neighborhood character at a local level by introducing changes in travel behavior that could in turn affect defining features of neighborhood character. The analysis considers the potential effects that would occur in neighborhoods where BPM results indicate that Project-related changes in travel behavior would occur: the Manhattan CBD; at and close to 60th Street; near neighborhood streets where vehicular traffic would increase because of the Project; and at transit hubs where vehicular and/or pedestrian activity would increase because of the Project. The study areas for this assessment include the following:

- **Manhattan CBD Study Area** – This study area includes the portion of Manhattan inclusive of and south of 60th Street from the Hudson River to the East River.[1]

[1] For the purposes of the analysis in this subchapter, the Manhattan CBD study area includes the West Side Highway/ Route 9A and the FDR Drive because these roadways are within and form part of the neighborhood context of the Manhattan CBD. However, vehicles that travel exclusively on these roadways would not be subject to the Manhattan CBD toll.

- **60th Street Manhattan CBD Boundary Study Area** – 60th Street is the only segment of the Manhattan CBD boundary that is adjacent to neighborhoods outside the Manhattan CBD (elsewhere, the boundary is defined by the Hudson and East Rivers and New York Harbor). Because a new toll would be implemented between neighborhoods where no toll exists today, an analysis of potential effects on the neighborhood character of this area is merited. This study area includes the section of Manhattan between 55th and 65th Streets from the Hudson River to the East River, overlapping with a portion of the Manhattan CBD study area. This study area at the border of the Manhattan CBD is included for consideration of changes in travel behavior that could occur near the edge of the Manhattan CBD following implementation of the CBD Tolling Alternative and their potential for localized effects on its neighborhood character.

  The study area is limited to five blocks on either side of the Manhattan CBD boundary because while changes in transportation activity near the 60th Street Manhattan CBD boundary could be spread out over a broader area, this analysis makes the conservative assumption that the changes would be more concentrated (and therefore more intense) in the five blocks on either side of 60th Street and could have the potential to adversely affect neighborhood character.

In addition to the two study areas described above, the following areas where changes in transportation activity would result from Project implementation were also considered. For the reasons explained below, there is no potential for Project implementation to adversely affect neighborhood character in these areas, and no further analysis of these study areas was warranted.

- **Neighborhood Streets and Highways Experiencing Increases in Traffic** – The CBD Tolling Alternative would result in an overall net reduction in auto journeys to and from the Manhattan CBD. Depending on the tolling scenario, certain local streets and highway segments are projected to experience increases in vehicle traffic from route diversions. (**Subchapter 4B, "Transportation: Highways and Local Intersections,"** identifies these local streets and highways.) The concern for neighborhood character on these neighborhood streets and highways is whether this increased vehicular traffic could substantively burden the roadways in a way that could affect defining features of neighborhood character.[2] As described in **Section 5B.4.3**, changes in neighborhood character in neighborhoods where local streets and highways would experience increased traffic are not anticipated; therefore, specific study areas were not defined for this analysis.

  Some neighborhoods near these neighborhood streets and highways have large concentrations of minority and/or low-income populations, collectively "environmental justice populations," who live in them. **Chapter 17, "Environmental Justice,"** describes these neighborhoods and evaluates the effects of the CBD Tolling Alternative on the environmental justice populations who live there.
- **Transit Hubs** – With the CBD Tolling Alternative, certain public transportation hubs would experience an increase in transit ridership as more travelers to and from the Manhattan CBD elect to take public transportation rather than personal transportation or taxis/FHVs to avoid the toll. (**Subchapter 4C,**

[2] This analysis relies on the impact determinations in **Subchapter 4B, "Transportation: Highways and Local Intersections,"** to determine whether roadways have been substantively burdened.

"Transportation: Transit," identifies the transit hubs.) The concern for neighborhood character at these transportation hubs is whether this increased travel activity could substantively burden[3] the roadways, parking facilities, and pedestrian elements in the immediate area of the transit hubs in a way that could affect defining features of neighborhood character, or whether the larger numbers of travelers accessing the transit hubs could cause changes in market forces near the transit hubs that could lead to displacement of businesses or residents in a way that would affect defining features of neighborhood character. As described in **Section 5B.4.3**, changes in neighborhood character near transit hubs are not anticipated; therefore, specific study areas were not defined for this analysis.

5B.3 AFFECTED ENVIRONMENT

This section describes the existing neighborhood character of each study area.

5B.3.1 Manhattan CBD Study Area

For the assessment in this subchapter, the Manhattan CBD study area is defined as the area of Manhattan south and inclusive of 60th Street. This area includes a heterogeneous mix of neighborhoods and serves as the economic hub of the New York City region (**Figure 5B-1**). This section broadly describes the character of the Manhattan CBD organized into three geographic areas—Lower Manhattan, Canal Street to 14th Street, and Midtown Manhattan north of 14th Street—following a traditional division of the Manhattan CBD into broad groupings of neighborhoods based on similarities in neighborhood character.

The Manhattan CBD has census block groups that house minority and low-income (collectively, "environmental justice") populations. **Chapter 17, "Environmental Justice,"** evaluates the effects of the CBD Tolling Alternative on environmental justice populations.

LOWER MANHATTAN

Lower Manhattan is the southern portion of the Manhattan CBD study area from the tip of Manhattan north to Canal Street. This area includes neighborhoods such as the Financial District, Battery Park City, Chinatown, Tribeca, and Civic Center, and falls within Manhattan Community District 1 and a portion of Community District 3.[4] The area's built form is characterized by narrow streets in configurations that are not the typical Manhattan grid (e.g., the original colonial-era street configuration in the Financial District) and a varied mix of building forms that include low-rise, mid- to late-19th century buildings; turn-of-the-century and Art Deco skyscrapers; and tall, modern, brick and metal-and-glass skyscrapers, especially in the World Trade Center complex and Battery Park City. Land uses in the area include predominantly commercial and civic/government uses in the southernmost portions of Lower Manhattan, giving way to a more mixed-use, lower-density character with more residential, retail, open space, and light industrial uses

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3 This analysis relies on the impact determinations in **Subchapter 4C, "Transportation: Transit," Subchapter 4D, "Transportation: Parking,"** and **Subchapter 4E, "Transportation: Pedestrians and Bicycles,"** to determine whether roadways, parking facilities, and pedestrian elements have been substantively burdened.

4 New York City is divided into 59 community districts, a division of local governance. Each district is represented by a community board, a group of up to 50 unsalaried members selected by the area's elected officials. Community boards serve an advisory role to address land use and community concerns within their districts and as a liaison between the public and the local government.

in the northern portions of Lower Manhattan. The area of Lower Manhattan south of Chambers Street has experienced a notable increase in residential use in recent decades, including conversion of prior office space into residential apartments. The Two Bridges neighborhood contains several public housing projects comprising thousands of affordable apartments.

Figure 5B-1. View of the Manhattan CBD Looking North to Midtown Manhattan from One World Trade Center

Source: Allison L. C. de Cerreño, 2022

Lower Manhattan includes neighborhoods with notable environmental justice populations—Two Bridges and the portions of the Chinatown and the Lower East Side neighborhoods below Canal Street. **Chapter 17, "Environmental Justice," Section 17.5.2** provides more information on these neighborhoods.

Lower Manhattan contains the approaches and entrance ramps to four major river crossings: the Brooklyn Bridge, Manhattan Bridge, Holland Tunnel, and Hugh L. Carey Tunnel. Traffic is particularly heavy at the river crossing entrances and exits, and traffic is often congested due to the narrow streets and irregular street layout. Generally, pedestrian volumes are extremely heavy on weekdays (because of the area's worker population) and lighter on weekends. Several major transportation hubs are located in Lower Manhattan and provide service connections to and between the subway system, the Port Authority Trans-Hudson (PATH) system, and ferry services. These include the PATH World Trade Center terminal; Fulton

Center subway complex; and ferry terminals at Pier 11, Battery Park City, and Whitehall Street (Staten Island Ferry and Battery Maritime Building).

The defining features of neighborhood character for the Lower Manhattan portion of the Manhattan CBD study area include its wide mix of street configurations and building forms; its dominant patterns of commercial, civic/government, and residential uses; the presence of numerous large-scale transportation facilities linking the area to other parts of the city and region; high levels of vehicular and pedestrian traffic; and the high density of development and intensity of use that characterize its neighborhoods.

CANAL STREET TO 14TH STREET

From Canal Street to 14th Street, the overall character of the Manhattan CBD study area is low-rise (compared to Lower Manhattan and Midtown) and more mixed-use, with a greater concentration of residential uses. Neighborhoods in the area include the Lower East Side, East Village, West Village/Greenwich Village, Soho, Hudson Square, and Meatpacking District. The area falls within Manhattan Community District 2 and a portion of Community District 3. Land uses in this area include mid-rise and high-rise residential buildings, many with ground-floor retail; institutional uses such as museums, university buildings, public and private schools, and churches; and open spaces. Local retail is generally concentrated on the avenues and includes concentrations of restaurants, drinking establishments, coffee shops, grocery stores, and other service establishments such as laundromats. The blocks closest to the East River in the Lower East Side and East Village neighborhoods contain several public housing projects comprising thousands of affordable apartments. Compared to other areas of the Manhattan CBD, office space is less prevalent between Canal and 14th Streets, but there are areas of converted industrial lofts and factory spaces used for commercial purposes. The Williamsburg Bridge lands at Delancey Street in this area of Manhattan.

This part of Manhattan includes the East Village neighborhood and portions of the Chinatown and Lower East Side neighborhoods, which have notable concentrations of environmental justice populations. Chapter 17, "Environmental Justice," Section 17.5.2 provides additional information on these neighborhoods.

The defining features of neighborhood character for the Canal Street to 14th Street portion of the Manhattan CBD study area include its thoroughly mixed-use character, with a high concentration of residential uses, local retail, open spaces, and institutional uses; relatively lower building heights (compared to Lower Manhattan and Midtown); high levels of vehicular and pedestrian traffic; and a level of development and intensity of use that are lower than those of Lower Manhattan or Midtown—though still quite high compared to most parts of the region.

MIDTOWN MANHATTAN

North of 14th Street, the character of the Manhattan CBD study area transitions to the high-density commercial uses of Midtown. Neighborhoods in this area include Union Square, Chelsea, Midtown, Garment Center, Times Square, Hell's Kitchen/Clinton, Stuyvesant Town, Murray Hill, Kips Bay, and Sutton Place. Midtown Manhattan falls within Manhattan Community Districts 4, 5, and 6. Notably, given the predominantly north–south orientation of the subway system and arterial street network in this part of

Manhattan, the eastern and western sides of Midtown are notably distinct from each other in terms of neighborhood character.

Midtown Manhattan contains a dense mix of office and commercial uses, with notable concentrations of office use along Park and Sixth Avenues, near Penn Station New York, in Rockefeller Center, in Times Square, around Grand Central Terminal, and in the new Hudson Yards neighborhood (**Figure 5B-2**). Major transportation hubs—including Penn Station New York, Grand Central Terminal, the Lincoln Tunnel, the Port Authority Bus Terminal, Queens-Midtown Tunnel, the Ed Koch Queensboro Bridge, and the ferry terminals at East 34th Street and West 39th Street—serve Midtown, as do numerous subway lines and the PATH system.

Figure 5B-2. Morning Congestion and Traffic in Midtown Manhattan Looking South on Third Avenue (Summer 2022)

Source: MTA

Midtown Manhattan also includes substantial residential uses, generally located in the eastern and western portions of Midtown. For example, numerous high-rise apartment buildings line Second and First Avenues, while brownstones and tenement buildings are mainly on the side streets. Residential uses are also concentrated west of Sixth Avenue, particularly within the Hell's Kitchen/Clinton neighborhood, and south of West 34th Street. Several public housing complexes are spread throughout Midtown. Local retail tends to be concentrated along the avenues and consists of ground-floor restaurants, bars, and local goods and services.

In Midtown Manhattan, the Hell's Kitchen and Clinton neighborhoods have concentrations of environmental justice populations. **Chapter 17, "Environmental Justice," Section 17.5.2** provides additional information on these neighborhoods.

The defining features of neighborhood character for the Midtown portion of the Manhattan CBD study area include its dominant patterns of commercial and residential uses; the presence of numerous large-scale transportation facilities linking the area to other parts of the city and region; high levels of vehicular and pedestrian traffic; heavily visited tourist attractions such as Times Square and the Empire State Building; and the high density of development and intensity of use that characterize its neighborhoods.

SUMMARY

Taken together, the defining features of neighborhood character for the Manhattan CBD study area include the following:

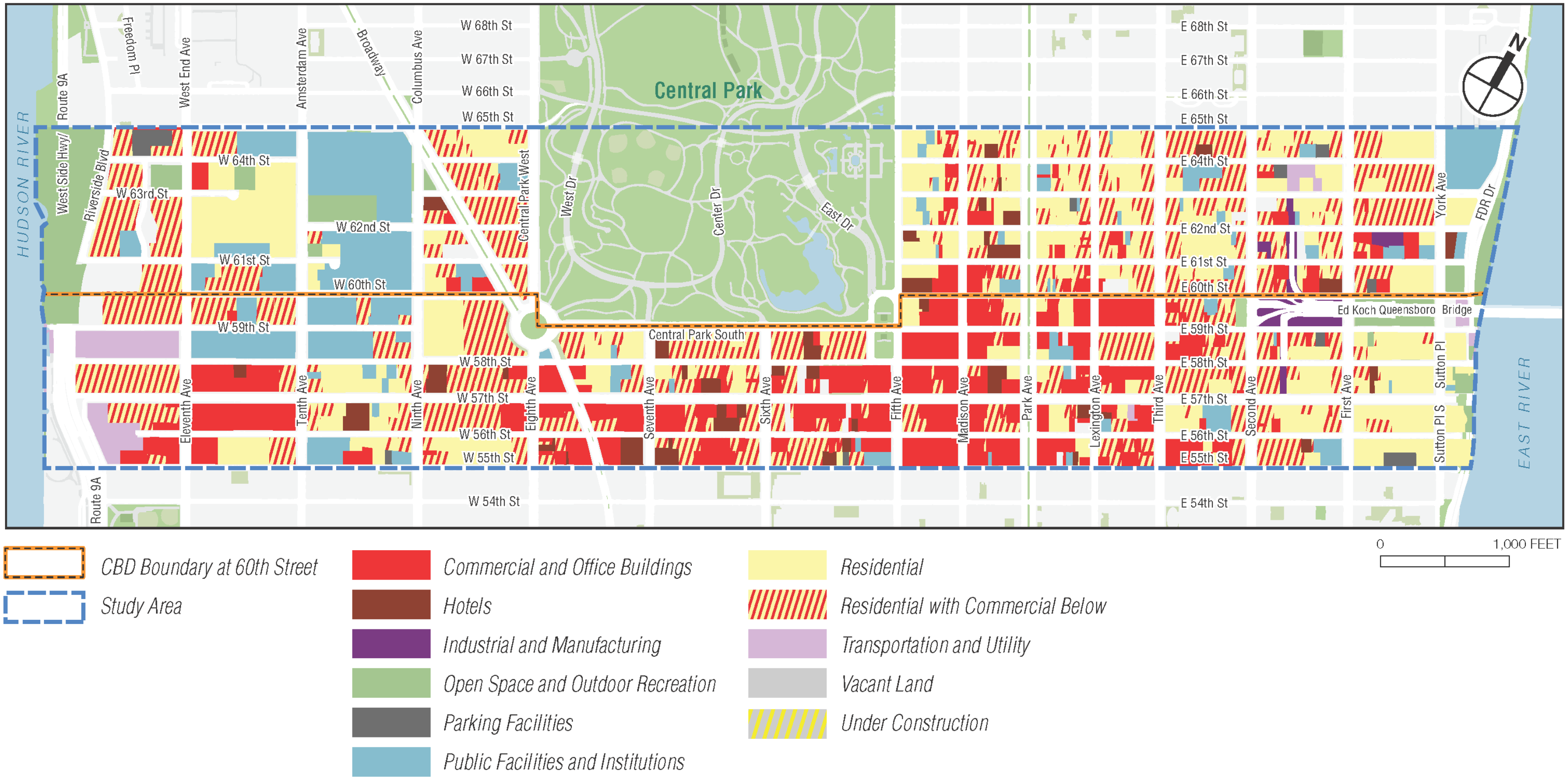
- Wide mix of street configurations (particularly in Lower Manhattan) and building forms, ranging from row houses to skyscrapers
- Established patterns of land use, with a heavy mix of uses across the Manhattan CBD and concentrations of different types of uses in certain neighborhoods
- The presence of numerous large-scale transportation facilities linking the Manhattan CBD study area to other parts of the city and region
- High levels of vehicular and pedestrian traffic
- Very high density of development and intensity of use (somewhat lesser between Canal and 14th Streets, and greater in Lower Manhattan and Midtown)

5B.3.2 60th Street Manhattan CBD Boundary Study Area

The 60th Street Manhattan CBD boundary study area includes the area between 55th and 65th Streets from the Hudson River to the East River (**Figure 5B-3**), which encompasses the boundary of the Manhattan CBD at 60th Street and the blocks to the immediate south and north of the boundary. This area is densely developed with a wide mix of uses and long-established land use patterns. The area has heavy vehicular and pedestrian traffic, with access to multiple subway and bus routes and high transit usage.

From 55th Street to 60th Street, the 60th Street Manhattan CBD boundary study area is part of the Manhattan CBD, and is a high-density district characterized by a mix of uses, including commercial and residential skyscrapers, retail districts, and large cultural and institutional facilities. The areas east of Second Avenue and west of Eighth Avenue are more residential in character, but still very densely developed with row houses and mid- and high-rise apartment buildings. Between 55th and 60th Streets, the 60th Street Manhattan CBD boundary study area is characterized by high pedestrian traffic throughout the day, and heavy vehicular traffic on all north–south roadways, along 57th Street and Central Park South, on the West Side Highway/Route 9A and the Franklin D. Roosevelt (FDR) Drive, and near the entrances and exits to the Ed Koch Queensboro Bridge.

Figure 5B-3. 60th Street Manhattan CBD Boundary Study Area (Manhattan from 55th Street to 65th Street)



Sources: New York City Department of City Planning, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page.
ArcGIS Online, https://www.arcgis.com/index.html. January 2022.

From 60th Street to 65th Street, the 60th Street Manhattan CBD boundary study area includes the densely developed east and west sides of Manhattan and the southern portion of Central Park. The east and west sides of Manhattan are high-density districts containing residential, commercial, cultural, and institutional uses. Residential uses include a mix of forms including row houses, mid- and high-rise apartment buildings, and residential skyscrapers. Neighborhood commercial corridors are along most north–south avenues. Streets in this area are characterized by heavy use due to the neighborhood's density and its proximity to the Manhattan CBD. There is heavy vehicular traffic on north–south avenues and on the east–west side streets in the eastern portion of the area, which provide access to the Ed Koch Queensboro Bridge and the FDR Drive. At the northern edge of the area, 65th Street is more heavily trafficked, because it provides eastbound vehicular access across Central Park between the Upper West Side and Upper East Side neighborhoods via the 65th Street transverse. (66th Street, just outside the 60th Street Manhattan CBD boundary study area, provides westbound access across Central Park and is also heavily trafficked). Pedestrian traffic is also heavy throughout the area, although less so on side streets.

While there are on-street, curbside parking spaces on most streets in the 60th Street Manhattan CBD boundary study area, on-street spaces are generally not a reliable source of parking and finding available parking spaces that are not already occupied can involve substantial time searching for an available space. Much of this parking is metered, and New York City on-street parking regulations are complex, with variable time-of-day and day-of-week regulations applying to any given space, which limits the reliable supply of available on-street parking spaces at any given time. For example, on-street parking throughout New York City, including in the 60th Street Manhattan CBD boundary study area, is subject to the city's alternate-side parking regulations, which require vehicles to be moved during the week to facilitate street cleaning. At other locations, parking is metered during certain hours with a limited length of stay, and drivers must renew the charge to park or get ticketed for violating parking regulations. At other locations, parking is restricted during peak commuter hours to provide additional moving lanes but is allowed during other times. Each of these regulations increases the complexity of finding a parking space that is reliably available for the entire duration during which an individual needs to park their car.

New York City policy does not protect or prioritize on-street parking in this section of Manhattan; in fact, the City of New York has implemented several policies and programs that promote repurposing on-street parking spaces for other uses, which has reduced the number of on-street parking spaces over time. These include the NYCDOT's bike-share program, which places bike-share docking stations in former on-street parking spaces, and the Open Restaurants program, which allows restaurants and other food-service establishments to convert on-street parking spaces to customer seating. The small percentage of residents of the 60th Street Manhattan CBD boundary study area who have vehicles (approximately 74 percent of 60th Street Manhattan CBD boundary study area households do not have a vehicle[5]) either park their vehicles in curbside spaces despite these challenges or use private off-street garages, often paying monthly. Public rates for monthly parking spaces (as opposed to preferential rates for residents of the building where the garage is located) range from approximately $400 per month to over $1,000 per month;[6] in general,

5 U.S. Census Bureau, American Community Survey 5-Year Estimates, 2015–2019. Data are for the 21 census tracts that are closest to the 60th Street Manhattan CBD boundary study area (including Manhattan Census Tracts 106.01, 106.02, 108.01, 108.02, 108.03, 110, 112.01, 112.02, 112.03, 114.01, 114.02, 120, 122, 135.02, 137, 139, 145, 147, 149, 151.01, 151.02). In this area, 73.7 percent of households have no vehicles available; the margin of error is 2.0 percent.

6 spothero.com.

higher pricing corresponds with greater proximity to major destinations, as well as added features such as valet service. Typically, given the low vehicle ownership rates in this area, the challenges in finding available parking spaces in the 60th Street Manhattan CBD boundary study area and the dense, walkable nature of the area, as in the rest of Manhattan, most residents do not drive a vehicle for errands and shopping as they might outside the city. For example, modal split data prepared for the Greater East Midtown Rezoning (covering an area just south of the 60th Street Manhattan CBD boundary study area that is comparable in terms of land use and transportation patterns) showed that 83 percent of trips to local retail destinations were walk trips, and 12 percent of local retail trips were made via public transportation (subway or bus); only 5 percent of these trips were made via automobile (2 percent by private auto, and 3 percent by taxi/FHV).[7]

The southern portion of Central Park is very different in character from the other areas of the 60th Street Manhattan CBD boundary study area, as it is part of a large (840-acre), landscaped city park. The section of Central Park within the 60th Street Manhattan CBD boundary study area is heavily used and has a variety of active and passive recreation areas. Other than the transverse roadways that cross the park, roadways in Central Park are closed to vehicular traffic other than authorized vehicles, and these roadways are heavily used by bicyclists, runners, and walkers, as well as recreational horse carriages. Throughout the southern part of Central Park, the tall buildings of the surrounding neighborhoods are visible and visually delimit the edges of the park. The park serves as an important public open space for residents, workers, and visitors from the adjacent neighborhoods. **Chapter 7, "Parks and Recreational Resources,"** provides more information about Central Park.

The defining features of neighborhood character for the 60th Street Manhattan CBD boundary study area include the following:

- Heavily mixed-use nature and established patterns of office, retail, residential, cultural, institutional, and open space uses
- High density of development
- High levels of vehicular and pedestrian traffic and transit use
- Highly walkable nature
- Contrast provided by the large open expanse of the southernmost portion of Central Park

5B.4 ENVIRONMENTAL CONSEQUENCES

5B.4.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program with its associated tolling infrastructure. New York Metropolitan Transportation Council (NYMTC) socioeconomic and demographic forecasts and BPM modeling conducted for this Project show that between the 2023 build year and the 2045 future analysis year and in the absence of Project implementation, population would experience

[7] New York City Department of City Planning. May 2017. *Greater East Midtown Rezoning Final Environmental Impact Statement*, Chapter 12, "Transportation," Table 12.4 Transportation Planning Factors.

modest background growth, with corresponding increases in roadway traffic and transit ridership (see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** for further detail). The neighborhood character of the Manhattan CBD study area and the 60th Street Manhattan CBD boundary study area would be similar to existing conditions.

5B.4.2 CBD Tolling Alternative

This section describes the potential effects of the CBD Tolling Alternative (all tolling scenarios) on neighborhood character.[8] CEQR guidance for neighborhood character analyses notes that neighborhood character is an amalgam of various character-defining features, and when a defining feature of neighborhood character would be adversely affected, this would in turn adversely affect neighborhood character overall. Travel patterns help give neighborhoods their distinct personality, context, and feeling, and thus are a component of neighborhood character. This section presents potential beneficial and adverse effects on defining features of neighborhood character resulting from implementation of the CBD Tolling Alternative.

MANHATTAN CBD STUDY AREA

As described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the CBD Tolling Alternative would reduce VMT in the Manhattan CBD study area, although VMT reductions would not be evenly spread across the Manhattan CBD, and certain roadways would experience increased VMT due to route diversions. Overall, reduced VMT in the Manhattan CBD would reduce associated pollutant emissions and improve travel times and travel-time reliability. Even in locations where traffic would increase, the Project would not adversely affect air quality (see **Chapter 10, "Air Quality"**) or noise (see **Chapter 12, "Noise"**). Therefore, there would be no potential for changes in air quality or noise to adversely affect defining features of neighborhood character. Beneficial Project effects to air quality and noise at the local scale would be limited and would not affect defining features of neighborhood character.

As described in **Section 5B.3.1**, the defining features of neighborhood character in the Manhattan CBD study area include the following:

- Wide mix of street configurations (particularly in Lower Manhattan) and building forms, ranging from row houses to skyscrapers
- Established patterns of land use, with a heavy mix of uses across the Manhattan CBD and concentrations of different types of uses in certain neighborhoods
- The presence of numerous large-scale transportation facilities linking the Manhattan CBD study area to other parts of the city and region
- High levels of vehicular and pedestrian traffic
- Very high density of development and intensity of use (somewhat lesser between Canal and 14th Streets, and greater in Lower Manhattan and Midtown)

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8 See **Chapter 2, "Project Alternatives,"** for information on the tolling scenarios.

Potential concerns for neighborhood character in the Manhattan CBD study area due to implementation of the CBD Tolling Alternative relate to whether changes in the number of people accessing the Manhattan CBD and economic effects on specific industries would have the potential to affect defining features of neighborhood character.

Changes in the Number of People Accessing the Manhattan CBD

As described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** BPM results indicate that despite congestion reductions resulting from the Project, due to people shifting to other modes the overall number of daily journeys by all modes to, from, and within the Manhattan CBD study area would not change substantially because of the Project. The BPM has a limited ability to predict trip cancellation, and it is likely that some additional trips to the Manhattan CBD beyond those projected by the BPM would be canceled due to the implementation of the Project. **Subchapter 4A** notes that experience from similar program implementations in London and Stockholm shows that while some trip cancellation would occur, it would be a relatively small percentage of overall drivers accessing the Manhattan CBD (less than 3 percent in London and up to approximately 11 percent in Stockholm). Because only approximately 20 percent of all Manhattan CBD-related journeys are made by auto, cancellation of a small percentage of auto trips would not result in a significant decrease in total journeys by all modes. For example, in 2023 under Tolling Scenario B (the scenario with the highest number of Daily Manhattan CBD-related vehicle person- journeys, per **Table 4A-9** in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**), if 11 percent of those journeys were cancelled altogether, this would result in a decline of 50,329 total CBD-related journeys; if 3 percent of those journeys were cancelled altogether, this would result in a decline of 13,726 total CBD-related journeys. In the context of the approximately 2.8 million total daily journeys to the Manhattan CBD in 2023 (see **Table 5A-2** in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion,"**), this represents a small fraction of total journeys to the Manhattan CBD. With this small reduction in the overall number of people accessing the Manhattan CBD study area daily, the high levels of vehicular and pedestrian traffic, high density of development and intensity of use, and the prominence of large-scale transportation facilities that are defining characteristics of neighborhood character in the Manhattan CBD would not be affected. Therefore, the CBD Tolling Alternative would not adversely affect neighborhood character in the Manhattan CBD study area due to changes in the number of people accessing the Manhattan CBD.

As discussed in the previous paragraph, with the Project, pedestrian traffic in this area would likely increase due to mode shift away from automobiles, which could benefit land uses that rely on high levels of pedestrian traffic, particularly retail uses. This would reinforce the established patterns of land use, heavy mixing of uses, and the very high density of development and intensity of use that are defining features of neighborhood character in the Manhattan CBD study area.

Economic Effects on Specific Industries

As noted in **Chapter 18, "Agency Coordination and Public Outreach,"** members of the public raised Project effects on small businesses as a concern during early public outreach conducted in fall 2021. **Chapter 6, "Economic Conditions,"** concludes that changes in travel patterns brought on by the CBD Tolling Alternative would not adversely affect any particular industry or occupational category in the Manhattan CBD, including small businesses. The analysis also indicates no adverse changes to commercial traffic providing goods and services to the Manhattan CBD.

Therefore, economic effects on specific industries resulting from the CBD Tolling Alternative would not adversely affect the established land use patterns and mixing of uses that are defining features of neighborhood character in the Manhattan CBD study area.

As discussed above, with the Project, pedestrian traffic in this area would likely increase, which could benefit specific industries that rely on high levels of pedestrian traffic, particularly retail businesses. This would reinforce the established patterns of land use, heavy mixing of uses, and the very high density of development and intensity of use that are defining features of neighborhood character in the Manhattan CBD study area.

60TH STREET MANHATTAN CBD BOUNDARY STUDY AREA

As described in **Section 5B.3.2**, the defining features of neighborhood character in the 60th Street Manhattan CBD boundary study area include the following:

- Heavily mixed-use nature and established patterns of office, retail, residential, cultural, institutional, and open space uses
- High density of development
- High levels of vehicular and pedestrian traffic and transit use
- Highly walkable nature
- Contrast provided by the large open expanse of the southernmost portion of Central Park

Concerns for neighborhood character in the 60th Street Manhattan CBD boundary study area because of implementation of the CBD Tolling Alternative relate to whether changes in driving behavior, changes in access to parking, economic effects of changes in travel patterns, and effects on Central Park would have the potential to affect defining features of neighborhood character.

Changes in Driving Behavior and Access to Parking

As described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** BPM results for all tolling scenarios indicate that with the CBD Tolling Alternative, roadway traffic would generally decrease across the 60th Street Manhattan CBD boundary study area; however, traffic would increase on certain streets due to route diversions, particularly in the eastern portion of the 60th Street Manhattan CBD boundary study area near the Ed Koch Queensboro Bridge. The volume of vehicular traffic on each of the avenues immediately north of 60th Street would decrease under all tolling scenarios. As noted in **Chapter 18, "Agency Coordination and Public Outreach,"** members of the public raised concerns about high levels of congestion near cultural institutions in the Upper West Side portion of the 60th Street Manhattan CBD boundary study area during early public outreach conducted in the fall of 2021; as this area is located immediately north of 60th Street, BPM results described above indicate that the Project would improve the traffic situation in this area. The drop in vehicular traffic along the avenues north of 60th Street described above also suggests that the demand for parking in those neighborhoods would not increase. However, members of the public have expressed concern that after implementation of the CBD Tolling Alternative, taxi/FHV drop-offs would increase just north of 60th Street and demand for the existing, limited supply of on-street parking north of 60th Street could increase, as people seek to avoid crossing the Manhattan CBD boundary in a vehicle and paying the toll. However, this is unlikely to occur given the difficulty in finding an available parking space in this area (see discussion in **Section 5B.3.2**). On-street parking is generally not a reliable source of parking in the 60th Street Manhattan CBD boundary study area. To have a reliable source of parking, commuters and other drivers who routinely access the Manhattan CBD from the north would likely seek a monthly space in a parking lot or garage; as discussed in **Section 5B.3.2**, costs for monthly spaces in this area range from approximately $400 to over $1,000 per month, which would offset the benefit of avoiding the toll. If any increase in parking demand or taxi/FHV drop-offs does occur in this area, it would likely decrease over time as people adjust their travel patterns to account for the toll. Particularly for those driving their personal vehicles, the complexity and wasted time associated with finding parking in this area would likely deter long-term shifts to parking just north of the 60th Street Manhattan CBD boundary. Any increase in demand for on-street parking would not affect most neighborhood residents, who are not likely to rely on on-street parking for their regular parking needs. It should be noted that ready access to on-street parking spaces is not a defining feature of neighborhood character in this area, and any limited changes to on-street parking availability that may occur as a result of Project implementation would therefore not have the potential to affect neighborhood character.

As described in **Chapter 6, "Economic Conditions," Section 6.4.3.2,** if an increase in demand for off-street parking were to occur just north of the 60th Street Manhattan CBD boundary, that demand would be accommodated through available capacity, or if there were capacity constraints, it would be offset through upward adjustments in parking fees; this would likely offset potential changes in parking behavior resulting from the CBD Tolling Alternative. Between 60th and 65th Streets, there are 7,525 off-street parking spaces in 52 parking facilities, which under typical conditions are at 70 to 80 percent occupancy.[9] Of these, 3,865 spaces in 34 parking facilities are located east of Central Park, and 3,660 spaces in 18 parking facilities are located west of Central Park. For additional detail, see **Chapter 6, "Economic Conditions," Table 6-33**. It is unlikely that new off-street parking capacity would be added just north of 60th Street because the area is built-out and lacks available sites, and a decades-long trend toward lower parking demand combined with high real estate values in this area further suggest that new parking garages would not be developed.

With the CBD Tolling Alternative, neighborhood residents who live on one side of the Manhattan CBD boundary and park on the other, and who elect not to switch to a parking space on the same side of the Manhattan CBD boundary, would need to pay the toll each time they drive to their residence. This could add complexity to certain activities for those individual residents, such as dropping off purchases at a residence after a shopping trip. However, as noted, most residents do not have vehicles, and among those

9 Based on a sampling of parking utilization collected in 2018 and 2019 during typical conditions for environmental review studies, weekday midday off-street parking utilization generally ranges from approximately 70 to 80 percent of capacity, with lower utilization rates in the AM and PM peak periods. Applying this utilization estimate to the total off-street parking capacity between 60th and 65th Streets (7,525 spaces) equates to between 1,505 and 2,258 available off-street parking spaces.

who do, most do not drive their vehicles in connection with shopping trips in this way. In addition, the New York City zoning code and CEQR guidance do not prioritize such activities in this section of Manhattan. New York City zoning does not require most developments in the 60th Street Manhattan CBD boundary study area to include off-street parking, and CEQR guidance generally does not consider project parking shortfalls in the 60th Street Manhattan CBD boundary study area to constitute an adverse impact due to the wide availability of transit and other alternative modes of transportation.

Any changes in driving behavior and access to parking would not adversely affect the defining features of neighborhood character in the 60th Street Manhattan CBD boundary study area. Because new parking garages are not likely to be developed in the place of existing uses, there would be no change in the mixed-use nature, established land use patterns, and high development densities that are defining features of the area's neighborhood character. Any increase in demand for parking would not affect the defining features of neighborhood character in the 60th Street Manhattan CBD boundary study area, because ready access to parking is not a defining feature of neighborhood character in this area.

Economic Effects of Changes in Travel Patterns

While the reductions in roadway traffic with the CBD Tolling Alternative would reduce congestion in the neighborhood, the 60th Street Manhattan CBD boundary study area would continue to experience heavy vehicular traffic overall given its major activity centers and its connections to the Ed Koch Queensboro Bridge, a major East River crossing. Pedestrian traffic would likely increase, which could benefit retail businesses in the neighborhood. Because the CBD Tolling Alternative would not substantially change the overall number of people using the neighborhood, it would not result in changes to the land use patterns that contribute to the character of the 60th Street Manhattan CBD boundary study area. Existing businesses in the 60th Street Manhattan CBD boundary study area would not be adversely affected, except potentially for off-street parking garages, which are discussed in the next paragraph (see Chapter 6, "Economic Conditions," for further discussion of existing businesses).

As described in Chapter 6, "Economic Conditions," demand for off-street parking could decrease in the blocks south of 60th Street after implementation of the CBD Tolling Alternative. This could lead to the redevelopment of existing parking garages with new replacement uses over time. The high property values in the neighborhood combined with existing zoning would ensure that replacement uses would be consistent with the types of uses already prevalent in the area, such as high-density commercial, residential, and institutional uses.

Therefore, the economic effects of changes in travel patterns would not adversely affect the mixed-use nature, prevailing land use patterns, high densities, and highly walkable nature that are defining features of neighborhood character in this area.

Pedestrian traffic would likely increase in the 60th Street Manhattan CBD boundary study area, which could benefit retail businesses in the neighborhood, reinforcing the established patterns of land use that are a defining feature of the area's neighborhood character. Any redevelopment of existing parking garages could also benefit neighborhood character by introducing more active uses and higher densities that are more aligned with the defining features of the area's neighborhood character.

Effects on Central Park

Central Park is closed to vehicular traffic except for park deliveries or other drivers with permitted business in the park; therefore, there would be no increase in the small number of vehicles that use the park roadways. The CBD Tolling Alternative would not result in any adverse effects on Central Park, such as changes in the use of the park or any reduction in usable parkland. The CBD Tolling Alternative (all tolling scenarios) would result in reduced traffic volumes adjacent to Central Park on Fifth Avenue and Central Park West as well as reduced traffic volumes crossing the park using the park's sunken transverse roads, which would be considered a beneficial effect on the park (see **Chapter 7, "Parks and Recreational Resources"**). Thus, the CBD Tolling Alternative would not adversely affect the character of Central Park, which is a defining feature of neighborhood character in the 60th Street Manhattan CBD boundary study area, and would result in beneficial effects to the park.

NEIGHBORHOOD STREETS AND HIGHWAYS EXPERIENCING INCREASES IN TRAFFIC

Subchapter 4B, "Transportation: Highways and Local Intersections," provides analysis of highway segments and intersections in neighborhoods where changes in traffic would occur and concludes that with the implementation of standard traffic improvements, there would be no adverse traffic effects at local intersections. **Subchapter 4B** also concludes that through implementation of Transportation Demand Management measures, adverse traffic effects would be mitigated on highway segments where potentially adverse effects would result from increases in traffic volumes. As a result, with implementation of Transportation Demand Measures, there would be no substantial change to the overall operation or character of local streets or highways. Therefore, the CBD Tolling Alternative does not have the potential to alter neighborhood character near neighborhood streets or highways experiencing increases in traffic.

Many of the neighborhoods near these neighborhood streets and highways contain environmental justice populations. As noted in **Chapter 17, "Environmental Justice"** and **Chapter 18, "Agency Coordination and Public Outreach,"** during early public outreach conducted in the fall of 2021, members of the public raised concerns that traffic diversions to highways in Upper Manhattan and the Bronx with the CBD Tolling Alternative would adversely affect nearby neighborhoods with environmental justice populations, including by degrading air quality and increasing noise. Members of the public also voiced concerns about the effects of changes in traffic on the Lower East Side section of Lower Manhattan. **Section 17.6** provides a discussion of effects on environmental justice communities.

TRANSIT HUBS

As noted in **Section 5.B.2.2**, the concern for neighborhood character at transit hubs relates to whether increased travel activity resulting from the Project would substantively burden the roadways, parking facilities, and pedestrian elements in the immediate area of the transit hubs in a way that could affect defining features of neighborhood character, or whether the larger numbers of travelers accessing the transit hubs could cause changes in market forces near the transit hubs that could lead to displacement of businesses or residents in a way that would affect defining features of neighborhood character. **Subchapter 4C, "Transportation: Transit," Subchapter 4D, "Transportation: Parking,"** and **Subchapter 4E, "Transportation: Pedestrians and Bicycles,"** conclude that the CBD Tolling Alternative would increase ridership at many transit stations, but it would not result in adverse effects to the operations of transit hubs. Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion," concludes that the CBD Tolling Alternative would not result in adverse effects from indirect residential displacement near transit hubs. Chapter 6, "Economic Conditions," concludes that the CBD Tolling Alternative does not have the potential to substantively alter market conditions in neighborhoods surrounding transportation hubs. Therefore, given that the Project would not result in any effects at transit hubs, the CBD Tolling Alternative does not have the potential to alter neighborhood character near transit hubs.

5B.5 CONCLUSION

Table 5B-1 summarizes the effects of the Project.

Table 5B-1. Summary of Effects of the CBD Tolling Alternative on Neighborhood Character

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
No notable change in neighborhood character, including in the Manhattan CBD, in the area close to the CBD boundary, and the rest of the 28-county area	The changes in traffic patterns on local streets are unlikely to change the defining elements of the neighborhood character of the Manhattan CBD.	No	**No mitigation needed.** No adverse effects
	Changes in parking demand near the 60th Street CBD boundary (including increases just north of 60th Street and decreases just to the south) would not create a climate of disinvestment that could lead to adverse effects on neighborhood character nor alter the defining elements of the neighborhood character of this area.	No	**No mitigation needed.** No adverse effects

The Manhattan CBD study area serves as the economic hub of the New York City region and includes a heterogeneous mix of neighborhoods. The CBD Tolling Alternative would decrease vehicular trips within most parts of the Manhattan CBD and increase transit, bicycle, and pedestrian trips near transit stations. Due to people shifting to other modes the Project-related changes in the number of people accessing the Manhattan CBD would not substantially change and would not noticeably affect the intensity of use of the Manhattan CBD study area. Changes in travel patterns brought on by the CBD Tolling Alternative would not adversely affect any particular industry in the Manhattan CBD. Pedestrian traffic in this area would likely increase due to mode shift away from automobiles, which would benefit land uses that rely on high levels of pedestrian traffic, particularly retail uses. This, in turn, would reinforce the established patterns of land use, heavy mixing of uses, and the very high density of development and intensity of use that are defining features of neighborhood character in the Manhattan CBD study area.

The 60th Street Manhattan CBD boundary study area is a high-density mixed-use district containing portions of several neighborhoods as well as a section of Central Park. The CBD Tolling Alternative would not result in any adverse effects on Central Park, and traffic reductions on certain roadways adjacent to and within the park would result in beneficial effects to the park. This study area would be affected by changes in driving behavior related to access to parking; in addition, implementation of a congestion toll at 60th Street would add complexity for those neighborhood residents who currently drive in the area for errands and other activities. However, because new parking garages are not likely to be developed in the place of existing uses, there would be no change in the mixed-use nature, established land use patterns, and high development densities that are defining features of the area. Any increased complexity in finding parking would not affect the defining features of neighborhood character because ready access to parking is not a defining feature of neighborhood character in this area. For these reasons, the CBD Tolling Alternative would not adversely affect the 60th Street Manhattan CBD boundary study area.

The CBD Tolling Alternative would benefit neighborhood character in the 60th Street Manhattan CBD boundary study area. Pedestrian traffic would likely increase, which could benefit retail businesses in the neighborhood, reinforcing the established patterns of land use that are a defining feature of the area's neighborhood character. Any redevelopment of existing parking garages could also benefit neighborhood character by introducing more active uses and higher densities that are more aligned with the defining features of the area's neighborhood character.

Subchapter 4B, "Transportation: Highways and Local Intersections," concludes that with the implementation of standard traffic improvements, there would be no adverse traffic effects at local intersections. It also concludes that through implementation of Transportation Demand Measures, adverse traffic effects could be mitigated on highway segments where traffic volumes would increase. While the CBD Tolling Alternative would affect traffic operations on local streets and highways in neighborhoods near the Manhattan CBD, there would be no substantial change to the overall operation or character of these local streets or highways, including on emissions and noise (see Chapter 10, "Air Quality," and Chapter 12, "Noise"). Thus, there would be no potential for Project-related changes to local streets or highways to substantively alter the neighborhood character of the areas nearby.

Subchapter 4C, "Transportation: Transit," Subchapter 4D, "Transportation: Parking," and Subchapter 4E, "Transportation: Pedestrians and Bicycles," conclude that the CBD Tolling Alternative would not result in adverse effects to transportation conditions at transit hubs; Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion," concludes that the CBD Tolling Alternative would not result in adverse effects from indirect residential displacement near transit hubs; and Chapter 6, "Economic Conditions," concludes that the CBD Tolling Alternative does not have the potential to substantively alter market conditions in neighborhoods surrounding transportation hubs. Therefore, there would be no potential for Project-related changes to transportation, social, or economic conditions at transit hubs to substantively alter defining features of neighborhood character near these transit hubs.

5C. Public Policy

5C.1 INTRODUCTION

This subchapter assesses the consistency of the CBD Tolling Alternative with public policies enacted or adopted by governmental bodies from the regional study area that are applicable to major transportation initiatives such as the Project. A public policy is a plan or program enacted by a government body to achieve a stated goal.

5C.2 PUBLIC POLICIES APPLICABLE TO THE PROJECT

This section describes existing public policies that are applicable to the Project. **Chapter 13, "Natural Resources,"** describes policies related to coastal zone management.

5C.2.1 OneNYC 2050: Building a Strong and Fair City, New York City's Strategic Plan

OneNYC 2050, New York City's strategic plan, includes initiatives related to the city's economic growth, sustainability, and resiliency.[1] New York City's plans for sustainable development address the need for reducing traffic congestion, improving air quality, and improving public transportation, among other goals. The City of New York plans to reduce congestion by implementing initiatives that include, but are not limited to, leveraging new technologies to enforce traffic laws; optimizing curb use by expanding bus and bike lanes, commercial loading/unloading zones, and curb safety designs; and addressing FHV congestion and vehicles circulating without passengers in the most congested parts of New York City (including driver incentives to reduce passenger circulation within the Manhattan CBD and using CBD tolling to limit cruising in and out of the Manhattan CBD).

The *OneNYC 2050* report notes that 67 percent of all trips in New York City in 2015 were made by taking public transit, walking, and bicycling—the highest of any large U.S. city. The report identifies the goal of increasing the transit, walking, and bicycling mode share to 80 percent of all trips by 2050, which requires reducing the share of trips taken by personal automobile from 31 percent to 16 percent. The initiatives identified to achieve that goal include, among others, implementing CBD tolling to reduce traffic.[2]

5C.2.2 Regional Transportation Plans

Transportation planning in metropolitan areas is guided by Federally mandated Metropolitan Planning Organizations (MPOs), which have the responsibility for addressing compliance with the Clean Air Act (see **Chapter 10, "Air Quality"**). The MPOs ensure that transportation projects conform to the states' plans to improve air quality, as delineated in their state implementation plans. **Chapter 10, "Air Quality," Section 10.4** provides discussion of the Project's relationship to the NYMTC Transportation Improvement Program and the New York State Implementation Plan.

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1 The City of New York. April 2019. *OneNYC 2050: Building a Strong and Fair City*. http://onenyc.cityofnewyork.us/strategies/onenyc-2050/.

2 The City of New York. April 2019. *OneNYC 2050: Building a Strong and Fair City*. Volume 8, Efficient Mobility, p. 24.

In the New York metropolitan region, New York City and five surrounding New York counties (Nassau and Suffolk Counties in Long Island; and Putnam, Rockland, and Westchester Counties north of New York City) are within the jurisdiction of NYMTC. Northern New Jersey is within the jurisdiction of the North Jersey Transportation Planning Authority (NJTPA). Mercer County, New Jersey, is within the jurisdiction of the Delaware Valley Regional Planning Commission, the MPO for the greater Philadelphia region. Orange County, New York, has a dedicated MPO—the Orange County Transportation Council; likewise, Dutchess County, New York, is under the jurisdiction of the Dutchess County Transportation Council. In Connecticut, Fairfield and New Haven Counties are split among the jurisdictions of five MPOs: the South Western Region MPO, the Housatonic Valley MPO, the Greater Bridgeport and Valley MPO, the Central Naugatuck Valley MPO, and the South Central Regional MPO. Each MPO must produce a regional transportation plan (sometimes referred to as a long-range transportation plan) with a long-term plan for the region's transportation system, which must be updated regularly. **Table 5C-1** provides information on each of the MPOs in the regional study area and their most recent regional transportation plans, and **Figure 5C-1** shows the jurisdiction of each of the MPOs.

NJTPA and NYMTC issued their most recent regional transportation plans in 2021. Both plans recognize the vital importance of reducing roadway congestion to assist the metropolitan area's sustainability and economic growth. NYMTC's plan, *Moving Forward: Your Region, Connected*, references the Project and describes congestion pricing as a strategy for reducing congestion and air pollution that would also raise funds to pay for additional transportation system improvements.[3] NJTPA's plan, *Plan 2050: Transportation, People, Opportunity*, describes "severe congestion in some locations, hampering commerce and commuting, and causing growing safety and environmental concerns"[4] as a key transportation challenge facing the region. Both plans highlight the need for congestion reduction in the New York and northern New Jersey metropolitan region to support existing, as well as future, transportation needs.

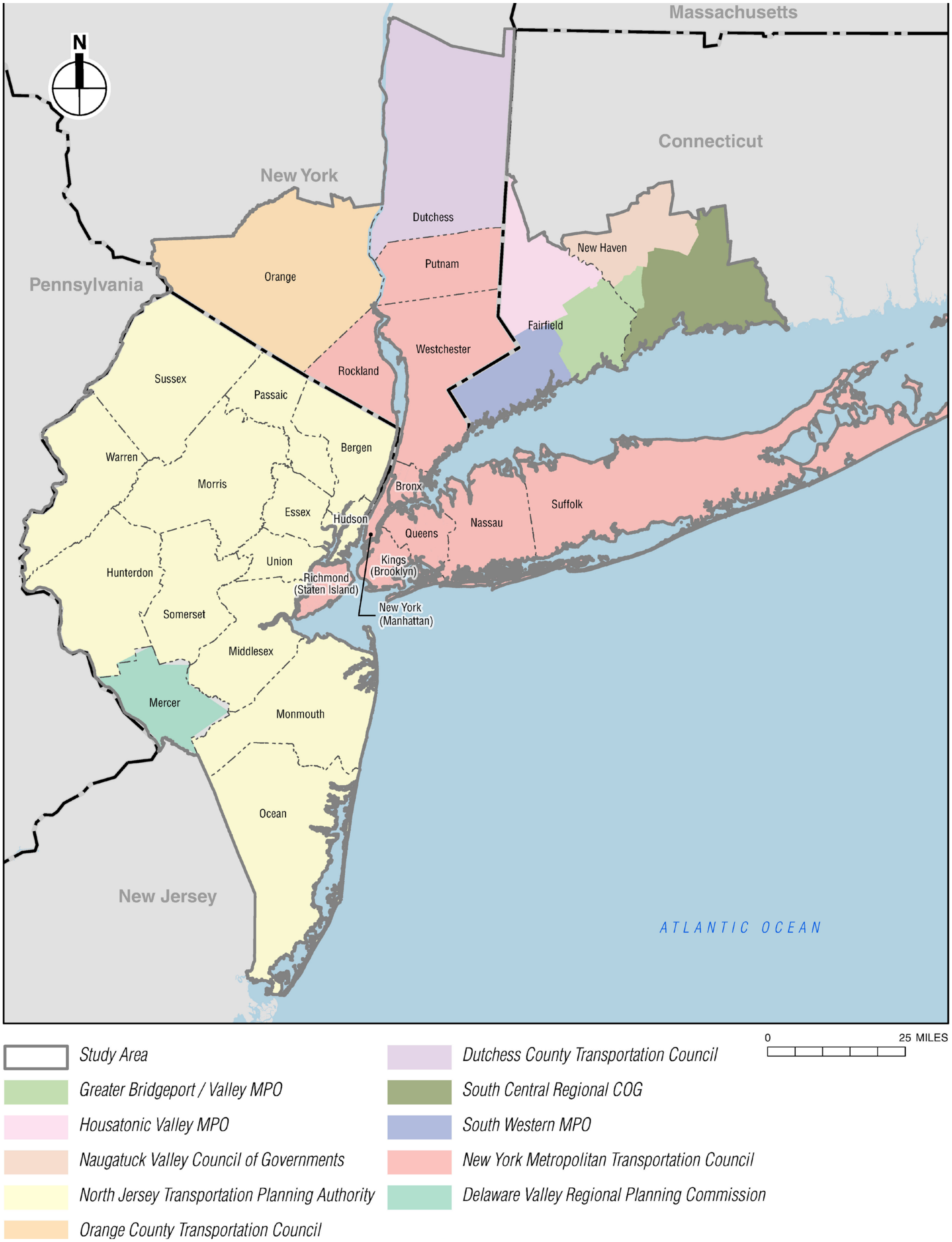
The other MPOs in the regional study area focus on counties outside the core of the New York City region. Their regional transportation plans share a focus on the importance of reducing congestion within each MPO's jurisdiction, and several of the plans specifically reference congestion pricing as a tool for achieving such reductions in their areas of focus.

3 New York Metropolitan Transportation Council. September 2021. *Moving Forward: Your Region, Connected*. p. 211.
4 North Jersey Transportation Planning Authority. September 2021. *Plan 2050: Transportation, People, Opportunity*. p. 1.

Table 5C-1. Metropolitan Planning Organizations in the Regional Study Area

METROPOLITAN PLANNING ORGANIZATION (MPO)	JURISDICTION	REGIONAL TRANSPORTATION PLAN	LINK
New York Metropolitan Transportation Council	New York City and Nassau, Putnam, Rockland, Suffolk, and Westchester Counties, New York	*Moving Forward: Your Region, Connected* (September 2021)	https://nymtcmovingforward.org/pdfs/nymtc_lrtp_2050_book.pdf
North Jersey Transportation Planning Authority	Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren Counties, New Jersey	*Plan 2050: Transportation, People, Opportunity* (September 2021)	https://www.njtpa.org/Planning/Plans-Guidance/Plan-2050.aspx
Delaware Valley Regional Planning Commission	Mercer County, New Jersey *(includes areas outside the regional study area)*	*Connections 2050: Plan for Greater Philadelphia* (September 2021)	https://www.dvrpc.org/plan
Orange County Transportation Council	Orange County, New York	*Orange County Long Range Transportation Plan 2045* (November 2019)	https://www.orangecountygov.com/485/Long-Range-Transportation-Plan
Dutchess County Transportation Council	Dutchess County, New York	*Moving Dutchess Forward* (July 2021)	https://www.dutchessny.gov/Departments/Transportation-Council/Transportation-Plan.htm
South Western Region MPO	Part of Fairfield County, Connecticut	*South Western Region Metropolitan Planning Organization 2019–2045 Long Range Transportation Plan* (April 2019)	https://westcog.org/transportation/foundational-plans/long-range-transportation-plans/#swrmpo
Housatonic Valley MPO	Part of Fairfield County, Connecticut *(includes areas outside the regional study area)*	*Housatonic Valley Metropolitan Planning Organization 2019–2045 Long Range Transportation Plan* (April 2019)	https://westcog.org/transportation/foundational-plans/long-range-transportation-plans/#hvmpo
Greater Bridgeport and Valley MPO	Parts of Fairfield and New Haven Counties, Connecticut	*Metropolitan Transportation Plan 2019–2045: Greater Bridgeport & Valley Metropolitan Planning Organization* (March 2019)	https://metrocog-website.s3.us-east-2.amazonaws.com/Website+Content/MTP/MTP+Final+2019-03-28.pdf
Central Naugatuck Valley MPO	Part of New Haven County, Connecticut *(includes areas outside the regional study area)*	*Metropolitan Transportation Plan for the Naugatuck Valley Planning Region: 2019–2045* (April 2019)	https://nvcog.maps.arcgis.com/apps/MapSeries/index.html?appid=95aa35d9cd7747e68d2205d86c15dbb0
South Central Regional MPO	Part of New Haven County, Connecticut	*South Central Regional Metropolitan Transportation Plan 2019–2045* (April 2019)	https://scrcog.org/transportation-planning/metropolitan-transportation-plan/

Figure 5C-1. Metropolitan Planning Organizations in the Regional Study Area



Source: ArcGIS Online, https://www.arcgis.com/index.html; each MPO.

5C.2.3 New York State Smart Growth Public Infrastructure Policy Act

The Smart Growth Public Infrastructure Policy Act requires that State of New York infrastructure agencies, including TBTA and NYSDOT, ensure that public infrastructure projects are consistent with 11 smart growth criteria to minimize environmental degradation, loss of open space, and disinvestment in existing communities. Smart growth criteria encourage projects that focus on existing infrastructure in municipal centers and other developed areas. The following 11 smart growth criteria reflect the State of New York's commitment to sustainable development that strengthens existing communities and develops new ones without compromising the needs of future generations, all while reducing greenhouse gas emissions and mitigating future climate risks:

- To advance projects for the use, maintenance, or improvement of existing infrastructure
- To advance projects located in municipal centers
- To advance projects in developed areas or areas designated for concentrated infill development in a municipally approved comprehensive land use plan, local waterfront revitalization plan and/or brownfield opportunity area plan
- To protect, preserve and enhance the state's resources, including agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archeological resources
- To foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development and the integration of all income and age groups
- To provide mobility through transportation choices including improved public transportation and reduced automobile dependency
- To coordinate between state and local government and intermunicipal and regional planning
- To participate in community-based planning and collaboration
- To ensure predictability in building and land use code
- To promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations, by among other means encouraging broad based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain its implementation[5]

5C.2.4 Climate Leadership and Community Protection Act

The Climate Leadership and Community Protection Act, which became law in July 2019, establishes a comprehensive climate policy for New York State. The act requires that the State of New York reduce

[5] New York State Environmental Conservation Law, Article 6, State Smart Growth Public Infrastructure Policy Act. https://dos.ny.gov/system/files/documents/2020/08/smart-growth-public-infrastructure-act.pdf.

greenhouse gas emissions to 85 percent below 1990 levels by 2050 and offset the remaining 15 percent, establishing a "net-zero" economy. It also includes provisions that 70 percent of the state's electricity must come from renewable energy by 2030, and 100 percent of the state's electricity supply must be emissions free by 2040. The act seeks to ensure environmental justice by requiring that a minimum of 35 percent of investments from clean energy and energy efficiency funds be invested in poor communities. The act also creates a Climate Action Council, which must create a plan for reducing emissions across all sectors of the economy, including the transportation sector.

5C.3 CONSISTENCY WITH APPLICABLE PUBLIC POLICIES

5C.3.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program that would reduce traffic congestion in the Manhattan CBD in a manner that would generate revenue for future transportation improvements. Under the No Action Alternative, roadway traffic and transit ridership would experience normal background growth. NYMTC Best Practice Model (BPM) results indicate that congestion within the Manhattan CBD would continue to increase, with daily VMT in the Manhattan CBD growing between the 2023 and 2045 analysis years (see **Table 4A-2** in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**).[6] The No Action Alternative is not consistent with public policy, because it would not advance the goals of *OneNYC 2050*, regional transportation plans, the Smart Growth Public Infrastructure Policy Act, or the Climate Leadership and Community Protection Act.

5C.3.2 CBD Tolling Alternative

This section describes the potential effects of the CBD Tolling Alternative (all tolling scenarios) on the public policies described earlier in **Section 5C.2**. **Chapter 13, "Natural Resources,"** describes the CBD Tolling Alternative's consistency with coastal zone policies.

ONENYC 2050: NEW YORK CITY'S STRATEGIC PLAN

The CBD Tolling Alternative would be consistent with and supportive of the objectives of *OneNYC 2050*. *OneNYC 2050* explicitly recommends CBD tolling in its Initiative 26, "Reduce congestion and emissions." Regionwide, reductions in vehicle volumes and the corresponding shift of some journeys from auto to transit, walking, and cycling (see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**) would contribute to reduced pollutant emissions (see **Chapter 10, "Air Quality"**), and toll revenue would facilitate a new funding source for MTA. Accordingly, the CBD Tolling Alternative would also help advance various other initiatives of *OneNYC 2050*, including the following:

- Initiative 16, "Design a physical environment that creates the conditions for health and well-being," which focuses in part on reducing air pollutant emissions.

[6] As noted in **Chapter 1, "Introduction,"** MTA data for September 2021 shows that weekday vehicle traffic activity at TBTA crossings was approximately only 5 percent below pre-COVID-19 pandemic levels on average. September weekday data was adjusted to exclude Labor Day and Yom Kippur. Source: Metropolitan Transportation Authority Day-by-Day Ridership Numbers. https://new.mta.info/coronavirus/ridership.

- Initiative 20, "Achieve carbon neutrality and 100 percent clean energy," which emphasizes the importance of inducing mode shift from driving to transit, cycling, and walking.
- Initiative 24, "Modernize New York City's mass transit networks," which encourages facilitating a new funding source to support MTA projects.
- Initiative 25, "Ensure New York City's streets are safe and accessible," which envisions reprioritizing space on city streets where vehicular congestion has been reduced because of the Project.

The City of New York, through the New York City Department of Transportation, is a partner in the planning and development of the CBD Tolling Alternative.

REGIONAL TRANSPORTATION PLANS

The CBD Tolling Alternative would be consistent with and supportive of the objectives of the regional transportation plans from MPOs across the 28-county New York City region. Specifically, the CBD Tolling Alternative would implement a congestion pricing strategy to reduce congestion in the Manhattan CBD, consistent with the strategies detailed in NYMTC's *Moving Forward: Your Region, Connected*. It would also provide a new funding source for MTA's 2020–2024 Capital Program, which includes projects that are noted in *Moving Forward*.

BPM results show that VMT would increase in New Jersey under all tolling scenarios. However, these increases would be negligible (between 0.01 percent and 0.20 percent (see **Table 4A-7** in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**), and would be widely distributed across northern New Jersey. A nominal increase in VMT in New Jersey does not directly translate to an increase in congestion, and the projected change in VMT under the CBD Tolling Alternative would not preclude NJTPA from implementing its own programs and initiatives to reduce congestion in northern New Jersey. Therefore, the change in VMT associated with the CBD Tolling Alternative is not inconsistent with the NJTPA Regional Transportation Plan. NJTPA is a participating agency for the Project. NJTPA attended an agency coordination meeting with the Project Sponsors on September 10, 2021, and NJTPA will have an opportunity to review and comment on this EA. The Project Sponsors will also continue to coordinate with NJTPA as part of the Project's agency coordination activities.

SMART GROWTH PUBLIC INFRASTRUCTURE POLICY ACT

The CBD Tolling Alternative would be consistent with the 11 policies of the Smart Growth Public Infrastructure Policy Act. As shown in **Appendix 5C, "Social Conditions: New York State Smart Growth Public Infrastructure Policy Act Consistency Assessment,"** the Smart Growth checklist indicates that the CBD Tolling Alternative would advance projects to use, maintain, or support existing infrastructure, support activity in municipal centers, and promote mobility and sustainability.

CLIMATE LEADERSHIP AND COMMUNITY PROTECTION ACT

The CBD Tolling Alternative would be consistent with and supportive of the objectives of the Climate Leadership and Community Protection Act. Specifically, by reducing VMT, the CBD Tolling Alternative would reduce emissions of key greenhouse gases that are known to contribute to climate change. This would in turn contribute to reducing New York State's overall carbon emissions, consistent with the goals of the climate policy established by this act.

5C.4 CONCLUSION

By catalyzing regionwide reductions in vehicle volumes and VMT; precipitating mode shifts from auto to transit, walking, and cycling; reducing emissions of air pollutants and greenhouse gases; and providing a new funding source for MTA, the CBD Tolling Alternative would be consistent with and supportive of *OneNYC 2050*, regional transportation plans, and the Climate Leadership and Community Protection Act. By advancing a project to use, maintain, or support existing infrastructure, support activity in municipal centers, and promote mobility and sustainability, the CBD Tolling Alternative would be consistent with the Smart Growth Public Infrastructure Policy Act. **Table 5C-2** summarizes the effects of the Project.

Table 5C-2. Summary of Effects of the CBD Tolling Alternative Related to Public Policy

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
No effect	In all tolling scenarios, the Project would be consistent with regional transportation plans and other public policies in place for the regional study area and the Manhattan CBD.	No	**No mitigation needed.** No adverse effects

6. Economic Conditions

6.1 INTRODUCTION

This chapter assesses the potential effects of implementing the CBD Tolling Alternative on economic conditions within the affected environment at both the regional and neighborhood levels.

6.2 METHODOLOGY

6.2.1 Framework for Economic Conditions Analysis

An assessment of economic conditions includes consideration of a project's effects on productivity, employment, and business activity. It also considers potential economic changes that could lead to the loss of critical goods and services and/or neighborhood investment.

Economic conditions may be affected by projects in three ways:

- **Direct displacement**, which occurs when residents or businesses must move from a site or sites as a direct result of a project. Examples include the redevelopment of an already occupied site for new uses or structures, or an easement or right-of-way that would take a portion of that occupied site or property, rendering it unfit for its current use.
- **Indirect displacement** (also known as secondary displacement), which occurs when a project alters one or more of the underlying forces that shape real estate market conditions in an area, resulting in conditions that cause the displacement of residents, businesses, or employees. Examples include lower-income residents forced out due to rising rents caused by a new concentration of higher income housing introduced by a project; a similar turnover of industrial to higher-paying commercial tenants spurred by the introduction of a successful office project in the area, or the introduction of a new use, such as residential; or increased retail vacancy resulting from business closure when a large new retailer saturates the market for particular categories of goods. Specific to the CBD Tolling Alternative, as noted in **Chapter 18, "Agency Coordination and Public Outreach,"** during early public outreach conducted in the fall of 2021, members of the public raised concerns that the additional cost of a toll could "price out" residents, visitors, and businesses from the Manhattan CBD, forcing residents to leave and businesses to close.
- **Change in the economic and operational conditions of an industry**, within or outside a directly affected area, that results in a loss or substantial diminishment of a particularly important product or service. For example, changes in operational conditions of the taxi and FHV industries could create adverse socioeconomic effects if a substantial number of residents or workers who depend on taxis or FHVs would no longer be served, thereby affecting their access to transportation. As noted in **Chapter 18,**

"Agency Coordination and Public Outreach," during early public outreach conducted in the fall of 2021, taxi/FHV vehicle drivers raised concerns about economic hardship specific to the industry.

This Project would not result in any direct displacements, because the tolling infrastructure and tolling system equipment would not require the taking of any privately owned property. Thus, the analysis in this chapter focuses on potential indirect displacement effects and potential changes in the operations of certain industries, with analysis conducted at a regional level (**Section 6.3**) and at a localized, neighborhood level (**Section 6.4**). The assessments of potential economic benefits and adverse effects utilize guidance from the National Cooperative Highway Research Program's *Guidebook for Assessing the Social and Economic Effects of Transportation Projects*[1] and Chapter 5, "Socioeconomic Conditions," of the City of New York's 2021 *City Environmental Quality Review (CEQR) Technical Manual*.[2]

6.2.2 Study Areas

The study areas for this economic assessment are the geographic areas where the Project could alter economic conditions (either positively or negatively) to an extent that potential indirect displacement or adverse effects on specific industries could occur. The analysis assesses separate study areas for consideration of potential regional and local effects on economic conditions as set forth in **Section 6.3 and Section 6.4**, respectively.

6.2.3 Data and Information Sources

The following data sources were used in this analysis:

- Best Practice Model (BPM) results (see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"**)
- U.S. Census Bureau, 2015–2019 American Community Survey (ACS)[3]
- 2012–2016 ACS from the Census Transportation Planning Package (CTPP) data product[4]
- 2006–2010 and 2012–2016 ACS Journey to Work[5]
- U.S. Census Bureau Longitudinal Employer-Household Dynamics data, available through OnTheMap[6]
- U.S. Department of Labor, Bureau of Labor Statistics[7]
- Esri Business Analyst (private data provider, for retail sales estimates by geography)[8]

1 https://www.ebp-us.com/en/projects/guidebook-assessing-social-economic-effects-transportation-projects.
2 https://www1.nyc.gov/assets/oec/technical-manual/05_Socioeconomic_Conditions_2021.pdf.
3 https://www.census.gov/programs-surveys/acs/data.html.
4 https://ctpp.transportation.org/2012-2016-5-year-ctpp/. The CTPP data product is based on the 2012–2016 ACS 5-Year Estimates and is produced by the American Association of State Highway and Transportation Officials (AASHTO). The CTPP provides custom tables describing residence, workplace, and trip from home to work. AASHTO has not updated the CTPP to reflect more recent ACS data.
5 https://www.census.gov/topics/employment/commuting.html.
6 https://onthemap.ces.census.gov/.
7 https://www.bls.gov/.
8 https://www.esri.com/en-us/arcgis/products/arcgis-business-analyst/overview.

- New York City Department of City Planning Neighborhood Tabulation Areas data, based on U.S. Census Bureau, 2013–2017 ACS[9]
- New York City Department of Consumer Affairs data related to off-street parking facilities, obtained from the New York City Department of Information Technology & Telecommunications NYCityMap program[10]
- U.S. Census Bureau, ZIP Code Business Patterns by Employment Size Class, 2018
- Various industry literature (specific sources cited by footnote throughout)

These data sources were developed prior to the onset of the COVID-19 pandemic, and therefore do not reflect workforce and employment changes resulting from the pandemic, including the substantial increase in work-from-home rates. At this time, it would be speculative to estimate long-term (post-pandemic) employment levels and work-from-home rates for the region. In addition, the use of more recent data would not be appropriate given the unusual circumstances that the pandemic created.

6.3 REGIONAL ASSESSMENT

6.3.1 Regional Study Area

Both regional and local market forces influence the potential for indirect residential or business displacement; therefore, both study areas are considered as part of the neighborhood-level assessment. At the regional level, the economic conditions assessment considers whether the Project could alter the economic and operational conditions of certain types of businesses or processes by changing the movement of workers, goods and services, and consumers into, out of, and through the Manhattan CBD. The 28-county region is the study area for this analysis. This regional study area is defined in **Chapter 3, "Environmental Analysis Framework,"** and illustrated in **Figure 3-1** of that chapter.

6.3.2 Affected Environment

This section describes current conditions with respect to the movement of workers, goods and services, and consumers in the regional study area. The region includes portions of three states—New York, New Jersey, and Connecticut—and is home to approximately 22.2 million residents. It is the largest metropolitan economy in the United States, accounting for nearly 10 percent of the U.S. economy.[11] New York City serves as the social and economic core of the region, and its 8.4 million residents represent about 37 percent of the regional study area's population.

9 https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-nynta.page.
10 http://maps.nyc.gov/doitt/nycitymap/.
11 New York City Department of City Planning. July 2018. "The Geography of Jobs NYC Metro Region Economic Snapshot." https://www1.nyc.gov/assets/planning/download/pdf/planning-level/housing-economy/nyc-geography-jobs-0718.pdf.

6.3.2.1 Employed Labor Force and Jobs

Approximately 11.0 million working labor force participants—those who identify as working members of the labor force regardless of where they work—live within the region (**Table 6-1**). Of that regional working labor force, approximately 4.1 million workers (about 37 percent) reside in New York City. Within New York City, the largest number of workers reside in Kings County (Brooklyn), followed closely by Queens County, and then New York County (Manhattan). The estimated 372,091 workers who live within the Manhattan CBD represent only about 3 percent of the region's employed labor force; Manhattan resident-workers living outside the Manhattan CBD account for approximately 5 percent of the region's employed labor force.

Table 6-1. Employed Labor Force and Jobs in the Regional Study Area

GEOGRAPHIC AREAS	EMPLOYED LABOR FORCE	EMPLOYED LABOR FORCE AS PERCENTAGE OF REGION	JOBS	JOBS AS PERCENTAGE OF REGION
New York City	**4,083,215**	**37.2%**	**4,579,070**	**43.1%**
Bronx County	601,341	5.5%	376,455	3.5%
Kings County (Brooklyn)	1,227,030	11.2%	855,115	8.0%
New York County (Manhattan)	905,475	8.3%	2,495,355	23.5%
Inside Manhattan CBD	372,091	3.4%	1,554,368	14.6%
Outside Manhattan CBD	533,384	4.9%	940,987	8.8%
Queens County	1,134,877	10.3%	721,775	6.8%
Richmond County (Staten Island)	214,492	2.0%	130,370	1.2%
Long Island Counties[1]	**1,439,914**	**13.1%**	**1,210,050**	**11.4%**
New York Counties North of New York City[2]	**1,003,701**	**9.1%**	**817,665**	**8.1%**
New Jersey Counties[3]	**3,539,762**	**32.3%**	**3,162,905**	**29.8%**
Connecticut Counties[4]	**907,235**	**8.3%**	**859,675**	**8.1%**
TOTAL	**10,973,827**	**100.0%**	**10,629,365**	**100.0%**

Source: ACS 2012–2016 5-Year Estimates, special tabulation—Census Transportation Planning Products.
Note: Region totals are the sums of the first five rows; percentages may not sum to 100 percent due to rounding. Numbers from different tables in the CTPP (e.g., total commuters to the Manhattan CBD) may not be identical due to rounding and different methods of estimating inherent in the CTPP.
1 Long Island counties include Nassau and Suffolk.
2 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
3 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
4 Connecticut counties include Fairfield and New Haven.

Approximately 6.9 million workers (about 63 percent of the region's employed labor force) reside outside of New York City in surrounding regional counties in Long Island, New York counties north of New York City, New Jersey, and Connecticut. Approximately 1.4 million workers (about 13 percent of the region's employed labor force) reside in Long Island counties, while just over 1.0 million workers (about 9 percent) reside in the region's New York counties north of New York City. Approximately 3.5 million workers (about 32 percent) reside in the region's New Jersey counties, while roughly 900,000 workers (about 8 percent) reside in the region's Connecticut counties. Over 90 percent of the region's workforce living outside New York City commute to jobs located outside the Manhattan CBD, while approximately 75 percent of New York City residents commute to jobs outside the Manhattan CBD.

The region's employed labor force participants do not necessarily work near their places of residence and may not even work in the region (though most do).[12] **Table 6-1** also presents the numbers of jobs located within the various geographic areas that comprise the regional study area. In total, approximately 10.7 million jobs are within the region. Of those jobs, nearly 4.6 million (about 43 percent) are within New York City. More than half of the jobs within New York City are in Manhattan, and about one-third of all New York City jobs are within the Manhattan CBD. Not surprisingly, there is a very high concentration of total regional employment within the Manhattan CBD (nearly 15 percent of all regional jobs) relative to the percentage of the region's labor force who reside in the Manhattan CBD (approximately 3 percent). New Jersey counties and Long Island counties also have substantial concentrations of jobs, with 3.2 million (30 percent) and 1.2 million (11 percent) jobs, respectively. The New York counties north of New York City and the Connecticut counties have relatively fewer jobs, with both areas hosting fewer than 1 million (approximately 8 percent) of the region's jobs.

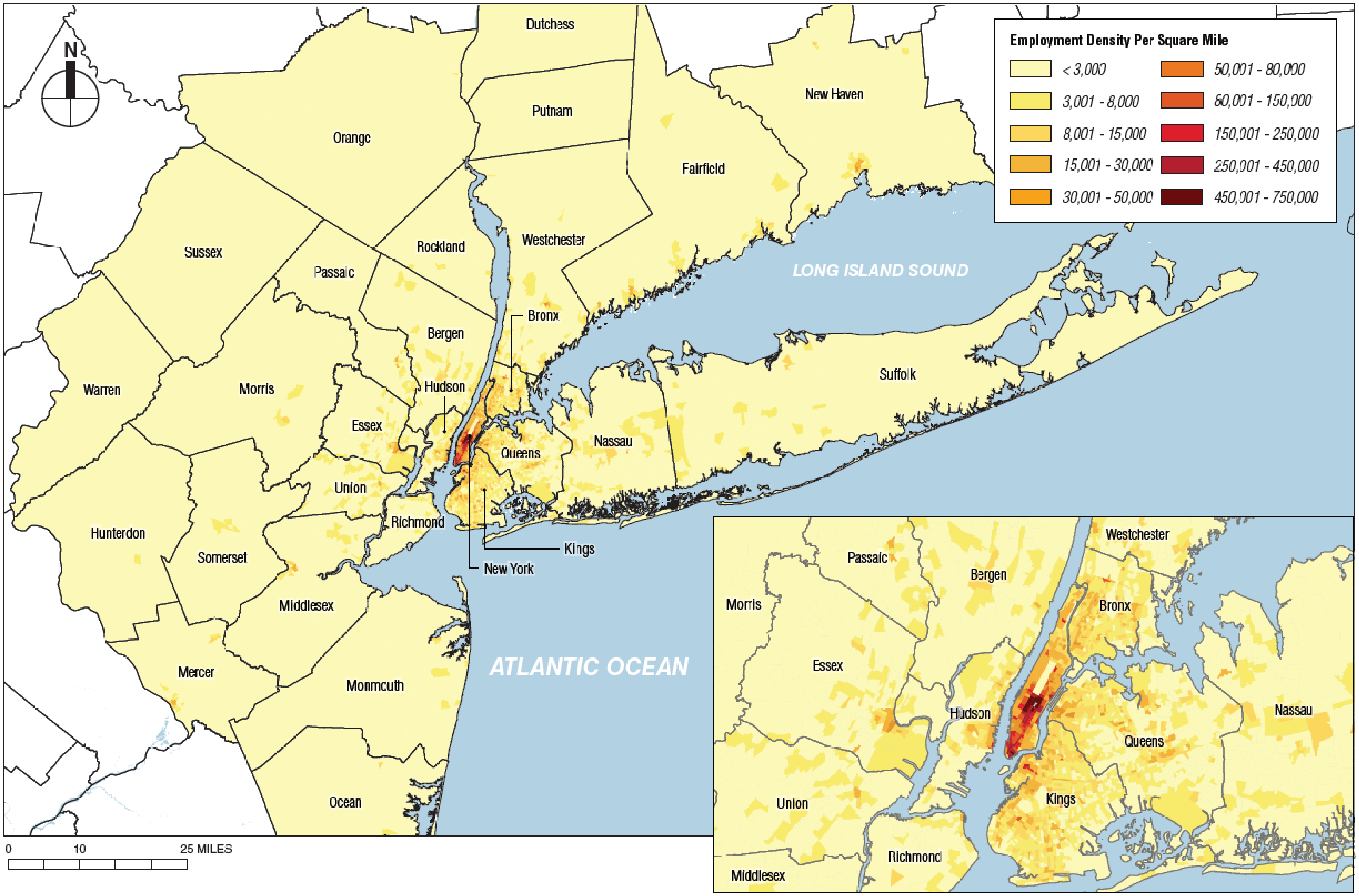
Figure 6-1 presents a spatial representation of the region's employment densities (jobs per square mile). As shown in the figure, the region's jobs are most heavily concentrated within the Manhattan CBD. **Figure 6-2** illustrates the distribution of the regional labor force's employment types by industry category (i.e., jobs held by the region's residents), as classified by the North American Industry Classification System (NAICS).[13] (**Appendix 6A, "Economic Conditions: Information on Industry Sectors of Regional Labor Force and Employment,"** provides detailed tabular data for this figure.) Relative to the regional study area as a whole, New York City's employed labor force holds notable proportions of the regional jobs in the following NAICS industry categories of Arts, Entertainment, and Recreation (with 45 percent of the regional employment held by New York City residents); Information (45 percent); Transportation and Warehousing, and Utilities (41 percent); and Other Services (41 percent). The two categories for which New York City residents comprise the lowest proportion of the region's employment are the Agriculture, Forestry, and Fishing industry category (approximately 18 percent) and the Manufacturing industry category (approximately 20 percent).

Long Island has a higher percentage of its working labor force employed within the Agriculture, Forestry, Fishing and Hunting, and Mining industry category (17 percent) relative to these counties' total percentage of regional labor force (13 percent).The working labor force from the New York counties north of New York City also contribute a disproportionately large percentage of employees to the Agriculture, Forestry, Fishing and Hunting, and Mining industry category (19 percent of the region's employees) relative to their overall contribution to the regional working labor force (9 percent). Otherwise, this geography's employment by industry category is generally distributed within a percentage point of its 9 percent contribution to overall employment in the region.

12 Based on U.S. Census Bureau Longitudinal Employer-Household Dynamics data available through OnTheMap, approximately 93 percent of jobs in the region are held by regional labor force participants; the remaining approximately 7 percent of jobs are held by labor force members from outside the regional study area. Conversely, approximately 95 percent of the employed region's labor force work inside of the region; the remaining 5 percent work outside the region.

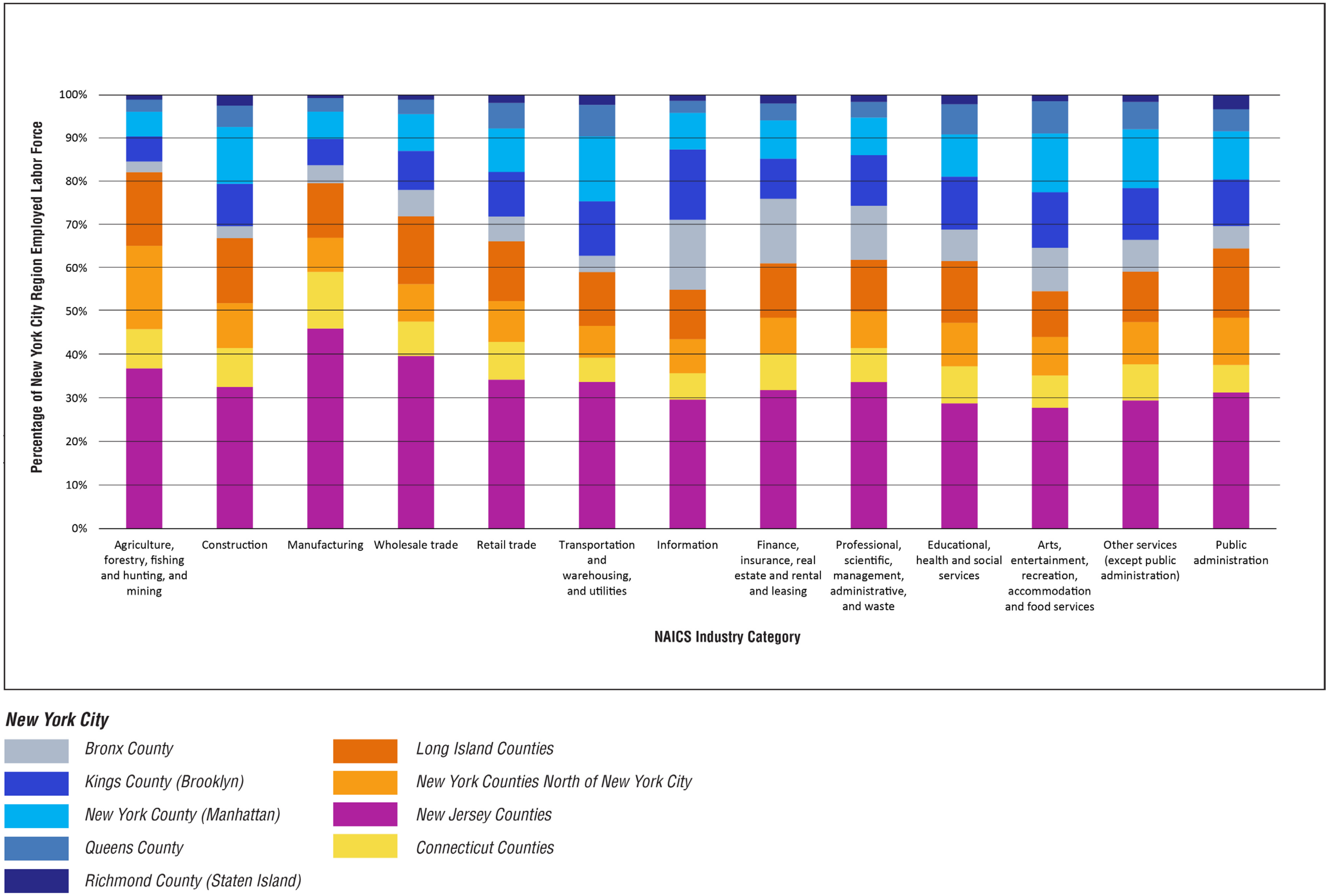
13 The standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy; https://www.census.gov/eos/www/naics/.

Figure 6-1. Employment Density in the Regional Study Area



Source: U.S. Census Bureau, CTPP, 2012–2016.

Figure 6-2. Regional Study Area Employed Labor Force by North American Industry Classification System Industry Category



Source: U.S. Census Bureau, ACS, 2015–2019 5-Year Estimates.

The New Jersey labor force has notable concentrations of employment in the Manufacturing and Wholesale Trade industry categories, constituting approximately 46 percent and 40 percent, respectively, of the region's employed labor force for these categories.

Jobs by Industry and Occupation

Figure 6-3 shows the types of jobs located within the region by NAICS industry category; **Appendix 6A, "Economic Conditions: Information on Industry Sectors of Regional Labor Force and Employment,"** provides detailed tabular data for this figure. Manhattan has the largest share of the regional study area's jobs in the Information category (44 percent of regional jobs); Finance, Insurance, Real Estate, and Rental and Leasing (41 percent); and Professional, Scientific, Management, Administrative, and Waste Management Services industry categories (33 percent). In contrast, only approximately 13 percent to 16 percent of the Manhattan labor force is employed in each of these three industry categories, indicating that Manhattan attracts workers from throughout the region to these jobs. The largest shares of jobs in the Manufacturing and Wholesale Trade categories are in New Jersey, with 46 percent and 39 percent, respectively, of the region's jobs in those categories.

Manhattan CBD Workers

On an average weekday, over 1.5 million people work within the Manhattan CBD (referred to in this chapter as Manhattan CBD workers).[14] **Table 6-2** shows the distribution of these workers' jobs by NAICS industry category.[15] The industry category employing the largest number of workers in the Manhattan CBD is Professional, Scientific, and Management, and Administrative and Waste Management Services; this industry category employs nearly one-quarter of all workers in the Manhattan CBD. Other prominent industry categories are Finance and Insurance, and Real Estate and Rental and Leasing (about 20 percent of Manhattan CBD workers), and Educational Services, and Health Care and Social Assistance (together, 12 percent of Manhattan CBD workers).

In addition to industry type, employment in the Manhattan CBD can also be assessed by occupation, using categories developed by the Bureau of Labor Statistics in its Standard Occupational Classification (SOC) System.[16] **Table 6-3** presents the same Manhattan CBD workers as **Table 6-2**, but with their job types distributed by SOC category. Of the 24 occupational categories, four categories employ over half of all Manhattan CBD workers: Management (nearly 18 percent); Office and Administrative Support (12 percent); Business and Financial (12 percent); and Sales and Retail (11 percent).

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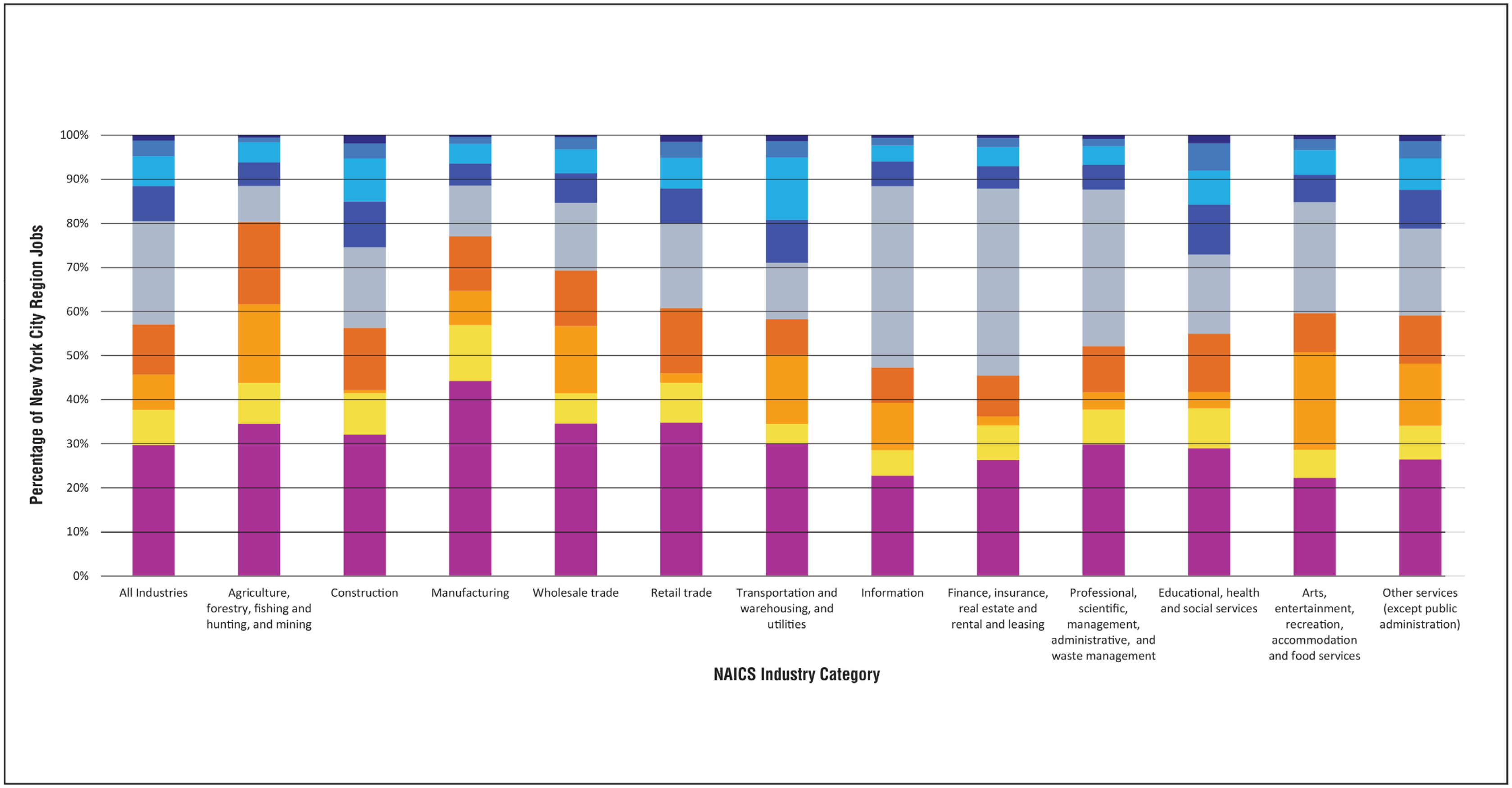
[14] U.S. Census Bureau, CTPP, 2012–2016, Part 2.

[15] The U.S. Census Bureau aggregates certain two-digit industry sectors into industry groupings, or categories, in order to provide statistically reliable estimates for census tract-level geographies. Specifically: Sector 11 – Agriculture, forestry, fishing and hunting is grouped with Sector 21 – Mining, Quarrying, and Oil and Gas Extraction; Sector 52 – Finance and insurance is grouped with Sector 53 – Real estate and rental and leasing; Sector 54 – Professional, scientific, and technical services is grouped with Sector 55 – Management of companies and enterprises as well as Sector 56 – Administrative support and waste management and remediation services; Sector 61 – Educational services is grouped with Sector 62 – Health care and social assistance; and Sector 71 – Arts, entertainment and recreation is grouped with Sector 72 – Accommodation and food services.

[16] The SOC system is a Federal statistical standard used by Federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. https://www.bls.gov/soc/.

Figure 6-3. Regional Study Area Jobs by North American Industry Classification System Industry Category



New York City

Bronx County
Kings County (Brooklyn)
New York County (Manhattan)
Queens County
Richmond County (Staten Island)
Long Island Counties
New York Counties North of New York City
New Jersey Counties
Connecticut Counties

Source: U.S. Census Bureau, ACS, 2015–2019 5-Year Estimates.

Table 6-2. North American Industry Classification System Industry Categories of Manhattan CBD Workers

NAICS CODES	INDUSTRY CATEGORIES	ALL MANHATTAN CBD WORKERS	PERCENTAGE OF ALL MANHATTAN CBD WORKERS
11, 21	Agriculture, forestry, fishing and hunting, and mining	1,087	0.1%
23	Construction	42,467	2.7%
31–33	Manufacturing	55,013	3.5%
42	Wholesale trade	39,271	2.5%
44–45	Retail trade	117,904	7.6%
48–49, 22	Transportation and warehousing, and utilities	41,420	2.7%
51	Information	120,408	7.8%
52–53	Finance and insurance, and real estate and rental and leasing	306,288	19.7%
54–56	Professional, scientific, and management, and administrative and waste management services	365,795	23.5%
61–62	Educational services, and health care and social assistance	192,030	12.4%
71–72	Arts, entertainment, and recreation, and accommodation and food services	150,708	9.7%
81	Other services (except public administration)	53,608	3.5%
92	Public administration	67,836	4.4%
928110	Armed forces	533	<0.1%

Source: U.S. Census Bureau, CTPP, 2012–2016, Part 2.

Table 6-3. Standard Occupational Classification Categories of Manhattan CBD Workers

SOC GROUPS	OCCUPATIONAL CATEGORIES	MANHATTAN CBD WORKERS	PERCENTAGE OF ALL MANHATTAN CBD WORKERS
11-0000	Management occupations	273,591	17.6%
13-0000	Business and financial operations specialists	188,380	12.1%
15-0000	Computer and mathematical occupations	87,008	5.6%
17-0000	Architecture and engineering occupations	24,906	1.6%
19-0000	Life, physical, and social science occupations	12,939	0.8%
21-0000	Community and social service occupations	18,904	1.2%
23-0000	Legal occupations	70,961	4.6%
25-0000	Education, training, and library occupations	47,128	3.0%
27-0000	Arts, design, entertainment, sports, and media occupations	116,405	7.5%
29-0000	Healthcare practitioners and technicians occupations	39,678	2.6%
31-0000	Healthcare support occupations	21,419	1.4%
33-0000	Protective service occupations	38,222	2.5%
35-0000	Food preparation and serving related occupations	65,648	4.2%
37-0000	Building and grounds cleaning and maintenance occupations	43,580	2.8%
39-0000	Personal care and service occupations	33,540	2.2%
41-0000	Sales and related occupations	171,705	11.0%
43-0000	Office and administrative support occupations	190,963	12.3%
45-0000	Farming, fishing, and forestry occupations	494	<0.1%
47-0000	Construction and extraction occupations	32,933	2.1%
49-0000	Installation, maintenance, and repair occupations	15,390	1.0%
51-0000	Production occupations	27,508	1.8%
53-0000	Transportation and material moving occupations	32,794	2.1%
55-0000	Armed forces	244	<0.1%

Source: U.S. Census Bureau, CTPP, 2012–2016, Part 2.

Overall, the industry and occupation data show that relative to the region, the Manhattan CBD has high concentrations of office-based jobs such as business management, finance, and real estate, as well as service-based sectors like education and health care, retail, and arts and entertainment.

Small Businesses within the Manhattan CBD

In New York State, a small business is defined as one that has fewer than 100 employees and is independently owned and operated, as defined in Section 131 of the New York State's Economic Development Law. Small businesses with fewer than 20 employees, sometimes referred to as "Micro-businesses,"[17] would likely be more sensitive to goods delivery cost increases caused by the toll increases proposed under the CBD Tolling Alternative.

As shown in **Table 6-4**, there are approximately 77,121 businesses in the Manhattan CBD. Most of these businesses (approximately 91.0 percent) are small businesses, and a large majority of them (78.0 percent) are also considered micro-businesses. The distribution of small businesses (and micro-businesses) among industry types within the Manhattan CBD is similar to that of businesses of all sizes. The majority of businesses in the Manhattan CBD (approximately 68.9 percent) fall within one of five industry groupings including: Professional, Scientific, and Technical Services/Management/Administrative and Waste Management Services, which is the largest category (25.0 percent); followed by Finance and Insurance, and Real Estate and Rental and Leasing (15.7 percent); Accommodation and Food Services (10.1 percent); Retail Trade (9.5 percent); and Wholesale Trade (8.5 percent).

[17] Empire State Development (ESD) Annual Report on the State of Small Businesses, 2021.

Table 6-4. Small Businesses in the Manhattan CBD by Industry Category

NAICS CODES	INDUSTRY CATEGORIES	BUSINESSES IN THE MANHATTAN CBD (ALL SIZES)	PERCENTAGE OF ALL BUSINESSES IN THE MANHATTAN CBD	SMALL BUSINESSES (<100 EMPLOYEES) TOTAL	SMALL BUSINESSES (<100 EMPLOYEES) PERCENTAGE OF BUSINESSES IN INDUSTRY CATEGORY	MICRO-BUSINESSES (<20 EMPLOYEES) TOTAL	MICRO-BUSINESSES (<20 EMPLOYEES) PERCENTAGE OF BUSINESSES IN INDUSTRY CATEGORY
23	Construction	1,541	2.0%	1,427	92.6%	1,202	78.0%
31–33	Manufacturing	1,499	1.9%	1,448	96.6%	1,307	87.2%
42	Wholesale trade	6,579	8.5%	6,407	97.4%	5,832	88.6%
44–45	Retail trade	7,309	9.5%	7,104	97.2%	6,331	86.6%
48–49, 21, 22	Transportation and warehousing; Utilities; Mining, quarrying and oil and gas extraction	557	0.7%	462	82.9%	393	70.6%
51	Information	3,648	4.7%	3,304	90.6%	2,762	75.7%
52–53	Finance and insurance, and real estate and rental and leasing	12,129	15.7%	11,520	95.0%	10,283	84.8%
54–56	Professional, scientific, and management, and administrative and waste management services	19,266	25.0%	14,930	77.5%	13,242	68.7%
61–62	Educational services, and health care and social assistance	5,948	7.7%	5,616	94.4%	4,908	82.5%
71–72	Arts, entertainment, and recreation,	3,621	4.7%	3,491	96.4%	3,134	86.6%
72	Accommodation and food services	7,818	10.1%	7,452	95.3%	5,007	64.0%
81	Other services (except public administration)	7,080	9.2%	6,922	97.8%	6,302	89.0%
99	Industries not classified	126	0.2%	122	96.8%	122	96.8%
	Total[1]	**77,121***		**70,205**	**91.0%**	**60,825**	**78.9%**

Source: U.S. Census, ZIP Code Business Patterns by Employment Size Class for 5-digit ZIP Code level (2018).
Note: Data on sectors with fewer than three establishments are withheld to avoid disclosing the operations of an individual employer, but those firms are included in the total count.

6.3.2.2 Means of Transportation to Work

The regional study area is well-served by public transit, with rail, buses, subways, and ferries providing commuters with public transportation options to the region's employment centers.[18] **Table 6-5** presents the means of commuting to work within the region by geographic area of origin (i.e., from where workers live). In total, approximately 29 percent of workers in the region commute by public transportation,[19] with the highest rates of public transportation utilization by workers commuting from Brooklyn (61 percent), the Bronx (60 percent), Manhattan (59 percent), and Queens (51 percent). Within Manhattan, the rate at which workforce members commute by public transit is higher for residents living outside the Manhattan CBD as compared to those living within the Manhattan CBD (65 percent and 50 percent, respectively); however, the workforce living inside the Manhattan CBD has a much higher rate of walking to work—30 percent—as compared to 13 percent for Manhattan residents living outside the Manhattan CBD.

Table 6-5. Means of Transportation to Work for Regional Study Area's Workforce

GEOGRAPHIC AREA OF ORIGIN	CAR, TRUCK, OR VAN (Drove Alone)	CAR, TRUCK, OR VAN (Carpooled)	PUBLIC TRANSPORTATION (Excluding Taxi)	WALKED	TAXICAB, MOTORCYCLE, BICYCLE, OR OTHER MEANS[1]	WORKED AT HOME
New York City	**22.3%**	**4.5%**	**56.0%**	**10.0%**	**3.0%**	**4.3%**
Bronx County	23.5%	4.4%	59.8%	7.4%	2.0%	3.0%
Kings County (Brooklyn)	18.4%	4.1%	61.2%	8.7%	3.0%	4.6%
New York County (Manhattan)	6.0%	1.9%	58.8%	20.4%	5.7%	7.2%
Inside Manhattan CBD	4.6%	1.4%	49.7%	30.2%	7.0%	7.1%
Outside Manhattan CBD	7.0%	2.2%	65.3%	13.4%	4.9%	7.3%
Queens County	32.4%	6.3%	51.2%	5.8%	1.6%	2.7%
Richmond County (Staten Island)	56.3%	7.7%	29.7%	2.6%	1.1%	2.7%
Long Island Counties[2]	**74.2%**	**7.4%**	**11.5%**	**1.8%**	**1.1%**	**4.0%**
New York Counties North of New York City[3]	**66.2%**	**8.3%**	**14.3%**	**4.1%**	**1.6%**	**5.5%**
New Jersey Counties[4]	**68.9%**	**7.9%**	**13.5%**	**3.1%**	**1.9%**	**4.7%**
Connecticut Counties[5]	**75.1%**	**8.3%**	**7.1%**	**2.9%**	**1.3%**	**5.4%**
TOTAL	**52.6%**	**6.6%**	**28.5%**	**5.5%**	**2.1%**	**4.6%**

Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.
Note: Percentages may not sum to 100 percent due to rounding.
1. The source ACS survey does not include an FHV category, only "car, truck, or van" and "taxicab." Those commuting by FHV may select taxi or car, truck, or van, depending on how they interpret the survey question.
2 Long Island counties include Nassau and Suffolk.
3 Counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
5 Connecticut counties include Fairfield and New Haven.

18 Unless otherwise noted, the terms "public transportation" and "transit" are used interchangeably throughout this chapter.
19 In 2019 the regional study area's rate of commutation by public transportation was higher than the rate for the 10 largest metropolitan areas in the United States, with the exception of the District of Columbia, where 35.7 percent of the workforce commuted by public transportation (Source: U.S. Census Bureau, ACS, 2015–2019 5-Year Estimates).

The region's workforce living outside New York City has a lower rate of commutation by public transportation compared to New York City's resident-workers. The workforce living in Fairfield and New Haven Counties in Connecticut has the lowest rate of commutation by public transportation in the region at about 7 percent, followed by Long Island counties (12 percent) and the region's New Jersey counties and counties north of New York City (both 14 percent). The primary reasons for these lower rates are threefold:

- A higher percentage of the workforce living outside New York City does not commute to the Manhattan CBD, but rather, they commute to less transit-accessible locations outside New York City. Over 90 percent of the region's workforce living outside New York City, and 75 percent of New York City residents commute to jobs located outside of the Manhattan CBD.
- The region's public transportation system is not as readily accessible outside New York City. For example, east–west travel by transit in Westchester County often requires circuitous routes via Metro-North Railroad into Manhattan (125th Street or Grand Central Station) to switch lines or by limited east–west bus routes.
- Workforce members living outside of New York City are more likely to live in households with an available vehicle, leading to a higher propensity to drive to work irrespective of public transportation options. Outside of New York City within the region, approximately 94 percent of the workforce live in households that have access to at least one vehicle; within New York City, approximately 55 percent of the workforce live in households with access to at least one vehicle.[20]

Given the breadth of public transportation options to, from, and within the Manhattan CBD, workers commuting to the Manhattan CBD have a much lower rate of auto commuting relative to the broader regional and New York City workforce. As shown in **Table 6-6**, approximately 53 percent of all regional workforce members drive to work alone. For New York City residents in the workforce, approximately 22 percent drive to work alone, while only 9 percent of Manhattan CBD jobs are held by workers who drive to work alone.

Table 6-6. Means of Transportation to Work for the Regional Study Area and New York City Workforce vs. Commuters to the Manhattan CBD

WORKER TYPE	CAR, TRUCK, OR VAN (Drove Alone)	CAR, TRUCK, OR VAN (Carpooled)	PUBLIC TRANSPORTATION (Excluding Taxi)	WALKED	TAXICAB, MOTORCYCLE, BICYCLE, OR OTHER MEANS[1]	WORKED AT HOME
Regional Workforce	52.6%	6.6%	28.5%	5.5%	2.1%	4.6%
New York City Workforce	22.3%	4.5%	56.0%	10.0%	3.0%	4.3%
Commuters to the Manhattan CBD	9.0%	2.3%	85.7%	1.2%	1.8%	N/A

Sources: Regional and New York City workforce data from U.S. Census Bureau, ACS 2015–2019 5-Year Estimates; Manhattan CBD data from U.S. Census Bureau, CTPP, 2012–2016.
Note: Percentages may not sum to 100 percent due to rounding.
[1] The source ACS survey does not include a FHV category, only "car, truck, or van" and "taxicab." Those commuting by FHV may select taxicab or car, truck, or van, depending on how they interpret the survey question.

[20] U.S. Census Bureau, ACS, 2015–2019 5-Year Estimates, Table B08014. **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion,"** provides additional information on vehicle ownership within the region.

6.3.2.3 Means of Transportation to Work for Different Industry Categories

Table 6-7 presents how the region's workforce commutes to work based on the type of industry in which they are employed. Those NAICS industry categories with the lowest rates of commutation by public transportation—Armed Forces (12 percent) and Agriculture, Forestry, Fishing and Hunting, and Mining (13 percent)—have notably higher rates of working from home (both about 11 percent, compared to under 5 percent for the region).[21] Armed forces workers also have the highest rate of walking to work, likely because many workers live at a military base. Other NAICS industry categories with relatively low rates of commutation by public transit include Manufacturing (17 percent); Wholesale Trade (20 percent); Transportation and Warehousing, and Utilities (21 percent); and Construction (24 percent). These industries are not concentrated in the Manhattan CBD, which is highly accessible via public transportation. Many industries within these categories require facilities with large footprints, which are less likely to be within dense urban areas that are highly transit-accessible. Conversely, those industry categories with the highest rates of commutation by public transportation—including Information (42 percent); Finance and Insurance, and Real Estate and Rental and Leasing (39 percent); and Arts, Entertainment, and Recreation, and Accommodation and Food Services (36 percent)—are all industries with a high concentration of jobs in Manhattan, which is highly accessible via public transportation.

21 U.S. Census Bureau, ACS 5-Year Estimates 2015–2019, Means of Transportation to Work, Workers 16 years and over. The 2019 ACS estimates are from prior to the onset of the COVID-19 pandemic, and therefore do not reflect the substantial increase in work-from-home rates since the onset of the pandemic. Now that residents may again travel freely and many businesses have resumed operations, activity levels have been increasing. At this time, it would be speculative to estimate long-term (post-pandemic) work-from-home rates for the region.

Table 6-7. Means of Transportation to Work for Regional Study Area Employed Workforce by NAICS Industry Category

NAICS CODES	INDUSTRY CATEGORIES	CAR, TRUCK, OR VAN (Drove Alone)	CAR, TRUCK, OR VAN (Carpooled)	PUBLIC TRANSPORTATION (Excluding Taxi)	WALKED	TAXICAB, MOTORCYCLE, BICYCLE, OR OTHER MEANS[1]	WORKED AT HOME
11, 21	Agriculture, forestry, fishing and hunting, and mining	59.2%	8.4%	12.5%	6.3%	2.2%	11.3%
23	Construction	56.4%	11.7%	23.8%	2.6%	2.0%	3.5%
31–33	Manufacturing	64.7%	9.2%	16.9%	3.4%	1.9%	4.0%
42	Wholesale trade	61.3%	7.5%	20.2%	3.3%	1.7%	6.1%
44–45	Retail trade	54.5%	7.2%	26.2%	7.1%	2.1%	2.9%
48–49, 22	Transportation and warehousing, and utilities	64.3%	6.4%	21.3%	2.9%	2.8%	2.4%
51	Information	38.7%	3.8%	42.3%	5.1%	2.5%	7.6%
52–53	Finance and insurance, and real estate and rental and leasing	42.3%	4.0%	39.4%	5.7%	2.2%	6.4%
54–56	Professional, scientific, and management, and administrative and waste management services	42.5%	5.5%	35.0%	4.9%	2.3%	9.8%
61–62	Educational services, and health care and social assistance	57.7%	6.3%	25.1%	6.3%	1.7%	2.9%
71–72	Arts, entertainment, and recreation, and accommodation and food services	41.6%	7.3%	35.8%	8.3%	3.4%	3.6%
81	Other services (except public administration)	48.9%	7.8%	28.4%	7.7%	2.2%	5.0%
92	Public administration	64.7%	5.5%	24.5%	2.8%	1.0%	1.5%
928110	Armed forces	56.7%	4.5%	11.8%	13.4%	2.9%	10.7%
	TOTAL	**52.6%**	**6.6%**	**28.5%**	**5.5%**	**2.1%**	**4.6%**

Source: U.S. Census Bureau, ACS, 2015–2019 5-Year Estimates.
Notes: Industry category percentages may not sum to 100 percent due to rounding.
[1] The source ACS does not include a FHV category, only "car, truck, or van" and "taxicab." Those commuting by FHV may select taxicab or car, truck, or van, depending on how they interpret the survey question.

6.3.2.4 Commuting Into, Out of, and Within the Manhattan CBD

Given that the Project would directly affect workers who drive into, out of, and within the Manhattan CBD, this section evaluates auto commuters who are concentrated in any specific regional industries, with particular focus on jobs within the Manhattan CBD. The most recent ACS provides limited data describing the workplace industry and occupational categories of workers commuting via automobile (not including taxis); estimates for the Manhattan CBD alone are not available. The most detailed estimates describe only those working in Manhattan as a whole, but these data reveal a correlation between commute mode and employment categories. As shown in **Table 6-8**, the rate of workers driving to Manhattan jobs is highest in industry categories representing small fractions of all Manhattan jobs (see **Figure 6-3**). This is especially true for Manhattan workers holding jobs in the Transportation, Warehousing, and Utilities category. Fewer than 4 percent of Manhattan workers hold jobs within these industries, but nearly 35 percent of those workers drive to work.

Table 6-8. Manhattan Workers Who Commute by Auto by NAICS Industry Category

NAICS CODES	INDUSTRY CATEGORIES	MANHATTAN WORKERS	PERCENTAGE OF ALL MANHATTAN WORKERS	PERCENTAGE OF WORKERS IN INDUSTRY COMMUTING BY AUTO
11, 21	Agriculture, forestry, fishing and hunting, and mining	1,914	0.1%	22.2%
23	Construction	101,647	4.1%	25.5%
31–33	Manufacturing	77,446	3.1%	11.8%
42	Wholesale trade	51,839	2.1%	14.0%
44–45	Retail trade	197,906	7.9%	8.3%
48–49, 22	Transportation and warehousing, and utilities	85,112	3.4%	33.7%
51	Information	153,225	6.1%	9.0%
52–53	Finance and insurance, and real estate and rental and leasing	400,242	16.0%	9.6%
54–56	Professional, scientific, and management, and administrative and waste management services	486,114	19.5%	8.0%
61–62	Educational services, and health care and social assistance	458,573	18.4%	13.7%
71–72	Arts, entertainment, and recreation, and accommodation and food services	279,446	11.2%	8.1%
81	Other services (except public administration)	108,712	4.4%	11.8%
92	Public administration	93,187	3.7%	28.4%
928110	Armed forces	806	<0.1%	21.0%
	TOTAL	**2,496,169**	**100.0%**	**12.2%**

Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.
Note: Percentage of all Manhattan workers may not sum to 100 percent due to rounding.

Within SOC grouped occupational categories, approximately 12 percent of all Manhattan workers drive to their jobs, but within certain occupational groupings, nearly 30 percent drive (**Table 6-9**). These SOC occupational groups (Military Specific occupations; Natural Resources, Construction, and Maintenance occupations; and Production, Transportation, and Material Moving occupations) include many different job classifications but together account for fewer than 10 percent of the jobs held by Manhattan workers.

Table 6-9. Standard Occupational Classification Categories for Manhattan Workers Who Commute by Auto

SOC GROUPS	OCCUPATIONAL CATEGORIES	MANHATTAN WORKERS	PERCENTAGE OF ALL MANHATTAN WORKERS	PERCENTAGE OF MANHATTAN WORKERS IN OCCUPATION COMMUTING BY AUTO
11–29	Management, business, science, and arts	1,274,070	51.0%	10.4%
31–39	Service occupations	433,439	17.4%	12.2%
41–43	Sales and office occupations	546,553	21.9%	9.6%
45–49	Natural resources, construction, and maintenance occupations	116,716	4.7%	27.0%
51–53	Production, transportation, and material moving occupations	124,986	5.0%	27.5%
55	Military specific occupations	405	<0.1%	29.1%
	TOTAL	**2,496,169**	**100.0%**	**12.2%**

Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.
Note: SOC data is not available at the level of detail provided in **Table 6-3** due to cross-tabulation by mode of transportation to work. The percentage of all Manhattan workers may not sum to 100 percent due to rounding.

Commuters to the Manhattan CBD

The following analysis provides insight on modal trends and identifies whether specific industries and occupations could be adversely affected by the CBD Tolling Alternative.[22] The data presented in **Table 6-2 and Table 6-3** describe jobs held by all Manhattan CBD workers. Commuters to the Manhattan CBD can be divided in two categories:

- Those commuting from residences outside the Manhattan CBD (Manhattan CBD commuters)
- Those commuting from residences within the Manhattan CBD (Manhattan CBD resident-workers)

Nearly 1.3 million workers (approximately 83 percent) are Manhattan CBD commuters, traveling to jobs within the Manhattan CBD from residences across the 28-county region.[23] The remaining, approximately

[22] For estimates specific to those workers commuting from outside the Manhattan CBD (and within the 28-county region) to jobs within the Manhattan CBD, the CTPP provides data products describing the employed labor force's commuting patterns, mode of travel to work, and industry/occupation sector distribution. Data tables are published at various geographic levels down to the census tract. The most recent estimates are based on the ACS 2012–2016 5-Year Estimates and reported in three parts: Part 1, by worker residence of origin; Part 2, by worker job location destination; and Part 3, paired by worker origin and destination. The availability and provided detail of the estimates are dependent on the CTPP part, geographic-level of detail, and number of variables cross-tabulated. The most detailed estimates of industry, occupation, and commuting mode of New York City workers are available only for Part 1 and Part 2 at the county level. The Part 1 and Part 2 estimates also provide detailed industry and occupation information for all workers residing in the 28-county region or those working within the Manhattan CBD. However, only CTPP Part 3 provides estimates specifically describing workers who commute to inside the Manhattan CBD from residences within the 28-county region. Isolated estimates of detailed industry/occupation by mode for Manhattan CBD workers commuting from outside the Manhattan CBD are not provided by the CTPP. However, the CTPP does provide detailed estimates of these variables without cross-tabulation.

[23] U.S. Census Bureau, CTPP, 2012–2016, Part 3.

one-fifth, of Manhattan CBD workers live within the Manhattan CBD and therefore are Manhattan CBD resident-workers.

Within the NAICS industry category groupings, all Manhattan CBD workers and Manhattan CBD commuters are distributed among industries at nearly the same rates (**Table 6-10**).

Table 6-10. Industry Categories for Manhattan CBD Workers and Manhattan CBD Commuters

NAICS CODES	INDUSTRY CATEGORIES	MANHATTAN CBD WORKERS	PERCENTAGE OF MANHATTAN CBD WORKERS BY INDUSTRY	COMMUTERS TO THE MANHATTAN CBD FROM ELSEHWERE	PERCENTAGE OF COMMUTERS TO MANHATTAN CBD BY INDUSTRY
11, 21, 23, 928110	Agriculture, forestry, fishing and hunting, and mining; + construction; + armed forces	44,087	2.8%	39,830	3.1%
31–33	Manufacturing	55,013	3.5%	45,848	3.6%
42, 44–45, 48–49, 22	Wholesale trade; + retail trade; + transportation and warehousing, and utilities	198,595	12.8%	168,195	13.3%
51, 52–53, 54–56	Information; + finance, insurance, real estate and rental and leasing; + professional, scientific, management, administrative, and waste management services	792,491	51.0%	619,984	48.9%
61–62	Educational, health and social services	192,030	12.4%	162,356	12.8%
71–72	Arts, entertainment, recreation, accommodation and food services	150,708	9.7%	127,069	10.0%
81, 92	Other services (except public administration); + public administration	121,444	7.8%	105,212	8.3%

Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.
Notes: Percentages may not sum to 100 percent due to rounding.

Approximately 99 percent of Manhattan CBD workers—and approximately 99 percent of the subset who commute from outside the Manhattan CBD—have jobs that are within one-half mile or about a 15-minute walk of a subway station or Select Bus Service (SBS) stop within the Manhattan CBD.[24] All of these jobs are within one-half mile of local bus service and/or ferry service. Based on FHWA Pedestrian Safety Guide for Transit Agencies, most people are willing to walk for 5 to 10 minutes, or approximately one-quarter to one-half mile to a transit stop, and people may be willing to walk considerably longer distances when accessing heavy rail services.[25] A 15-minute walk is considered reasonable for most trip purposes.[26] **Subchapter 4C, "Transportation: Transit,"** describes the regional transit network. The estimated 8,470 Manhattan CBD

24 Express bus service from specific destinations outside the Manhattan CBD, such as bus routes from Staten Island and Queens, also serves the Manhattan CBD. Since these routes are from specific destinations and not available for other commuters within the Manhattan CBD, express bus stops within the Manhattan CBD are not included in this discussion.

25 https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/ch4.cfm#a.

26 Yong Yang, PhD and Ana V. Diez-Roux, PhD, MD. "Walking Distance by Trip Purpose and Population Subgroups." *American Journal of Preventative Medicine*. March 2012. https://www.ajpmonline.org/article/S0749-3797(12)00240-1/fulltext.

employees who work greater distances from a subway station or SBS stop have a relatively high rate of auto commuting (1,770, or almost 15 percent, drive to work) but represent small fractions of all Manhattan CBD workers within any specific industry and occupational category (**Table 6-11**). When compared to the Manhattan CBD as a whole, workers traveling to Manhattan CBD locations farther from public transportation disproportionately hold jobs in the Information industry. An estimated 2,595 workers employed in Census Tract 135 in West Midtown (bounded by West 58th Street to the north, Tenth Avenue to the east, West 50th Street to the south, and the Hudson River to the west; **Figure 6-4**) are employed in the Information industry and represent 2.2 percent of all workers in the Manhattan CBD in the same industry. Census Tract 135 is home to several broadcasting studios.[27] Collectively the 8,470 workers account for less than 1 percent of Manhattan CBD employment across all industry and occupational categories.

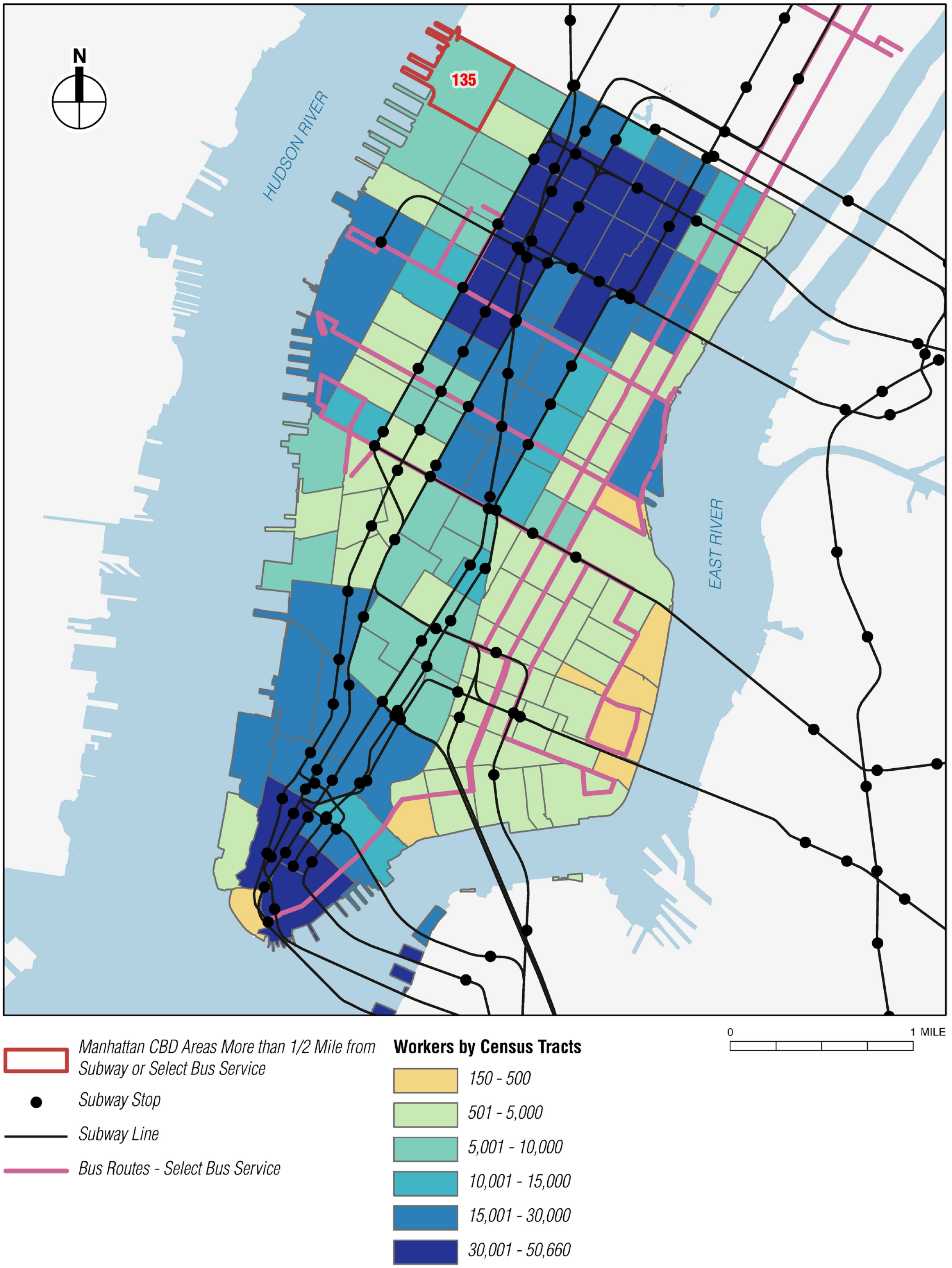
Table 6-11. Industry Categories for Manhattan CBD Jobs in Census Tracts More than One-Half Mile from a Subway or Select Bus Service Bus Stop

NAICS CODES	INDUSTRY CATEGORIES	JOBS WITHIN MANHATTAN CBD MORE THAN ONE-HALF MILE FROM SUBWAY STATION OR SBS BUS STOP	JOBS AS A PERCENTAGE OF ALL MANHATTAN CBD JOBS WITHIN INDUSTRY CATEGORY
11, 21	Agriculture, forestry, fishing and hunting, and mining	10	0.9%
23	Construction	310	0.8%
31–33	Manufacturing	365	0.7%
42	Wholesale trade	140	0.4%
44–45	Retail trade	1,080	1.0%
48–49, 22	Transportation and warehousing, and utilities	220	0.6%
51	Information	2,595	2.2%
52–53	Finance, insurance, real estate and rental and leasing	410	0.1%
54–56	Professional, scientific, management, administrative, and waste management services	1,065	0.3%
61–62	Educational, health and social services	1,415	0.7%
71–72	Arts, entertainment, recreation, accommodation and food services	565	0.3%
81	Other services (except public administration)	230	0.5%
92	Public administration	65	0.1%
928110	Armed forces	0	0.0%
	AREA ESTIMATE*	**8,470**	**0.5%**

Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.
Note: CTPP estimates for industry and occupational categories are derived separately from CTPP estimates of all workers within the same geographic area; therefore, the sum total of industry-level estimates may not equal the estimate for all workers.

[27] Broadcasting and telecommunications industries are subsets of the Information NAICS industry category.

Figure 6-4. Number of Manhattan Workers in Manhattan CBD Areas and Proximity to Subway Stops and Select Bus Service Routes



Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.

Car Commuters to the Manhattan CBD

As established in **Chapter 1, "Introduction,"** approximately 142,500 workers commute to the Manhattan CBD from around the region by car. Of these, more than one-third (approximately 57,000) drive from residences in New York City that are within one-half mile of a rail (commuter rail, subway, or Staten Island Railway) station, express bus stop, or SBS bus stop. Most of these workers have a relatively close option of using public transportation to reach the Manhattan CBD. The remaining car commuters to the Manhattan CBD originate from areas of New York City that are farther from public transportation, and from all other municipalities within the 28-county region (irrespective of proximity to public transportation).

Manhattan CBD Locations with the Largest Numbers of Car Commuters

In terms of absolute numbers, car commuters to the Manhattan CBD generally drive to jobs in neighborhoods with high employment density, including central Midtown and Lower Manhattan (**Figure 6-5**). While the Manhattan CBD has 125 census tracts and covers approximately 9 square miles, approximately one-half (50.7 percent) of car commuters to the Manhattan CBD drive to jobs inside one of just 23 census tracts in the Manhattan CBD that occupy an area one-quarter the size of the entire Manhattan CBD. These census tracts are also the destination for over half (52.7 percent) of all Manhattan CBD workers, not including those working from home. Within the 23 census tracts with the largest numbers of car commuters, jobs are distributed among industries and occupations at rates similar to industry and occupational distribution across the entire Manhattan CBD (**Table 6-12**), suggesting that no industry or occupational categories are within this area for which commuters have a greater propensity or need to commute by auto.[28] It also suggests that the disproportionately high rate of Information industry workers in Census Tract 135 (on the far West Side and more distant from faster modes of public transportation) are not dependent upon the ability to commute by auto for industry-specific needs.

One notable exception (see **Table 6-12**) is the NAICS Finance, Insurance, Real Estate and Rental and Leasing industry category, which employs one-quarter of the workers in those 23 census tracts while this industry category accounts for one-fifth of the employment within the Manhattan CBD as a whole. Given the large number of employees within the census tracts, it is difficult to draw conclusions as to whether workers within this industry category have a higher rate of auto commuting.

As shown in **Table 6-13**, within the same 23 census tracts that have the highest number of car commuters, jobs are divided among occupations at percentages similar to the Manhattan CBD as a whole. However, the SOC Business and Financial Operations Specialists occupational category and the Legal occupational category have a slightly higher percentage of the jobs in the 23 census tracts than in the Manhattan CBD overall.

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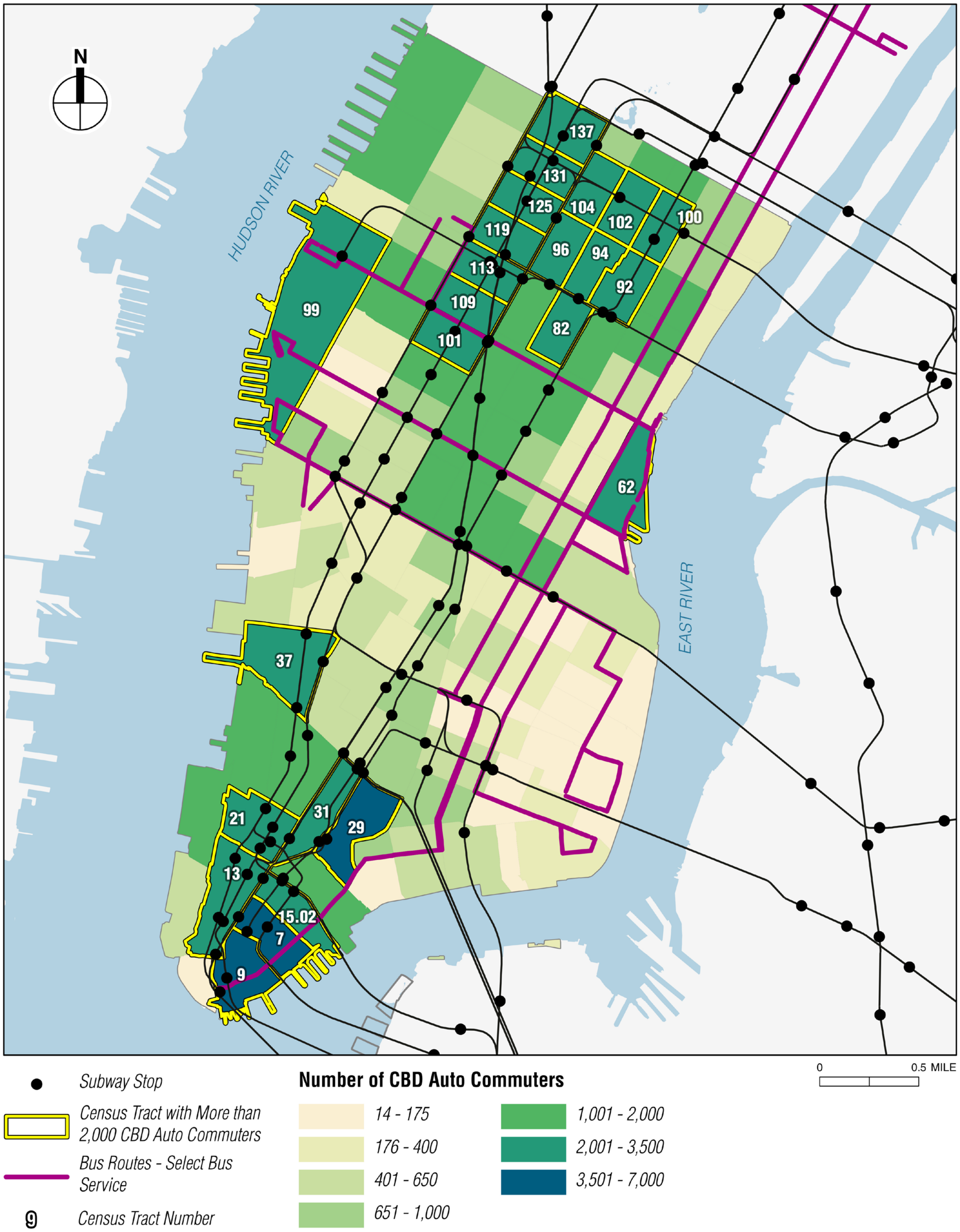
[28] Origin-destination estimates by industry are not available by mode for this unique geography, limiting the ability to draw more definitive conclusions from this data with respect to a correlation between industry types and auto commuting within the Manhattan CBD.

Figure 6-5. Number of Commuters Who Drive to Locations in the Manhattan CBD



Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.

Table 6-12. Industry Categories for Jobs in 23 Manhattan CBD Census Tracts with the Largest Numbers of Car Commuters

NAICS CODES	INDUSTRY CATEGORIES	WORKERS IN 23 CENSUS TRACTS[1]	PERCENTAGE OF WORKERS IN 23 CENSUS TRACTS	COMPARISON: PERCENTAGE OF WORKERS IN INDUSTRY CATEGORY, ALL MANHATTAN CBD WORKERS
11, 21	Agriculture, forestry, fishing and hunting, and mining	535	<0.1%	0.1%
23	Construction	20,450	2.6%	2.7%
31-33	Manufacturing	23,760	3.0%	3.5%
42	Wholesale trade	16,375	2.1%	2.5%
44-45	Retail trade	46,195	5.8%	7.6%
48-49, 22	Transportation and warehousing, and utilities	18,860	2.4%	2.7%
51	Information	63,925	8.0%	7.8%
52-53	Finance, insurance, real estate and rental and leasing	201,760	25.3%	19.7%
54-56	Professional, scientific, management, administrative, and waste management services	202,405	25.4%	23.5%
61-62	Educational, health and social services	71,485	9.0%	12.4%
71-72	Arts, entertainment, recreation, accommodation and food services	64,765	8.1%	9.7%
81	Other services (except public administration)	21,400	2.7%	3.5%
92	Public administration	45,150	5.7%	4.4%
928110	Armed forces	142	<0.1%	<0.1%

Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.
[1] **Figure 6-5** identifies the 23 census tracts for which data is presented.

Table 6-13. Standard Occupational Classification Categories of Jobs in the 23 Manhattan CBD Census Tracts with the Largest Numbers of Car Commuters

SOC GROUPS	OCCUPATIONAL CATEGORIES	WORKERS IN 23 CENSUS TRACTS[1]	PERCENTAGE OF ALL WORKERS IN 23 CENSUS TRACTS	PERCENTAGE OF ALL MANHATTAN CBD WORKERS
11-0000	Management occupations	146,770	18.4%	17.6%
13-0000	Farmers and farm managers	55	<0.1%	<0.1%
15-0000	Business and financial operations specialists	116,260	14.6%	12.1%
17-0000	Computer and mathematical occupations	48,225	6.0%	5.6%
19-0000	Architecture and engineering occupations	12,590	1.6%	1.6%
21-0000	Life, physical, and social science occupations	5,735	0.7%	0.8%
23-0000	Community and social service occupations	7,840	1.0%	1.2%
25-0000	Legal occupations	48,845	6.1%	4.6%
27-0000	Education, training, and library occupations	14,845	1.9%	3.0%
29-0000	Arts, design, entertainment, sports, and media occupations	50,320	6.3%	7.5%
31-0000	Healthcare practitioners and technicians occupations	18,415	2.3%	2.6%
33-0000	Healthcare support occupations	8,795	1.1%	1.4%
35-0000	Protective service occupations	23,100	2.9%	2.5%
37-0000	Food preparation and serving related occupations	25,765	3.2%	4.2%
39-0000	Building and grounds cleaning and maintenance occupations	21,060	2.6%	2.8%
41-0000	Personal care and service occupations	12,340	1.5%	2.2%
43-0000	Sales and related occupations	84,920	10.7%	11.0%
45-0000	Office and administrative support occupations	100,205	12.6%	12.3%
47-0000	Farming, fishing, and forestry occupations	184	<0.1%	<0.1%
49-0000	Construction and extraction occupations	15,815	2.0%	2.1%
51-0000	Installation, maintenance, and repair occupations	7,660	1.0%	1.0%
53-0000	Production occupations	12,820	1.6%	1.8%
55-0000	Transportation and material moving occupations	14,605	1.8%	2.1%
	Armed forces	77	<0.1%	<0.1%

Source: U.S. Census Bureau, CTPP, 2012–2016, Part 2.
1 **Figure 6-5** identifies the 23 census tracts for which data is presented.

By far, the greatest number of car commuters to the Manhattan CBD drive to jobs in Census Tract 29 in Lower Manhattan (see **Figure 6-5**). Census Tract 29 is north of the Brooklyn Bridge approach ramps and extends north to Canal Street. The tract includes parts of Chinatown and several large municipal buildings including 1 Centre Street, the Jacob Javits Federal Building, and the New York City Police Department (NYPD) headquarters. Of the estimated 16,453 workers commuting to jobs in Census Tract 29 from outside the Manhattan CBD, an estimated 6,832 workers (over 40 percent) drive to work. Approximately 50 percent more car commuters to the Manhattan CBD work in Census Tract 29 than in either Census Tracts 7 or 9, which have the second- and third-highest number of car commuters to the Manhattan CBD (4,561 and 4,345, respectively). Roughly 40 percent of those working in Census Tract 29 are employed in protective service occupations, a category including NYPD officers. Over the entire Manhattan CBD, only 2.5 percent of jobs are in this occupational category.

Manhattan CBD Locations with the Highest Percentages of Car Commuters

The previous section considered total volumes of car commuters; this section considers areas with the highest proportions of car commuters, irrespective of volume. Across different neighborhoods of the Manhattan CBD, the percentage of commuters originating from outside the Manhattan CBD who drive to work varies. Considering the locations where higher percentages of commuters drive to work could reveal whether specific industry types are correlated with the larger driving share for commuters.

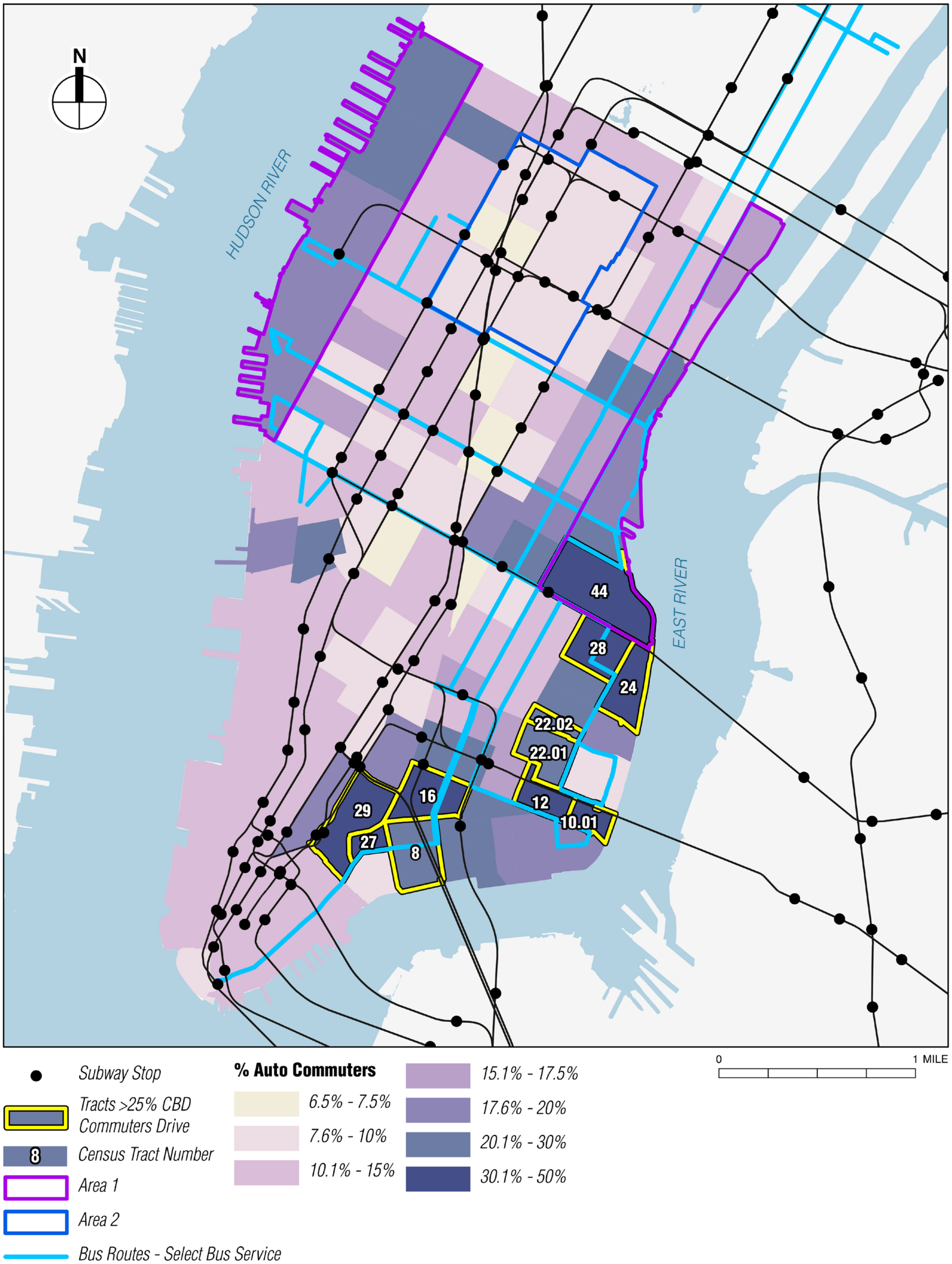
As shown in **Figure 6-6**, CTPP data indicate that in general, the percentage of Manhattan CBD commuters driving to work correlates roughly with the distance of their job location from major transit hubs. This trend is particularly apparent in the areas of Midtown Manhattan north of 14th Street that are near the East River and the Hudson River, where more commuters drive to work than in the Midtown core. In the areas of the Manhattan CBD farther from major transit hubs and closer to the East River and the Hudson River (**Figure 6-6, Area 1**), 63,036 workers commute from outside the Manhattan CBD and approximately 19 percent of them drive to work. In the area between Third Avenue and Eighth Avenue (**Figure 6-6, Area 2**), approximately 8 percent of commuters coming from outside the Manhattan CBD drive to work.

The area of the Manhattan CBD with the highest rate of commuters by auto from locations outside the Manhattan CBD is an area of 11 census tracts in Manhattan's East Village and Lower East Side neighborhoods, including a portion of Chinatown (**Figure 6-6**). In each of these 11 census tracts, at least one-quarter of workers commuting from outside the Manhattan CBD drive to their jobs. Approximately 26,000 total workers commute to jobs in these 11 census tracts from outside the Manhattan CBD, which is just over 2 percent of all workers commuting into the Manhattan CBD from outside the Manhattan CBD. Of those, an estimated 10,416 workers (about 40 percent) drive to work from outside the Manhattan CBD.

Within the 11 census tracts with the highest rates of drivers, nearly half of all workers are employed in the public administration industry, while only 4 percent of all Manhattan CBD workers are employed in this industry (**Table 6-14**). Within NAICS occupational categories, over one-quarter of workers in the 11 census tracts are employed in protective service occupations, compared to under 3 percent across the Manhattan CBD (**Table 6-15**). The higher rate of auto commuting to these census tracts, and the high volume of auto commuting to Census Tract 29, are likely due to the availability of free parking and/or parking placards for some public administration employees.[29] The number of workers employed in Management, Business and Financial Operations Specialists, and Sales occupations are notably lower in these census tracts than in the Manhattan CBD overall.

[29] Those who work for a government agency, the New York City Department of Education, clergy, non-profit organizations, or individuals with severe disabilities may be eligible to apply for a New York City parking permit (or "placard"). About 150,000 City of New York-issued parking permits are in circulation. Various permits are available, depending on the needs and occupation of the driver. Parking permits are generally rectangular placards that drivers place on their car's dashboard. Displaying these permits allows drivers to forgo certain parking restrictions. Some may also allow drivers to park in certain "No Parking" zones or "Authorized Vehicle Only" zones. Depending on the permit, drivers can park for a specified amount of the time without getting a parking ticket. This may include hours designated for alternate-side parking. The permits also allow drivers to park in spaces specifically designated for certain occupations. This may include drivers who are part of the press, non-profit organizations, physicians, and government workers. Usually "Authorized Parking Only" signs will specify the type of permit holder allowed to use the space. (Source: https://parkingtickets.org/ny-new-york/nyc-parking-permit.)

Figure 6-6. Percentage of Commuters Who Drive to Locations in the Manhattan CBD



Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.

Table 6-14. Industry Categories of Jobs in the 11 Manhattan CBD Census Tracts with the Highest Percentage of Car Commuters

NAICS CODES	INDUSTRY CATEGORIES	WORKERS IN 11 CENSUS TRACTS[1]	PERCENTAGE OF WORKERS IN 11 CENSUS TRACTS	COMPARISON: PERCENTAGE OF WORKERS IN INDUSTRY CATEGORY, ALL MANHATTAN CBD WORKERS
11, 21	Agriculture, forestry, fishing and hunting, and mining	35	0.1%	0.1%
23	Construction	613	1.9%	2.7%
31–33	Manufacturing	659	2.0%	3.5%
42	Wholesale trade	363	1.1%	2.5%
44–45	Retail trade	1,645	5.0%	7.6%
48–49, 22	Transportation and warehousing, and utilities	1,074	3.3%	2.7%
51	Information	254	0.8%	7.8%
52–53	Finance, insurance, real estate and rental and leasing	2,164	6.6%	19.7%
54–56	Professional, scientific, management, administrative, and waste management services	3,255	10.0%	23.5%
61–62	Educational, health and social services	4,755	14.6%	12.4%
71–72	Arts, entertainment, recreation, accommodation and food services	2,260	6.9%	9.7%
81	Other services (except public administration)	899	2.8%	3.5%
92	Public administration	14,690	45.0%	4.4%
928110	Armed forces	4	<0.1%	<0.1%

Source: U.S. Census Bureau, CTPP, 2012–2016, Parts 2 and 3.
1 **Figure 6-6** identifies the 11 census tracts for which data is presented.

Table 6-15. Standard Occupational Classification Categories of Jobs in the 11 Manhattan CBD Census Tracts with the Highest Proportions of Car Commuters

SOC GROUPS	OCCUPATIONAL CATEGORIES	WORKERS IN 11 CENSUS TRACTS[1]	PERCENTAGE OF WORKERS IN 11 CENSUS TRACTS	PERCENTAGE OF ALL MANHATTAN CBD WORKERS
11-0000	Management occupations	2,659	8.1%	17.6%
13-0000	Farmers and farm managers	0	0.0%	<0.1%
15-0000	Business and financial operations specialists	965	3.0%	12.1%
17-0000	Computer and mathematical occupations	844	2.6%	5.6%
19-0000	Architecture and engineering occupations	224	0.7%	1.6%
21-0000	Life, physical, and social science occupations	205	0.6%	0.8%
23-0000	Community and social service occupations	715	2.2%	1.2%
25-0000	Legal occupations	2,035	6.2%	4.6%
27-0000	Education, training, and library occupations	1,654	5.1%	3.0%
29-0000	Arts, design, entertainment, sports, and media occupations	1,035	3.2%	7.5%
31-0000	Healthcare practitioners and technicians occupations	734	2.2%	2.6%
33-0000	Healthcare support occupations	799	2.4%	1.4%
35-0000	Protective service occupations	9,055	27.7%	2.5%
37-0000	Food preparation and serving related occupations	1,490	4.6%	4.2%
39-0000	Building and grounds cleaning and maintenance occupations	870	2.7%	2.8%
41-0000	Personal care and service occupations	765	2.3%	2.2%
43-0000	Sales and related occupations	2,050	6.3%	11.0%
45-0000	Office and administrative support occupations	4,089	12.5%	12.3%
47-0000	Farming, fishing, and forestry occupations	25	<0.1%	<0.1%
49-0000	Construction and extraction occupations	509	1.6%	2.1%
51-0000	Installation, maintenance, and repair occupations	460	1.4%	1.0%
53-0000	Production occupations	639	2.0%	1.8%
55-0000	Transportation and material moving occupations	855	2.6%	2.1%
	Armed forces	4	<0.1%	<0.1%

Source: U.S. Census Bureau, CTPP, 2012–2016, Part 2.
[1] **Figure 6-6** identifies the 11 census tracts for which data is presented.

Two of the census tracts in this area—Census Tracts 24 and 44 encompassing Stuyvesant Town, Jacob Riis Houses, and the Con Edison East River Generating Station (**Figure 6-6**)—have a particularly high percentage of commuters who drive. In these two census tracts, employees drive to work at nearly four times the average rate of the Manhattan CBD.[30] Despite this large percentage, these census tracts represent a small number of total car commuters to the Manhattan CBD (1,090 workers). More than 25 percent of jobs within these census tracts are in the Transportation, Warehousing and Utilities industry category, which includes jobs at the Con Edison Generating Station (the area's largest employer), as well as a New York City Department of Environmental Protection pumping station. Both facilities include large employee parking

[30] This information reflects conditions prior to implementation of an SBS route on the Lower East Side and the ferry stop along the East River serving Stuyvesant Town.

lots, suggesting that the availability of free employee parking could be encouraging workers to travel by car to their jobs. This area also has more available, free on-street parking relative to most locations within the Manhattan CBD because of its distance from the denser commercial areas. Based on CTPP 2012–2016 data, nearly 75 percent of car commuters to this area arrive at work before 8:00 a.m., which would allow them to avoid peak rush-hour conditions and more easily secure free on-street parking; however, atypical arrival times are not consistently found across census tracts with high auto-commutation rates.

Manhattan CBD Reverse Commuters

Based on CTPP 2012–2016 data, an estimated 114,591 Manhattan CBD residents commute to work at jobs outside the Manhattan CBD, with a majority working in other areas of New York City that are within close proximity to faster modes of public transportation. An estimated 16,663 (approximately 14.5 percent) of these Manhattan CBD reverse commuters drive to their jobs. None of these drivers are estimated to originate from locations in the Manhattan CBD that are distant from faster modes of public transportation. Approximately 1,200 Manhattan CBD reverse commuters commute by car out of the Manhattan CBD to work at other locations in Manhattan that are within one-half mile of a subway station. Approximately 4,000 additional Manhattan CBD residents drive to work outside Manhattan to one of the four remaining New York City boroughs. Approximately 90 percent travel to jobs within areas of New York City that are within one-half mile of a faster public transportation (subway, railroad, or express or SBS bus stop) and 540 drive to jobs in New York City that are more distant from public transportation. The majority of these 540 drivers go to jobs in Brooklyn and Queens, where they represent about 2 percent of employment in each community district.[31]

About 6,700 Manhattan CBD reverse commuters drive to work in New Jersey, representing a tiny fraction of New Jersey's employment.[32] The majority of these drivers commute to jobs in Bergen, Essex, or Hudson Counties, where they make up less than 1 percent of employment in each county. There are five New Jersey municipalities where car commuters from the Manhattan CBD account for between 1 and 2 percent of all employees.

6.3.2.5 Non-Work-Related Journeys

In addition to work-related journeys[33] discussed in the previous sections, consumer spending associated with non-work-related activities (e.g., dining, retail, entertainment, and health care spending) plays a large role in the regional economy. Many industries—including most notably Retail Trade, Arts, Entertainment and Recreation, and Accommodation and Food Services—are heavily dependent upon non-work-related consumer expenditures. According to Esri Business Analyst estimates, residents within the regional study area spend more than $342 billion annually on retail goods (including food and drink). In addition to the region's resident spending, visitors to New York City spent $44.2 billion in 2018. It is therefore important

31 U.S. Census Bureau, CTPP, 2012–2016, Part 3.
32 This analysis focuses on the effect of changes to commuter patterns on economic conditions related to employment; therefore, this section discusses overall employment that could be affected.
33 As described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** a journey is defined as round-trip travel between principal and anchor locations such as home, work, school, retail, and entertainment.

to consider whether the Project could alter non-work-related journeys within the region in a manner that could reduce spending and jeopardize the viability of any industry sectors.

6.3.2.6 Vehicle-Dependent Industries

While all industries are to a degree dependent on vehicle movement—for supplying workers, goods and services, and/or customers—the following sections discuss industries that have operations that inherently depend on the movement of vehicles into, out of, and through the Manhattan CBD. Because the Project would toll vehicles entering or remaining in the Manhattan CBD, the Project has the greatest potential to affect changes in consumer demand and/or operational conditions within these industries.[34] As noted in the *CEQR Technical Manual*, an assessment is appropriate if a project is expected to affect conditions within a specific industry; for example, a citywide regulatory change would adversely affect the economic and operational conditions of certain types of businesses or process may affect socioeconomic conditions in a neighborhood if (1) if a substantial number of residents or workers depend on the goods or services provided by the affected businesses; or (2) if it would result in the loss or substantial diminishment of a particularly important product or service within the city.[35]

<u>Taxi and For-Hire Vehicle Industry</u>

The following section describes the variety of taxis and FHVs:

- **Yellow cabs**: The New York City Taxi and Limousine Commission (TLC) has issued 13,587 medallions to allow drivers to operate yellow cabs throughout New York City. Fares for yellow cabs are metered based on rates set by the TLC. Some yellow cabs are owned and operated as part of a fleet and others are owned and operated independently. Some drivers may lease the medallion and the vehicle, others lease the medallion and own their vehicle, while other yellow cabs drivers own and operate their own medallion and vehicle. Passengers can arrange for service through street hails and through "e-hails" arranged through a mobile application by a TLC-approved company.
- **Green cabs**: The TLC created a program of street-hail livery cabs, also referred to as green cabs or borough taxis, in August 2013 to increase the availability of street-hail taxi service (rather than service available by calling in advance) outside of the core service area of Manhattan.[36] Street-hail livery cabs can accept trips in Manhattan north of East 96th Street and West 110th Street, and in any location in the boroughs outside of Manhattan. Green cabs can also pick up passengers at airports if the ride is pre-arranged through a dispatcher. Fares for street-hail trips are metered based on rates set by the TLC. Green cab drivers must use approved vehicles that meet specific requirements of the TLC but medallions are not required.

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[34] As detailed in **Chapter 2, "Project Alternatives,"** with the CBD Tolling Alternative, TBTA would toll vehicles entering or remaining in the Manhattan CBD via a cashless tolling system. At this time, the Project Sponsors consider vehicles that remain in the Manhattan CBD to be those that were not detected entering but must have been remaining in the Manhattan CBD since they were detected leaving.

[35] Chapter 5, Section 200 of the 2021 *CEQR Technical Manual*. As noted in Chapter 5, Section 430 of the 2021 *CEQR Technical Manual*, an impact of a project that would substantially impair the ability of certain specific industries or categories or business to continue operating within New York City may be considered significant and adverse.

[36] Prior to 2013, private livery cabs were offering non-metered and often informal and inconsistent ride services to residents and workers outside the core service area of Manhattan, raising equity and public safety concerns in these communities.

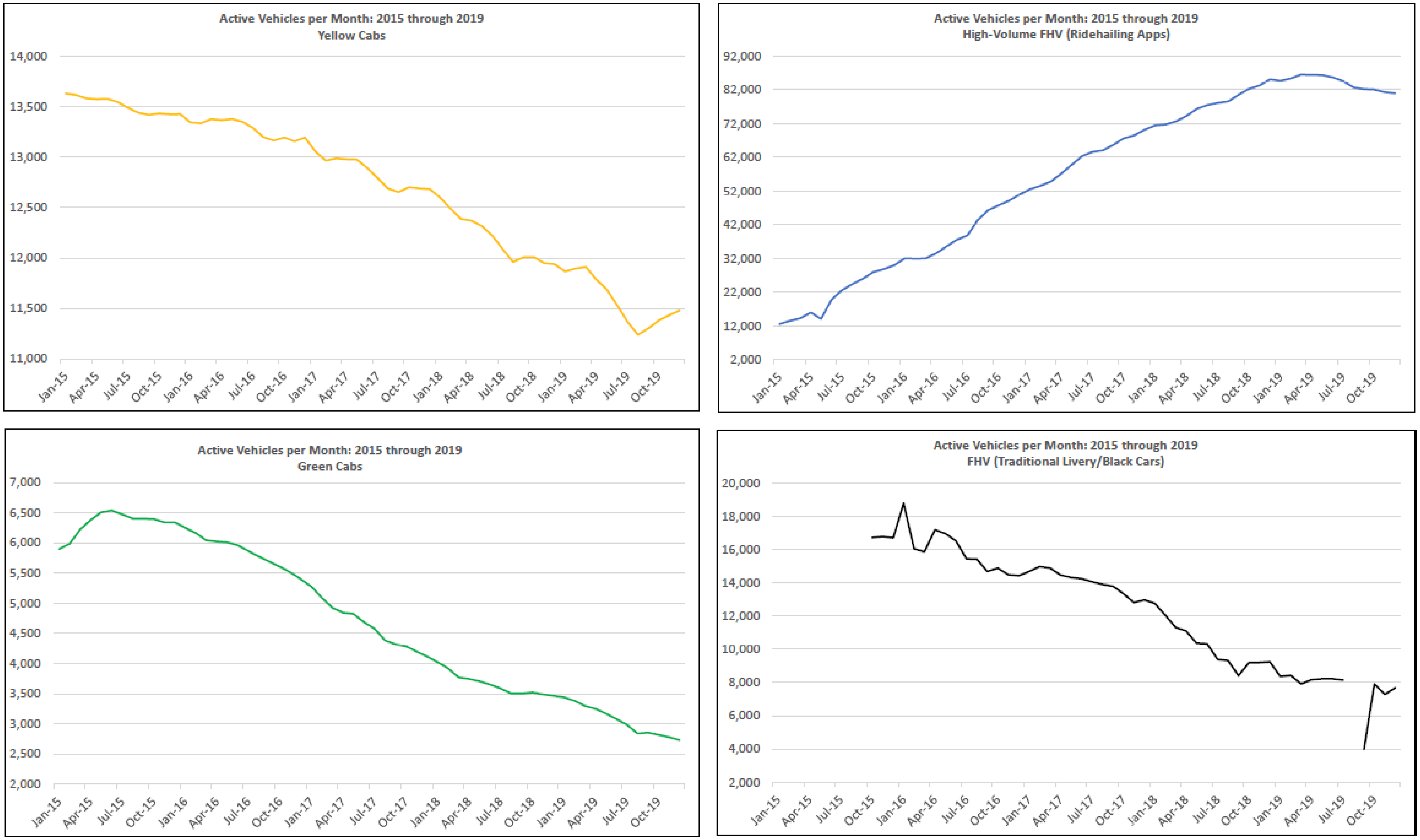
- **FHVs**: FHVs, also licensed by the TLC, include black cars, liveries, and limousines that provide pre-arranged service. FHVs cannot accept street hails and must operate through a dispatching base. Rides are typically pre-arranged through a smartphone app, website, or phone reservation (by individuals or, often, through contracts held by businesses). Customers can ride individually or set up shared rides with other customers making a similar trip. FHVs must be licensed by the TLC and can operate throughout New York City. FHV drivers either independently own or lease their own personal vehicles or lease a vehicle from a fleet. Some FHVs are licensed as "high-volume" FHVs, because they operate from bases that dispatch more than 10,000 trips a day. Lyft and Uber are examples of high-volume FHVs.[37]

According to the TLC's 2020 Fact Book, in 2019 there were 13,587 yellow cabs, 2,895 green cabs, and 101,663 FHVs licensed by the TLC.[38] In 2019 the TLC licenses more than 118,000 vehicles and nearly 185,000 drivers in total. In April 2022, there were 7,053 yellow cabs, 1,027 green cabs, and 70,281 FHVs that made at least one trip. As detailed in **Chapter 17, "Environmental Justice,"** approximately 96 percent of yellow and green cab drivers and 91 percent of FHV drivers were born in countries other than the United States. Before the COVID-19 pandemic, the number of licensed yellow cabs was steady between 2015 and 2019, limited by the number of total medallions available from the TLC. In contrast, the number of licensed green cabs decreased by 62 percent between 2015 and 2019 as the emerging FHV technology gained popularity and the number of licensed FHVs increased by over 50 percent between 2015 and 2019.[39]

The TLC provides data for both licensed vehicles and drivers (those that are currently in good standing with TLC's licensing division) and active vehicles and drivers (those that provided at least one trip in a given time period). The number of active vehicles differs from the number of licensed vehicles, because not every licensed vehicle is actively in use during a given time period. In 2018, during peak activity periods, as many as 12,610 active yellow cabs, 4,026 green cabs, and 90,284 active FHVs were providing trips in New York City.[40] **Figure 6-7** illustrates the average number of active vehicles per month between 2015 and 2019 (distinguishing FHVs by traditional livery cars/black cars and high-volume FHVs available through ride hailing apps). As shown in the figure, there were reductions in the number of active livery cars, yellow cabs, and green cabs beginning in 2015 as the popularity of high-volume FHV ride hailing services grew. Between January 2016 and January 2019, the numbers of active yellow cabs, green cabs, and traditional livery/black cars decreased by 11.1 percent, 45.0 percent, and 55.4 percent, respectively.

37 New York City TLC. 2020 Fact Book. https://www1.nyc.gov/assets/tlc/downloads/pdf/2020-tlc-factbook.pdf.
38 The New York City TLC's 2020 Fact Book defines paratransit vehicles as vehicles that provide pre-arranged service for medical-related purposes. Trips are usually to or from healthcare facilities and vehicles must be dispatched by a paratransit base. These do not include ADA-accessible yellow cabs.
39 New York City TLC. 2020 Fact Book and 2016 Fact Book. https://www1.nyc.gov/assets/tlc/downloads/pdf/2020-tlc-factbook.pdf.
40 The New York City TLC's 2018 Fact Book presents an annual number for licensed yellow cab, green cab, and FHVs, while data on the number of active vehicles is reported on a monthly basis. In the case of green cabs, the highest monthly statistic for active vehicles (4,026 in January 2018) was greater than the number of reported average annual licensed vehicles (3,579 vehicles in 2018); this is likely due to a downward trend in licensed green cab vehicles over 2018. For this reason, the numbers of licensed and active vehicles should not be used to estimate the percentage of licensed vehicles that are active. This level of data is not provided in the 2020 Fact Book.

Figure 6-7. Active Taxi and For-Hire Vehicles per Month (2015 through 2019)



Source: NYC Taxi & Limousine Commission's Monthly Indicators and FHV Base Aggregate reports. https://toddwschneider.com/dashboards/nyc-taxi-ridehailing-uber-lyft-data/.

A key contributor to rising congestion in the pre-COVID-19 pandemic period was the explosive growth of high-volume (application-based) FHVs. While the number of yellow taxicabs is capped at 13,587 vehicles, prior to 2018, there was no cap on the number of FHVs.[41] Between 2010 and 2019, companies such as Uber and Lyft dramatically expanded their operations, and the number of registered FHVs, licensed drivers, and trips doubled.[42] By fall 2019, there were more than 100,000 FHVs on the road, and taxis and FHVs made up 48 percent of all vehicles circulating in the Manhattan CBD.[43] The business model of the taxi and FHV industries requires drivers to cruise without passengers, increasing vehicle-miles traveled (VMT) in the Manhattan CBD. A large proportion of VMT for both taxi and high-volume FHVs is associated with cruising without passengers. In the fourth quarter of 2019 (prior to the COVID-19 pandemic), approximately 45 percent of yellow cabs' VMT within the Manhattan CBD were associated with cruising, while approximately 30 percent of high-volume FHVs' VMT within the Manhattan CBD were associated with cruising (including empty travel to a ride hail's pickup location).[44] Frequent double-parking by these vehicles further contributes to congestion.

TLC-licensed vehicles completed more than 1,000,000 trips per day on average by the end of 2019.[45] Most trips in yellow cabs originate in Manhattan (97 percent), while other TLC-based services distribute trips more evenly across the boroughs. In terms of distances traveled, the average yellow cab trip in 2018 was 3.7 miles and the average green cab trip was 2.8 miles, although more than one-half of all yellow cab and green cab trips were less than two miles.[46] The average fare for a yellow cab trip was $13.61 and the average fare for a green cab trip was $12.78.[47] Average distance and fare for FHV trips was not available. Drivers must use an E-ZPass when taking a toll bridge or tunnel. For a yellow or green cab, the discounted E-ZPass toll is added to the passenger fare at the end of the trip. For an FHV, the toll is part of the estimated trip cost included in the reservation for the FHV or the adjusted charge at the end of the trip. Passengers must also pay the tolls to and from a destination for the following trips: Westchester and Nassau Counties; trips over the Cross Bay Veterans and Marine Parkway-Gil Hodges Memorial Bridges; and Newark Airport.[48]

The pandemic resulted in dramatic reductions in demand for taxi and FHV services. Historically concentrated in the Manhattan CBD and airports, citywide demand for yellow taxi services fell to near zero in spring 2020 and only recovered to 25 percent of pre-pandemic levels by the fall peak of 2020 (**Figure 6-8**). High-volume FHV services, including Uber and Lyft, also dropped substantially but recovered more quickly,

41 New York City TLC.
42 New York City TLC 2020 TLC Factbook.
43 NYCDOT analysis.
44 *Ibid.*
45 In addition to taxis and FHVs, this includes trips made by 792 TLC-licensed commuter vans and 161 TLC-licensed paratransit vehicles.
46 According to the New York City TLC's 2018 Fact Book, 92.2 percent of yellow cab trips occur entirely within Manhattan, while 5.1 percent of yellow cab trips are to and from New York City airports. While yellow cab trips to airports constitute a small percentage of overall trips, the length of those trips contributes to the higher average yellow cab trip distance relative to the median trip distance. Unlike yellow cabs, green cabs may not pick up passengers from New York City airports unless trips are pre-arranged through a base. Therefore, most green cabs are used within the boroughs, excluding Staten Island.
47 This 2018 data does not account for the New York State Congestion Surcharge, which went into effect January 2019 ($2.75 for each for-hire vehicle transportation trip in a non-yellow cab or pool vehicle, $2.50 per trip by yellow cab, and $0.75 per pool trip; fares apply to all trips that begin, end, or pass through Manhattan south of 96th Street).
48 NYC Taxi & Limousine Commission. https://www1.nyc.gov/site/tlc/passengers/taxi-fare.page#.

with business at approximately two-thirds of pre-COVID-19 levels by the fall of 2020. Recovery of citywide trip levels continued in 2021, with fall trip levels at 46 percent and 83 percent for yellow taxi and high-volume FHV services, respectively, compared to the fall peak of 2019. In terms of citywide VMT, yellow taxis mileage accumulation in fall 2021 was approximately half of that in fall 2019, while high-volume FHV VMT mileage was three-quarters. Prior to the pandemic, taxi and FHV VMT in the Manhattan CBD represented approximately 15 percent to 20 percent of taxi and FHV VMT citywide. That fell to below 10 percent during the height of the pandemic and has since risen to approximately 15 percent. Yellow cab VMT in the Manhattan CBD represented about 35 percent to 40 percent of yellow cab VMT citywide pre-pandemic, falling to below 20 percent during the height of the pandemic, and has since risen to 30 percent. High-volume FHV VMT in the Manhattan CBD represented about 15 percent of high-volume VMT citywide pre-pandemic, falling to about 8 percent during the height of the pandemic, and has since risen to just under 15 percent.[49]

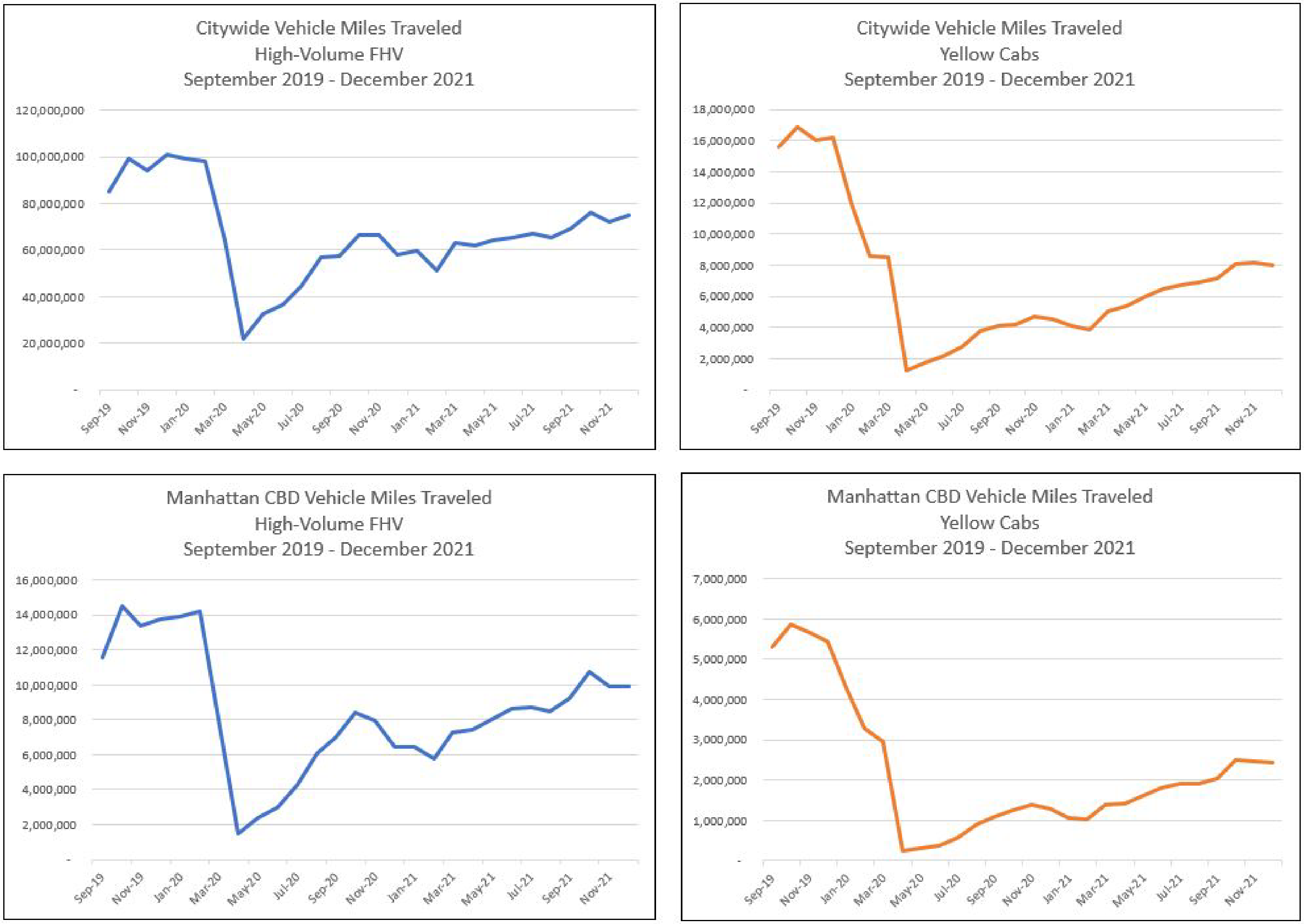
The number of TLC-licensed drivers actively performing trips reached a peak in October 2021 but was still just 69 percent of the number in October 2019 and was still recovering from significant loss of ridership due to the Omicron variant at the start of 2022. Many medallion owners stored their medallions with the NYC TLC rather than continue to pay fees for their use, and FHV drivers allowed their licenses to lapse in greater numbers. As of early 2022, the taxi industry remained dependent on the Manhattan core, with 75 percent of taxi trips starting or ending in the Manhattan CBD. By comparison, the FHV industry operated more widely in New York City, with 38 percent of high-volume FHV trips starting or ending in the Manhattan CBD[50].

Paratransit Vehicles

Paratransit is the term used for a "demand-response" service in which an eligible customer reserves a trip in advance to a destination within the service area covered by public buses and subways. The Americans with Disabilities Act (ADA) requires the provision of paratransit for individuals with disabilities who are unable to use accessible mass transit for some or all of their trips. In New York City, paratransit vehicles provide wheelchair-accessible rides through the Access-A-Ride program administered by MTA. The Access-A-Ride program provides shared-ride, door-to-door trips for New Yorkers utilizing various vehicle types. According to the TLC's 2020 Fact Book, in 2019 there were 161 paratransit vehicles licensed by the TLC.[51] The most commonly recognized blue and white vans are not licensed by the TLC, but TLC-licensed vehicles also provide trips for the Access-A-Ride program. As of May 2018, Access-A-Ride trips by TLC-licensed vehicles accounted for about one-half of all Access-A-Ride trips, and the share has been growing considerably since this option was first available in October 2016. As of 2019, the number of monthly Access-A-Ride trips in TLC-licensed vehicles exceeded 250,000.

49 NYCDOT.
50 New York City TLC.
51 The New York City TLC's 2020 Fact Book defines paratransit vehicles as vehicles that provide pre-arranged service for medical-related purposes. Trips are usually to or from healthcare facilities and vehicles must be dispatched by a paratransit base. These do not include ADA-accessible yellow cabs.

Figure 6-8. High-Volume For-Hire Vehicle and Yellow Cab Vehicle Miles Traveled (September 2019 through December 2021)



Source: NYCDOT.

Buses

The following section describes the wide variety of bus types, organized by the type of service provided:

- **Public transit:** Public transit buses include New York City Transit/Manhattan and Bronx Surface Transit Operating Authority and MTA Bus Company buses that are subsidized services carrying primarily New York City residents and operated by a public agency; other non-subsidized franchise buses carrying primarily New York City residents operated by private companies; subsidized buses operated by a public agency servicing primarily New York State and New Jersey residents (e.g., NJ Transit Corporation, Bee Line); and subsidized private buses that carry primarily suburban (New York State and New Jersey) residents (e.g., Academy, Rockland Coach).
- **Public transportation (commuter vans):** New York's commuter vans—also known as shuttle buses, minibuses, dollar vans, or jitneys—carry approximately 120,000 passengers each day.[52] Most commuter vans provide service in areas that are less well-served by subway service or other public transportation options. Some commuter vans, such as the Chinatown-Flushing-Sunset Park commuter van, operate under privately owned Commuter Van Authorities licensed by the TLC to provide rides, though they do not operate on published schedules or routes. The commuter van drivers operate motor vehicles with seating capacity of 9 to 20 passengers. According to the TLC's 2020 Fact Book, in 2019 there were 792 commuter vans licensed by the TLC.[53] In addition, privately operated jitney buses provide transportation between New Jersey and Midtown Manhattan. The New Jersey jitneys provide a reliable, low-cost transit option to communities where conventional, direct public bus service is limited or unavailable. Jitneys that travel interstate are under the purview of the Federal government, are not licensed by the TLC, and pay tolls at the Port Authority of New York and New Jersey crossings.
- **Private use:** Private use buses include sightseeing buses operated by private companies to provide hop-on, hop-off tourist services within New York City as a for-profit enterprise, as well as charter buses operated by private companies to provide charter services as a for-profit enterprise.
- **Privately operated longer-haul public transportation**: These include buses operated by private companies (e.g., Greyhound) that provide long-distance, scheduled intercity services into and out of New York City as a for-profit enterprise, generally without public subsidy.
- **Access to education**: School buses provide subsidized bus service carrying students to both public and private schools located in the region.
- **Various other uses**: Other buses not identified above include those used by religious institutions, the New York City Department of Corrections, the NYPD, and TBTA.

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52 King, D.A.; E. Goldwyn. September 2014. "Why do regulated jitney services often fail? Evidence from the New York City group ride vehicle project." *Transportation Policy 2014*, 35, 186 to 192.

53 The New York City TLC's 2020 Fact Book defines paratransit vehicles as vehicles that provide pre-arranged service for medical-related purposes. Trips are usually to or from healthcare facilities and vehicles must be dispatched by a paratransit base. These do not include ADA-accessible yellow cabs.

Movement of Goods and Services, including Freight Transport

Every day, trucks and commercial vehicles deliver goods to millions of New York City residents and workers. Of the approximately 365 million tons of cargo that enter, leave, or pass through New York City each year, approximately 89 percent is carried by truck.[54] Trucks also deliver goods to homes or stores within New York City, commonly known as "last-mile" distribution. Trucks comprise a small but meaningful portion of the overall traffic stream in New York City, ranging from 8 percent to 12 percent of all traffic. Approximately 125,600 trucks cross into Manhattan per day, and approximately 73,600 trucks cross into Brooklyn each day from all points of access. Within Midtown Manhattan (in the Manhattan CBD), 80 percent of the commercial activity conducted by trucks occurs during daylight hours between 7:00 a.m. and 7:00 p.m. Congestion within Midtown impedes truck mobility during the day, with truck speeds dropping to 7 miles per hour, which is 50 percent slower than off-peak periods (between 7:00 p.m. and 7:00 a.m.).[55]

Though not always adhered to, truck traffic in New York City is required to use designated truck routes, which include local truck routes and through truck routes. Local truck routes are for use by trucks traveling to or from their origin and destination within a borough. Through truck routes consist of major urban arterials and highways and serve trucks along their journeys that have neither an origin nor destination within the borough.

Industry research on the trucking industry shows that in 2020, tolls were approximately 3 percent of motor carriers' average marginal cost per mile in the Northeast U.S. ($0.055 per mile, with a total average marginal cost of $1.835 per mile). The area covered by this research includes the 28-county regional study area for this EA, although toll costs for localized trip-making in and out of the Manhattan CBD could be higher than the regional average based on the density of tolled roadways and bridges. [56] From 2015 to 2020, the average marginal cost per mile of tolls across the trucking industry nationally increased by approximately 85 percent.[57] Many drivers and motor carriers plan their routes to avoid or minimize tolls, because tolls are typically considered a fixed cost that is not added directly to customer shipping invoices, and carriers or drivers absorb the cost of the toll expense.[58] Economic

Types of Costs

- **Marginal costs**: Costs associated with producing an additional unit of output (i.e., an additional mile of travel)
- **Fixed costs:** Costs that are constant and occur regularly (such as rent and salaries)
- **Variable costs:** Costs that change with the level of production, such as purchase of raw materials

54 New York City Department of Transportation. April 2019. *Improving the Efficiency of Truck Deliveries in NYC*. https://www1.nyc.gov/html/dot/downloads/pdf/truck-deliveries-ll189.pdf.

55 Ibid.

56 American Transportation Research Institute. *An Analysis of the Operational Costs of Trucking: 2021 Update.* November 2021. https://truckingresearch.org/wp-content/uploads/2021/11/ATRI-Operational-Cost-of-Trucking-2021-FINAL.pdf. Motor carrier marginal costs include vehicle-based costs (fuel, truck/trailer lease or purchase payments, repair and maintenance, truck insurance premiums, permits and licenses, tires, and tolls) and driver-based costs (driver wages and benefits). The marginal cost of tolls in the Northeast U.S. is heavily influenced by long-haul trucking costs and is not reflective of cost associated with "last-mile" distribution to and within the Manhattan CBD, for which tolls could comprise a higher percentage of cost depending upon the routes, time, and distance traveled.

57 Ibid. This statistic includes the cost of all tolling, accounting for both new tolls and toll increases.

58 Hooper, Alan, and Dan Murray. 2018. *An Analysis of the Operational Costs of Trucking: 2018 Update*. American Transportation Research Institute. https://truckingresearch.org/wp-content/uploads/2018/10/ATRI-Operational-Costs-of-Trucking-2018.pdf.

research on urban freight delivery in the region finds that it is a highly competitive market with delivery rates equal to marginal costs. Since toll costs are a fixed cost—as they do not depend on a singular unit of production (i.e., delivery to an individual receiver)—the toll cost cannot be passed along to most receivers. The exceptions are certain market segments—including carriers of stone/concrete, wood/lumber, food, electronics, and beverages—with market power such that they could pass along toll costs.[59] Despite these research findings, it is recognized that shippers will pass the cost along to receivers if the competitive market will support doing so, and therefore tolls costs may be passed along to receivers more broadly than suggested by this research. To the extent toll costs are passed along to receivers, those costs are diluted among the various receivers on a journey (within New York City, averaging 5.5 stops per journey[60]). Those receivers in turn pass incremental costs along to customers, with the cost further diluted across the inventory of shipped goods.

Examples of Truck Toll Costs

- **A 2-axle box truck shipping bananas from the Hunts Point Market to the Manhattan CBD:** The truck would pay a toll for the RFK Bridge crossing into Manhattan (ranging from $11.84 to $20.35) or use the Willis Avenue Bridge to avoid a toll.
- **A 3-axle truck shipping retail goods from a fulfillment center on Staten Island to Manhattan CBD:** The truck would pay a toll for the Verrazzano-Narrows Bridge (ranging from $19.40 to $33.51) to cross into Brooklyn, travel along the Belt Parkway (I-287), and then pay a toll to enter Manhattan through the Hugh L. Carey Tunnel (also ranging from $19.40 to $33.51) or use one of the untolled East River bridges to avoid a toll.

In the region, trucks must pay tolls on a number of facilities.[61] Toll rates vary, depending on which crossing is used, the direction of travel, time of day, the number of axles on the truck, and whether the toll is paid by E-ZPass, cash, or Tolls by Mail.[62] **Appendix 6B**, **"Economic Conditions: Existing Truck Toll Rates,"** presents existing truck toll rates at crossings in and near New York City. The cost of tolls associated with deliveries varies widely depending on the route, truck type, availability of E-ZPass, and the time and frequency of toll crossings. As shown in **Appendix 6B**, truck rates for individual Hudson River crossings near Manhattan range from $30 to $132, depending on the size of the vehicle, time of day, and availability of E-ZPass. Similarly, toll costs as a percentage of total delivery cost vary widely depending upon the routes, times, and distances traveled.[63] Delivery companies typically

59 Holguin-Veras, Jose, et al. September 2010. *Integrative Freight Demand Management in the New York City Metropolitan Area*. http://www.nyc.gov/html/dot/downloads/pdf/ohd-final-report.pdf.

60 Ibid.

61 Trucks must pay tolls at six bridges and two tunnels connecting the New York City boroughs (Bronx-Whitestone, Throgs Neck, Robert F. Kennedy, Verrazzano-Narrows, Cross Bay, and Marine Parkway Bridges; Hugh L. Carey and Queens-Midtown Tunnels); two tunnels and four bridges connecting New York City and New Jersey (Lincoln and Holland Tunnels, and George Washington, Bayonne, Goethals, and Outerbridge Crossing Bridges); and on several roadways and bridges outside New York City, including the New Jersey Turnpike (I-95), the Garden State Parkway south of Exit 105, the New York State Thruway (I-87), the Connecticut Turnpike (I-95), the Mario M. Cuomo Bridge (I-287), the Newburgh-Beacon Bridge (I-84), the Bear Mountain Bridge, the Mid-Hudson Bridge, and the Kingston-Rhinecliff Bridge.

62 Specific New York State Thruway toll rates can be identified using the toll calculator at https://wwwapps.thruway.ny.gov/tollcalculator/permit.aspx.
Port Authority of New York and New Jersey toll rates are at https://www.panynj.gov/bridges-tunnels/en/tolls.html.
TBTA toll rates are at https://new.mta.info/fares-and-tolls/bridges-and-tunnels/tolls-by-vehicles.

63 Pre-pandemic shipping data suggests that an average cost of a journey for a large truck between Maspeth, Queens and Manhattan (inclusive of tolls and driver and vehicle costs) was approximately $700 per journey, based on Chainalytics Inc. transportation service price benchmarking data purchased under the USDOT Freight Fluidity Program.

incorporate the toll costs into their overall delivery costs rather than add a special surcharge or line item for tolls.

6.3.3 Environmental Consequences

This section describes the effects of the No Action Alternative and CBD Tolling Alternative on forecasted economic conditions in the region by the 2023 analysis year, using results of the BPM. While the U.S. Census Bureau-based data sources are part of the development of the BPM, U.S. Census Bureau-based data is not directly comparable to the results of the BPM runs for the 2023 No Action Alternative so this chapter does not present a comparison of existing conditions to No Action Alternative conditions.[64] Like all transportation-related analyses, this section assesses incremental change between the 2023 No Action Alternative and the CBD Tolling Alternative and therefore largely relies on the results of the BPM.

6.3.3.1 No Action Alternative

Under the No Action Alternative, a vehicular tolling program to reduce traffic congestion in the Manhattan CBD would not be implemented. The movement of workers, goods and services, and consumers into, out of, and through the Manhattan CBD influence economic conditions at the regional level. The following sections address each of these influences for the No Action Alternative.

<u>Movement of Workforce</u>

The Project Sponsors conducted transportation modeling for the Project using the BPM originally developed by the New York Metropolitan Transportation Council, as described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling."** The BPM uses census data and other economic forecasts to establish forecasts of travel characteristics. Therefore, the BPM results affirm the mode choice and travel patterns developed and described previously through census data but are not directly comparable to census data. The BPM baseline was used to model the incremental changes resulting from the CBD Tolling Alternative. The BPM results show that in the No Action Alternative, of the approximately 1.56 million workers who would commute into or within the Manhattan CBD, close to 80 percent (about 1.22 million workers) would use public transportation as their primary mode of transportation to work (**Table 6-16**). Approximately 17 percent of workers would commute into or within the Manhattan CBD by auto (including drive alone, carpool, or taxi/FHV). Under the No Action Alternative, nearly 5 percent of workers are estimated to commute by walking or biking.

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[64] The BPM uses census data and other economic forecasts to establish forecasts of travel characteristics. Therefore, the BPM results affirm the mode choice and travel patterns developed and described previously through census data but are not directly comparable to census data.

Table 6-16. Regional Workforce Commuting To and Within the Manhattan CBD: No Action Alternative

GEOGRAPHIC AREA OF ORIGIN	COMMUTE BY PUBLIC TRANSPORTATION	COMMUTE BY AUTO (Including Taxi/FHV)	COMMUTE BY WALK/BIKE[1]	PERCENTAGE OF WORKERS COMMUTING BY AUTO
New York City	**765,424**	**173,374**	**69,671**	**17.2%**
Bronx County	78,107	19,411	0	19.9%
Kings County (Brooklyn)	231,152	50,789	498	18.0%
New York County (Manhattan)	232,162	39,672	68,856	11.6%
Inside Manhattan CBD	94,328	14,748	55,738	8.9%
Outside Manhattan CBD	137,834	24,924	13,118	14.2%
Queens County	202,032	58,095	317	22.3%
Richmond County (Staten Island)	21,971	5,407	0	19.7%
Long Island Counties[2]	**112,408**	**16,394**	**0**	**12.7%**
New York Counties North of New York City[3]	**74,409**	**27,336**	**0**	**26.9%**
New Jersey Counties[4]	**222,044**	**42,368**	**0**	**16.0%**
Connecticut Counties[5]	**46,932**	**10,707**	**0**	**18.6%**
TOTAL	**1,221,217**	**270,179**	**69,671**	**17.3%**

Source: BPM, WSP 2021.
1 When the BPM was developed in 2005, insufficient data was available to reliably estimate bike journeys; based on 2012–2016 CTPP data, the BPM results tend to underreport walk/bike journeys.
2. Long Island counties include Nassau and Suffolk.
3. New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
4. New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
5. Connecticut counties include Fairfield and New Haven.

New York City's five boroughs would continue to provide the largest absolute numbers of commuters into the Manhattan CBD (1.01 million workers, including those residing within the Manhattan CBD), with the largest percentage of those commuters traveling from Manhattan and Brooklyn. The workforce within New York City would have a lower rate of auto commuting to the Manhattan CBD (about 17 percent) as compared to New York counties north of New York City (27 percent) and Connecticut counties (19 percent), a slightly higher auto-commuting rate from New Jersey (16 percent), and a higher rate than Long Island (13 percent). The lowest rate of auto commuting would be from Manhattan CBD residents who work within the Manhattan CBD (9 percent), with over one-third of these workers walking or biking to work.

Table 6-17 presents BPM projections for the primary mode of transportation of regional workforce participants who commute from within the Manhattan CBD to regional destinations outside the Manhattan CBD. In the No Action Alternative, of the projected 37,457 workers who commute from within to outside of the Manhattan CBD, approximately 64 percent (23,881 workers) would use public transportation as their primary mode of transportation to work. Approximately 33 percent of workers would commute from the Manhattan CBD to non-CBD destinations by auto (including taxi/FHV), and about 3 percent of workers would commute by other modes (e.g., walk or bicycle).

Table 6-17. Regional Workforce Commuting from Within the Manhattan CBD to Regional Destinations Outside the Manhattan CBD: No Action Alternative

GEOGRAPHIC AREA OF DESTINATION	COMMUTE BY PUBLIC TRANSPORTATION	COMMUTE BY AUTO (Including Taxi/FHV)	COMMUTE BY WALK/BIKE[1]	PERCENTAGE OF WORKERS COMMUTING BY AUTO
New York City	**18,991**	**3,010**	**1,041**	**13.1%**
Bronx County	693	316	0	31.3%
Kings County (Brooklyn)	3,820	1,161	388	21.6%
New York County (Manhattan) outside Manhattan CBD	13,563	1,238	638	8.0%
Queens County	905	285	15	23.7%
Richmond County (Staten Island)	10	10	0	50.0%
Long Island Counties[2]	**1,057**	**1,694**	**0**	**61.6%**
New York Counties North of New York City[3]	**134**	**431**	**0**	**76.3%**
New Jersey Counties[4]	**3,054**	**6,702**	**0**	**68.7%**
Connecticut Counties[5]	**645**	**698**	**0**	**52.0%**
TOTAL	**23,881**	**12,535**	**1,041**	**33.5%**

Source: BPM, WSP 2021.

1 When the BPM was developed in 2005 there was insufficient data available to reliably estimate bike journeys; based on 2012–2016 CTPP data the BPM results tend to underreport walk/bike journeys.

2 Long Island counties include Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

5 Connecticut counties include Fairfield and New Haven.

Of workers who live in, but work outside, the Manhattan CBD approximately 41 percent (an estimated 15,439 workers) would work at locations elsewhere in Manhattan; of those commuters, approximately 8 percent (1,238 workers) would commute to their jobs by personal auto or taxi/FHV. The next-largest destinations for residents of the Manhattan CBD who work elsewhere would be New Jersey counties (9,756 workers), followed by Brooklyn (5,369 workers) and Long Island (2,751 workers). Counties north of New York City would see the largest percentage of Manhattan CBD residents who work elsewhere and use personal auto or taxi/FHV as the primary means of travel, at approximately 76 percent (431 of 565 workers), followed by New Jersey counties, at 69 percent (6,702 of 9,756 workers).

Regional Non-Work-Related Journeys To, From, and Within the Manhattan CBD

Table 6-18 presents the projected numbers of regional non-work journeys to and within the Manhattan CBD under the No Action Alternative. These include journeys for activities such as health care visits, retail and grocery purchases, dining, and entertainment. Overall, approximately 14 percent of such journeys would be made by auto, which would be a lower rate than work journeys to the Manhattan CBD (17 percent) and substantially less in terms of the overall volume (117,950 non-work journeys by auto, as compared to 270,179 drive journeys for work). The highest rates of auto-based, non-work journeys would originate in New York counties north of New York City (approximately 48 percent). Connecticut counties and Long Island also have relatively high rates of auto-based journeys (approximately 42 and 38 percent, respectively), followed by New Jersey counties with 22 percent of non-work journeys by auto. However, the auto-based, non-work journeys to the Manhattan CBD originating from outside of New York City would represent only about 5 percent of the total auto-based journeys to the Manhattan CBD from the regional study area; New York City residents would contribute the remaining 95 percent. Approximately 86 percent of the region's non-work journeys made by public transportation into and within the Manhattan CBD would originate within New York City.

Table 6-18. Daily Regional Non-Work-Related Journeys To and Within the Manhattan CBD: No Action Alternative

GEOGRAPHIC AREA OF ORIGIN	JOURNEYS BY ALL MODES	JOURNEYS BY AUTO (Including Taxi/FHV)	PERCENTAGE OF JOURNEYS BY AUTO
New York City	**796,263**	**97,212**	**12.2%**
Bronx County	41,511	9,427	22.7%
Kings County (Brooklyn)	80,405	17,327	21.5%
New York County (Manhattan)	601,900	53,265	8.8%
Inside Manhattan CBD[1]	513,511	35,250	6.9%
Outside Manhattan CBD	88,389	18,015	20.4%
Queens County	61,828	14,972	24.2%
Richmond County (Staten Island)	10,619	2,221	20.9%
Long Island Counties[2]	**16,566**	**6,300**	**38.0%**
New York Counties North of New York City[3]	**7,640**	**3,680**	**48.2%**
New Jersey Counties[4]	**46,807**	**10,121**	**21.6%**
Connecticut Counties[5]	**1,514**	**637**	**42.1%**
TOTAL	**868,790**	**117,950**	**13.6%**

Source: BPM, WSP 2021.

1 Journeys originating in the Manhattan CBD are internal journeys within the Manhattan CBD.

2 Long Island counties includes Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 Connecticut counties include Fairfield and New Haven.

5 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

Table 6-19 presents the projected numbers of non-work journeys originating within the Manhattan CBD and destined for non-CBD locations. Overall, under the No Action Alternative approximately 11 percent of such journeys would be made by auto, which would be a lower rate than work journeys from the Manhattan CBD (34 percent) but a substantially higher overall volume (70,630 non-work journeys by auto, as compared to 12,535 drive journeys for work). The highest rates of auto-based, non-work journeys would be destined for Long Island (95 percent) and Connecticut counties (94 percent), followed by New York counties north of New York City with 89 percent of all non-work journeys to those counties from the Manhattan CBD arriving by auto. However, the auto-based, non-work journeys from the Manhattan CBD destined for regional locations outside New York City would represent about 14 percent of the total auto-based journeys from the Manhattan CBD; New York City destinations would contribute the remaining 86 percent. With respect to public transportation, about 99 percent of those journeys would be destined for locations within New York City.

Table 6-19. Daily Non-Work-Related Journeys From the Manhattan CBD: No Action Alternative

GEOGRAPHIC AREA OF DESTINATION	JOURNEYS BY PUBLIC TRANSPORTATION	JOURNEYS BY AUTO (Including Taxi/FHV)	JOURNEYS BY WALK/BIKE[1]	PERCENTAGE OF JOURNEYS BY AUTO
New York City	**182,684**	**60,848**	**411,230**	**9.3%**
Bronx County	2,903	5,262	0	64.4%
Kings County (Brooklyn)	7,663	8,620	4,203	42.1%
New York County (Manhattan)	169,103	43,472	406,551	7.0%
Inside Manhattan CBD	126,589	35,250	383,588	6.5%
Outside Manhattan CBD	42,514	8,222	22,963	11.2%
Queens County	3,001	3,481	476	50.0%
Richmond County (Staten Island)	14	13	0	48.1%
Long Island Counties[2]	**241**	**4,194**	**0**	**94.6%**
New York Counties North of New York City[2]	**281**	**2,245**	**0**	**88.9%**
New Jersey Counties[4]	**976**	**3,231**	**0**	**76.8%**
Connecticut Counties[5]	**7**	**112**	**0**	**94.1%**
TOTAL	**184,189**	**70,630**	**411,230**	**10.6%**

Source: BPM, WSP 2021.

1 When the BPM was developed in 2005 there was insufficient data available to reliably estimate bike journeys; based on 2012–2016 CTPP data the BPM results tend to underreport walk/bike journeys.

2 Long Island counties includes Nassau and Suffolk.

3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.

4 Connecticut counties include Fairfield and New Haven.

5 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

Taxi and For-Hire Vehicle Industry

Table 6-20 presents projections of daily VMT by taxi/FHV within the region under the No Action Alternative.[65] In total, taxis/FHVs would travel approximately 4.3 million VMT on a daily basis. Over one-half (approximately 58 percent) of all taxi/FHV VMT would occur within New York City, with nearly one-half (approximately 43 percent) of those VMT occurring within Queens, and approximately 29 percent of New York City VMT occurring within Manhattan. Outside New York City, New Jersey counties would have the highest VMT for the region (approximately 1.2 million VMT daily).

Table 6-20. Daily Vehicle-Miles Traveled for Taxis/For-Hire Vehicles in the Regional Study Area: No Action Alternative

GEOGRAPHIC AREA	VEHICLE-MILES TRAVELED[1]
New York City	**2,503,176**
Bronx County	272,450
Kings County (Brooklyn)	373,255
New York County (Manhattan)	715,505
Inside Manhattan CBD	323,998
Outside Manhattan CBD	391,507
Queens County	1,085,040
Richmond County (Staten Island)	56,926
Long Island Counties[2]	**291,624**
New York Counties North of New York City[3]	**222,684**
New Jersey Counties[4]	**1,181,690**
Connecticut Counties[5]	**116,356**
TOTAL	**4,315,530**

Source: BPM, WSP 2021.
Note: Numbers may not total due to rounding.
1 Projections include vehicle-miles-traveled only during fares and do not include cruising without passenger(s).
2 Long Island counties includes Nassau and Suffolk.
3 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
4 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
5 Connecticut counties include Fairfield and New Haven.

Movement of Goods and Services, Including Freight Transport

Table 6-21 presents the projected daily vehicle trips within and to the Manhattan CBD in the No Action Alternative for different types of commercial vehicles (trucks). It is important to note that total number of daily trips for vehicle types associated with the movement of goods and services should not be confused with a total number of individual vehicles. Rather, it represents vehicles that will make a series or chain of trips within the Manhattan CBD boundary to fulfill deliveries or other services. Each trip identified in Table 6-21 represents a modeled estimate of each individual leg of the multiple-stop trip. The 18,965 medium truck trips and 6,043 heavy truck trips to the Manhattan CBD shown in the table also include multiple crossings to and from the Manhattan CBD over the course of a day. An example would be the

65 Taxis and FHVs are a single mode in the BPM and therefore cannot be presented separately.

U.S. Postal Service, where delivery vehicles leave the main distribution center and make a series of stops (each one considered an individual trip in **Table 6-21**) throughout the day.

Table 6-21. Daily Vehicle Trips Within and To the Manhattan CBD by Type: No Action Alternative

VEHICLE TYPE	DAILY VEHICLE TRIPS WITHIN MANHATTAN CBD	DAILY VEHICLE TRIPS CROSSING INTO MANHATTAN CBD
Commercial Van	122,098	23,203
Medium Truck	63,079	18,965
Heavy Truck	39,631	6,043
TOTAL	**224,808**	**48,211**

Source: BPM, WSP 2021.
Notes: Numbers may not total due to rounding.
Daily vehicle trips account for multiple stops by the same vehicle. Trips do not include through truck trips (i.e., truck trips passing through the Manhattan CBD without a stop in the Manhattan CBD.

6.3.3.2 CBD Tolling Alternative

This section describes the potential effects of the CBD Tolling Alternative on regional economic conditions, when compared with the No Action Alternative, beginning with a description of the potential regional economic benefits of the CBD Tolling Alternative. It then considers whether the projected changes in the flows of workers, goods and services, or consumers could alter regional market conditions in a manner that could jeopardize the viability of specific industries.

Potential Economic Benefits

A study conducted for Partnership for New York City found that traffic congestion in the New York metropolitan area has a \$20 billion annual cost, including more than \$9 billion in travel-time costs and nearly \$6 billion in industry revenue losses.[66] Through congestion relief, the CBD Tolling Alternative would provide an economic benefit to the Manhattan CBD, and thus to the region and nation as a whole. As discussed earlier, the Manhattan CBD is a critical economic core of the region and a center of national and global economic activity. As the largest business district in the nation as well as the most visited city in the United States for business, cultural, and tourism travel, its transportation network is essential to supporting the high density that underpins New York City.

More specifically, transportation users in the region would benefit economically from the CBD Tolling Alternative through travel-time savings, improved or stabilized travel-time reliability, reduced vehicle operating costs, and improved safety that are described in **Chapter 5A, "Population Characteristics and Community Cohesion."** These changes would also positively affect productivity as described below:

- **Travel-Time Savings:** Travel-time savings associated with both work and non-work journeys are an economic benefit because they increase a person's productivity and overall utility by reducing time spent on less productive activities (i.e., traveling to a destination). Reduced congestion would facilitate the more efficient and cost-effective distribution of goods and services by truck and other deliveries in

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66 The study defined the New York metropolitan area as including New York City, Westchester, Putnam, and Rockland Counties, and northern New Jersey. https://pfnyc.org/wp-content/uploads/2020/01/2018-01-Congestion-Pricing.pdf.

the Manhattan CBD. Part of the economic benefit realized by travel-time savings benefits would be offset by the increased transportation cost for those journeys under the CBD Tolling Alternative in the form of a toll. These benefits would occur in all tolling scenarios.

- **Vehicle Operating Cost Savings:** The CBD Tolling Alternative would decrease regional VMT relative to the No Action Alternative, which could lead to vehicle operating cost savings for drivers and businesses, which is an economic benefit.
- **Reliability Benefits:** When transportation systems are improved in terms of capacity or reliability, they can have an economic benefit such as increased opportunities and higher quality of life. Improving travel-time reliability also reduces logistics and scheduling costs beyond just the travel-time savings. Reliability of travel time refers to the level of travel-time uncertainty. When travel times are unpredictable, travelers typically allow more time for their journey to account for possible delays. By reducing congestion in the Manhattan CBD, the CBD Tolling Alternative would reduce the current uncertainty associated with travel in the Manhattan CBD and potentially allow travelers to reduce the buffer time set aside for their journeys.
- **Safety Benefits:** Enhanced safety reduces medical costs and time spent injured/healing, both of which improve economic productivity.
- **Accessibility Benefits:** From an economic perspective, accessibility refers to the number of opportunities available for a given cost, either in terms of time or money. As the cost for movement between any two places changes, either in terms of time or money, accessibility changes. Accessibility can also be understood as the attractiveness of a place of origin (how easy it is to get from there to all other destinations) or of a destination (how easy it is to get to there from all other origins and destinations). For residents, accessibility includes access to employment, education, health care, and recreation. For businesses, it refers to access to labor, clients, support services, vendors, business partners, and deliveries. The CBD Tolling Alternative would improve accessibility for users throughout the region by decreasing congestion. In the long term, improved access to larger consumer markets and larger labor pools as well as more efficient access to resources could positively affect productivity, provide economies of scale, and lead to new economic growth. For some travelers, the introduction of a toll would decrease accessibility by disincentivizing an auto-based mode choice but given the small proportion of commuters who drive to work and the wide range of travel options other than driving available to the great majority of travelers, the effect of the CBD Tolling Alternative overall on accessibility would be positive.

Potential Adverse Economic Effects

At a regional level, the CBD Tolling Alternative would not substantively alter one or more of the underlying forces that shape real estate market conditions, and therefore would not be likely to result in the involuntary displacement of residents, businesses, or employees. (**Section 6.4** addresses the potential for indirect, or secondary, displacement at the neighborhood level.) While there would be potential social, economic, and environmental benefits from the CBD Tolling Alternative—some of which are discussed in the previous section—these factors would not be substantial enough to markedly influence residential or commercial rents within or outside of the Manhattan CBD. The study area and the Manhattan CBD have well-established residential and commercial markets that are heavily influenced by locational attributes (e.g., close proximity to job centers, cultural institutions and amenities, public transportation) that far outweigh the potential influence of quality-of-life benefits generated by the CBD Tolling Alternative. This section therefore focuses on potential changes in workforce and the operations of certain industries.

Movement of Workers

With the CBD Tolling Alternative, there would be an incremental cost to workers associated with commuting by auto if they enter or remain in the Manhattan CBD.[67] For these directly affected subsets of workers who would commute by auto—in total, approximately 19 percent of all workers commuting to or from the Manhattan CBD—the CBD Tolling Alternative would require one of the following decisions:

- **Continue to commute to work by auto and incur the toll cost.** The frequency and feasibility of this option for individuals would depend on several factors, such as the cost of the toll, their wages and salary, and the availability of non-vehicular commute options near their places of work and residence. As shown in Table 6-22, the BPM projects that there would be decreases in auto-commuting rates into, out of, and within the Manhattan CBD under the various tolling scenarios as compared to the No Action Alternative, but that many commuters would continue to travel by auto. The aggregate change in share of auto commuters into and within the Manhattan CBD would range from a decrease of 0.8 percentage points under Tolling Scenarios A and B (from 17.3 percent to 16.5 percent) to a 2.3 percentage point decrease under Tolling Scenario E (from 17.3 percent to 15.0 percent). Similarly, the aggregate change in share of auto commuters from within the Manhattan CBD to regional workplace locations outside the Manhattan CBD would range from a decrease of 0.8 percentage points under Tolling Scenario B (from 33.5 percent to 32.7 percent) to a 2.0 percentage point decrease under Tolling Scenario D (from 33.5 percent to 31.5 percent).

  Table 6-23 presents absolute differences in the numbers and the percentage changes of journeys by auto. The absolute change in auto commuters into and within the Manhattan CBD would range from a decrease of 11,790 journeys under Scenario B to a decrease of 27,221 journeys under Tolling Scenario E.

67 BPM traffic modeling considers a toll only for entering a zone, although legislation allows for tolling those remaining in the zone. As detailed in Chapter 2, "Project Alternatives," at this time, the Project Sponsors consider vehicles that remain in the Manhattan CBD to be those that were not detected entering but must have been remaining in the Manhattan CBD since they were detected leaving.

Table 6-22. Percentage of Worker Journeys by Auto To, Within, and From the Manhattan CBD

GEOGRAPHY	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Workers Commuting by Auto **To and Within** the Manhattan CBD	17.3%	16.5%	16.6%	16.2%	15.8%	15.0%	15.8%	16.5%
Workers Commuting by Auto **From** the Manhattan CBD	33.5%	32.4%	32.7%	32.1%	31.5%	31.7%	32.2%	32.3%

Source: BPM, WSP 2021.

Table 6-23. Change in Numbers of Worker Journeys by Auto To, Within, and From the Manhattan CBD

GEOGRAPHY	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Workers Commuting by Auto **To and Within** the Manhattan CBD	270,179	-12,552 (-4.6%)	-11,790 (-4.4%)	-17,271 (-6.4%)	-23,877 (-8.8%)	-27,221 (-10.1%)	-24,230 (-9.0%)	-13,264 (-4.9%)
Workers Commuting by Auto **From** the Manhattan CBD	12,535	-482 (-3.8%)	-328 (-2.6%)	-661 (-5.3%)	-961 (-7.7%)	-916 (-7.3%)	-621 (-5.0%)	-550 (-4.4%)

Source: BPM, WSP 2021.

- **Switch modes of commute to non-vehicular option(s) to avoid the toll.** The feasibility and frequency of selecting this option would depend in part on the availability of non-vehicular commute options near the commuter's place of work and/or residence. Some commuters could choose to continue to drive toward the Manhattan CBD, but park outside of the Manhattan CBD and walk or transition to public transportation for final leg of their commute to avoid the toll. The likelihood of commuters choosing to do this would depend on the availability and cost of parking near transit stations outside the Manhattan CBD coupled with the cost of that transit journey, in comparison to the cost of the new toll as well as the total time duration of such a trip. The BPM results indicate that a small number of commuters would choose this option (for more information, see **Subchapter 4D, "Transportation: Parking"**). As shown in **Table 6-24 and Table 6-25**, with the CBD Tolling Alternative, there would be increases in the share of commuters using public transportation and walking/biking to, from, and within the Manhattan CBD, except for Manhattan CBD residents who work in the Manhattan CBD, who would generally continue to use public transportation, walk, and bike at the same rate as in the No Action Alternative. Overall, under Tolling Scenario E there would be the highest percentage of workers electing to commute by public transportation (82.7 percent, compared to 80.7 percent in the No Action Alternative). Under Tolling Scenario B, there would be a slight decrease in public transportation usage from this subset of Manhattan CBD commuters, likely due to the relatively inelastic price sensitivity of auto commuters combined with the scenario's easing congestion, which in turn would marginally increase the attractiveness of commuting by auto (e.g., taxi/FHV) within the Manhattan CBD. This phenomenon would be counterbalanced by reduced congestion in the Manhattan CBD, making some bus routes run faster and more reliable.

- **Telecommute, or telecommute more often, to eliminate or reduce the frequency of incurring the toll.** Though not a viable option for all types of work, telecommuting is growing (and will continue to grow with or without CBD Tolling Alternative) based on continual improvements in technologies, restructuring of office space, and other factors, including but not limited to the influence of the COVID-19 pandemic, cost savings, and benefit and lifestyle offerings. The degree to which the CBD Tolling Alternative would also incentivize this behavior would depend on the specific cost increase for a given worker, which would be based not only on the cost of the toll but also any potential crossing credits and/or exemptions, as well as the employee's specific work environment and workplace policies.
- **Commute earlier or later to avoid incurring the toll.** Though not a viable option for many workers, those who can adjust their work hours could elect to commute during off-peak and/or overnight hours to reduce the cost of a toll associated with auto commuting. Tolling Scenarios E and F would have the greatest potential to incentivize this behavior because they would have the largest cost differential between peak and non-peak toll rates.
- **Seek new employment opportunities (or other workplace locations with the same employer) at location(s) that would not involve incurring the toll.** Some commuters to the Manhattan CBD might decide to relocate or switch jobs to locations outside the Manhattan CBD. The CBD Tolling Alternative could also result in new workplace decision-making for those who would not incur a toll based on their existing commute; members of the labor force could find new job opportunities because other toll-affected workers could elect to vacate their positions to avoid tolling. In some instances, there could be a societal cost associated with decision-making that is a benefit to individuals. For example, a member of the labor force currently residing in the Bronx and who commutes by subway into the Manhattan CBD could instead choose to commute by auto to a job closer to home in the Bronx or upper Manhattan. Overall, Tolling Scenarios E and F (with the highest toll rates) would be the tolling scenarios most likely to incentivize this behavior, while Tolling Scenario A (with the lowest toll rates) would be the least likely tolling scenario to incentivize this behavior.

  The feasibility and frequency of such options would largely depend on the availability of similar employment opportunities at locations that would avoid the toll and that otherwise would be a more desirable commuting option. Since the BPM is a regional transportation model used to predict changes in mode and route that would result from modifications to the transportation system—using adopted regional population, labor force, and employment forecasts—it does not (and cannot) predict changes to the numbers of residents, workers, or jobs in the region. The BPM projections are predictive of changes in mode choice, but because they must hold the number of jobs steady, the projections assume that any vacated positions within the region would be filled by other labor force participants. This analysis therefore does not rely on BPM results for determining potential effects on labor supply within the region; rather, it considers the potential industry effects by conservatively assuming that positions currently occupied by auto commuters could be vacated and potentially not be filled by other labor force participants.

Table 6-24. Percentage of Worker Journeys by Non-Auto To and From the Manhattan CBD

GEOGRAPHY AND MODE	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Workers Commuting from Outside the Manhattan CBD to the Manhattan CBD								
Percentage by Transit	80.7%	81.6%	81.7%	81.9%	82.4%	82.7%	82.5%	81.8%
Percentage by Walk/Bike	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Workers Commuting from Within the Manhattan CBD to the Manhattan CBD								
Percentage by Transit	57.2%	57.3%	56.5%	57.2%	57.4%	57.2%	57.2%	56.6%
Percentage by Walk/Bike	33.8%	33.8%	33.9%	33.7%	33.6%	33.7%	33.7%	33.7%
Workers Commuting from Within the Manhattan CBD to Outside the Manhattan CBD								
Percentage by Transit	63.8%	64.7%	64.4%	65.0%	65.6%	65.4%	65.0%	65.0%
Percentage by Walk/Bike	2.8%	2.9%	2.9%	2.9%	2.9%	2.9%	2.8%	2.8%

Source: BPM, WSP 2021.
Note: When the BPM was developed in 2005, there was insufficient data available to reliably estimate bike journeys; based on 2012–2016 CTPP data the BPM results tend to underreport walk/bike journeys. In addition, the BPM is best suited for predicting travel by automobile and transit; the internal calculations in the model related to routes available to automobiles result in the prediction of negligible reductions in the number of walk/bike journeys in some tolling scenarios.

Table 6-25. Change in Number of Worker Journeys by Non-Auto To and From the Manhattan CBD

GEOGRAPHY AND MODE	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Workers Commuting from Outside the Manhattan CBD to the Manhattan CBD								
Number by Transit	1,126,889	+12,280 (+1.1%)	+13,082 (+1.2%)	+16,877 (+1.5%)	+23,482 (+2.1%)	+26,717 (+2.4%)	+24,083 (+2.1%)	+14,351 (+1.3%)
Number by Walk/Bike	13,933	-28 (-0.2%)	-331 (-2.4%)	+67 (0.5%)	-158 (-1.1%)	-67 (-0.5%)	-133 (-1.0%)	-102 (-0.7%)
Workers Commuting from Within the Manhattan CBD to the Manhattan CBD								
Number by Transit	94,328	+263 (+0.3%)	-1,157 (-1.2%)	+308 (+0.3%)	+595 (+0.6%)	+485 (+0.5%)	+268 (+0.3%)	-851 (-0.9%)
Number by Walk/Bike	55,738	0 (0.0%)	+144 (+0.3%)	+45 (+0.1%)	-69 (-0.1%)	+100 (+0.2%)	+4 (0.0%)	-184 (-0.3%)
Workers Commuting from Within the Manhattan CBD to Outside the Manhattan CBD								
Number by Transit	23,881	+181 (+0.8%)	+187 (+0.8%)	+147 (+0.6%)	+271 (+1.1%)	+56 (+0.2%)	+164 (+0.7%)	+280 (+1.2%)
Number by Walk/Bike	1,041	+19 (+1.8%)	+61 (+5.9%)	+24 (+2.3%)	+24 (+2.3%)	+25 (+2.4%)	-18 (-1.7%)	-9 (-0.9%)

Source: BPM, WSP 2021.
Note: When the BPM was developed in 2005, there was insufficient data available to reliably estimate bike journeys; based on 2012–2016 CTPP data the BPM results tend to underreport walk/bike journeys. In addition, the BPM is best suited for predicting travel by automobile and transit; the internal calculations in the model related to routes available to automobiles result in the prediction of negligible reductions in the number of walk/bike journeys in some tolling scenarios.

- **Relocate their place of residence to a location within the Manhattan CBD.** Existing or new workers with jobs in the Manhattan CBD could elect to move to a residence within the Manhattan CBD and walk/bike to work or commute by transit to avoid a toll associated with auto commuting. Tolling Scenarios E and F would have the greatest potential to incentivize this behavior because they would have the highest toll rates; Tolling Scenario E would also have the greatest potential to reduce congestion and improve other quality-of-life factors within the Manhattan CBD. However, the CBD Tolling Alternative would have a marginal influence on residential location decision-making because potential cost savings associated with eliminating a toll would be far outweighed by other cost-of-living and quality-of-life factors. Given the relatively high rents and home prices within the Manhattan CBD compared with other locations within the study area, those considering a move because of the cost of tolling would be more likely to locate in areas outside the Manhattan CBD near transit to avoid the toll. In addition, those moving into the Manhattan CBD with a personal auto would incur new tolling costs for non-commute trips, thereby diminishing the cost savings.
- **Relocate their place of residence to a location closer to transit outside the Manhattan CBD.** Existing or new workers with jobs in the Manhattan CBD could elect to move to a residence closer to transit and park-and-ride commute to avoid a toll associated with auto commuting. Tolling Scenarios E and F would have the greatest potential to incentivize this behavior because they would have the greatest cost differential between peak and non-peak toll fees.

  Pass-through commuters who drive through the Manhattan CBD would either continue to drive through and pay the Manhattan CBD toll or select an alternative route that avoids the toll. The frequency and feasibility of this option is dependent on the length of time associated with re-routing as well as the continuous improvement of live traffic and wayfinding information to avoid the toll.

As noted above, the BPM projections assume that in the aggregate, there would be no change in the total employment or overall workforce commutes into and within the region as a result of the CBD Tolling Alternative (**Table 6-26**). However, it is possible that jobs in certain industries could be affected at a greater rate than suggested by the net results of the BPM if those industries and occupations had a higher percentage of workers who commute by auto, or if certain locations within the Manhattan CBD were highly dependent on auto commuting. For the following reasons, this is not expected to occur as a result of the CBD Tolling Alternative:

Table 6-26. Daily Worker Journeys To and Within the Manhattan CBD (All Modes of Transportation)

GEOGRAPHIC AREA OF ORIGIN	NO ACTION TOTAL JOURNEYS	NET CHANGE IN DAILY WORKER JOURNEYS BY TOLLING SCENARIO AS COMPARED TO THE NO ACTION ALTERNATIVE						
		A	B	C	D	E	F	G
New York City	**1,008,469**	**-4,288**	**-4,990**	**-5,698**	**-7,058**	**-7,718**	**-7,223**	**-5,869**
Bronx County	97,518	-607	-697	-920	-1,159	-1,346	-777	-1,109
Kings County (Brooklyn)	282,439	-1,776	-1,844	-2,533	-2,755	-3,274	-2,242	-1,976
New York County (Manhattan)	340,690	-908	-658	-816	-654	-289	-1,231	-1,390
Inside Manhattan CBD	164,814	282	80	490	666	835	475	279
Outside Manhattan CBD	175,876	-1,190	-738	-1,306	-1,320	-1,124	-1,706	-1,669
Queens County	260,444	-1,688	-2,448	-2,448	-3,109	-3,547	-3,820	-2,077
Richmond County (Staten Island)	27,378	691	657	1,019	619	738	847	683
Long Island Counties[1]	**128,802**	**2,610**	**3,191**	**2,451**	**2,470**	**2,975**	**1,834**	**3,400**
New York Counties North of New York City[2]	**101,745**	**-1,757**	**-1,334**	**-1,003**	**-1,473**	**-1,731**	**-1,498**	**-1,398**
New Jersey Counties[3]	**264,412**	**3,763**	**3,326**	**4,612**	**6,588**	**7,622**	**7,001**	**4,891**
Connecticut Counties[4]	**57,639**	**-365**	**-245**	**-336**	**-554**	**-1,134**	**-122**	**-1,074**
TOTAL	**1,561,067**	**-37**	**-52**	**26**	**-27**	**14**	**-8**	**-50**

Source: BPM, WSP 2021.
1 Long Island counties includes Nassau and Suffolk.
2 Counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
3 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
4 Connecticut counties include Fairfield and New Haven.

- **CTPP data suggest that the propensity to commute by auto is related more to distance from public transit and the availability of free parking, which can correlate with certain types of work, rather than to needs for commuting by auto inherently related to a worker's industry or occupational category.** Therefore, the increased cost for those who commute by car would not disproportionately affect the operations of a specific industry, although it may incentivize workers currently incentivized to drive by the availability of free parking to switch to a transit mode (promoting the goals of the Program).[68] The highest rate of auto commuting in the Manhattan CBD occurs in Census Tract 21 in Lower Manhattan (**Figure 6-5**), an area that includes part of Chinatown and several large municipal buildings. The availability of parking placards and/or free parking for some municipal employees likely contributes to the higher numbers of workers commuting by auto to Census Tract 21, rather than a business-specific need for personal automobiles. Within two East Village/Lower East Side census tracts that also have very high rates of auto commuting in the Manhattan CBD, over 25 percent of the jobs are associated with facilities that provide free parking.

68 As detailed in **Section 6.2.2**, the NAICS Finance, Insurance, Real Estate and Rental and Leasing industry category and the SOC Business and Financial Operations Specialists and Legal occupational categories had only slightly higher representation within the highest auto commute locations of the Manhattan CBD. Salaries within these occupations are relatively high, suggesting that workers would be less price-sensitive to the incremental cost associated with tolling, particularly when factoring for the value of shorter commute times due to reduced congestion.

- **Manhattan CBD locations with the highest auto-commuting mode share have relatively low concentrations of total commuters.** Within the area of the Manhattan CBD with the highest rate of people who commute by auto from locations outside the Manhattan CBD—in the East Village and Lower East Side neighborhoods—relatively few total workers from outside the Manhattan CBD commute to this area, representing just over 2 percent of all workers commuting from outside the Manhattan CBD into the Manhattan CBD. The disincentive to drive created by the Project would not adversely affect economic conditions within or outside of the Manhattan CBD.
- **The potentially affected workforce who work outside of the Manhattan CBD is small.** The BPM estimates that 12,535 Manhattan CBD residents commute by auto to work at jobs outside the Manhattan CBD represent approximately 0.01 percent of the regional labor force. Of those who drive to work in other locations in New York City, only 540 are driving to jobs located farther than one-half mile of a rail (subway or Staten Island Railway) station, express bus stop, or express stop. Those workers who drive to New Jersey collectively comprise less than 2 percent of the employment within any New Jersey municipality.
- **Most of the potentially affected workforce who work inside the Manhattan CBD live and/or work near transit:**
  - **Approximately 99 percent of auto commuters to the Manhattan CBD have jobs that are close to transit.**[69] The ease of transit access within the Manhattan CBD allows the subset of car commuters to the Manhattan CBD who would be discouraged by toll costs and do not have transit access near their homes, to instead drive to a transit station and complete their commute by transit. The estimated 8,470 employees who work at locations more than one-half mile from a subway station or SBS stop in the Manhattan CBD represent small fractions of all Manhattan CBD workers in any specific industry and occupational category.
  - **Of the estimated 142,506 people who currently commute into the Manhattan CBD by car, more than one-third drive from residences in New York City that are close to transit.** Most workers living in these parts of New York City have a relatively easy option of riding a subway or train to the Manhattan CBD.
- **For some auto commuters, the underlying benefits of driving would remain in place with or without a Manhattan CBD toll.** With a toll, many drivers would continue to drive, because the additional cost of the toll may be offset by the value of a shorter commute time due to reduced congestion, and in some cases, the value of free parking available to them by an employer.

With respect to Manhattan CBD reverse commuters, the BPM projections indicate that in the aggregate, there would be minimal overall change in the number of workers who commute from the Manhattan CBD to other regional locations because of the CBD Tolling Alternative (**Table 6-27**). As compared to the No Action Alternative, the differences range from a 0.8 percent work-journey decrease (80 workers) under Tolling Scenario B to a 2.2 percent decrease (835 workers) under Tolling Scenario E. Under Tolling Scenario B, there would be a slight increase in Manhattan CBD resident-workers commuting to jobs in Long Island counties and in Manhattan outside the Manhattan CBD. Under Tolling Scenario E, the decrease in

69 It is noted that proximity to transit does not necessarily make it accessible to some disabled individuals.

Manhattan CBD resident-workers commuting to jobs outside of the Manhattan CBD could be due to those workers taking jobs vacated by non-CBD residents who were working in the Manhattan CBD, but who took jobs outside of the Manhattan CBD to avoid the toll. These levels of change in workforce commuting would not disrupt employment in any industry at the regional level. Even if all of the estimated 12,535 Manhattan CBD reverse commuters who drive to their jobs elected to change positions in order to avoid tolling, they represent less than 5 percent of the labor force living within the Manhattan CBD, and approximately 0.1 percent of the labor force in the region. As a result, the CBD Tolling Alternative would not be likely to adversely affect any particular industry because of its potential to affect reverse commuters from the Manhattan CBD.

Table 6-27. Daily Worker Journeys from the Manhattan CBD (All Modes of Transportation)

GEOGRAPHIC AREA OF DESTINATION	NO ACTION TOTAL JOURNEYS	NET CHANGE IN DAILY WORKER JOURNEYS BY TOLLING SCENARIO AS COMPARED TO THE NO ACTION ALTERNATIVE						
		A	B	C	D	E	F	G
New York City (not including Manhattan CBD)	**23,042**	**-107**	**55**	**-154**	**-313**	**-326**	**-206**	**-176**
Bronx County	1,009	19	30	33	-2	12	5	1
Kings County (Brooklyn)	5,369	-28	-36	-88	-183	-153	-123	-67
New York County (Manhattan) Outside Manhattan CBD	15,439	-118	120	-50	-112	-178	-79	-79
Queens County	1,205	16	-54	-42	-6	-2	-5	-21
Richmond County (Staten Island)	20	4	-5	-7	-10	-5	-4	-10
Long Island Counties[1]	**2,751**	**-165**	**8**	**-170**	**-242**	**-205**	**-218**	**-97**
New York Counties North of New York City[2]	**565**	**-28**	**-38**	**-23**	**-55**	**-58**	**-32**	**-67**
New Jersey Counties[3]	**9,756**	**97**	**-7**	**-69**	**23**	**-110**	**77**	**128**
Connecticut Counties[4]	**1,343**	**-79**	**-98**	**-74**	**-79**	**-136**	**-96**	**-67**
TOTAL	**37,457**	**-282**	**-80**	**-490**	**-666**	**-835**	**-475**	**-279**

Source: BPM, WSP 2021.
1. Long Island counites include Nassau and Suffolk.
2 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
3 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
4 Connecticut counties include Fairfield and New Haven.

Non-Work-Related Journeys

For non-work-related journeys, the BPM assumes that the total number of these discretionary journeys remains steady regionwide, but the destination of a non-work-related journey (e.g., a journey for shopping or entertainment) could change because of a change to the transportation network. **Table 6-28** presents the BPM results related to changes in non-work-related journeys (all modes) to the Manhattan CBD with the CBD Tolling Alternative as compared to the No Action Alternative. Under all tolling scenarios, the total number of these journeys would remain essentially the same between tolling scenarios (the small differences in total journeys are equivalent to rounding errors in the model results), but the destination of the non-work-related journeys would vary. The largest contributing factor in terms of reductions under all tolling scenarios would be forgone journeys to the Manhattan CBD from areas of Manhattan north of 60th Street. **Table 6-28** also shows marginal increases in non-work Manhattan CBD journeys originating within the Manhattan CBD, likely due to reductions in congestion, which would encourage additional non-work journeys within the Manhattan CBD.

Table 6-29 provides additional detail on how the CBD Tolling Alternative would alter discretionary journey-making decisions; Tolling Scenario D is used in this example because it would result in the greatest reduction in non-work-journeys to the Manhattan CBD. The reductions in non-work-related journeys would be related to reductions in journeys by auto and offset by increases in journeys by public transit. Notable decreases in auto journeys would occur for Manhattan north of the Manhattan CBD, Brooklyn, and Queens.

Table 6-28. Net Change in Non-Work-Related Journeys To and Within the Manhattan CBD vs. No Action Alternative (All Modes of Transportation)

GEOGRAPHIC AREA OF ORIGIN	NO ACTION TOTAL	TOLLING SCENARIO –NET CHANGE						
		A	B	C	D	E	F	G
New York City	**796,263**	**-3,105**	**-1,213**	**-3,033**	**-6,027**	**-5,347**	**-2,795**	**-4,116**
Bronx County	41,511	-1,272	-540	-1,159	-1,804	-1,820	-1,197	-1,110
Kings County (Brooklyn)	80,405	-1,212	-407	-1,187	-2,323	-2,032	-1,015	-1,762
New York County (Manhattan)	601,900	-151	-538	-1,008	-1,036	-704	-769	-594
Inside Manhattan CBD	513,511	1,954	1,102	1,468	2,753	2,914	1,995	1,869
Outside Manhattan CBD	88,389	-2,105	-1,640	-2,476	-3,789	-3,618	-2,764	-2,463
Queens County	61,828	-1,190	-592	-1,183	-1,759	-1,405	-699	-1,415
Richmond County (Staten Island)	10,619	720	864	1,504	895	614	885	765
Long Island Counties[1]	**16,566**	**622**	**748**	**109**	**2**	**223**	**158**	**816**
New York Counties North of New York City[2]	**7,640**	**-478**	**-458**	**-450**	**-888**	**-891**	**-678**	**-574**
New Jersey Counties[3]	**46,807**	**2,186**	**2,775**	**3,380**	**2,894**	**3,149**	**3,498**	**3,256**
Connecticut Counties[4]	**1,514**	**-28**	**272**	**358**	**293**	**206**	**387**	**250**
TOTAL	**868,790**	**-803**	**2,124**	**364**	**-3,726**	**-2,660**	**570**	**-368**

Source: BPM, WSP 2021.

1. Long Island counties includes Nassau and Suffolk.
2. New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
3. New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
4. Connecticut counties include Fairfield and New Haven.

Table 6-29. Change in Regional Non-Work-Related Journeys To and Within the Manhattan CBD: Tolling Scenario D versus No Action Alternative

GEOGRAPHIC AREA OF ORIGIN	TOTAL NON-WORK RELATED JOURNEYS NO ACTION	TOTAL NON-WORK RELATED JOURNEYS SCENARIO D	CHANGE IN JOURNEYS	PERCENTAGE CHANGE IN JOURNEYS
New York City	**796,263**	**790,236**	**-6,027**	**-0.8%**
Bronx County	41,511	39,707	-1,804	-4.3%
Kings County (Brooklyn)	80,405	78,082	-2,323	-2.9%
New York County (Manhattan)	601,900	600,864	-1,036	-0.2%
Inside Manhattan CBD	513,511	516,264	2,753	0.5%
Outside Manhattan CBD	88,389	84,600	-3,789	-4.3%
Queens County	61,828	60,069	-1,759	-2.8%
Richmond County (Staten Island)	10,619	11,514	895	8.4%
Long Island Counties[1]	**16,566**	**16,568**	**2**	**0.0%**
New York Counties North of New York City[2]	**7,640**	**6,752**	**-888**	**-11.6%**
New Jersey Counties[3]	**46,807**	**49,701**	**2,894**	**6.2%**
Connecticut Counties[4]	**1,514**	**1,807**	**293**	**19.4%**
TOTAL	**868,790**	**865,064**	**-3,726**	**-0.4%**

Source: BPM, WSP 2021.
1. Long Island counties includes Nassau and Suffolk.
2 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
3 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
4 Connecticut counties include Fairfield and New Haven.

The BPM assumes that the total number of non-work-related journeys in the region would remain the same in the No Action and CBD Tolling Alternatives. This is a reasonable assumption given the size of the regional study area; non-work-related journeys that may no longer occur within the Manhattan CBD are expected to be captured within the broader study area. Reductions in journeys to the Manhattan CBD would likely be captured in other areas of Manhattan outside the Manhattan CBD, in New York City, or in the region. There would not be a loss of consumer spending on a regional basis, except for spending that would be forgone by consumers traveling by car to the Manhattan CBD, who could instead use a portion of their discretionary spending money for the toll. The toll would effectively reduce the overall expenditure potential for people traveling by car into the Manhattan CBD; this would reduce expenditure potential for individuals and the potential revenue that businesses would have captured but that would now be spent on the toll. As noted in **Chapter 18, "Agency Coordination and Public Outreach,"** during early public outreach for the Project in fall 2021, members of the public raised concern about potential effects of losses in consumer spending at businesses, cultural and sporting events, and tourist areas like Chinatown and Broadway. However, given that a vast majority of non-work-related journeys to the Manhattan CBD are not conducted by auto, that some auto journeys would transition to public transit, and that some auto journeys would continue (with potential reductions in some discretionary expenditures to compensate for the toll cost), a reduction in non-work journeys to the Manhattan CBD would not be expected to substantively alter expenditures within any particular industry.[70] At the regional level, any forgone non-work-related journeys to the Manhattan CBD and associated expenditure would be captured elsewhere. The CBD Tolling Alternative would also provide regional benefits by establishing a reliable, recurring local source of funding for MTA capital projects, which would allow MTA to reinvest in and improve its transportation network. This would be expected to facilitate growth in non-work-related journeys to the Manhattan CBD.

Taxi and For-Hire Vehicle Industry

Under some tolling scenarios there could be an increase in taxi and FHV fares that could reduce demand and industry revenues for taxis and/or FHVs.[71] As detailed in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the tolling scenarios and additional analyses assess a variety of tolling policies for taxis and FHVs ranging from unlimited tolling for taxis and FHVs each day to a complete exemption from paying the Manhattan CBD toll.

The TLC requires that passengers reimburse the taxi driver for any toll costs during the trip; when no passengers are in the vehicle, drivers pay the toll today as part of the cost of doing business. TLC rules for high-volume FHVs (i.e., Uber and Lyft) and require that FHV services collect and remit to the TLC information on the itemized fare for the trips charged to the passengers, including the fare, toll, taxes and gratuities.

Any charge implemented by the CBD Tolling Program would likely follow the existing framework. Thus, when present, the customer would be responsible for paying the tolls and the receipt would be itemized to show this. If no customer is present, the vehicle would be charged, unless exempted or capped.

Table 6-30 shows the projected reductions in daily VMT for each of the various tolling scenarios without

New York City's Commitment to Supporting Taxi and FHV Drivers

In 2019, New York City became the first city in the world to implement a trip-based, guaranteed minimum pay standard for high-volume FHV drivers, whether they drive their own vehicle or lease an FHV. The TLC also modified rules for yellow and green taxis to increase driver income protections, including reducing the daily maximum credit card surcharge and increasing accessible dispatch fees.

In 2021, the City implemented a medallion relief program and loan guaranty program to provide relief for owners with five or fewer medallions. Both programs provide financial assistance and free legal representation to help negotiate with lenders to reduce loan balances and lower monthly payments.

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70 Literature research of congestion-based pricing programs in London, England, and Stockholm, Sweden, found that these programs had not adversely affected retail markets. Retail businesses in the central London charging zone have outperformed retail businesses in inner and outer London in terms of sales, profitability, and employment growth. Overall, five years after the event there is no measurable evidence of any differential impact of the central London congestion charging scheme on business and economic activity, at the aggregate level, based on analysis and surveys conducted (https://content.tfl.gov.uk/central-london-congestion-charging-impacts-monitoring-sixth-annual-report.pdf). In Stockholm, studies of retail markets did not reveal adverse effects resulting from congestion charges. A durables survey within shopping centers, malls, and department stores conducted during the Stockholm program's trial period found that these entities developed at the same rate as the rest of the country; the same was true for other retail sectors (https://www.itf-oecd.org/sites/default/files/docs/swedish-congestion-charges.pdf).

71 Paratransit vehicles, although part of the taxi/FHV industry, are not addressed in this section because the CBD Tolling Alternative would not impose a new toll on paratransit vehicles. With the CBD Tolling Alternative, paratransit vehicles would benefit from reduced congestion on some roadways within the Manhattan CBD.

modifications.[72] The VMT estimates shown in the table do not include cruising miles without a customer, and only reflect daily VMT for travel when the taxi/FHV has a customer. As shown in the table, the CBD Tolling Alternative would reduce the overall VMT for taxis and FHVs regionwide by 1 to 3 percent. These reductions would be greatest in New York City, ranging from 5 to 9 percent in tolling scenarios that do not include a cap or exemption for tolls on taxis and FHVs (Tolling Scenarios A, D, and G) and 1 to 5 percent in those that do have caps and/or exemptions (Tolling Scenarios B, C, E, and F).

The CBD Tolling Alternative would result in larger reductions in taxi/FHV VMT within the Manhattan CBD, which is the core service area for yellow taxis, as well as in Manhattan overall. As shown in **Table 6-30**, under Tolling Scenarios A, D, and G, which would have uncapped tolls for both taxis and FHVs, reductions in taxi/FHV VMT in the Manhattan CBD would range from almost 7 percent for Tolling Scenario A to close to 17 percent for Tolling Scenario D. In Manhattan overall, VMT reductions would range from 11 to 17 percent. If a tolling scenario with tolls of more than once per day is implemented for taxis and/or FHVs, the Project Sponsors will work with the appropriate city and state agencies so that passengers pay the toll, rather than the driver. Under Tolling Scenarios C and F, which would exempt taxis but would toll FHVs up to three times a day, VMT reductions would range from 3.5 percent to 7.9 percent in the Manhattan CBD and 7 to 10 percent for Manhattan overall. Given that taxis would not be tolled under Tolling Scenarios C and E, it is likely that taxis would experience increases in VMT while FHVs would experience greater VMT reductions.

In the Tolling Scenarios B and F, in which taxis and FHVs would be tolled a maximum of once per day, the reduction in taxi/FHV VMT within the Manhattan CBD and Manhattan overall would be lower and in Tolling Scenario F, taxi/FHV VMT within the Manhattan CBD is predicted to increase slightly because of the combination of the larger toll cost, which would make taxi/FHV a more attractive mode, and the reduction in congestion, which would increase the utility of commuting by taxi/FHV within the Manhattan CBD).

In addition, in response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on taxi and FHV drivers, the Project Sponsors considered modified several modified tolling scenarios with caps and/or exemptions for taxis and FHVs to understand the effects of such a modification. This included modifications of Tolling Scenarios A and D with a cap on tolls of once per day for taxis and FHVs (like Tolling Scenarios B and F), a modified Tolling Scenario D with both taxis and FHVs exempt from the toll, and a variation of Tolling Scenario G (referred to as Tolling Scenario G1) with a cap on tolls of once per day for taxis and FHVs. The analysis conducted demonstrated that with these modifications, these tolling scenarios would have substantially less reduction in taxi/FHV VMT in the Manhattan CBD. For more information, see **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling."** Overall, the more exemptions and caps provided, the higher tolls need to be to meet the Project's congestion and revenue objectives. However, if taxis and FHVs are charged for each trip, the demand for their service would decline, as would the number of trips they make.

72 Taxis and FHVs are a single mode in the BPM and therefore cannot be presented separately.

Table 6-30. Net Change in Taxi/For-Hire Vehicle Daily Vehicle-Miles Traveled vs. No Action Alternative

GEOGRAPHIC AREA	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
New York City	**2,503,176**	**-128,847 (-5.1%)**	**-29,731 (-1.2%)**	**-84,406 (-3.4%)**	**-219,068 (-8.8%)**	**-130,412 (-5.2%)**	**-25,521 (-1.0%)**	**-147,687 (-5.9%)**
Bronx County	272,450	-8,392 (-3.1%)	-5,717 (-2.1%)	-6,426 (-2.4%)	-9,346 (-3.4%)	-3,991 (-1.5%)	-1,959 (-0.7%)	-7,831 (-2.9%)
Kings County (Brooklyn)	373,255	-33,855 (-9.1%)	-20,648 (-5.5%)	-10,247 (-2.7%)	-37,923 (-10.2%)	-27,854 (-7.5%)	-7,095 (-1.9%)	-39,183 (-10.5%)
New York County (Manhattan)	715,505	-77,843 (-10.9%)	-19,553 (-2.7%)	-51,989 (-7.3%)	-119,349 (-16.7%)	-73,223 (-10.2%)	-17,076 (-2.4%)	-87,944 (-12.3%)
Inside Manhattan CBD	323,998	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)
Outside Manhattan CBD	391,507	-56,345 (-14.4%)	-34,573 (-8.8%)	-40,618 (-10.4%)	-64,873 (-16.6%)	-47,602 (-12.2%)	-22,038 (-5.6%)	-60,187 (-15.4%)
Queens County	1,085,040	-3,873 (-0.4%)	+21,258 (+2.0%)	-10,804 (-1.0%)	-47,911 (-4.4%)	-19,342 (-1.8%)	+4,979 (+0.5%)	-7,812 (-0.7%)
Richmond County (Staten Island)	56,926	-4,884 (-8.6%)	-5,071 (-8.9%)	-4,940 (-8.7%)	-4,539 (-8.0%)	-6,002 (-10.5%)	-4,370 (-7.7%)	-4,917 (-8.6%)
Long Island Counties[1]	**291,624**	**-1,050 (-0.4%)**	**+2,836 (+1.0%)**	**+6,816 (+2.3%)**	**-3,159 (-1.1%)**	**+3,846 (+1.3%)**	**+9,153 (+3.1%)**	**-2,775 (-1.0%)**
New York Counties North of New York City[2]	**222,684**	**-3,316 (-1.5%)**	**+1,047 (+0.5%)**	**-206 (-0.1%)**	**-4,694 (-2.1%)**	**-2,547 (-1.1%)**	**-1,118 (-0.5%)**	**-2,905 (-1.3%)**
New Jersey Counties[3]	**1,181,690**	**+9,142 (+0.8%)**	**+13,582 (+1.1%)**	**+8,656 (+0.7%)**	**+12,899 (+1.1%)**	**+17,283 (+1.5%)**	**+15,094 (+1.3%)**	**+17,455 (+1.5%)**
Connecticut Counties[4]	**116,356**	**-2,922 (-2.5%)**	**-1,762 (-1.5%)**	**-4,273 (-3.7%)**	**-3,455 (-3.0%)**	**-4,235 (-3.6%)**	**-2,496 (-2.1%)**	**-1,903 (-1.6%)**
TOTAL	**4,315,530**	**-126,993**	**-14,028**	**-73,413**	**-217,477**	**-116,065**	**-4,888**	**-137,815**
PERCENTAGE CHANGE		**-2.9%**	**-0.3%**	**-1.7%**	**-5.0%**	**-2.7%**	**-0.1%**	**-3.2%**

Source: BPM, WSP 2021.
Note: Projections include vehicle-miles traveled only during fares and do not include cruising without passenger(s).
1. Long Island counties includes Nassau and Suffolk.
2 New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
3 New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
4 Connecticut counties include Fairfield and New Haven.

Under tolling scenarios that would toll taxis and/or FHVs more than once a day, customers could choose to avoid the toll by switching to transit, walking, or biking to their destination in the Manhattan CBD, thereby reducing the frequency of taxi/FHV utilization. A reduction in congestion in the Manhattan CBD would improve drive-times and reduce passenger costs. However, the potential decrease in overall demand for taxis and FHVs could reduce employment in the taxi and FHV industries. The predicted change in overall taxi/FHV travel characteristics indicates that there could be some shift in business practices within the industry, particularly for yellow cabs operating in Manhattan. The projected reductions in VMT indicate potential economic costs within an industry in flux where journeys have already been shifting from taxis to FHVs and could correlate to lost revenues for both taxis and FHVs operating in New York City. Since driver income is directly related to the miles they travel with paying customers, these reductions could result in reductions in taxi and FHV employment. **Chapter 17, "Environmental Justice,"** evaluates this potential adverse effect on taxi and FHV drivers in more detail.

In terms of economic impacts on businesses and industries, the change in taxi and FHV operations and business practices, while adverse for taxi and FHV drivers, would not result in an adverse economic impact on the industry overall.[73] The potential reductions in revenue and employment would not be of an amount that could jeopardize the overall viability of the taxi/FHV industry within the region. Based on historic data from the TLC's Fact Book for 2018, the industry has experienced substantial fluctuations year to year in key metrics such as active drivers and daily average trips; the industry adjusts to remain viable as an industry and meet demand. For example, there were reductions in the number of active livery cars, yellow cabs, and green cabs beginning in 2015 with the introduction of high-volume FHV ride-hailing services (**Figure 6-7**). Between January 2016 and January 2019, the numbers of active yellow cabs, green cabs, and livery cars decreased by 11.1 percent, 45.0 percent, and 55.4 percent, respectively. There were also precipitous decreases in demand for taxi/FHV services during the height of the COVID-19 pandemic (**Figure 6-8**). Nevertheless, under both circumstances that industry has continued to provide service. With the CBD Tolling Alternative consumer demand for taxi/FHV service would continue to be met, and those consumers who are willing to pay the toll would be driven to locations within the Manhattan CBD. The taxi/FHV industry would continue to operate throughout the region and would continue to be able to meet the needs of its consumer base.

Chapter 17, "Environmental Justice," provides additional analysis of the potential for job losses in the taxi and FHV industry, where the majority of drivers identify as minority populations.

Paratransit Vehicles

With the CBD Tolling Alternative, qualifying vehicles transporting persons with disabilities would be exempt from the toll.[74] This includes Access-A-Ride paratransit service, which provides public transportation for customers with disabilities or certain qualifying health conditions. The CBD Tolling Alternative would

73 As noted in Chapter 5, Section 430 of the 2021 *CEQR Technical Manual*, an impact of a project that would substantially impair the ability of certain specific industries or categories or business to continue operating within New York City may be considered significant and adverse.

74 As currently designed, qualifying vehicles transporting a person with disabilities include vehicles with government-issued disability license plates and fleet vehicles owned or operated by organizations and used exclusively to provide transportation to people with disabilities.

provide benefits to improve paratransit services, such as reduced roadway congestion resulting in travel-time and reliability improvements.

Buses

Given the Project goal of reducing congestion in the Manhattan CBD, while also creating a new recurring funding source to support the MTA's Capital Program for funding public transportation capital projects, the various tolling scenarios consider crossing credits, discounts, and/or exemptions for buses because those transporting passengers presumably reduce vehicle congestion. The standard bus tolling rate can be set at a value distinct from other classes. A discounted rate may represent a lower rate for buses as compared to the truck rate (non-franchise buses are currently charged truck rates at TBTA facilities) or may be a discounted rate against the bus rate for certain types of buses (e.g., public transit buses). As detailed in **Chapter 2, "Project Alternatives,"** the tolling scenarios present a range of potential charging options for buses.

To the extent buses are charged full or discounted tolls under the tolling scenarios, the cost of the toll would be expected to be absorbed into overall operating costs. For subsidized public transit, these costs could result in additional subsidy requirements and a portion could ultimately be passed along to passengers in terms of ticket prices for carriers with variable ticket pricing or could be a component in periodic fare adjustments for fixed fare transit systems. Given the high passenger volumes of most bus services, the small incremental cost borne by any given passenger is not expected to be an amount that would deter ridership for a vast majority of passengers, and reduced ridership would not be expected to jeopardize the viability of bus service operations.

For non-subsidized service, increased operating costs would be expected to be passed on to the passenger or could result in reduced services. Smaller volume services such as commuter vans and jitney buses may experience a greater proportion of reduced ridership; however, if some price-sensitive commuter van and jitney riders switch to transit, they could benefit from the transit improvements facilitated by the CBD Tolling Alternative. For tour and charter buses, costs would be lower since the frequency of crossing in and out of the Manhattan CBD is much lower than public buses, and the cost of the toll would be passed on to a larger number of passengers.

Movement of Goods and Services, Including Freight Transport

As noted in **Chapter 18, "Agency Coordination and Public Outreach,"** during early public outreach for the Project in fall 2021 members of the public expressed concerns about the potential for increases in fees and other services such as deliveries within the Manhattan CBD. With the CBD Tolling Alternative, the volumes of truck journeys into and within the Manhattan CBD are expected to remain similar to today because the need to deliver goods would remain the same; deliveries would still need to be made to restaurants, businesses, and residents regardless of the Manhattan CBD tolling implementation. As a result, the BPM assumes that journey origins and destinations of trucks and other commercial vehicles would remain constant between the No Action Alternative and all the tolling scenarios. In some cases, shipments could be consolidated to maximize the amount of product delivered if the route would incur the toll.

With the CBD Tolling Alternative, delivery trucks would incur an additional cost from a toll. **Table 6-31** identifies the toll rates for various truck types under each of the tolling scenarios. As shown in **Table 6-31**, the actual amount paid by an individual truck per day would vary based on the toll rate, whether there is a cap on the number of tolls per day, and the number of times a truck is detected entering or remaining in the Manhattan CBD. Depending on the number of trips a truck makes, the total cost might be less in a tolling scenario with a cap on the number of tolls per day or a tolling scenario with a lower toll rate but no cap.

The CBD Tolling Alternative would also reduce costs for truck deliveries related to the time spent making the delivery and costs associated with parking tickets. Specifically, with a reduction in congestion in the Manhattan CBD, truckers could make their deliveries more quickly, reducing labor costs associated with the delivery. In addition, with fewer automobiles entering the Manhattan CBD each day, the demand for parking would be reduced, which would free up legal curbside parking for delivery vehicles. Delivery trucks may be able to find legal parking more readily in the Manhattan CBD, thereby reducing the incidence of ticketing (fines for which frequently exceed $1,000 per truck per month[75]). The extent of delivery cost savings would vary depending on the toll cost, the delivery route, timing of delivery, and the level of reduced congestion along the route that would be realized under the tolling scenarios.

Businesses in the Manhattan CBD that would be more likely to be adversely affected by increased delivery costs associated by tolling increases are small businesses that have a high rate of deliveries. In general, micro-businesses, which are small businesses with fewer than 20 employees, would be most sensitive to delivery cost increases. The types of businesses in the Manhattan CBD that would most likely be affected would be small businesses in the Retail Trade industry since they are dependent on frequent deliveries of smaller loads, and the cost of delivery of goods constitutes a higher portion of their operating costs. These include grocery stores, restaurants, and small “bodega” market convenience stores. As shown in **Table 6-4**, approximately 10 percent of businesses in the Manhattan CBD are classified as Retail Trade. Although bodegas and other small independent grocery/convenience stores are not uniquely identified in **Table 6-4**, they would most likely be represented by micro-businesses in the Supermarkets and Other Grocery Except Convenience Stores (NAICS Code 445110) and Convenience Stores (NAICS Code 445120) industry sub-categories. There are approximately 600 such businesses within the Manhattan CBD, representing slightly less than 1 percent (0.7 percent) of all businesses within the Manhattan CBD. As described below, any cost increase associated with the tolling increases from the CBD Tolling Alternative that would be passed along to receiving businesses would be distributed among several customers per toll charge (since trucks make multiple deliveries) especially for businesses, including small businesses and micro-businesses, receiving smaller deliveries, thereby minimizing the effect of the toll increases on any individual business.

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75 Holguin-Veras, Jose, et al. September 2010. *Integrative Freight Demand Management in the New York City Metropolitan Area*. http://www.nyc.gov/html/dot/downloads/pdf/ohd-final-report.pdf.

Table 6-31. Truck Treatment by Tolling Scenario

PARAMETER[1]	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
	Base Plan	Base Plan with Caps and Exemptions	Low Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	High Crossing Credits for Vehicles Using Tunnels to Access the CBD	High Crossing Credits for Vehicles Using Tunnels to Access the CBD, with Some Caps and Exemptions	High Crossing Credits for Vehicles Using Manhattan Bridges and Tunnels to Access the CBD, with Some Caps and Exemptions	Base Plan with Same Tolls for All Vehicle Classes
Potential Crossing Credits							
Credit Toward the CBD Toll for Tolls Paid at the Queens-Midtown, Hugh L. Carey, Lincoln, Holland Tunnels	No	No	Yes	Yes	Yes	Yes	No
Credit Toward the CBD Toll for Tolls Paid at the Robert F. Kennedy, Henry Hudson, George Washington Bridges	No	No	No	No	No	Yes	No
Potential Exemptions and Limits (Caps) on Number of Tolls per Day							
Small and large trucks	No cap	Twice per day	No cap	No cap	No cap	Once per day	No cap
Approximate Toll Rate (Small Truck / Large Truck) [2, 3]							
Peak [4]	\$18 / \$28	\$20 / \$30	\$28 / \$42	\$38 / \$57	\$46 / \$69	\$65 / \$82	\$12 / \$12
Off Peak [5]	\$14 / \$21	\$15 / \$23	\$21 / \$32	\$29 / \$43	\$35 / \$52	\$49 / \$62	\$9 / \$9
Overnight [6]	\$9 / \$14	\$10 / \$15	\$14 / \$21	\$19 / \$29	\$23 / \$35	\$33 / \$41	\$7 / \$7

1 The information in this table was used for modeling purposes to evaluate the range of effects resulting from implementation of the CBD Tolling Alternative. Actual toll rates, potential crossing credits/exemptions and/or other discounts, and the time of day when toll rates would apply would be determined by the TBTA Board after recommendation by the Traffic Mobility Review Board. **Appendix 2E, "Project Alternatives: Definition of Tolling Scenarios,"** provides more detailed information on the rates, potential crossing credits/exemptions, and/or other discounts assumed for each tolling scenario.

2 Tolls would be higher during peak periods when traffic is greatest. These would be defined by TBTA in the final toll schedule. All tolling scenarios also include a higher toll on designated "Gridlock Alert" days, although the modeling conducted for the Project did not reflect this higher toll since it considers typical days rather than days with unusually high traffic levels.

3 Toll rates are using E-ZPass and are rounded. For all tolling scenarios, different rates would apply for vehicles not using E-ZPass.

4 Peak is 6:00 a.m. to 8:00 p.m. on weekdays except for Scenario F, where it is 6:00 a.m. to 10:00 a.m. and 4:00 p.m. to 8:00 p.m., and on weekends when peak is 10:00 a.m. to 10:00 p.m.

5 Off peak is 8:00 p.m. to 10:00 p.m. on weekdays except for Scenario F, where it is 10:00 a.m. to 4:00 p.m.

6 Overnight is 10:00 p.m. to 6:00 a.m. on weekdays except for Scenario F, where it is 8:00 p.m. to 6:00 a.m., and on weekends when overnight is 10:00 p.m. to 10:00 a.m.

Incremental toll costs that are passed along to receiving businesses would be passed in a diluted fashion because shippers would allocate the toll costs among the multiple receivers on a journey (within New York City, averaging 5.5 stops per journey).[76] Shippers to small retail stores like bodegas typically make many stops and consequently would share the toll cost among those multiple receivers. An incremental cost to any one retail store would be passed along as an incremental cost to consumers but would represent a very small component of the retail price charged to the consumer.

As incremental toll costs would be diluted among receivers, the receivers would retain a role as decision-maker for delivery hours, and a vast majority of receivers prefer regular-hour deliveries because they typically have more staff on hand, as opposed to off-hour deliveries that could require additional staff, security, lighting, and other costs.[77] Therefore, tolling, as well as tolling with peak- and off-peak rate variation, would not likely substantially alter urban freight delivery. Separate research from Stockholm, Sweden about congestion pricing indicates that commercial-vehicle traffic, such as truck traffic, has a higher willingness to pay for decreased travel time and is relatively insensitive to changes in price compared with private passenger-trips.[78] However, the toll rates in Stockholm generally fall well below the toll rates contemplated under the tolling scenarios[79], and therefore with the CBD Tolling Alternative the lower off-peak rates may have a stronger influence on receiver decision-making if a business is incurring additional costs during peak delivery times.

With the CBD Tolling Alternative, some trucks with origins and destinations outside the Manhattan CBD that currently pass through the Manhattan CBD enroute to their destinations in the No Action Alternative could choose a different route to avoid the toll with the CBD Tolling Alternative. This routing decision would be based on consideration of the cost of the toll versus the cost of the alternative routing, which could be longer or more time-consuming. These trucks would still reach their destination, using a different route than they do today. The BPM projects a reduction in truck trips passing through the Manhattan CBD ranging from approximately 1,700 truck trips in Tolling Scenario G[80] to nearly 6,800 truck trips in Tolling Scenario F compared to the No Action Alternative. Tolling Scenario F would have the highest tolls for trucks (**Table 6-32**). While in the No Action Alternative, 25 percent of the trucks entering the Manhattan CBD would not have destinations in the Manhattan CBD and would be passing through. In Tolling Scenario F, with the highest tolls, the share would drop to 6 percent.

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76 Holguin-Veras, Jose, et al. September 2010. *Integrative Freight Demand Management in the New York City Metropolitan Area*. http://www.nyc.gov/html/dot/downloads/pdf/ohd-final-report.pdf.

77 Ibid.

78 Börjesson, Maria. 2018. *Long-Term Effects of the Swedish Congestion Charges*. International Transport Forum. https://www.itf-oecd.org/sites/default/files/docs/swedish-congestion-charges.pdf.

79 Charges for a single entry in Stockholm range from 11 to 45 Swedish Krona (SEK) (approximately $1.14 to $4.66 USD) during peak seasons, and 11 to 35 SEK ($1.14-$3.62 USD) in off-peak seasons. Vehicles are charged for every entry with a maximum toll per day for any vehicle of 135 SEK, or $13.98 USD (during off-peak season, the maximum toll is 105 SEK, or $10.87 USD). All vehicles are subject to the same fee schedule.

80 Tolling Scenario G is similar to the Stockholm, Sweden program in that all vehicles are subject to the same fee schedule, resulting in relatively low toll rates for trucks and a greater willingness to absorb (rather than avoid) the cost of tolls.

Table 6-32. Change in Daily Through Truck Trips via the Manhattan CBD, No Action Alternative vs. Tolling Scenarios

PARAMETER	NO ACTION	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Truck Trips Through Manhattan CBD	8,392	3,746	3,424	3,139	2,705	1,788	1,607	6,657
Difference from No Action Alternative	—	-4,645	-4,967	-5,253	-5,687	-6,604	-6,784	-1,734

Source: BPM, WSP 2021.

6.4 NEIGHBORHOOD-LEVEL ASSESSMENT

In addition to the regional effects of the Project discussed in **Section 6.3**, the changes in regional travel patterns resulting from the CBD Tolling Alternative also have the potential to affect localized community and neighborhood economic conditions if travel patterns at transportation hubs (where travelers shift modes) or near the 60th Street Manhattan CBD boundary change in a way that could lead to changes in economic conditions. This section of the chapter evaluates the potential for the Project to result in this type of localized change and whether such a change could lead to indirect displacement effects and changes in the operations of certain industries.

6.4.1 Study Areas

This section considers whether and where the CBD Tolling Alternative could substantively influence economic conditions at a local level, and thus warrant a neighborhood-level assessment. As detailed below, the identified study areas are locations where the CBD Tolling Alternative could indirectly alter land use and economic patterns within a neighborhood or neighborhoods. This section considers the effects of the CBD Tolling Alternative on transportation hubs, neighborhoods where vehicular traffic would increase or decrease, and the area close to the 60th Street Manhattan CBD boundary in Manhattan.

6.4.1.1 Transportation Hubs

With the CBD Tolling Alternative, certain public transportation hubs would experience an increase in transit ridership as more travelers to and from the Manhattan CBD select to take public transportation rather than personal transportation or taxis/FHVs in order to avoid the toll. The economic consideration at these transportation hubs is whether the increased consumer demand generated by the additional riders could substantively alter market forces in the immediate area of the transportation hubs, leading to a change of uses and neighborhood character. For example, this theoretically could occur if increased spending from new consumers in retail corridors near these public transportation hubs then led to increased property values, which in turn led to increased rents. To the extent that existing businesses would experience an increase in foot traffic or demand such that property values would be meaningfully affected, the resultant increase in rents could be offset by increased sales revenues. However, non-retail uses—or retail uses that do not cater to the new demand—may not benefit from increased sales, which in theory could lead to turnover of businesses.[81]

As detailed in **Subchapter 4C, "Transportation: Transit,"** the shift of some portion of journeys to and from the Manhattan CBD from automobile to transit would result in a relatively small overall change in regional transit ridership of 1 to 3 percent across all transit service types in the region. Outside the key Manhattan CBD transit hubs, where the increase in transit riders would be the most concentrated, the distribution of ridership changes is not expected to introduce additional consumer expenditure potential that could substantively alter real estate market conditions or change retail sales in and around any given transit station in the region. Therefore, the CBD Tolling Alternative does not have the potential to substantively alter market conditions in neighborhoods surrounding transportation hubs, and no further analysis of this concern is warranted.

6.4.1.2 Neighborhood Streets Experiencing Increases or Decreases in Traffic

The CBD Tolling Alternative would result in an overall net reduction in auto journeys to and from the Manhattan CBD. Depending on the tolling scenario and the specific crossing credits included for other tolls paid at bridges and tunnels, certain local streets are projected to experience increases in vehicle traffic from route diversions. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** provides detail on these locations and presents the results of intersection-level traffic impact analysis. The predicted changes in traffic volumes would be small compared to the overall volume of traffic on city streets during the day. As a result, there would be no anticipated change to the overall operation or character of local streets and no effect on economic conditions.

Increases and decreases in vehicle traffic along road segments resulting from the CBD Tolling Alternative would not substantively alter local market conditions for the following reasons:

- **These locations already experience traffic at levels that influence market conditions.** Areas where traffic volumes would increase already experience high levels of vehicle traffic, and in any case, local market conditions are more heavily influenced by existing pedestrian traffic. Therefore, such changes in traffic would not be expected to alter economic conditions at the neighborhood level. Outside the Manhattan CBD, few roadway segments would experience increases in vehicle traffic exceeding 20 percent over the No Action Alternative under any tolling scenario, and these segments would be primarily on highways such as the Long Island Expressway.
- **Car journeys to commercial businesses represent a small percentage of all consumer journeys in and immediately surrounding the Manhattan CBD.** Based on CTPP data, in general fewer than 10 percent of all journeys made to local businesses in the Manhattan CBD are made by auto. Given that the BPM predicts that the CBD Tolling Alternative would reduce non-work auto journeys to the Manhattan CBD by no more than 13 percent (the highest reduction, under Tolling Scenario D), the reduction in non-

[81] In addition to this economic effect on businesses, an increase in property values could also affect residences. This type of indirect displacement is discussed in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion,"** which concludes that the CBD Tolling Alternative would not result in adverse effects related to indirect residential displacement.

work journeys to the Manhattan CBD would be no more than approximately 1.3 percent (i.e., a 13 percent reduction of 10 percent of consumer base). Because some of those auto-based trips would transition to transit, the loss of consumer base is expected to be even less than 1.3 percent.

- **Areas receiving incremental traffic (e.g., roadways near the Queens-Midtown Tunnel and the Hugh L. Carey Tunnel) are largely "pass-through" locations.** A vast majority of automobile travelers are not stopping at these locations and therefore would not add consumer spending to these local areas. The Project-generated shifts in traffic would not be attributed to attractions to/from businesses along routes, but rather they would be in response to the imposed tolling program, resulting in different route choices. Therefore, they would have little or no effect on consumer journeys to any particular business, except for perhaps parking facilities (addressed later in this subchapter).

Based on the above, detailed assessment of potential economic effects along neighborhood streets is not warranted and no adverse effect on economic conditions is anticipated.

6.4.1.3 Neighborhoods Near the 60th Street Manhattan CBD Boundary

The northern boundary of the Manhattan CBD, as defined in the MTA Reform and Traffic Mobility Act, is 60th Street. This assessment considers whether the introduction of tolling for vehicles would result in changes in economic conditions in neighborhoods on either side of the Manhattan CBD boundary because of changes in traffic volumes close to 60th Street.

Neighborhoods immediately north and south of the Manhattan CBD boundary regularly experience high volumes of vehicular and pedestrian traffic such that the incremental volumes generated by the CBD Tolling Alternative would not alter local market conditions in a manner that could adversely affect neighborhood character (see **Subchapter 5B, "Social Conditions: Neighborhood Character,"** for additional discussion). This analysis considers the effects of the CBD Tolling Alternative on the local demand for off-street parking, which is a prominent land use in the vicinity of 60th Street across Manhattan, and whether a change in demand could in turn result in a change in the character of the area.[82] Fewer people may seek parking in the areas just inside the Manhattan CBD, while north of the boundary, there could be new demand for off-street parking, and new parkers could become new consumers as they walk to their destinations south of the Manhattan CBD boundary.

[82] The Project's effects on parking are evaluated in **Subchapter 4D, "Transportation: Parking."** The assessment in this chapter considers the possible changes in land use and local economic conditions related to changes in parking demand. Industrywide, the potential reduction in overall auto journeys to the Manhattan CBD is not predicted to be large enough to result in regional impacts to the off-street parking industry or off-street parking facilities within the Manhattan CBD south of 55th Street, because the reduction of auto trips and associated parking would be dispersed throughout the Manhattan CBD.

It is predicted that "last-mile" switching from auto to walking trips to avoid the toll cost would not be a rational decision beyond approximately five blocks of the Manhattan CBD boundary.[83] For example, an individual with a 55th Street destination would be far more likely to seek parking just north of the 60th Street Manhattan CBD boundary and walk to their destination compared with an individual who has a destination farther south in the Manhattan CBD. Therefore, to assess the potential economic effects of this change in consumer behavior, a study area encompassing the area from 55th Street to 65th Street for the width of Manhattan was evaluated (**Figure 6-9**).

6.4.2 Affected Environment

The area of Manhattan between 55th and 65th Streets from the Hudson River to the East River is characterized by densely developed neighborhoods with a wide mix of uses and strong, established land use trends. The Manhattan CBD boundary comprises heavy vehicular and pedestrian traffic, with access to multiple subway and bus routes and high transit usage. There are also numerous parking garages.

North of 60th Street, the areas east of Central Park (part of the Upper East Side) and west of Central Park (part of the Upper West Side) are both high-density neighborhoods characterized by residential uses, including rowhouses, mid- and high-rise apartment buildings, and residential skyscrapers. The economic and employment characters of this area include prominent large institutional uses as well as neighborhood commercial corridors along most north–south avenues. The key characteristics of these areas are the combination of high residential density development, congested vehicular and pedestrian traffic conditions, and a mix of office, residential, retail, institutional, and open space uses.

The area south of 60th Street, part of the Manhattan CBD and the northern part of Midtown Manhattan, is a high-density district characterized by a mix of uses, including commercial and residential skyscrapers, retail districts, and large cultural and institutional facilities (**Figure 6-9**). The areas of Midtown east of Second Avenue and west of Eighth Avenue are much more residential in character, but still very densely developed with rowhouses and mid- and high-rise apartment buildings. There is high pedestrian traffic throughout the day, and heavy vehicular traffic on all north–south roadways, along 57th Street and Central Park South, on the West Side Highway/Route 9A and Franklin D. Roosevelt Drive, and near the entrances and exits to the Ed Koch Queensboro Bridge. The high pedestrian and vehicular traffic and mix of commercial office, residential, and retail uses are key characteristics of the area immediately south of 60th Street.

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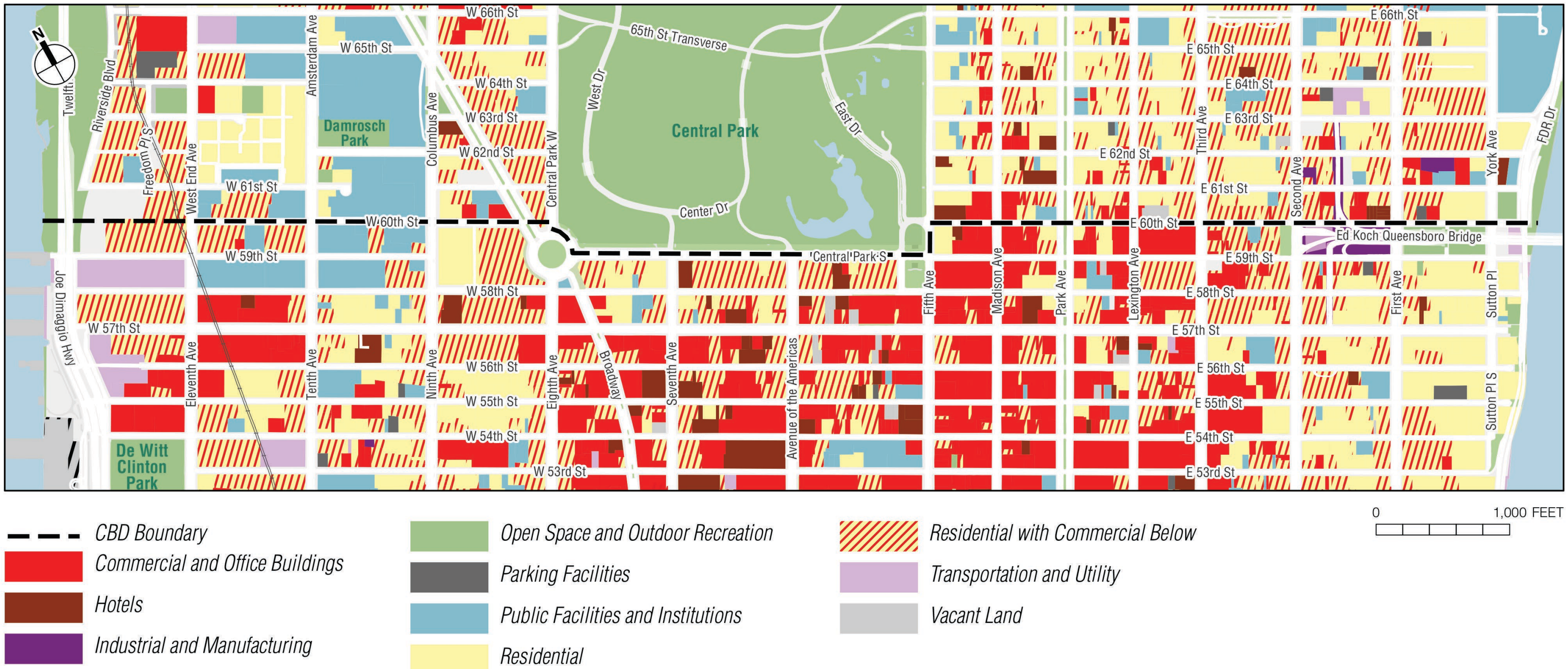
83 Rational behavior is the cornerstone of rational choice theory, a theory of economics that assumes that individuals always make decisions that provide them with the highest amount of personal utility. These decisions provide people with the greatest benefit or satisfaction given the choices available. While the value individuals place on their time varies depending on personal socioeconomic factors and circumstance, the value of one hour of personal travel time is usually estimated at 25 to 50 percent of earnings, while the value placed on business travel time can exceed 100 percent of earnings (https://www.transportation.gov/sites/dot.gov/files/docs/2016%20Revised%20Value%20of%20Travel%20Time%20Guidance.pdf). For purposes of this analysis, it is assumed that the toll cost is roughly equivalent to one hour of a person's time. Given this assumption, it would be a rational choice for individuals to park north of the 60th Street Manhattan CBD boundary to avoid the toll if the time spent on this "toll avoidance measure" were less than one hour, which when considering walking times roughly equates to an area from 55th to 65th Streets.

Figure 6-9. Land Use Near the 60th Street Manhattan CBD Boundary



Sources: New York City Department of City Planning, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page.
ArcGIS Online, https://www.arcgis.com/index.html.

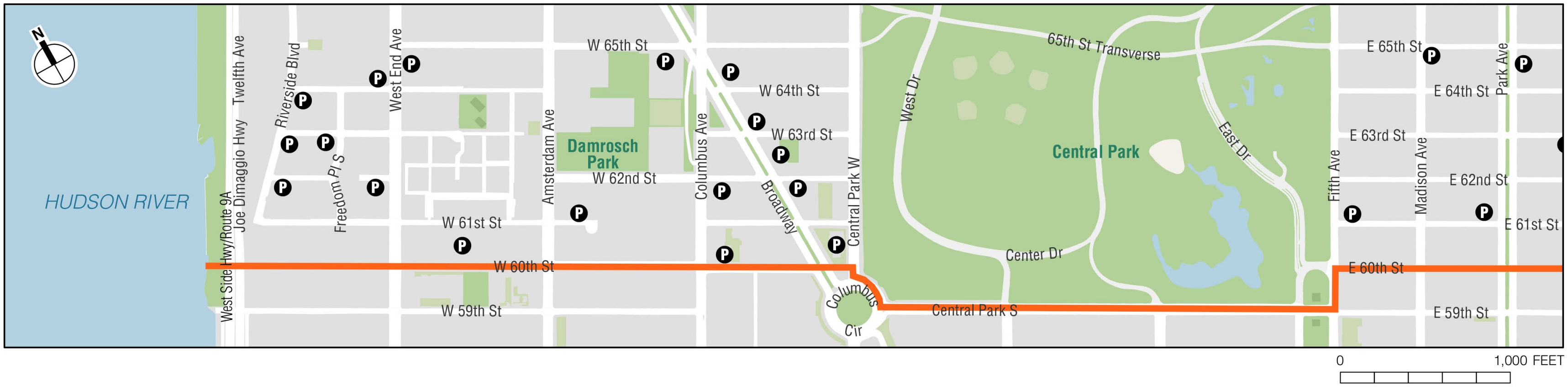
As noted above, neighborhoods immediately north and south of the 60th Street Manhattan CBD boundary regularly experience high volumes of vehicular and pedestrian traffic such that the incremental volumes generated by the CBD Tolling Alternative would not alter local market conditions in a manner that could adversely affect neighborhood character. The BPM projections do not suggest that there would be substantial increases in parking demand immediately north of the 60th Street Manhattan CBD boundary from auto users; the number of cars on each of the avenues immediately north of 60th Street is projected to decrease under all tolling scenarios. In addition, literature research of congestion-based pricing programs in London, England, and Stockholm, Sweden, did not identify adverse effects related to increased parking demand immediately outside of tolling cordons. Nevertheless, this assessment considers potential economic effects if the CBD Tolling Alternative were to increase demand for off-street parking at some locations north of 60th Street, even with a decrease in the overall number of cars. Between 60th and 65th Streets (north of the 60th Street Manhattan CBD boundary), there are approximately 7,525 off-street parking spaces in 52 parking facilities (Figure 6-10 and Table 6-33). If the area were to experience an increase in parking demand, it is expected that incremental demand would be satisfied through available capacity,[84] or if there were capacity constraints, through upward adjustments in parking fees. Changes in parking rates could also affect area residents that use off-street parking facilities. Parking fee adjustments north of 60th Street, combined with potential parking fee reductions south of 60th Street due to potential reductions in demand, would offset potential changes in consumer demand behaviors resulting from the CBD Tolling Alternative. Even if such behavior were not fully offset through rate adjustments, there would not be changes in land use patterns; the trend toward lower parking demand combined with high real estate values in this area suggests that new parking garages would not be developed.

In areas immediately south of 60th Street, the CBD Tolling Alternative could reduce local demand for off-street parking, which is a prominent land use in the area. Between 60th and 55th Streets (south of the 60th Street Manhattan CBD boundary), there are approximately 11,500 off-street parking spaces in 88 parking facilities (Table 6-33 and Figure 6-11). This analysis considers whether parking garages immediately south of 60th Street could experience reduced demand at a level that could lead to displacement of off-street parking facilities, and a resulting change in neighborhood character.

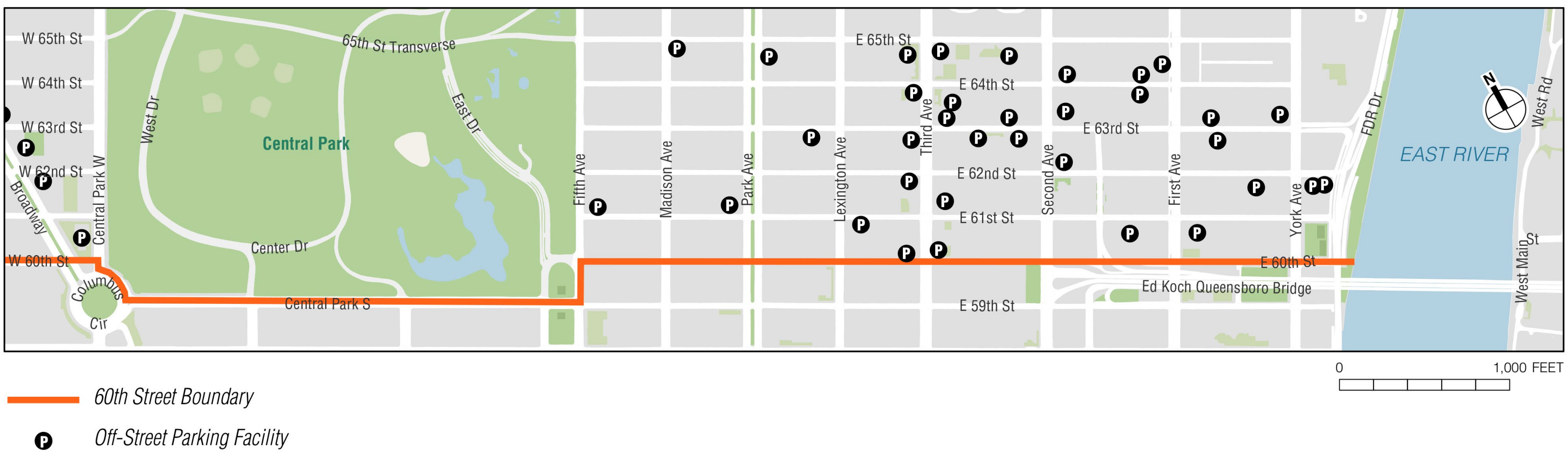
[84] Based on a sampling of parking utilization collected in 2018 and 2019 during typical conditions for environmental review studies, weekday midday off-street parking utilization ranges from approximately 70 to 80 percent of capacity, with lower utilization rates in the AM and PM peak periods. Applying this utilization estimate to the total off-street parking capacity between 60th and 65th Streets (7,525 spaces) equates to between 1,505 and 2,258 available off-street parking spaces.

Figure 6-10. Off-Street Parking Facilities between 60th and 65th Streets North of the 60th Street Manhattan CBD Boundary

Western Portion



Eastern Portion



Source: Parking facility locational data obtained from the New York City Department of Information Technology & Telecommunications NYCityMap program.

Table 6-33. Parking Garages between 55th and 65th Streets

AREA	BOUNDARIES	PARKING GARAGES	PARKING SPACES
Outside the Manhattan CBD: North of 60th Street (60th to 65th Streets)		**52**	**7,525**
Lenox Hill	East 60th Street to East 65th Street/Franklin D. Roosevelt Drive to Third Avenue	23	2,834
Upper East Side	East 60th Street to East 65th Street/Third Avenue to Fifth Avenue	11	1,031
Lincoln Square	West 60th Street to West 65th Street/Central Park West to Twelfth Avenue	18	3,660
Inside the Manhattan CBD: South of 60th Street (60th to 55th Street)		**88**	**11,541**
East Midtown	East 55th Street to East 60th Street/Franklin D. Roosevelt Drive to Park Avenue	31	4,198
Midtown	59th Street to 55th Street/Park Avenue to Eighth Avenue	36	3,202
Clinton	West 60th Street to West 55th Street/Eighth Avenue to Twelfth Avenue	21	4,141
	TOTAL (55th to 65th Streets)	**140**	**19,066**

Sources: New York City Department of Consumer Affairs data obtained from the New York City Department of Information Technology & Telecommunications NYCityMap program; data for areas inside of 60th Street Manhattan CBD boundary field verified by AKRF in October 2019.

6.4.3 Environmental Consequences

6.4.3.1 No Action Alternative

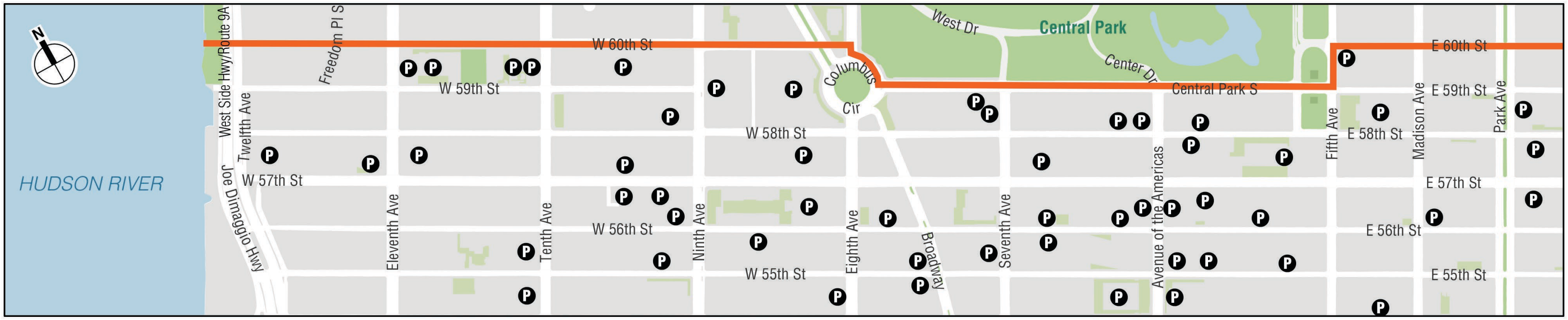
The No Action Alternative would not implement a vehicular tolling program. It would not affect population, travel patterns, access to employment, or neighborhood economic conditions in the 2023 analysis year. Market conditions at the neighborhood level would not markedly change.

6.4.3.2 CBD Tolling Alternative

This section describes the potential effects of the CBD Tolling Alternative on economic conditions at the neighborhood level. The analysis considers whether additional consumers and/or changes in consumer demand could alter underlying real estate market forces at the neighborhood level, specifically focusing on off-street parking uses and demand.

Figure 6-11. Off-Street Parking Facilities between 60th and 55th Streets South of the 60th Street Manhattan CBD Boundary

Western Portion



Eastern Portion

60th Street Boundary

Off-Street Parking Facility

Source: Parking facility locational data obtained from the New York City Department of Information Technology & Telecommunications NYCityMap program.

As shown in **Table 6-34**, under the various tolling scenarios there could be as much as a 10.5 percent reduction in total auto journeys to the Manhattan CBD as compared to the No Action Alternative, which in absolute terms is an estimated 40,906 autos. This is auto journeys from all locations crossing into the Manhattan CBD (60th Street, Hudson River, Brooklyn, and Queens); only a portion of this reduction would occur in journeys coming from the north. However, a conservative estimate of the reduction in demand for parking immediately south of 60th Street was made using the BPM zonal information. This information indicates about 4.5 percent of auto journeys to the Manhattan CBD are bound for the traffic analysis zones just south of 60th Street. Applying this percentage to the largest reduction shown in **Table 6-34** (Tolling Scenario E, with 40,906 fewer vehicles) would reduce potential parking demand in the area immediately south of 60th Street by about 1,840 vehicles per day, which represents approximately 16 percent of the estimated 11,500 parking spaces located across Manhattan between 55th and 60th Streets.[85] Reduction in parking demand of this volume could jeopardize the viability of one or more parking facilities in the area south of 60th Street. However, given property values and consumer volumes at the northern border of the Manhattan CBD in the area south of 60th Street, if one or more parking facilities were to close, these facilities could be redeveloped or repurposed with other uses; the sites would not remain vacant; therefore, their potential displacement would not create a climate of disinvestment that could lead to adverse effects on neighborhood character.

Table 6-34. Change in Auto Journeys to the Manhattan CBD vs. No Action Alternative

CHANGE IN JOURNEYS	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Absolute Change	-20,742	-16,173	-25,559	-38,744	-40,906	-31,784	-23,056
Percentage Change	-5.3%	-4.2%	-6.6%	-10.0%	-10.5%	-8.2%	-5.9%

Source: BPM, WSP 2021.

Overall, therefore, changes in traffic patterns predicted as a result of the CBD Tolling Alternative would not alter overall economic activity or conditions in any areas that could see a decrease or increase in traffic on local streets.

6.5 CONCLUSION

Through congestion relief, the CBD Tolling Alternative would provide an economic benefit to the Manhattan CBD, and thus to the region and nation. Most transportation users in the region making journeys to or within the Manhattan CBD by auto, FHV/taxi, bus, or truck would benefit from travel-time savings and travel-time reliability improvements, which are economic benefits because they increase a person's productivity and overall utility by reducing time spent on less productive activities (i.e., traveling to a destination). With fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative would also reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety. In addition, the CBD Tolling Alternative would decrease regional VMT relative to the No Action

85 In addition to assuming the largest auto reduction of autos from the tolling scenarios, this analysis conservatively assumes that all auto trips bound for the traffic analysis zones just south of 60th Street are seeking off-street parking, when some of those trips currently secure on-street parking.

Alternative, which could lead to vehicle operating cost savings for drivers and businesses. Overall, economic benefits to sustaining the economic vitality of New York City as well as benefits to drivers and transit riders are anticipated because of the proposed CBD Tolling Alternative, which would provide for congestion relief in the Manhattan CBD as well as secure funding to sustain capital investment in the regional transit system.

The economic analysis also considers the potential for adverse economic effects resulting from increased commuting costs, increased taxi/FHV fares, and increased delivery costs that could result from the CBD Tolling Alternative on businesses and employees in the Manhattan CBD. The analysis finds that increased auto commuting costs under the CBD Tolling Alternative would not adversely affect any particular industry or occupational category in the Manhattan CBD. Given the highly transit-accessible nature of the Manhattan CBD, the Project's toll on auto commuters would directly affect a relatively small percentage of the overall workforce.

Census data indicates that in the aggregate, there are no industry or occupational categories within the Manhattan CBD for which commuters have a greater propensity or need to commute by auto. Approximately 99 percent of Manhattan CBD workers—and approximately 99 percent of the subset who commute from outside the Manhattan CBD—work within one-half mile of a subway station or SBS stop within the Manhattan CBD. While there are higher rates of auto commuting for specific industries and occupations within certain locations in the Manhattan CBD, the total numbers of employees working at those locations do not constitute a substantial percentage of the total workforce for any industry or occupation within the Manhattan CBD or broader regional study area. The tendency for these workers to commute by auto appears related more to distance from transit and/or availability of free parking than to needs of their occupations or industries.

The analysis finds that costs could increase for drivers and delivery costs could increase if delivery companies pass on the toll cost to customers. Taxis would be most affected by CBD tolling, because 75 percent of taxi trips start or end in the Manhattan CBD. FHVs rely less on trips in the Manhattan CBD, because only about 38 percent of "high-volume" FHV trips start or end in the Manhattan CBD. Taxi and FHV fares may increase under tolling scenarios that toll taxis and/or FHVs more than once a day and there could be reductions in demand and corresponding reductions in employment within the industry. The potential reductions in revenue and employment would not be of an amount that could jeopardize the overall viability of the taxi/FHV industry within the region. Overall, these increased costs would not adversely affect the operations of businesses in the Manhattan CBD, its ability to attract employees, and the viability of the taxi and FHV industry. There is already a high cost associated with locating in or travel to the Manhattan CBD, and the toll cost would not meaningfully change the competitiveness or attractiveness of doing business in the Manhattan CBD.

The analysis indicates no adverse changes to commercial traffic providing goods and services to the Manhattan CBD. Because incremental toll costs would not be borne by many customers or would be diluted among many customers, the incremental cost would not be expected to jeopardize the viability of the freight industry or the many industries that rely on freight services.

The neighborhoods near the 60th Street boundary of the Manhattan CBD would experience changes in travel patterns as a result of the CBD Tolling Alternative. This analysis considers whether those changes could substantially affect the economic characteristics of these neighborhoods, and in particular, off-street parking facilities located there. Neighborhoods immediately north and south of the 60th Street Manhattan CBD boundary regularly experience high volumes of vehicular and pedestrian traffic such that the incremental volumes generated by the CBD Tolling Alternative would not alter local market conditions in a manner that could adversely affect neighborhood character. Reduction in parking demand from the CBD Tolling Alternative could jeopardize the viability of one or more parking facilities in the area south of 60th Street. However, given property values and consumer volumes at the northern border of the Manhattan CBD in the area south of 60th Street, if one or more parking facilities were to close, these facilities could be redeveloped or repurposed with other uses; the sites would not remain vacant, and therefore their potential displacement would not create a climate of disinvestment that could lead to adverse effects on neighborhood character. Overall, therefore, changes in traffic patterns predicted as a result of the CBD Tolling Alternative (for all tolling scenarios) would not alter overall economic activity or conditions in any areas that could see a decrease or increase in traffic on local streets.

Table 6-35 provides a summary of the conclusions of this chapter.

Table 6-35. Summary of Effects of the CBD Tolling Alternative on Economic Conditions

TOPIC	SUMMARY OF EFFECTS	EFFECT BY TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
		A	B	C	D	E	F	G		
Benefits	Regional economic benefits	Economic benefit through congestion relief in terms of travel-time savings and travel-time reliability improvements, which would increase productivity and utility, as well as safety improvements and reduced vehicle operating costs associated with reductions in congestion.							No	**No mitigation needed**. Beneficial effects
Economic Effects of Toll Costs	Cost of new toll for workers and businesses in the CBD that rely on vehicles	No adverse effects to any particular industry or occupational category in the Manhattan CBD. Given the high level of transit access in the CBD and high percentage of transit share, the toll would affect only a small percentage of the overall workforce. This would not adversely affect operations of businesses in the Manhattan CBD or the viability of any business types, including the taxi/FHV industry.							No	**No mitigation needed.** No adverse effects
Price of Goods	Cost of new toll would not result in changes in the cost of most consumer goods in the Manhattan CBD	Unlikely to result in meaningful change in cost for most consumer goods. Any cost increase associated with the new toll in the CBD Tolling Alternative that would be passed along to receiving businesses would be distributed among several customers per toll charge (since trucks make multiple deliveries) especially for businesses, including small businesses and micro-businesses, receiving smaller deliveries. This would minimize the cost to any individual business. Some commodity sectors (construction materials, electronics, beverages) are more prone to increases due to less competition within delivery market.							No	**No mitigation needed**. No adverse effects
Taxi and FHV Industry	Depending on the tolling scenario, the toll could reduce taxi and FHV revenues. While this could adversely affect individual drivers, the industry would remain viable overall.	Net change in taxi/FHV VMT vs. No Action Alternative							No	**No mitigation needed.** No adverse effects (see **Chapter 17, "Environmental Justice,"** for mitigation related to effects on taxi and FHV drivers)
		-126,993 (-2.9%)	-14,028 (-0.3%)	-73,413 (-1.7%)	-217,477 (-5.0%)	-116,065 (-2.7%)	-4,888 (-1.0%)	-137,815 (-3.2%)		
Local Economic Effects	Changes in parking demand near the 60th Street CBD boundary	Changes in parking demand near the 60th Street Manhattan CBD boundary (including increases just north of 60th Street and decreases just to the south) could jeopardize the viability of one or more parking facilities in the area south of 60th Street but would not create a climate of disinvestment that could lead to adverse effects on neighborhood character.							No	**No mitigation needed**. No adverse effects

7. Parks and Recreational Resources

7.1 INTRODUCTION

This chapter evaluates the potential effects of implementing the CBD Tolling Alternative on parks and recreational resources. Effects on publicly accessible open spaces, including parks and recreational areas, can result from physical changes in a park or recreation area, such as changes in the size and programming of, or access to an open space. In addition, changes in the enjoyment or usage of open spaces resulting from the introduction of substantial new shadows, noxious odors, or increased noise or air pollutant emissions that would affect its usefulness, whether on a permanent or temporary basis, are also considered effects to publicly accessible open spaces. This chapter also considers the Project's consistency with Federal laws that limit the incorporation of parkland and recreational resources into a transportation project or conversion of parkland to nonpark use — Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966, Section 6(f) of the Land and Water Conservation Fund Act (LWCFA) of 1965 (54 United States Code (USC) Section 200301 et seq.), and Section 1010 of the Urban Park and Recreation Recovery Act (UPARRA) of 1978 (16 USC Section 2501–2514).

7.2 AFFECTED ENVIRONMENT

7.2.1 Inventory of Publicly Accessible Open Space in the Parks Study Area

The parks study area consists of the proposed locations of tolling infrastructure and tolling system equipment and includes parks and recreational resources that are immediately adjacent to or directly across the street from proposed tolling infrastructure and tolling equipment. **Table 7-1** lists and **Figures 7-1a through 7-1g** show the publicly accessible open spaces in the parks study area.

These publicly accessible open spaces include small sitting areas in the median of Broadway, urban parks such as DeWitt Clinton Park, linear parks (e.g., Hudson River Park, East River Park, and the High Line), and the 840-acre Central Park. Most of the listed parks are under the jurisdiction of NYC Parks; some are managed by other public entities, such as the Hudson River Park Trust and New York City Economic Development Corporation. Privately owned public spaces (POPS) are also included in the list. POPS are spaces dedicated to public use and enjoyment, such as landscaped plazas or pocket parks that are owned and maintained by private property owners in exchange for the right to build larger developments.[1]

NYC Parks and other public agencies are engaged in several ongoing and recently completed projects to rebuild existing parks and construct new parks in the parks study area. Some of the most substantial projects that are likely to be completed by the Project's analysis year of 2023 include the following:

- Reconstruction of Honey Locust Park
- East River Esplanade Expansion: East Midtown Greenway and renovation of Andrew Haswell Green Park

1 https://www1.nyc.gov/site/planning/plans/pops/pops.page.

- Reconstruction of St. Vartan Park
- Construction of new park at Pier 42 in the East River (between Gouverneur Slip and Jackson Street)
- Reconstruction of Mannahatta Park
- Reconstruction of Vietnam Veterans Plaza
- Construction of Pier 26 Science Play Area and rehabilitation of Pier 57 in Hudson River Park

In addition to these projects, several parks in the parks study area will be partially reconstructed as part of the East Side Coastal Resiliency Project, a coastal protection initiative on Manhattan's East Side from Montgomery Street to East 25th Street that is aimed at reducing flood risk caused by coastal storms and sea level rise. Parks within the parks study area that are part of the East Side Coastal Resiliency Project include Asser Levy Playground, Stuyvesant Cove Park, Murphy Brothers Playground, Captain Patrick J. Brown Walk, East River Park, and Corlears Hook Park. In addition, Pier 42 is immediately adjacent to the area affected by the East Side Coastal Resiliency Project.

Construction on the East Side Coastal Resiliency Project began in January 2021 and will continue in stages through 2025; work affecting some parks in the parks study area is likely to be complete by the Project's analysis year of 2023, while other parks will remain under construction at that time.

The CBD Tolling Alternative would locate tolling infrastructure and tolling system equipment within Central Park and on the underside of the High Line, and the effects of the Project on these parks is described in **Section 7.3.2**. The following sections provide background information on these parks.

7.2.2 Central Park

Central Park is at the northern boundary of the proposed Project, and tolling infrastructure and tolling system equipment are proposed at three detection locations, four poles in total, inside the park and two locations along its edges. **Section 7.3.2.2** describes the proposed infrastructure and equipment and its effects on the park. A general description of Central Park follows to provide context for that analysis.

Central Park is an 840-acre park bounded by Central Park South (59th Street), Fifth Avenue, Central Park North (110th Street), and Central Park West (Eighth Avenue), and the sidewalks abutting the sides of the park outside the park's walls are also under NYC Parks control. The park is managed by NYC Parks with maintenance support provided by Central Park Conservancy—a private, not-for-profit organization that raises money for the park's operating budget and manages the park under a contract with the City of New York—pursuant to a license agreement.[2] Central Park is the largest NYC Parks property in Manhattan and the fifth largest in New York City.[3] Central Park is open to the public from 6:00 a.m. to 1:00 a.m. daily.

[2] http://www.centralparknyc.org/about/.
[3] https://www.nycgovparks.org/about/faq.

Table 7-1. Publicly Accessible Open Spaces in the Parks Study Area

MAP ID	OPEN SPACE	LOCATION	OWNERSHIP	SIZE (ACRES)	DESCRIPTION
1	Riverside Park South	Riverside Boulevard between West 59th Street and West 72nd Street	NYC Parks	66.7	Waterfront park with landscaping, seating, soccer fields, and court space
2	Waterline Square	West 60th Street between Freedom Place South and Riverside Boulevard	Private (POPS)	2.6	Landscaped park with seating, a playground, and an interactive fountain
3	P.S. 452 playground	210 West 61st Street	DOE	0.6	Paved schoolyard with play equipment
4	The Regent Plaza	45 West 60th Street	Private (POPS)	0.1	Plaza with landscaping and seating areas
5	Broadway Malls	Broadway from West 59th Street to West 168th Street	NYC Parks	5.6	Landscaped medians of Broadway, with benches and pedestrian refuges at crosswalks, subway entrances at Columbus Circle, 72nd, and 96th Streets
6	Trump International Hotel Plaza	1 Central Park West	Private (POPS)	0.4	Plaza with landscaping and seating areas, Columbus Circle subway entrance
7	Columbus Circle	Broadway and Central Park South	NYC Parks	0.8	Circular plaza with landscaping, seating, water feature, and central monument to Christopher Columbus
8	Central Park	Fifth Avenue to Eighth Avenue, 59th Street to 110th Street	NYC Parks	840	Regional park with landscaping, seating, active and passive recreation areas
9	Grand Army Plaza	Fifth Avenue and Central Park South	NYC Parks	0.6	Circular plaza that forms the gateway to Central Park with landscaping, seating, statue, and fountain
10	Savoy Plaza	200 East 61st Street	Private (POPS)	0.1	Plaza with landscaping and seating areas
11	Tramway Plaza	Second Avenue between East 59th Street and East 60th Street	NYC Parks	0.5	Paved area with seating, trees, and landscaping adjacent to the Roosevelt Island Tram (currently closed for renovation)
12	Evansview Plaza	303 East 60th Street	Private (POPS)	0.1	Plaza with landscaping and seating areas
13	Landmark Plaza	300 East 59th Street	Private (POPS)	0.3	Plaza with landscaping and seating areas
14	Honey Locust Park	1130 Second Avenue	NYC Parks	0.3	Paved area with trees beside Ed Koch Queensboro Bridge
15	Bridge Tower Place Plaza	First Avenue and East 60th Street	Private (POPS)	0.2	Plaza with landscaping and seating
16	Bridgemarket Public Plaza	East 59th Street between First and York Avenues	NYCDOT/EDC	0.2	Plaza with landscaping and seating areas; public garden with monument (Evangeline Blashfield Fountain)
17	Queensboro Oval	York Avenue between East 59th and East 60th Streets	NYC Parks	1.2	Indoor tennis facility beneath Ed Koch Queensboro Bridge
18	Twenty-Four Sycamores Park	501 East 60th Street	NYC Parks	0.6	Neighborhood park with landscaping, seating, playground, and court space
19	Andrew Haswell Green Park	FDR Drive and East 60th Street	NYC Parks	2.0	Waterfront park with landscaping, seating, and dog-friendly areas

MAP ID	OPEN SPACE	LOCATION	OWNERSHIP	SIZE (ACRES)	DESCRIPTION
20	Sutton Place Park	East 57th Street and Sutton Place	NYC Parks	0.3	Neighborhood park with landscaping and seating areas
21	Sutton Parks	25 Sutton Place South	NYC Parks	0.9	Neighborhood park with landscaping and seating areas
22	Peter Detmold Park	454 East 51st Street	NYC Parks	0.6	Neighborhood park with landscaping and seating areas, and dog run
23	MacArthur Playground	436 East 49th Street	NYC Parks	0.3	Neighborhood playground
24	Robert Moses Playground	East 42nd Street and First Avenue	NYC Parks	1.1	Neighborhood playground with court space and synthetic turf field
25	East River Esplanade-Midtown Section	East River and East 37th Street	NYC Parks	1.7	Waterfront esplanade with landscaping, seating, active and passive recreation areas (expansion currently under construction)
26	The Corinthian Plaza	330 East 38th Street	Private (POPS)	0.6	Plaza with landscaping and seating areas
27	St. Vartan Park	613 First Avenue	NYC Parks	2.8	Neighborhood park with garden, courts space, synthetic turf field, seating, and playground space
28	Manhattan Place plaza	630 First Avenue	Private (POPS)	0.2	Plaza with landscaping and seating areas
29	American Copper Buildings plaza	626 First Avenue	Private (POPS)	0.5	Plaza with landscaping and seating areas
30	Alexandria Science Center plaza	450 East 29th Street	Private (POPS)	0.8	Plaza with landscaping and seating areas
31	Bellevue Sobriety Garden	East 26th Street and FDR Drive	Private - Bellevue Hospital	0.3	Publicly accessible landscaped garden at Bellevue Hospital
32	Asser Levy Playground	501 East 23rd Street	NYC Parks	2.4	Neighborhood playground with court space, pools, fitness areas, recreation center, and a running track
33	Stuyvesant Cove Park	East River waterfront, from East 18th Street to East 23rd Street	NYC Parks	1.9	Neighborhood park with landscaping, an esplanade, bikeway, paths, seating, and the Solar One community facility
34	Murphy Brothers Playground	292 Avenue C	NYC Parks	1.3	Neighborhood playground with court space and baseball fields
35	Captain Patrick J. Brown Walk	East River waterfront, from East 13th Street to East 18th Street	NYC Parks	1.0	Walkway/bikeway along the East River connecting Stuyvesant Cove Park and John V. Lindsay East River Park, built alongside the FDR Drive
36	John V. Lindsay East River Park	East River waterfront, from Jackson Street to East 13th Street	NYC Parks	45.9	Regional waterfront park with landscaping, seating, active and passive recreation areas, and an amphitheater
37	P.S. 142 playground	100 Attorney Street	DOE	0.6	Paved schoolyard with sports facilities and play equipment

MAP ID	OPEN SPACE	LOCATION	OWNERSHIP	SIZE (ACRES)	DESCRIPTION
38	Luther Gulick Park	21 Columbia Street	NYC Parks	1.5	Neighborhood park with seating, courts, fitness areas, and playground space
39	Corlears Hook Park	397 FDR Drive	NYC Parks	4.4	Neighborhood park with playground, seating, dog run, batting cages, and a baseball field
40	Pier 42	East River waterfront at Jackson Street	NYC Parks/EDC	7.8	Neighborhood park (currently under construction)
41	P.S. 184M playground	327 Cherry Street	DOE	1.1	Paved schoolyard with sports facilities and play equipment
42	East River Esplanade-Lower Manhattan Section	East River waterfront between Broad and Jefferson Streets	NYC Parks	8.8	Waterfront esplanade with landscaping, seating, active and passive recreation areas (some sections currently under construction)
43	Forsyth Plaza	Forsyth Street and Canal Street	NYCDOT	0.1	Plaza with landscaping and seating areas
44	Sophie Irene Loeb Playground	10 Market Street	NYC Parks	0.1	Park with playground space, located under the Manhattan Bridge
45	Coleman Playground	Intersection of Cherry Street, Pike Street, and Monroe Street	NYC Parks	2.6	Neighborhood park with skate park, dog run, playground, field, and court space
46	Murray Bergtraum softball field	Market Slip between Cherry and South Streets	DOE	2.9	Softball field and running track
47	Catherine Slip Malls	Catherine Slip between Cherry and South Streets	NYC Parks	0.3	Plaza with landscaping and seating
48	City Hall Park	Broadway, Chambers Street, Centre Street, and Park Row	NYC Parks	8.8	Landscaped park with pathways and seating
49	Drumgoole Plaza	Frankfort Street and Gold Street	NYC Parks/ NYCDOT	0.4	Plaza with landscaping and seating areas
50	Verizon Building plaza	375 Pearl Street	Private (POPS)	0.1	Plaza with landscaping and seating areas
51	Fishbridge Park Garden and Dog Run	Pearl Street and Dover Street	NYC Parks	0.1	Community garden and dog run
52	Peck Slip Plaza	Peck Slip and FDR Drive	NYC Parks	0.2	Plaza with landscaping and seating
53	Imagination Playground	89 South Street	NYC Parks	0.4	Neighborhood playground
54	Mannahatta Park	Wall Street between Front and South Streets	NYC Parks	0.4	Plaza with landscaping and seating
55	Financial Square plaza	South Street between Old Slip and Gouverneur Lane	Private (POPS)	0.1	Plaza with landscaping and seating areas
56	55 Water Street plaza	55 Water Street	Private (POPS)	0.8	Elevated plaza with landscaping and seating areas

MAP ID	OPEN SPACE	LOCATION	OWNERSHIP	SIZE (ACRES)	DESCRIPTION
57	Vietnam Veterans Plaza	24 South Street	NYC Parks	0.7	Plaza with landscaping and stepped seating
58	125 Broad Street plaza	125 Broad Street	Private (POPS)	0.2	Plaza with landscaping and seating areas
59	Battery Park (also known as "Battery" or "The Battery")	State Street and Battery Place	NYC Parks/ The Battery Conservancy	21.9	Regional waterfront park with landscaping, seating, water features, and playground space
60	17 Battery Place Plaza	17 Battery Place	Private (POPS)	0.3	Plaza with landscaping and seating areas
61	Elizabeth H. Berger Plaza	Edgar Street, Greenwich Street and Trinity Place	NYC Parks	0.1	Plaza with landscaping, seating areas, and subway entrance
62	Battery Park City Parks	Throughout Battery Park City neighborhood	BPCA	28.4	Series of open spaces throughout the Battery Park City neighborhood including a waterfront esplanade, lawns, neighborhood pocket parks and playgrounds, and athletic fields
63	50 West Street plaza	50 West Street	Private (POPS)	0.1	Plaza with landscaping and seating areas
64	Liberty Park	Liberty, West, Cedar, and Greenwich Streets	PANYNJ	1.0	Elevated park with landscaping and seating areas located at the World Trade Center site
65	9/11 Memorial	West, Liberty, Greenwich, and Fulton Streets	PANYNJ	8.0	Memorial space at the World Trade Center site with landscaping, seating areas, and spaces for reflection and contemplation
66	101 Barclay Street plaza	101 Barclay Street	Private (POPS)	0.2	Paved plaza
67	One Eleven Murray plaza	111 Murray Street	Private (POPS)	0.3	Plaza with landscaping and seating areas
68	Washington Market Park	199 Chambers Street	NYC Parks	2.2	Neighborhood park with landscaping, seating, court space, and playground space
69	Salomon Smith Barney plaza	388 Greenwich Street	Private (POPS)	0.7	Plaza with landscaping and seating areas
70	Tribeca Park	8 Beach Street	NYC Parks	0.3	Plaza with landscaping and seating
71	Albert Capsouto Park	68 Varick Street	NYC Parks	0.4	Plaza with landscaping, seating, and sculptural fountain
72	Freeman Plaza	Hudson Street, Broome Street, Varick Street, Watts Street, Holland Tunnel Entrance Ramps	NYCDOT	0.8	Plaza with landscaping and seating
73	Canal Park	Canal Street between West Street and Washington Street	NYC Parks	0.7	Neighborhood park with landscaping and seating
74	Hudson River Park	Areas of waterfront and Hudson River west of West Side Highway/Route 9A from Battery Place to West 59th Street	HRPT	550.0	Regional waterfront park with landscaping, seating, active and passive recreation areas

MAP ID	OPEN SPACE	LOCATION	OWNERSHIP	SIZE (ACRES)	DESCRIPTION
75	14th Street Park	Eleventh and Twelfth Avenues, West 22nd to West 24th Streets	HRPT	0.9	Small park with landscaping, seating, and an open lawn
76	Chelsea Waterside Park	Tenth and Eleventh Avenues, West 14th and West 15th Streets	HRPT	2.5	Neighborhood park with playground, ballfields and basketball courts, a dog run, walking paths, seating areas, and landscaping
77	The High Line	Elevated linear alignment from Gansevoort Street to West 34th Street, roughly paralleling Washington Street, Tenth Avenue, West 30th Street, Twelfth Avenue/ Route 9A, and West 34th Street	NYC Parks and Friends of the High Line	6.7	Elevated former freight rail line with walking paths, landscaping, public art installations, and seating areas
78	500 West 30th Street plaza	500 West 30th Street	Private (POPS)	0.2	Plaza with landscaping and seating areas
79	Hudson Yards Eastern Railyard plaza	Hudson Boulevard between Eleventh Avenue and 33rd Street	Private (Hudson Yards)	4.5	Privately owned, publicly accessible plaza with landscaping, seating areas, and the Vessel climbing sculpture
80	450 West 33rd Street plaza	450 West 33rd Street	Private (POPS)	0.4	Elevated plaza with landscaping and seating areas
81	Manhattan West plaza	Ninth and Dyer Avenues, 31st and 33rd Streets	Private (POPS)	1.4	Privately owned, publicly accessible plaza with landscaping and seating areas
82	DeWitt Clinton Park	Between West Side Highway/Route 9A and Eleventh Avenue from West 52nd Street to West 54th Street	NYC Parks	5.8	Neighborhood park with landscaping, seating, court space, synthetic turf field, and playground space

Notes: HRPT = Hudson River Park Trust.
DOE = New York City Department of Education.
NYCDOT = New York City Department of Transportation.
NYC Parks/DOE = Jointly operated playground.
POPS = Privately owned public space (as designated under the New York City Zoning Resolution).
BPCA = Battery Park City Authority.
PANYNJ = Port Authority of New York and New Jersey.

Figure 7-1a. Parks and Recreational Resources: Local Study Area for CBD Tolling Program Infrastructure

Manhattan CBD (as defined by the MTA Reform and Traffic Mobility Act)

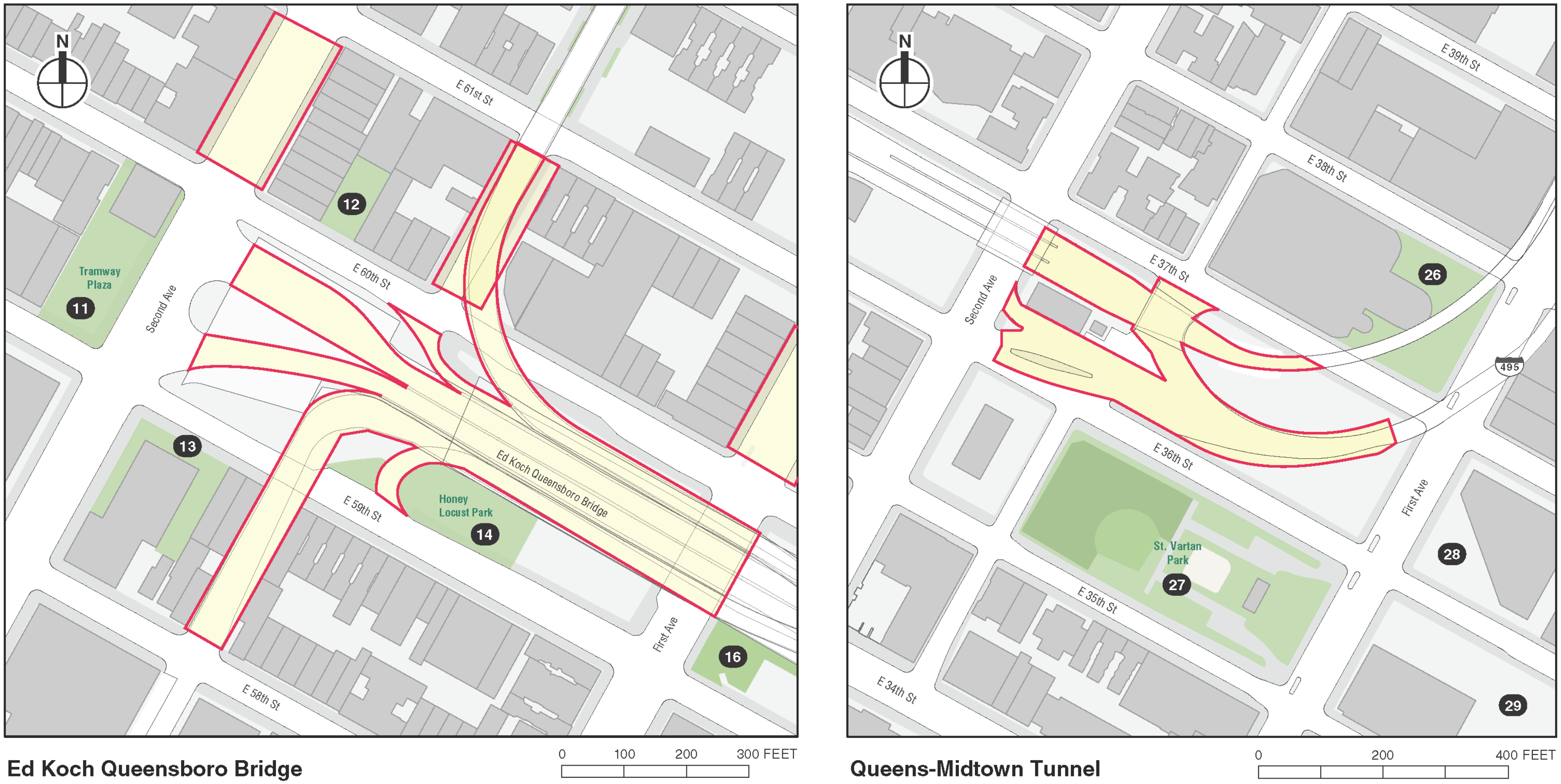
Local Study Area for Tolling Infrastructure and Tolling System Equipment

1 Park or Recreational Resource in Vicinity of Local Study Area (see Table 7-1 for reference)

Detail Inset Map (see Figures 7-1b to 7-1g)

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-1b. Parks and Recreational Resources: Ed Koch Queensboro Bridge and Queens-Midtown Tunnel

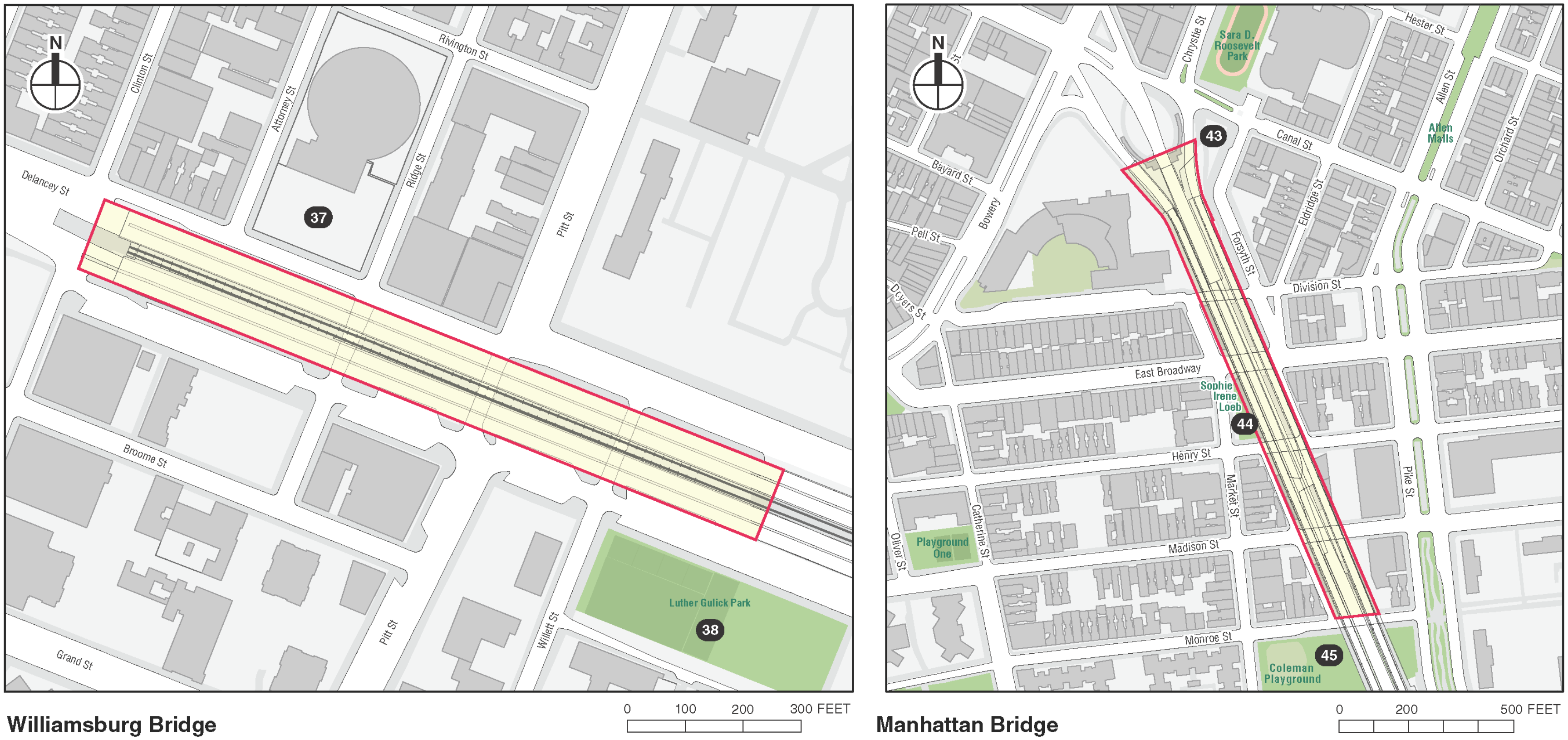


Local Study Area for Tolling Infrastructure and Tolling System Equipment

11 Park or Recreational Resource in Vicinity of Local Study Area (see Table 7-1 for reference)

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-1c. Parks and Recreational Resources: Williamsburg Bridge and Manhattan Bridge

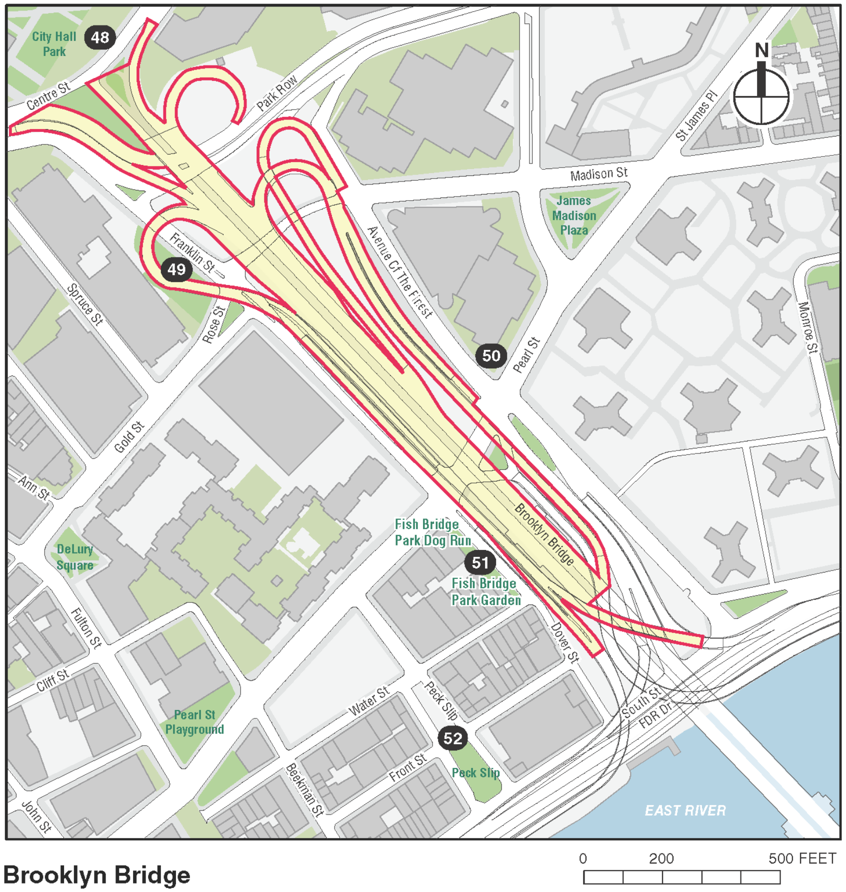


Local Study Area for Tolling Infrastructure and Tolling System Equipment

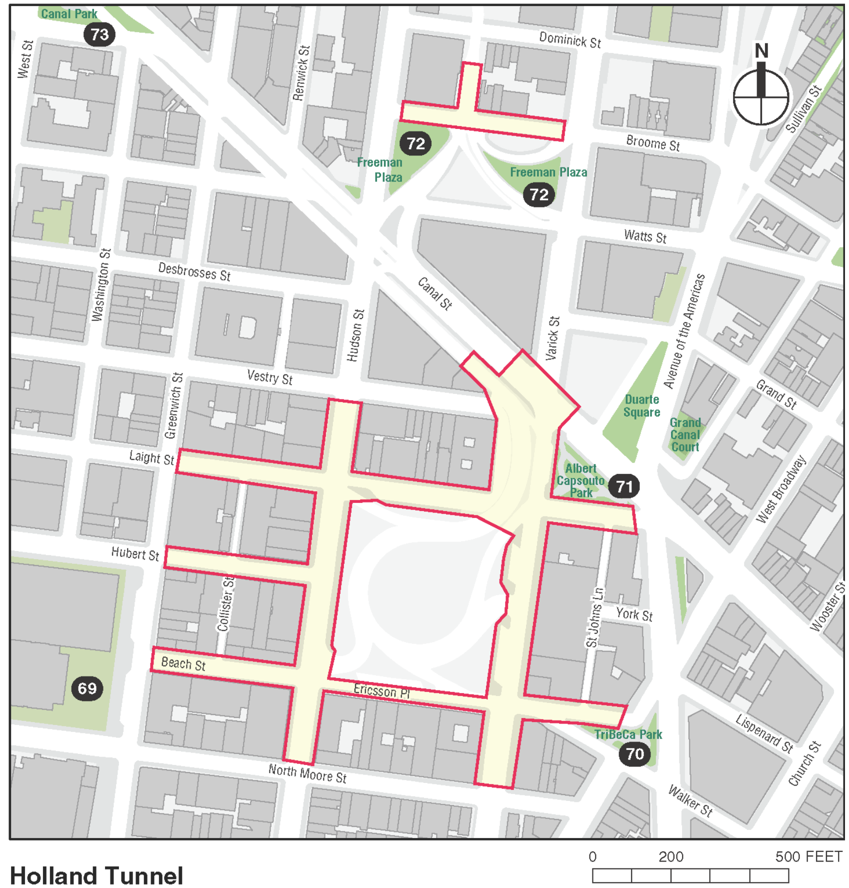
37 *Park or Recreational Resource in Vicinity of Local Study Area (see Table 7-1 for reference)*

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-1d. Parks and Recreational Resources: Brooklyn Bridge and Holland Tunnel



Brooklyn Bridge



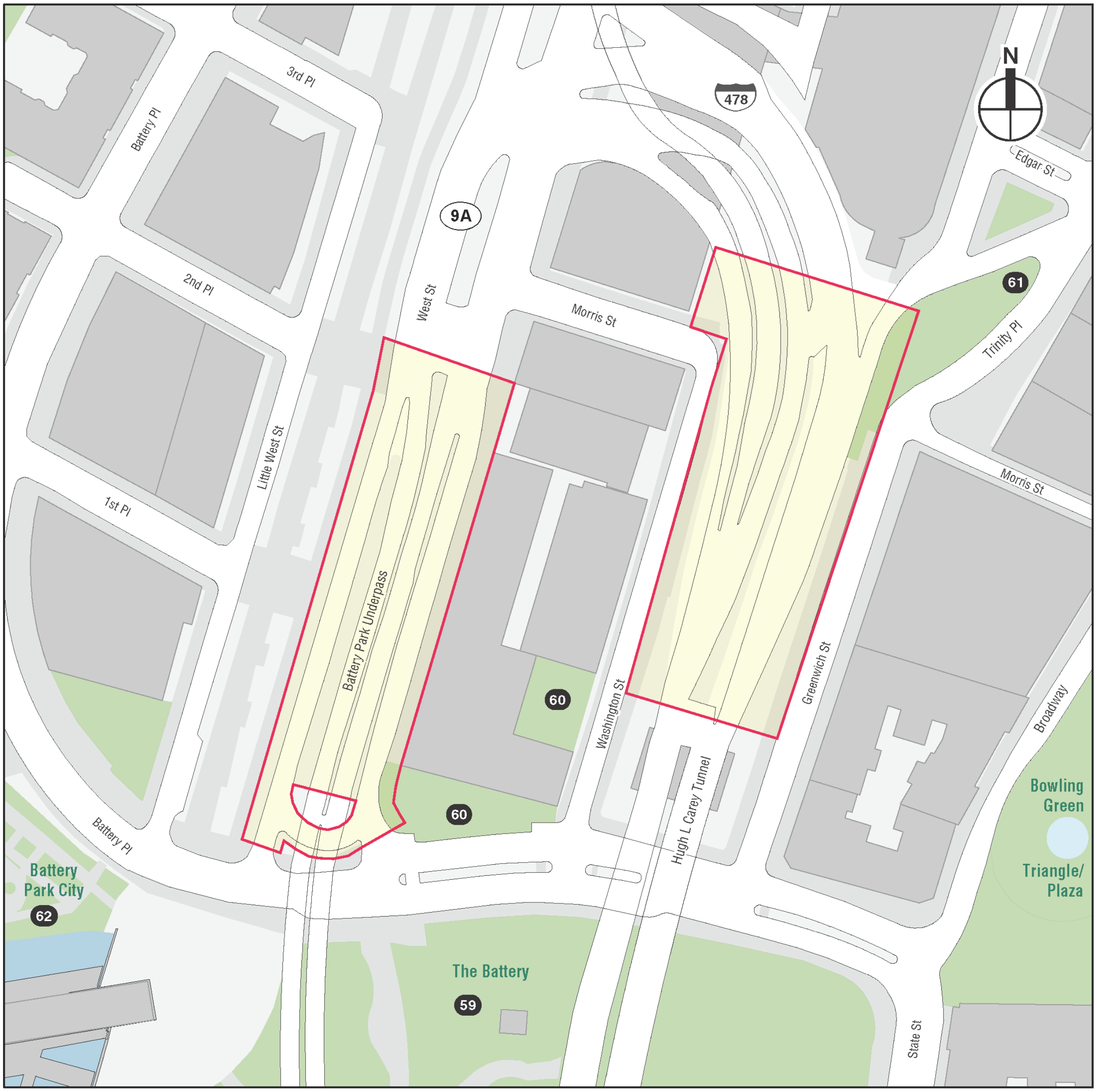
Holland Tunnel

Local Study Area for Tolling Infrastructure and Tolling System Equipment

48 Park or Recreational Resource in Vicinity of Local Study Area (see Table 7-1 for reference)

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-1e. Parks and Recreational Resources: Battery Park Underpass and Hugh L. Carey Tunnel



Battery Park Underpass Hugh L. Carey Tunnel

Local Study Area for Tolling Infrastructure and Tolling System Equipment

59 *Park or Recreational Resource in Vicinity of Local Study Area (see Table 7-1 for reference)*

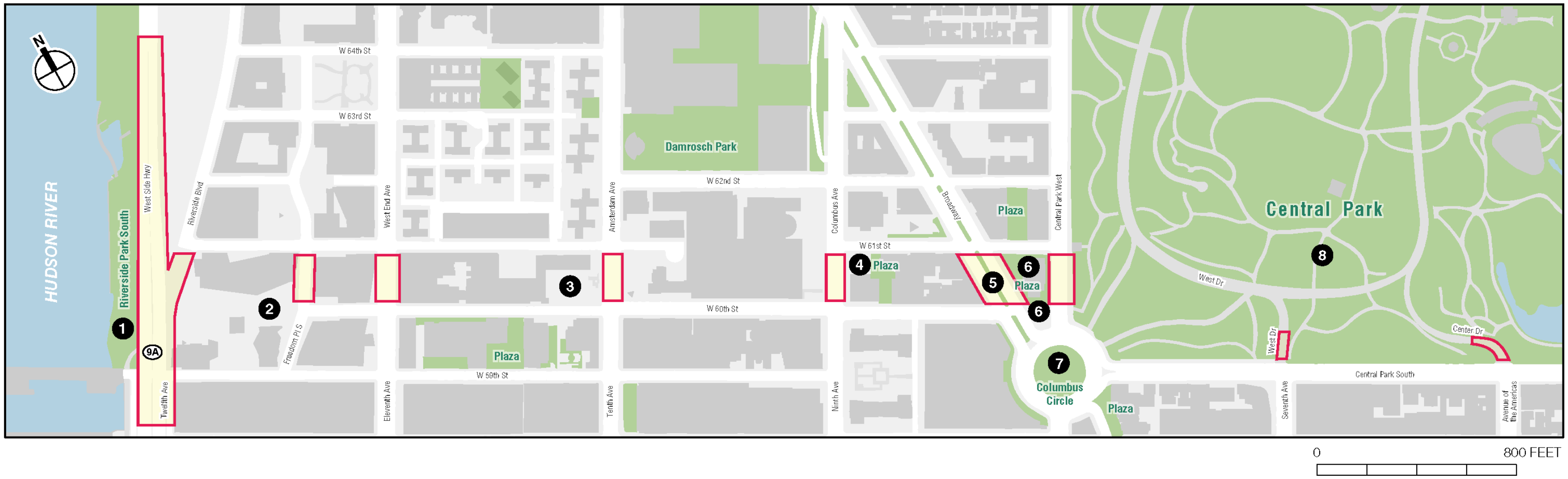
Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-1f. Parks and Recreational Resources: Lincoln Tunnel

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-1g. Parks and Recreational Resources: 60th Street

60th Street - Western Portion



60th Street - Eastern Portion

Local Study Area for Tolling Infrastructure and Tolling System Equipment

Park or Recreational Resource in Vicinity of Local Study Area (see Table 7-1 for reference)

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

The park has a Park Drive that forms a loop through the park and has connecting roads that lead to access points to and from the streets bordering the park (see **Figure 7-2** for the Central Park Conservancy's map of the park).[4] In 2018, NYC Parks closed Park Drive to vehicular traffic at all times except for park deliveries or other drivers with permitted business in the park (e.g., emergency response vehicles, park maintenance, park administration, vendors, and contractors). Park Drive and connecting roadways are heavily used by pedestrians (walking and jogging) and bicyclists as well as horse-drawn sightseeing carriages. Authorized vehicles (e.g., deliveries, maintenance, operations, concessionaires, horse carriages) can enter and exit the park through its vehicular entrances, including those on Central Park South (59th Street). Within the park, separate lanes of Park Drive are designated for each activity. The Central Park Conservancy's *Central Park Access Map* indicates the following:

> Originally designed for carriage rides through the 19th-century Park, the Drive today is a recreation loop shared by cyclists, joggers, and pedestrians. The inner lane is designated for pedestrians and joggers traveling in either direction. The center lane is for cyclists and pedi-cabs, and the outer lane for authorized vehicles and horse carriages; all wheeled traffic is one-way, counterclockwise on the loop.[5]

The park also has a separate network of walking paths, including sidewalks alongside Park Drive.

Central Park is listed in the National Register of Historic Places and is a National Historic Landmark. It is also designated by the City of New York as a New York City Scenic Landmark. **Chapter 8, "Historic and Cultural Resources,"** provides more information on the historic designation for Central Park.

7.2.3 High Line

The Project Sponsors would locate tolling infrastructure and tolling system equipment adjacent to and on the underside of the structure of the High Line. A former freight rail viaduct, the High Line has been converted to a linear park, which is located on top of the structure. The High Line is a 1.45-mile-long greenway and rail trail created on a former New York Central Railroad spur along the west side of Manhattan. The High Line begins at Gansevoort Street and ends near 34th Street. It parallels Washington Street from Gansevoort Street to 14th Street, Tenth Avenue from 14th Street to 30th Street, 30th Street from Tenth Avenue to the West Side Highway/Route 9A, and the West Side Highway/Route 9A from 30th Street to 34th Street. The park opened in three phases between 2009 and 2014. The park's attractions include naturalized plantings inspired by plants that grew on the disused tracks and views of the city and the Hudson River. It includes a continuous walkway, benches, and viewing areas. The High Line also offers cultural attractions and art installations. The City of New York owns the High Line, but it is programmed, maintained, and operated by Friends of the High Line, in partnership with NYC Parks, through a license agreement between the City of New York and the Friends of the High Line.

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4 Central Park also has four sunken east-west "transverse" roads that provide grade-separated vehicular access across the park at 65th/66th Streets, 79th/81st Streets, 85th/86th Streets, and 96th/97th Streets. These do not intersect with Park Drive and do not serve a recreational purpose.

5 Central Park Conservancy. 2018. *Central Park Access Map*. https://assets.centralparknyc.org/pdfs/maps/Central_Park_Access_Map.pdf.

Figure 7-2. Central Park Map

Central Park Map

Hours

Central Park opens at 6:00 am and closes at 1:00 am, 365 days a year.

Visitor Centers and Facilities

Start your trip at a visitor center. Look for this icon on the map.

Charles A. Dana Discovery Center
110th Street between Fifth and Lenox Avenues

Belvedere Castle
Mid-Park at 79th Street

Dairy Visitor Center & Gift Shop
Mid-Park at 65th Street

Chess & Checkers House
Mid-Park at 64th Street

Columbus Circle Information Kiosk
Central Park West at 59th Street

Points of Interest

W	**WEST**
W 103	**The Ravine / The Loch**
W 101	**The Pool**
W 79	**Shakespeare Garden**
W 79	**Belvedere Castle**
W 74	**Bow Bridge**
W 72	**Strawberry Fields / Imagine Mosaic**
W 72	**Cherry Hill**
E	**EAST**
E 107	**Harlem Meer**
E 105	**Conservatory Garden** Open year-round, 8:00 am to dusk.
E 90	**Reservoir** From 86th to 96th Street
E 81	**Obelisk (Cleopatra's Needle)**
E 75	**Alice in Wonderland**
E 74	**Conservatory Water**
E 72	**Bethesda Terrace / Bethesda Fountain**
E 68	**The Mall (Literary Walk)** From 66th to 72nd Street
E 67	**Balto**
E 62	**Gapstow Bridge**

Map Key

- Visitor Center
- Playground
- Information Kiosk
- Food / Closed in Winter
- Restroom / Closed in Winter
- Wheelchair Accessible
- Park Drive (shared by pedestrians, bicyclists, and authorized vehicles)
- Transverse Road (vehicles only)
- Pedestrian Path (pedestrians only)
- Bridle Path (no bicyclists)
- Emergency Call Box or Dial 911

Source: Central Park Conservancy

0 1000 2000 FEET

7.3 ENVIRONMENTAL CONSEQUENCES

7.3.1 No Action Alternative

The No Action Alternative would not result in a vehicular tolling program and would not involve installation of tolling infrastructure and tolling system equipment. The No Action Alternative would not result in physical changes to or changes in the use of or demand for any parks and recreational resources. Therefore, the No Action Alternative would not result in any effects on publicly accessible open space from the CBD Tolling Program.

7.3.2 CBD Tolling Alternative

This section describes the potential effects of implementation of the CBD Tolling Alternative on publicly accessible open spaces. **Section 7.3.2.1** describes the potential effects of the CBD Tolling Alternative on publicly accessible open spaces and other NYC Parks assets in general. **Section 7.3.2.2** describes the potential effects of the CBD Tolling Alternative on Central Park, and **Section 7.3.2.3** describes the effects of the CBD Tolling Alternative on the High Line. **Sections 7.3.2.4 through 7.3.2.6** describe the Project's compliance with Federal programs and regulations for the protection of publicly accessible recreational space. **Chapter 15, "Construction Effects,"** provides a discussion of the construction-period effects on parks and recreational resources, including Central Park.

7.3.2.1 Overview of Potential Effects on Parks in the Manhattan CBD

<u>Tolling Infrastructure and Equipment</u>

The CBD Tolling Alternative would place new tolling system equipment, including signage, on existing infrastructure or place new tolling system equipment on new infrastructure comparable in form to existing streetlight poles, sign poles, or overhead structures on city streets and sidewalks. **Chapter 2, "Project Alternatives,"** provides more information on the proposed tolling infrastructure and tolling system equipment and **Figure 3-3a through Figure 3-3j** in **Chapter 3, "Environmental Analysis Framework,"** show the proposed locations of the tolling infrastructure and tolling system equipment.

As noted above and discussed in **Section 7.3.2.2 and Section 7.3.2.3**, the CBD Tolling Alternative would place tolling infrastructure and tolling system equipment within Central Park and on the structure of the High Line. In other locations, proposed tolling infrastructure and tolling system equipment would be adjacent to or directly across the street from publicly accessible open space in the parks study area. These types of infrastructure are already adjacent to, and sometimes within, publicly accessible open spaces throughout New York City. Tolling infrastructure and tolling system equipment on city streets and sidewalks would not limit access to any publicly accessible open space, would not reduce the size or programming of any publicly accessible open space, and would not result in any conditions—such as increased noise, air pollutant emissions, odors, or substantial new or increases in existing shadows—that would adversely affect the usefulness of any publicly accessible open space.[6]

In the parks study area, trees on city sidewalks and New York City public parks and recreation areas are regulated by NYC Parks. TBTA will mitigate any potential adverse effects to trees from the CBD Tolling Alternative in consultation with NYC Parks and will undertake tree protection measures consistent with the requirements of NYC Parks. A tree work permit will be required should construction, including utility, sidewalk, or pruning work, take place within 50 feet of a tree regulated by NYC Parks.[7] If trees are removed as a result of the CBD Tolling Alternative or damaged during construction, tree replacement or restitution will be provided. TBTA will follow NYC Parks' specifications for all replacement trees.

7.3.2.2 Potential Effects on Central Park

The CBD Tolling Alternative would place tolling infrastructure and tolling system equipment within Central Park. Side-fire[8] tolling system equipment is proposed at three detection locations, four poles in total, just inside Central Park near 59th Street (see **Chapter 2, "Project Alternatives"**). The equipment would prevent authorized private vehicles that are using the park roads from entering the Manhattan CBD without paying the CBD toll. Equipment mounted on mast arms is also proposed at two locations along the east and west borders of the park to detect vehicles on Central Park West and Fifth Avenue. The tolling infrastructure and tolling system equipment proposed within the jurisdictional boundaries of Central Park and adjacent sidewalks under NYC Parks control is described below:

- **On the roadways in the park that connect Park Drive to Seventh Avenue, Sixth Avenue, and Grand Army Plaza/Fifth Avenue:** On the park roads connecting to Seventh Avenue and Sixth Avenue (West Drive and Center Drive, respectively), the CBD Tolling Alternative would replace one existing streetlight pole—inside the park close to Central Park South/59th Street—on each road with a new streetlight pole with a side-fire-mounted detector and a small equipment box. **Figures 7-3a through 7-3d** show the locations of these poles, and **Figure 7-4a through 7-4c** compare views of these locations between the No Action and CBD Tolling Alternative. On the park road connecting to Grand Army Plaza (East Drive), the CBD Tolling Alternative would replace two existing streetlight poles—inside the park close to Central Park South/59th Street—with new poles with side-fire-mounted detectors and a small equipment box. These replacement streetlight poles would be in the same location and would have the same appearance as existing streetlight poles. The tolling system equipment mounted on them would use matching color schemes to blend with the appearance of the poles.

In addition, the CBD Tolling Alternative would place new signs on the replacement streetlight poles in Central Park to warn authorized drivers using the park roadway system that exiting to Central Park

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6 Refer to **Chapter 10, "Air Quality," Chapter 12, "Noise,"** and **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials,"** for more information. An analysis of the potential effects of shadows from tolling infrastructure and tolling system equipment on publicly accessible open space was not warranted because the CBD Tolling Alternative would not result in new structures that would be taller than 50 feet, and therefore would not result in notable incremental shadows on any publicly accessible open space.

7 NYC Parks: https://www.nycgovparks.org/trees/street-tree-planting/best-practices.

8 In certain locations, tolling system equipment would be mounted on a standard M2-A pole without a mast arm, referred to as a "side fire."

South/59th Street via West Drive (at Seventh Avenue) or East Drive (at Grand Army Plaza) would incur a toll. Signs would be attached to the replacement pole on West Drive and to one of the poles on East Drive. The new signs would be on the replacement streetlight poles adjacent to the road, similar to other existing signs in the park, and would not affect any recreational area. The photographs in **Figures 7-3a through 7-3d** show existing views where signs are proposed on West Drive and East Drive, as well as the locations where tolling infrastructure and tolling system equipment are proposed.

- **On Fifth Avenue:** On the sidewalk on the west side of Fifth Avenue (i.e., the sidewalk along Central Park), an existing streetlight pole would be replaced with a new pole at the same location. The new pole would contain a side-fire unit and a small equipment box. On the east side of Fifth Avenue, a new pole with a mast arm extending over Fifth Avenue would be installed. The streetlight pole would be similar in form to a standard NYCDOT streetlight pole. **Figure 7-5** shows a rendering of the proposed poles.
- **On Central Park West:** On the east sidewalk of Central Park West (i.e., the sidewalk along Central Park), a new pole with a 50-foot mast arm extending over the Central Park West roadway would be installed. The mast arm would have tolling system equipment mounted on it. **Figure 7-6** illustrates this proposed new tolling infrastructure and tolling system equipment.

Equipment that is similar in appearance is already mounted on other poles in Central Park, and the tolling infrastructure and tolling system equipment would be visually consistent with the existing streetlight poles found throughout Central Park, including matching the existing color scheme. Because the tolling system equipment would be mounted on replacement poles in the same locations as existing poles, the amount of park space would not be reduced. Therefore, there would be no adverse effect on recreational uses of Central Park from the proposed tolling infrastructure and tolling system equipment.

The Project Sponsors met with NYC Parks on multiple occasions to review project plans. NYC Parks was invited to review a preliminary draft of this EA. NYC Parks has also participated as a Consulting Party for the Project's review under Section 106 of the National Historic Preservation Act (see **Chapter 8, "Historic and Cultural Resources"**). The Project Sponsors will also coordinate with NYC Parks and the Central Park Conservancy in the final design of the tolling infrastructure and tolling system equipment in Central Park.

The CBD Tolling Alternative would result in changes in traffic patterns within and around the Manhattan CBD. As described in **Subchapter 4B, "Transportation: Highways and Local Intersections,"** based on the results of the traffic modeling conducted for the Project, the CBD Tolling Alternative under all tolling scenarios analyzed in this Environmental Assessment would reduce the traffic volumes adjacent to Central Park on Fifth Avenue and Central Park West as well as the traffic volumes crossing the park using the park's sunken transverse roads.[9] Therefore, changes in traffic resulting from the CBD Tolling Alternative would not adversely affect the character of Central Park.

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9 See **Chapter 2, "Project Alternatives,"** for more information on the tolling scenarios evaluated in this EA.

Figure 7-3a. Key to Central Park Photographs (Figures 7-3 through 7-6)

Local Study Area for Tolling Infrastructure and Tolling System Equipment

Park or Recreational Resource

Photograph View Direction and Reference Number (see Figures 7-3 through 7-6)

General Location Proposed for Tolling System Equipment and New Sign

General Location Proposed for Tolling System Equipment without New Sign

Source: Department of Information Technology & Telecommunications. NYC Open Data, NYC Planimetrics. https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d.

Figure 7-3b. Photographs: Central Park East Drive near Grand Army Plaza

East Drive near Grand Army Plaza: **1**
View south; light poles on west side of park roadway

East Drive near Grand Army Plaza: **2**
View south; light poles on east and west sides of park roadway

Figure 7-3c. Photographs: Central Park Center Drive near Sixth Avenue

Center Drive near Sixth Avenue: **3**
View southeast; light poles on northeast side of park roadway

Center Drive near Sixth Avenue: **4**
View northwest; light poles on northeast side of park roadway

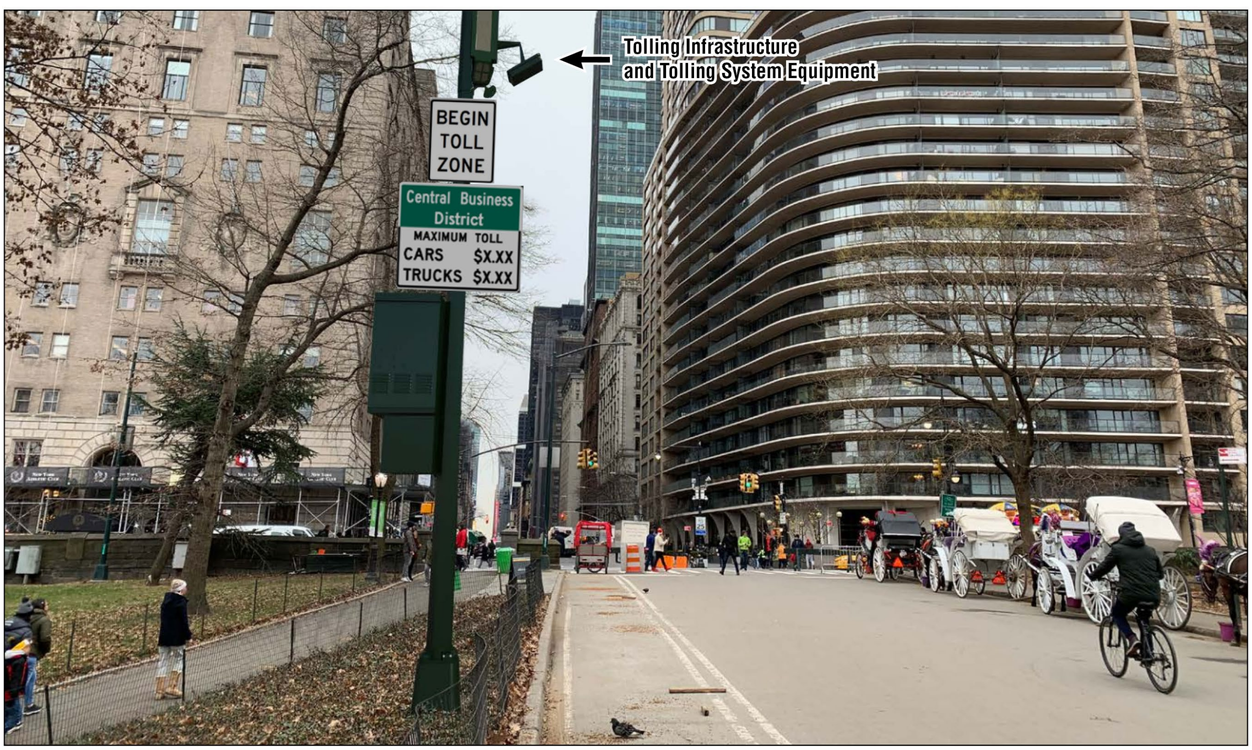
Figure 7-3d. Photographs: Central Park West Drive near Seventh Avenue

West Drive near Seventh Avenue: **5**
View northwest; light poles on east side of park roadway

West Drive near Seventh Avenue: **6**
View south; light poles on east side of park roadway

Figure 7-4a. Comparison of No Action Alternative versus CBD Tolling Alternative, Central Park West Drive near Seventh Avenue

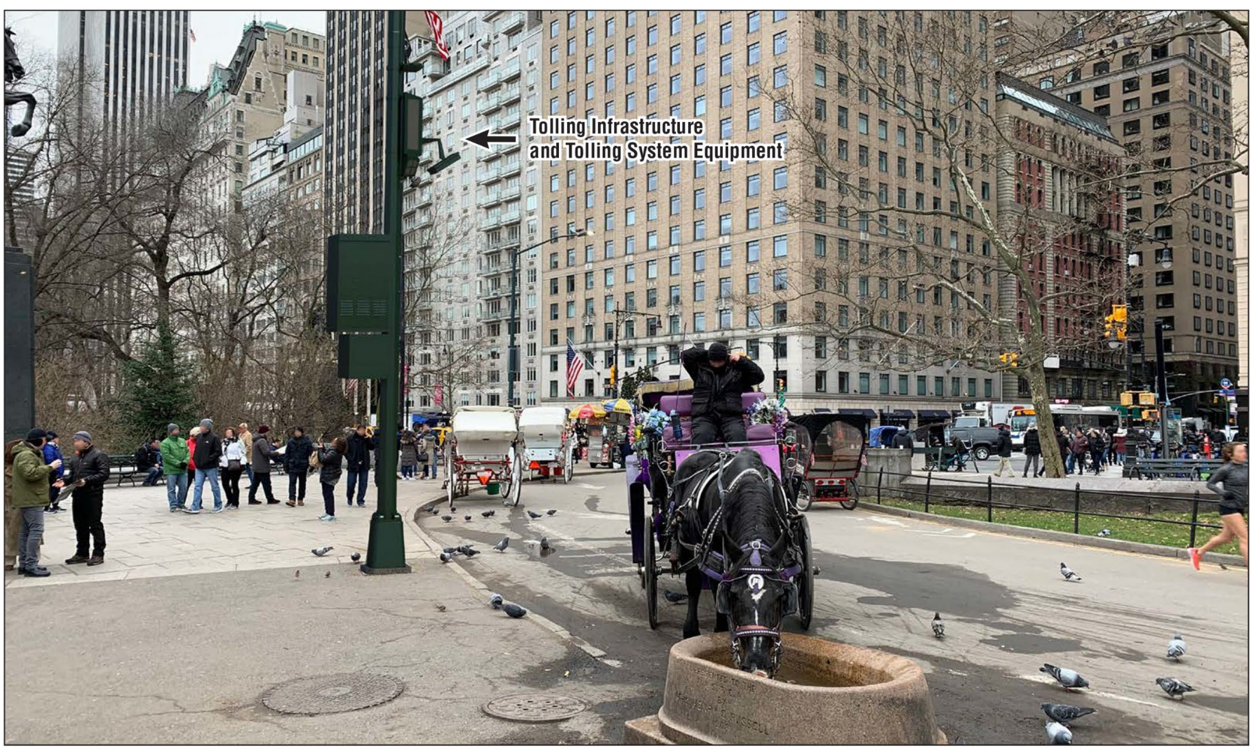
No Action Alternative, view south



CBD Tolling Alternative, view south

Figure 7-4b. Comparison of No Action Alternative versus CBD Tolling Alternative, Central Park Center Drive near Sixth Avenue

No Action Alternative, view southeast



CBD Tolling Alternative, view southeast

Figure 7-4c. Comparison of No Action Alternative versus CBD Tolling Alternative, Central Park East Drive near Grand Army Plaza

No Action Alternative, view northeast

CBD Tolling Alternative, view northeast

Figure 7-5. Comparison Views of No Action Alternative versus CBD Tolling Alternative, Fifth Avenue at East 60th Street

No Action Alternative, view south

CBD Tolling Alternative, view south

Figure 7-6. Comparison Views of No Action Alternative versus CBD Tolling Alternative, Central Park West at West 60th Street

No Action Alternative, view north

CBD Tolling Alternative, view north

7.3.2.3 Potential Effects on the High Line

Proposed tolling infrastructure and tolling system equipment would be placed on a replacement pole adjacent to the High Line at the intersection of Tenth Avenue and West 30th Street. Tolling system equipment would also be attached to a metal pipe that would be bolted to the existing girders on the underside of the High Line (**Figure 7-7**). The CBD Tolling Alternative would add tolling infrastructure and tolling system equipment of minimal visibility to the High Line structure that is consistent with the type of infrastructure already mounted on the structure including signage, traffic lights, and pedestrian crossing signals. No tolling infrastructure or tolling system equipment would be located atop the High Line within the publicly accessible parkland, and therefore, there would be no adverse effect on recreational uses of the High Line from the proposed tolling infrastructure and tolling system equipment.

7.3.2.4 Effects on Parks Protected by Section 4(f) of the U.S. Department of Transportation Act

Section 4(f) of the USDOT Act of 1966 (49 USC Section 303 and 23 USC Section 138) applies to the use of publicly owned parks and recreation areas.

FHWA has evaluated the potential use of parkland for this Project in accordance with Section 4(f). Implementation of the CBD Tolling Alternative would require the placement of tolling infrastructure and tolling system equipment within the jurisdictional boundaries of Central Park and adjacent sidewalks under NYC Parks control as well as on the underside of the High Line structure. FHWA, in consultation with NYC Parks, intends on finding that the CBD Tolling Alternative would result in a *de minimis* impact on the High Line and Central Park. (Refer to **Chapter 19, "Section 4(f) Evaluation".)**

7.3.2.5 Effects on Parks that Have Received Section 6(f) Funding

Five parks within the parks study area have received LWCFA funding and are therefore Section 6(f) resources: The Battery, Coleman Playground, East River Park, Broadway Malls, and Central Park.[10] The New York State Office of Parks, Recreation and Historic Preservation and National Park Service must review any proposed conversions and temporary non-conforming uses of Section 6(f) resources in New York State.

The proposed tolling infrastructure and tolling system equipment near the parks that received LWCFA funding would be as follows:

- **The Battery:** No Project infrastructure or equipment is proposed within or adjacent to the park.
- **Coleman Playground:** No Project infrastructure or equipment is proposed within or adjacent to the park.
- **East River Park:** As part of the CBD Tolling Alternative, new tolling system equipment would be mounted on an existing pedestrian bridge above the FDR Drive at 25th Street, adjacent to this park. The presence of this new equipment would not affect any land within the park boundaries.

[10] National Park Service. June 2019.

Figure 7-7. Comparison Views of No Action Alternative and CBD Tolling Alternative: High Line at Tenth Avenue and West 30th Street

No Action Alternative, view north on Tenth Avenue

CBD Tolling Alternative, view north on Tenth Avenue

- **Broadway Malls:** Based on preliminary design, the CBD Tolling Alternative would include new or replacement poles with mast arms on Broadway between West 60th and West 61st Streets. Based on preliminary design, these poles would be on the sidewalks on the east and west sides of Broadway and not within the median, where the Section 6(f) resource (recreational land) is located.
- **Central Park:** As discussed in **Section 7.3.2.2**, the CBD Tolling Alternative would place tolling infrastructure and tolling system equipment at five locations just inside or adjacent to Central Park near Central Park South (59th Street). In all five locations, there would be no conversion of outdoor recreational space. To provide utility and communications connections to the new poles in Central Park, trenches would be dug from each pole to the nearest utility detection, and conduits would be laid in the trenches. Once the new connections are installed, the trenches would be covered and returned to their original condition. The amount of time required to construct these Project elements would be approximately two weeks at each location, and if additional time is needed, such as for regrowth of vegetation if any unpaved areas are affected for utility work, the total time from disturbance through restoration back to existing conditions would nonetheless be less than the six months set forth in the LWCFA guidance.

The New York State Office of Parks, Recreation, and Historic Preservation found that the CBD Tolling Alternative would not adversely affect LWCF protected lands within Central Park because (1) the pole-mounted equipment would not remove any part of the LWCF recreation area from outdoor recreation use or impede recreational activities; (2) the construction activities for the trenching and laying of conduits are permissible under LWCF so long as the work is completed within six months and the lands impacted are returned to original surface condition; and (3) the Project would collect tolls from vehicles exiting the park and entering the tolling district that lies south of Central Park, and tolls would not be collected from vehicles entering Central Park from the tolling district and would not impede access by the public to the outdoor recreation facilities offered within the LWCF protected area (see **Appendix 7, "Parks and Recreational Resources: Documentation Related to Section 6(f) of the Land and Water Conservation Fund Act"**).

7.3.2.6 Effects on Parks that Have Received Section 1010 Funding

Central Park, which is partially within the parks study area, has received UPARRA assistance, but the CBD Tolling Alternative would not convert any park space from recreational use to another use (see discussion in **Section 7.3.2.5**); therefore, no coordination related to UPARRA Section 1010 is required.

7.4 CONCLUSION

Except for Central Park, the CBD Tolling Alternative would not place tolling infrastructure or tolling system equipment within mapped parkland. Tolling infrastructure and tolling system equipment would be within the street, sidewalk, underside, or immediately adjacent areas of the parks and would not impair the use of or access to these parks. Except for Central Park, there would be no tolling infrastructure or tolling system equipment within parkland, and no tolling infrastructure or tolling system equipment would be located atop the High Line within the publicly accessible parkland.

The CBD Tolling Alternative involves the installation of four replacement poles within the southernmost portion of Central Park near 59th Street. It also includes a pole on Central Park West with a mast arm and a pole and sign on Fifth Avenue adjacent to the park. Equipment that is similar in appearance is already mounted on other poles in Central Park, and the tolling infrastructure and tolling system equipment would be visually consistent with the existing streetlight poles found throughout Central Park, including matching the existing color scheme. Because the tolling system equipment would be mounted on replacement poles in the same locations as existing poles, the amount of park space would not be reduced. Therefore, there would be no adverse effect on recreational uses of Central Park from the proposed tolling infrastructure and tolling system equipment. The Project Sponsors will coordinate with NYC Parks and the Central Park Conservancy in the final design of the tolling infrastructure and tolling system equipment in and adjacent to Central Park.

In the parks study area, trees on city sidewalks and New York City public parks and recreation areas are regulated by NYC Parks. TBTA will mitigate any adverse effects to trees from the implementation of the CBD Tolling Alternative in consultation with NYC Parks and will undertake tree protection measures consistent with the requirements of NYC Parks. If trees are removed for the CBD Tolling Alternative or damaged during construction, tree replacement or restitution will be provided. TBTA will follow NYC Parks' specifications for all replacement trees.

As summarized in **Table 7-2**, the CBD Tolling Alternative would not result in adverse effects on parks and recreational resources in the local study area.

Table 7-2. Summary of Effects of the CBD Tolling Alternative on Parks and Recreational Resources

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
New tolling infrastructure, tolling system equipment, and signage in the southern portion of Central Park	The Project would replace four existing streetlight poles at three detection locations in Central Park near 59th Street and on two adjacent sidewalks outside the park's wall. These poles would be in the same locations as existing poles and would not reduce the amount of park space or affect the features and activities of the park. The Project would also place tolling infrastructure beneath the structure of the High Line, outside the park area atop the High Line structure. FHWA through the public involvement process is soliciting public input related to the Project's effects on these parks (see **Chapter 19, "Section 4(f) Evaluation**."	No	▪ Make tolling infrastructure and tolling system equipment in and near Central Park visually consistent with streetlight poles that they replace, including the color scheme. ▪ Coordinate with NYC Parks and Central Park Conservancy in the final design of the tolling infrastructure and tolling system equipment in Central Park ▪ Avoid adverse effects to street trees; if needed, undertake tree protection measures consistent with the requirements of NYC Parks.

8. Historic and Cultural Resources

8.1 INTRODUCTION

As a project requiring FHWA approval, the CBD Tolling Program is an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations, 36 CFR Part 800. This chapter documents the steps taken to comply with Section 106 review and consultation and summarizes the assessment of effects on historic properties, as identified through the Section 106 process and contained in the Section 106 Finding Documentation prepared for the Project (see **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"**).

In addition, because the Project is subject to review by FHWA, it must also comply with Section 4(f) of the U.S. Department of Transportation Act of 1966. Section 4(f) stipulates that FHWA may not approve the use of Section 4(f) properties unless they have determined that certain conditions apply. **Chapter 19, "Section 4(f) Evaluation,"** of this Environmental Assessment provides an evaluation of the Project's consistency with the requirements of Section 4(f) regarding historic sites.

8.2 SECTION 106 PROCESS

The Section 106 process includes the following steps:

- Initiation with State Historic Preservation Office (SHPO), Federally recognized Native American tribes, and other Consulting Parties
- Definition of the Area of Potential Effect (APE) for the build alternatives
- Identification of historic properties in the APE
- Evaluation of effects on historic properties in the APE
- Consideration of measures to avoid, minimize, or mitigate adverse effects if present
- Documentation of assessment of effects on historic properties
- Consultation to avoid, minimize, or mitigate adverse effects, if present, with agreed upon measures typically stipulated in a memorandum of agreement

8.3 IDENTIFICATION OF HISTORIC PROPERTIES

Identification of historic properties was conducted in accordance with the requirements of 36 CFR Part 800 for implementing Section 106 of the NHPA and in consultation with the SHPO. As noted above, historic properties include any district, site, building, structure, or object listed in or eligible for listing in the National Register of Historic Places (NRHP) (36 CFR Section 800.16(l1)). Although Section 106 applies to NRHP-listed or eligible properties, properties designated New York City landmarks have been included. All but two of the identified New York City landmarks also have NRHP designations.

As part of Section 106 consultation, a Cultural Resources Screening Report prepared in October 2021 was provided to the SHPO and to the four Federally recognized Native American tribes participating in the Section 106 process. The screening identified known historic properties and assessed archaeological sensitivity and prior disturbance within a study area that included areas immediately surrounding the proposed detection points and signage locations. Based on the scope of work and the results of the screening, the report recommends that no survey for architectural resources was warranted and concludes that extensive prior disturbance has reduced the archaeological potential such that the presence of intact archaeological deposits is highly unlikely within the very limited areas of ground disturbance proposed by the Project. Thus, no archaeological survey was recommended. In correspondence dated November 22, 2021, the SHPO identified two additional historic properties and concurred with the recommendations that no further architectural and archaeological surveys are warranted (see correspondence in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"**).

The APE for an undertaking as defined by 36 CFR Section 800.16(d) represents:

> [T]he geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties [i.e., NRHP-eligible resources] if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.[1]

The October 2021 screening described a proposed APE. In accordance with 36 CFR Section 800.4(a)(1), an APE was defined for the Project based on proposed work activities associated with the CBD Tolling Alternative and the potential to affect historic properties, including potential direct and indirect effects caused by the construction and operation of the Project. The APE for the Project was based on a proposed scope of work that includes the following items:

- Installation of new poles with tolling infrastructure and tolling system equipment on city streets and other at-grade roadways, including poles in new locations and replacement poles in the same locations
- Mounting of new poles and tolling infrastructure and tolling system equipment directly on bridge and tunnel structures

In correspondence dated November 22, 2021, the SHPO concurred with the APE.

The APE for the Project consists of noncontiguous areas representing the areas of potential direct and indirect effects associated with the installation of new tolling infrastructure and tolling system equipment and is mapped in **Figure 8-1** and described and mapped in greater detail in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation."**

Information on resources listed in or determined eligible for listing in the NRHP was collected from the New York State Office of Parks, Recreation and Historic Preservation's Cultural Resource Information System (CRIS). The NPS's list of NHLs was reviewed, and properties that New York City Landmarks Preservation

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1 National Historic Preservation Act of 1966, as amended 2004 (54 United States Code Section 300108, 2015).

Commission (LPC) has designated (or considered eligible for such designation) as individual New York City Landmarks and Scenic Landmarks (NYCLs) or New York City Historic Districts (NYCHDs) were identified. A review of the CRIS identified 45 historic properties within the APE. The properties consist of architectural resources, including buildings, structures, and districts.

8.4 ASSESSMENT OF EFFECTS

8.4.1 No Action Alternative

The No Action Alternative would not result in a vehicular tolling program; therefore, it would not involve the installation of tolling infrastructure and tolling system equipment. The No Action Alternative would not result in any physical changes in the APE and therefore would not result in any direct or indirect effects to historic properties.

8.4.2 CBD Tolling Alternative

The Project's effects on historic properties were assessed as part of the Section 106 Finding Documentation (see **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"**). **Table 8-1** provides a description of the historic architectural properties in the APE and a summary of the Project's changes on or near the properties.

Within the APE, the CBD Tolling Alternative would result in new tolling infrastructure and tolling system equipment (i.e., cameras and E-ZPass readers) on the structural elements at two historic bridges—the Ed Koch Queensboro Bridge and the Manhattan Bridge—and at the Manhattan portals of the Lincoln Tunnel. In addition, the CBD Tolling Alternative would place new tolling infrastructure and tolling system equipment on the underside of the High Line, a former freight railroad viaduct. New poles with tolling system equipment mounted directly on them or from mast arms extending over the streetbeds would be installed on city streets and sidewalks and other at-grade roadways, including new poles in new locations and replacement poles in the same locations (see **Chapter 2, "Project Alternatives,"** for a description of tolling infrastructure and tolling system equipment). These include poles within Central Park and historic districts and poles on the same blocks as individual historic properties. (Refer to **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation,"** for the specific locations of the tolling infrastructure and tolling system equipment.)

As summarized above and described in the Section 106 Finding Documentation, the CBD Tolling Alternative would result in minor changes to the affected historic bridges, tunnel, and High Line structure. It would not alter the historic characteristics of historic districts and would result in minimal changes to the settings of individual historic properties in the APE. The CBD Tolling Alternative would not result in changes that would alter the characteristics that qualify historic properties for listing in the NRHP, nor would it diminish the integrity of any historic property's location, design, setting, materials, workmanship, feeling or association, including the three NHLs in the APE: the Holland Tunnel, the McGraw-Hill Publishing Company Building, and Central Park.

Figure 8-1. Overview of Area of Potential Effects

Source: ArcGIS Online, https://www.arcgis.com/index.html.

Table 8-1. Historic Properties and Summary of Changes

ADDRESS/NAME	DESCRIPTION	STATUS & NRHP CRITERIA[1, 2]	CHANGES	EFFECT
Ed Koch Queensboro Bridge	Constructed in 1901-1908, the Ed Koch Queensboro Bridge is a two-span, through cantilever truss bridge spanning the East River from Manhattan to Queens.	▪ NRHP-Listed, C ▪ NYCL	▪ Minor changes – installation of tolling equipment on bridge structure	No adverse effect
Manhattan Bridge[3]	This steel suspension bridge spanning the East River from the Lower East Side of Manhattan to Brooklyn opened in 1909; it is supported by two steel towers and includes a stone colonnade at the Manhattan approach.	▪ NRHP-Listed, C ▪ NYCL	▪ Minor changes – installation of steel girder with tolling equipment	No adverse effect
South Street Seaport Historic District and Extension	The South Street Seaport Historic District and Extension contains the largest concentration of early 19th century commercial buildings in New York City.	▪ NRHP-Listed, A & C ▪ NYCHD	▪ Minor changes – installation of a pole with equipment cabinet in a parking lot ▪ Minor change to setting	No adverse effect
Holland Tunnel	Opened in 1927, the Holland Tunnel is the first subaqueous tunnel in the world; its two tubes carry traffic to and from Manhattan and New Jersey below the Hudson River.	▪ NRHP-Listed, C ▪ NHL	▪ No physical changes to tunnel structure ▪ Minor change to setting	No effect
Tribeca North Historic District (NRHP) Tribeca North Historic District (NYCHD)	This district is defined by many large warehouse buildings constructed mostly between 1880 and 1910.	▪ NRHP-Eligible, A & C ▪ NYCHD	▪ Minor changes – installation of one new pole with mast arm with tolling equipment in location of existing sidewalk light pole ▪ Minor change to setting	No adverse effect
Tribeca West Historic District	This district is defined by commercial buildings constructed between 1860 and the 1920s; row houses from the early 19th century; as well as office, garages, institutional, and civic buildings constructed from after the Civil War to 1931.	▪ NRHP-Eligible, A & C ▪ NYCHD	▪ No physical changes ▪ No changes to immediate setting	No effect
American Thread Building	This 11-story, Renaissance Revival-style commercial building faced in brown brick was constructed from 1894 to 1896 and designed by architect, William B. Tubby.	▪ NRHP-Listed, A & C	▪ No physical changes ▪ No changes to immediate setting	No effect
Whitehall Building	This 20-story, Beaux Arts-style building was designed by architect Henry Hardenbergh and completed in 1904. The 31-story addition was designed by the architectural firm Clinton and Russell and built in 1908. The building has a stone base with brick cladding above.	▪ NRHP-Eligible, C ▪ NYCL	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect

ADDRESS/NAME	DESCRIPTION	STATUS & NRHP CRITERIA[1, 2]	CHANGES	EFFECT
Downtown Athletic Club Building	Constructed in 1930 as a skyscraper clubhouse, the Downtown Athletic Club was designed by Starrett & Van Vleck. The Art Deco-style building features irregular massing and mottled orange brick cladding.	▪ NYCL	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect
21 West Street	This 32-story, Art Deco-style skyscraper was designed by Starrett & Van Vleck and constructed from 1929 to 1931; the building is faced with tan and dark-brown brick.	▪ NRHP-Listed, A & C ▪ NYCL	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect
U.S. Post Office – Morgan General Mail Facility	Constructed in 1933, the Morgan General Mail Facility is a 6- to 10-story building built in the Art Deco style. The building's exterior is faced in limestone block on the lower levels with brick above.	▪ NRHP-Eligible, A & C ▪ NYCL-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalks	No effect
406-426 West 31st Street[3]	Constructed in 1914, the 16-story building is symmetrically fenestrated and faced in brick.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on adjacent sidewalk	No effect
U.S. General Post Office	The 6- and 10-story, Art Deco-style building was built in 1933 under the design of architect James A. Wetmore. The building is faced in granite ashlar.	▪ NRHP-Listed, A & C ▪ NYCL	▪ No physical changes ▪ No changes to immediate setting	No effect
Pennsylvania Railroad North River Tunnel (used by Amtrak and NJ TRANSIT)	Built between 1904 and 1908, the North River Tunnel carries train traffic in two tubes beneath the Hudson River between Penn Station New York and New Jersey.	▪ NRHP-Eligible, A & C	▪ No physical changes ▪ No changes to immediate setting	No effect
St. Michael's Roman Catholic Church Complex[2]	Completed in 1907, the complex includes a Romanesque-style church, school, convent, and rectory. The complex was designed by Napoleon LeBrun & Sons.	▪ NRHP-Eligible ▪ NYCL-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
Master Printers Building[2]	Completed in 1927, the 19-story building was designed by architects Parker & Shaffer and clad in tan brick.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect
Webster Apartments[2]	The C-shaped building was constructed in 1923. The Neo-Classical style building rises 13 stories and is clad in red brick.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect

ADDRESS/NAME	DESCRIPTION	STATUS & NRHP CRITERIA[1, 2]	CHANGES	EFFECT
Harding Building/ Garment Center Historic District[4]	Designed by architect Chester J. Storm and constructed from 1926 to 1927, the 17-story building contributes to the Garment Center Historic District, which includes industrial, residential, religious, and government buildings dating from 1858 to 1958.	▪ NRHP-Listed, A & C	▪ No physical changes ▪ No changes to immediate setting	No effect
Paddy's Market Historic District	Ninth Avenue between West 38th and West 42nd Streets was the location of one of the best-known pushcart markets, located beneath the former rail viaduct. The buildings in this potential historic district are primarily late 19th century tenements with many retaining intact storefronts that reflect the history of the market.	▪ NRHP-Eligible, A & C	▪ Minor changes – installation of two new poles with mast arms with tolling equipment on sidewalk ▪ Minor change to setting	No adverse effect
Former Pinehill Crystal Water Company[2]	The 6-story building, constructed in 1911, is faced in tan brick with stone detailing.	▪ NRHP-Eligible	▪ No physical changes ▪ No changes to immediate setting	No effect
Hill Building[2]	Constructed in 1914, the 14-story building is designed in the Neo-Classical style. The building is clad in terra-cotta and brick.	▪ NRHP-Eligible	▪ No physical changes ▪ No changes to immediate setting	No effect
500 West 37th Street[2]	The 6-story building was constructed in 1890. Symmetrically fenestrated, the building is faced in red brick with a stone façade on the ground floor along Tenth Avenue.	▪ NRHP-Eligible	▪ No physical changes ▪ No changes to immediate setting	No effect
Underhill Building[2]	Designed by Hill & Stout, the 13-story building was constructed in 1915. The building is clad in red brick with decorative glazed terra-cotta.	▪ NRHP-Eligible	▪ No physical changes ▪ No changes to immediate setting	No effect
408 West 39th Street[2]	The 5-story tenement building comprises details from the Neo-Grec and Romanesque Revival styles. The ground floor is faced with brownstone with an intact cornice.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
523-539 Ninth Avenue[2]	The nine, 4-story tenement buildings along Ninth Avenue are faced in brick. The buildings' cornices are intact with stone lintels and windowsills.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on same block	No effect

ADDRESS/NAME	DESCRIPTION	STATUS & NRHP CRITERIA[1, 2]	CHANGES	EFFECT
Lincoln Tunnel	Completed after the Holland Tunnel, the Lincoln Tunnel has three tubes for vehicles to travel below the Hudson River between Manhattan and New Jersey. The north tube was completed in 1945, the center tube in 1937, and the south tube in 1957.	▪ NRHP-Eligible, A & C	▪ Minor changes – installation of tolling equipment at the three portal structures	No adverse effect
St. Raphael Roman Catholic Church and Rectory[2]	The church and rectory are designed in the Gothic Revival style with stone and red brick.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect
500-506 West 42nd Street[2]	The two, 6-story tenement buildings are clad in tan brick. A metal balcony runs just below the 6th-floor windows.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
McGraw-Hill Publishing Company Building	Designed by architect Raymond Hood, the 33-story building was constructed in 1930. The building is faced in panels that are painted a deep blue-green and includes horizontal bands of windows.	▪ NRHP-Listed, A & C ▪ NHL ▪ NYCL	▪ No physical changes ▪ No changes to immediate setting	No effect
The High Line	The 1.45-mile-long elevated steel and concrete viaduct structure was built by the New York Central Railroad to replace its on-grade Tenth Avenue tracks. It runs roughly parallel to Tenth Avenue between West 34th and Gansevoort Streets.	▪ NRHP-Eligible, A	▪ Minor changes – installation of tolling equipment on underside of viaduct structure	No adverse effect
Former French Hospital[2]	The 13-story building was built 1927–1928 by the French Benevolent Society as the New York City French Hospital. The building is clad in brick with a 2-story stone base.	▪ NRHP-Eligible	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect
Lithuanian Alliance of America	The 4-story Neo-Grec style building was built circa 1876 as a single-family residence by architect and real estate developer Edward E. Ashley. The building was purchased by the Lithuanian Alliance of America in 1910.	▪ NRHP-Eligible, A	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect
Hotel Irwin	The 11-story Hotel Irwin opened in 1925 as an apartment building for unmarried women. The building was originally planned in 1914 for use as a hotel for women by Ms. Richard Irwin, but World War 1 delayed construction. The Classical Revival-style brick building was designed by Jackson, Rosencranz, and Waterbury.	▪ NRHP-Eligible, A	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect

ADDRESS/NAME	DESCRIPTION	STATUS & NRHP CRITERIA[1, 2]	CHANGES	EFFECT
Engine Co. 34 Firehouse	The 2-story brick firehouse was designed by Hubert J. Treacy and built in 1937. The firehouse is a representative example of the two-company/two-vehicular entrance type the New York City Fire Department began using at the turn of the 20th century.	▪ NRHP-Eligible, A & C	▪ No physical changes ▪ No changes to immediate setting	No effect
P.S. 191 Hudson Honors School	The 5-story building was built in 1955 and designed by William Gehron. The building has an L-shaped plan and minimized ornamentation.	▪ NRHP-Eligible, C	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
Cova Building	The 12-story office building, built between 1922 and 1924 by Alexander Cohen, has terra-cotta ornaments and decorative metal panels.	▪ NRHP-Eligible, C	▪ No physical changes ▪ Minor change to setting – two new poles with mast arm with tolling equipment on sidewalks on same block	No effect
59th Street-Columbus Circle Subway Station	Completed in 1904, the station is one of the first original Interborough Rapid Transit subway stations to be completed. The station has Beaux Arts painting and decoration.	▪ NRHP-Listed, A & C ▪ NYCL Interior Landmark	▪ No physical changes ▪ No changes to setting	No effect

Central Park[5]	Central Park is the first large-scale public park in the nation. Created from 1857 to 1866, the park was designed by Frederick Law Olmsted and Calvert Vaux.	▪ NRHP-Listed, C
		▪ NYC Scenic Landmark
		▪ NHL
			▪ Minor physical changes:
			  ▪ Replacement of four existing poles with new poles with tolling equipment at three detection locations on the interior park roads (note, access to Central Park interior roads is restricted to authorized vehicles only)
			  ▪ Replacement of existing light pole with new pole with tolling equipment on Fifth Avenue sidewalk
			  ▪ Installation of a new pole with mast arm on Central Park West sidewalk.
			▪ Minor changes to setting
				No adverse effect

Upper East Side Historic District (NRHP)	This district is defined by mansions, apartment houses, and row houses in a range of architectural styles, dating from 1862 to 1938.	▪ NRHP-Listed, A & C	▪ Minor changes – installation of one new pole with mast arm with tolling equipment on sidewalk	No adverse effect

ADDRESS/NAME	DESCRIPTION	STATUS & NRHP CRITERIA[1, 2]	CHANGES	EFFECT
Upper East Side Historic District (NYCHD)		▪ NYCHD	▪ Minor changes to setting	
Upper East Side Historic District Boundary Increase and Additional Documentation	The expansion of the original Upper East Side Historic District includes multiple domestic, religious, commercial, and government buildings with similar historic development and period integrity. The period of significance is from 1862 to 1956.	▪ NRHP-Listed, A & C	▪ Minor changes – installation of one new pole with mast arm with tolling equipment on sidewalk ▪ Minor changes to setting	No adverse effect
Grand Army Plaza	Grand Army Plaza was laid out to the designs of Carrère & Hastings in 1913–1916. The plaza includes decorative paving and landscaped areas and is divided by 59th Street; the plaza to the south includes the Pulitzer Fountain and the plaza to the north the General Sherman Monument.	▪ NYC Scenic Landmark	▪ No physical changes ▪ No changes to immediate setting	No effect
Public Baths	The Public Baths were built by the City of New York in 1904–1906 and designed by Arnold W. Brunner and William M. Aiken. The Public Baths are a 1-story brick building with limestone base.	▪ NRHP-Listed, A & C ▪ NYCL	▪ No physical changes ▪ Minor changes to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
Gansevoort Market Historic District	This district is defined by a mix of buildings typically constructed between the 1840s and 1940s linked to the city's working waterfront and includes a contributing historic street grid.	▪ NRHP-Listed, A & C ▪ NYCHD	▪ Minor changes – installation of one new pole with equipment cabinet on sidewalk ▪ Minor change to setting	No adverse effect

Source: CRIS at https://cris.parks.ny.gov; NYC Landmarks Preservation Commission "Discover NYC Landmarks" at https://www1.nyc.gov/site/lpc/index.page.

Refer to the Section 106 Finding Documentation in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"** for more information about the potential changes associated with the CBD Tolling Alternative.

1 National Register of Historic Places, Significance Criteria A through D.

2 For certain properties, the SHPO's CRIS does not provide information regarding the NRHP criteria under which the properties were determined eligible; therefore, information is not provided in this table for those properties.

3 The Arch and Colonnade is an NYCL. The bridge structure/deck is not an NYCL or NYCL-Eligible.

4 The Harding Building is the only building in the Garment Center Historic District (NRHP-listed) that is in the APE.

5 The NRHP and NYCL boundaries differ for Central Park at the location of the corner of the park at Central Park South (59th Street) and Fifth Avenue; this corner is included as part of the Grand Army Plaza Scenic Landmark but excluded from the New York City Scenic Landmark boundaries. Grand Army Plaza is included within the Central Park NRHP and NHL boundaries.

LPC = New York City Landmarks Preservation Commission
NRHP = National Register of Historic Places
NYCL = New York City Landmark and New York City Scenic Landmark
NYCHD = New York City Historic District
NHL = National Historic Landmark

The Section 106 Finding Documentation describes the identified historic properties, applies the criteria of adverse effect (36 CFR 800.5(a)(1)), and concludes that the Project would have no adverse effect on historic properties. NYSDOT provided the Draft (Proposed Final) Section 106 Finding Documentation for review by the SHPO and Consulting Parties on April 12, 2022. FHWA provided the Draft (Proposed Final) Section 106 Finding Documentation to the four Federally recognized Native American tribes with an interest in the geographical area of the Project on April 13, 2022. The SHPO concurred with the No Adverse Effect finding on April 18, 2022, and NPS concurred with the No Adverse Effect finding on May 19. 2022 (see **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation")**.

Revisions were made to the Section 106 Finding Documentation based on comments received by the Consulting Parties on the Draft (Proposed Final) Finding Documentation and on the subsequent submission of information regarding the installation of tolling signage within Central Park as described in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation."** The comments were not substantive and did not alter the recommended finding. With these revisions, the Finding Documentation was considered final. Based on the consultation described in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"** and review of the Section 106 Finding Documentation, in a letter dated June 21, 2022, the FHWA issued a No Adverse Effect determination for the Project and a determination that the requirements of 36 CFR Part 800 have been met for this undertaking. FHWA issued a No Adverse Effect determination for the Project in a letter dated June 21, 2022.

8.4.2.1 Effects on Historic Sites Protected by Section 4(f) of the U.S. Department of Transportation Act

Because implementation of the CBD Tolling Alternative would require the placement of tolling infrastructure and tolling system within the APE and on or in proximity to historic sites or within historic districts that are NRHP-listed or NHRP-eligible sites, FHWA must evaluate the potential use of historic sites for this Project in accordance with Section 4(f) (refer to **Chapter 19, "Section 4(f) Evaluation").**

8.5 CONCLUSION

FHWA has undertaken consultation pursuant to Section 106 to assess the Project's potential effects on historic properties. Through that process, FHWA determined that the Project would not result in any direct or indirect effects on historic properties that would alter the characteristics of a historic property that qualify it for inclusion in the NRHP, and the Project would have No Adverse Effect on historic and cultural resources. **Table 8-2** summarizes the effects of the CBD Tolling Alternative and commitments that will be undertaken by the Project Sponsors pursuant to the Section 106 consultation for the Project.

Table 8-2. Summary of Effects of the CBD Tolling Alternative on Historic and Cultural Resources

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
New tolling infrastructure and tolling system equipment on or near historic properties	Based on a review of the Project in accordance with Section 106 of the National Historic Preservation Act, FHWA has determined that the Project would have No Adverse Effect on historic properties and the State Historic Preservation Office has concurred.	No	Through consultation undertaken pursuant to Section 106 of the NHPA, the Project Sponsors agreed to the following measures to avoid potential adverse effects on historic resources: ▪ Tolling infrastructure and tolling system equipment on city streets would not be installed in front of a historic building's entrance. ▪ Historic or decorative sidewalk paving within historic districts would not be removed or altered to install tolling infrastructure and tolling system equipment. On Fifth Avenue and Central Park West, any granite-block pavers that would be removed to install replacement poles would be reused or replaced in kind. Proposed work on sidewalks or protected paving located within historic districts designated by LPC would following guidance as set forth in Chapter 10: Historic Districts with Sidewalks Regulated by LPC of the LPC Permit Guidebook (2019). ▪ New light poles and associated equipment would be visually consistent with the existing palette of street furniture in the APE. ▪ In Central Park, new tolling infrastructure and tolling system equipment would have the same appearance as the poles they would replace. ▪ For new tolling infrastructure and tolling system equipment on the park edges (Fifth Avenue and Central Park West), place poles near the curbs consistent with the presence of modern street furniture in the area. On Central Park West, measures implemented to minimize the visual impact of the pole with a 50-foot-long mast arm include combining the disparate required elements of the tolling system equipment into single enclosures ("clusters") that are the minimum size possible (smaller than a traffic light). The proposed pole and tolling infrastructure and tolling system equipment would have a uniform green material finish that matches the color palette of infrastructure on the street. The Memorandum of Understanding between NYCDOT and TBTA for the Project restricts any equipment other than the tolling system equipment from being installed on the pole and mast arm. ▪ Coordinate with NYC Parks, SHPO, and NPS regarding additional street trees to help screen the pole and mast arm proposed on the Central Park West sidewalk. ▪ Coordinate with NYC Parks and the Central Park Conservancy regarding the final design of the tolling infrastructure and tolling system equipment in Central Park.

9. Visual Resources

9.1 INTRODUCTION

This chapter describes the potential effects of implementation of the CBD Tolling Alternative on visual resources and aesthetic conditions in the local study area for tolling infrastructure and tolling system equipment.[1] FHWA provides procedures for assessing the impact of roadway projects on prominent visual resources and aesthetic conditions of the surrounding communities. FHWA's Visual Impact Assessment (VIA) guidance begins with a decision tree, a process that determines whether a VIA is required for a project and, if so, the appropriate level of documentation. The guidance calls for a scoping tool—the VIA Scoping Questionnaire—to help determine first if a VIA is necessary, and if so, the level of detail needed to fulfill regulatory and judicial requirements.[2] The Project Sponsors completed the VIA Scoping Questionnaire, and the resulting score for the Project determined that no VIA is required (see **Appendix 9, "Visual Resources"**). Nonetheless, the Project Sponsors prepared a detailed study to describe the physical elements of the CBD Tolling Alternative that could affect the visual environment (see **Appendix 9**). The chapter summarizes the results and demonstrates that the effects of the Project would be neutral and not adverse.

9.2 AFFECTED ENVIRONMENT

For the CBD Tolling Alternative, the area of visual effect is a cultural environment, as defined by FHWA guidance, because it is a fully developed urban landscape. The Project environment (i.e., the specific locations where Project elements are proposed) consists of the transportation right-of-way and adjacent sidewalks where new tolling infrastructure and tolling system equipment would be placed. The area of visual effect also includes portions of roadway and adjacent sidewalk in three small areas of Central Park near its southern boundary. There is natural environment in Central Park, but the area of visual effect for the Project in Central Park is limited to grassy areas and trees close to the roadway that can be considered a cultural environment according to the definition in FHWA guidance. Other landscaped park spaces are in the area of visual effect, but these are urban parks that are also not natural environment according to the definition in FHWA guidance.

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[1] FHWA. January 2015. *Guidelines for the Visual Impact Assessment of Highway Projects*. FHWA-HEP-15-029. https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx.

[2] Refer to FHWA's *Visual Impact Assessment Guidelines of Highway Projects*, Chapter 3, for more information. https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx#chap3.

9.3 ENVIRONMENTAL CONSEQUENCES

The proposed tolling infrastructure, tolling system equipment, and signage associated with the CBD Tolling Alternative would be similar to existing infrastructure and signage present along the roadways throughout the Manhattan CBD and nearby areas. The tolling infrastructure would include the following:

- Poles and mast arms similar to those used for streetlights and traffic lights today
- Cameras, detectors, and other equipment mounted from tolling infrastructure
- Signage similar in size and character to signs already present throughout Manhattan

The poles for the CBD Tolling Alternative would typically be at locations where standard poles are currently installed or would replace existing poles with new poles that are up to about 20 feet from the existing poles.

The tolling infrastructure and tolling system equipment has been designed to minimize its visual impact, by using existing infrastructure as much as practicable and coordinating the appearance of new tolling infrastructure and tolling system equipment with the existing street furniture palette. The proposed tolling system equipment would be clustered into single enclosures to minimize the visual impact. The cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light.

9.4 CONCLUSION

For the various viewer groups in the area of visual effect—including residential, recreational, institutional, civic, retail, and commercial "neighbors" (i.e., those who may have a view of the Project), and commuting, touring, and shipping "travelers" (i.e., those who would use the affected roadways)—the visual changes introduced by the CBD Tolling Alternative would be minimal in the context of the urban landscape and are not likely to result in a change in visual quality as perceived by these viewers. Therefore, the CBD Tolling Alternative would have a neutral effect on viewer groups. Table 9-1 summarizes the effects of the Project.

Table 9-1. Summary of Effects of the CBD Tolling Alternative on Visual Resources

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Changes in visual environment resulting from new tolling infrastructure and tolling system equipment	Infrastructure and equipment would be similar in form to streetlight poles, sign poles, or similar structures already in use throughout New York City. Cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light. The Project would have a neutral effect on viewer groups and no adverse effect on visual resources.	No	**No mitigation needed.** No adverse effects.

10 Air Quality

10.1 INTRODUCTION

This chapter assesses the potential effect of implementing the CBD Tolling Alternative on air quality, air pollution, and greenhouse gas (GHG) emissions. It also summarizes the Project's Transportation Conformity Determination.

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants and air toxics can degrade the atmosphere by reducing visibility; they can also damage property, reduce the productivity or vigor of crops or natural vegetation, and harm human and/or animal health. Air quality is the term used to describe the level of pollution in the atmosphere and is usually compared to a regulated set of standards established by the U.S. Environmental Protection Agency (USEPA).

10.1.1 Context

The regional study area for the traffic analyses includes 28 counties in New York, New Jersey, and Connecticut.

Most of the regional study area is within the New York-N. New Jersey-Long Island nonattainment area[1] for the 2008 and 2015 ozone (O_3) National Ambient Air Quality Standards (NAAQS), and many counties, or portions thereof, are maintenance areas (previously nonattainment areas) for carbon monoxide (CO) and particulate matter ($PM_{2.5}$ and PM_{10}) NAAQS. Furthermore, New York County, which includes the Manhattan CBD, is a nonattainment area for PM_{10}. **Appendix 10A, "Air Quality: Description of Pollutants and MOVES Modeling Files,"** provides a full description of pollutants. According to monitored air quality data collected by USEPA around New York City and New Jersey, there were several exceedances of the O_3 standard, but no exceedances of any of the other criteria pollutants.

According to the New York City Community Air Survey (NYCCAS), annual average levels of four key pollutants ($PM_{2.5}$, nitrogen dioxide [NO_2], nitric oxide, and black carbon) decreased citywide—from 33 to 52 percent—between 2009 and 2019. Air quality has improved substantially since the City of New York required building owners to convert to cleaner heating oils in 2015.

10.1.2 Regulations

The Clean Air Act (CAA) and the Final Transportation Conformity Rule (40 CFR Parts 51 and 93) direct USEPA to implement environmental policies and regulations that will ensure acceptable levels of air quality.

1 A geographic area that meets or does better than the standard(s) is called an attainment area, while areas that do not meet the standard(s) are referred to as nonattainment or maintenance areas.

The CAA and the Final Transportation Conformity Rule affect the funding and approval of proposed transportation projects. According to CAA Title I, Section 176 (c) 2: "No Federal agency may approve, accept or fund any transportation plan, program or project unless such plan, program or project has been found to conform to any applicable State Implementation Plan in effect under this act."

According to Section 176(c)2(A) of the CAA, conformity to an implementation plan means not causing any new or reducing the severity and number of any existing violations of the NAAQS and achieving expeditious attainment of such standards, and that such activities will not:

- Cause or contribute to any new violation of any NAAQS in any area;
- Increase the frequency or severity of any existing violation of any NAAQS in any area; or
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area.

10.1.3 National and State Ambient Air Quality Standards

As required by the CAA, NAAQS have been established for six major air pollutants, known as criteria pollutants: CO, NO_2, O_3, $PM_{2.5}$ and PM_{10}, sulfur dioxide (SO_2), and lead (Pb). **Table 10-1** summarizes the Federal standards. "Primary" standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly, while "secondary" standards are intended to protect the nation's welfare, accounting for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of general welfare.

10.1.4 Attainment Status

Section 107 of the CAA requires that USEPA publish a list of all geographic areas in compliance with the NAAQS and those not attaining the NAAQS. Areas not in NAAQS compliance are deemed nonattainment areas. Areas that have insufficient data to support a determination are deemed "unclassified" and are treated as being attainment areas until proven otherwise. Maintenance areas are areas that were previously designated as nonattainment for a pollutant but have since demonstrated compliance with the NAAQS for that pollutant. An area's designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

To provide background on existing air quality conditions in the Project's 28-county regional study area, **Table 10-2** lists the counties or portions thereof that are currently attainment, nonattainment, or maintenance areas for the following criteria pollutants: CO, O_3, $PM_{2.5}$ and PM_{10}, and SO_2. All counties in the study area are in attainment for Pb and NO_2; as such, these pollutants have not been included in the table.

The majority of the regional study area is classified nonattainment for the 2008 and 2015 O_3 NAAQS, while many counties, or portions thereof, are maintenance areas for CO and $PM_{2.5}$.

Table 10-1. National Ambient Air Quality Standards

POLLUTANT		PRIMARY/ SECONDARY	AVERAGING TIME	LEVEL	FORM
Carbon Monoxide (CO)		Primary	8-hour	9 parts per million (ppm)	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		Primary and Secondary	Rolling 3-month average	0.15 micrograms per cubic meter of air (μg/m^3)[(1)]	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1-hour	100 parts per billion (ppb)	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	Annual	53 ppb[(2)]	Annual Mean
Ozone (O_3)		Primary and Secondary	8-hour	0.070 ppm[(3)]	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particulate Matter	$PM_{2.5}$	Primary	Annual	12 μg/m^3	Annual mean, averaged over 3 years
		Secondary	Annual	15 μg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 μg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24-hour	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb[(4)]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: U.S. Environmental Protection Agency, Office of Air and Radiation, https://www.epa.gov/criteria-air-pollutants/naaqs-table;
New York State Department of Environmental Conservation (NYSDEC), http://www.dec.ny.gov/chemical/8406.html.

Notes:

(1) Final rule signed October 15, 2008. The 1978 Pb standard (1.5 μg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 year, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO_2 standard is 0.053 parts per million (ppm), equal to 53 parts per billion (ppb), which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a U.S. Environmental Protection Agency action requiring a state to resubmit all or part of its SIP to demonstrate attainment of the required NAAQS.

Table 10-2. Current Air Quality Attainment Status

STATE	COUNTY	CARBON MONOXIDE	OZONE	PARTICULATE MATTER ($PM_{2.5}$)	PARTICULATE MATTER (PM_{10})	SULFUR DIOXIDE
New York	Bronx	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Dutchess	Attainment	Attainment	Attainment	Attainment	Attainment
	Kings	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Nassau	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	New York	— Maintenance —	* Nonattainment *	— Maintenance —	* Nonattainment[1] *	Attainment
	Orange	Attainment	Attainment	— Maintenance —	Attainment	Attainment
	Putnam	Attainment	Attainment	Attainment	Attainment	Attainment
	Queens	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Richmond	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Rockland	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Suffolk	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Westchester	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
New Jersey	Bergen	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Essex	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Hudson	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Hunterdon	Attainment	* Nonattainment *	Attainment	Attainment	Attainment
	Mercer	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Middlesex	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Monmouth	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Morris	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Ocean	Attainment	* Nonattainment *	Attainment	Attainment	Attainment
	Passaic	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Somerset	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Sussex	Attainment	* Nonattainment *	Attainment	Attainment	Attainment
	Union	— Maintenance —	* Nonattainment *	— Maintenance —	Attainment	Attainment
	Warren	Attainment	* Nonattainment *	Attainment	Attainment	* Nonattainment *
Connecticut	Fairfield	Attainment	* Nonattainment *	— Maintenance —	Attainment	Attainment
	New Haven	Attainment	* Nonattainment *	— Maintenance —	— Maintenance —	Attainment

Source: U.S. Environmental Protection Agency Green Book
Note: As per 40 CFR Part 81.333, this PM_{10} designation applied only to the annual form of the PM_{10} NAAQS. The annual PM_{10} NAAQS was revoked on October 17, 2006.

10.1.5 Mobile Source Air Toxics

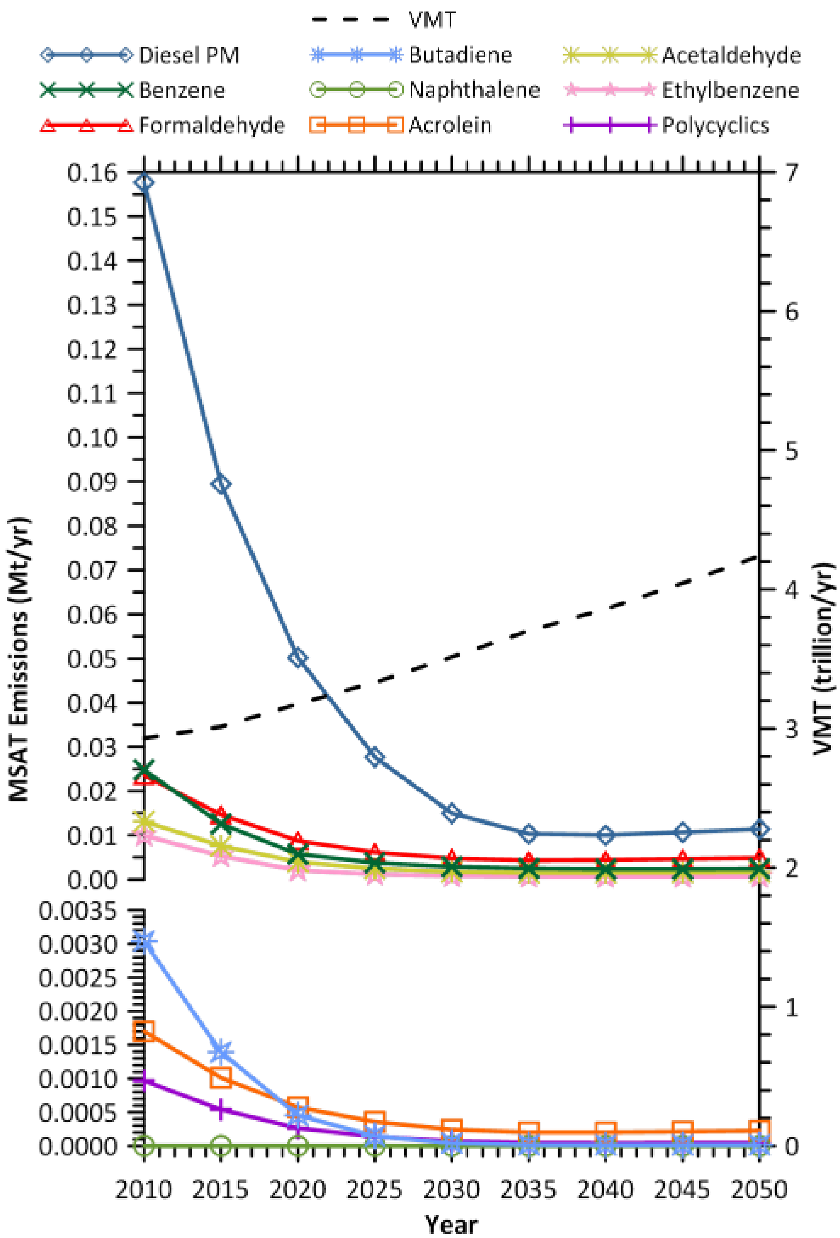
In addition to the criteria pollutants for which there are NAAQS, USEPA regulates air toxics, also known as hazardous air pollutants. Hazardous air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. Most hazardous air pollutants originate from human-made sources, including on-road mobile sources (e.g., vehicles), non-road mobile sources (e.g., airplanes), area sources (e.g., landfills), point sources (e.g., dry cleaners), line sources (e.g., roadways), and stationary sources (e.g., factories or refineries).

Controlling hazardous air pollutant emissions became a national priority with the passage of the CAA Amendments of 1990, which mandate that USEPA regulate 188 air toxics. USEPA has assessed this expansive list in its latest rule—Control of Hazardous Air Pollutants from Mobile Sources (72 Federal Register 8427, February 26, 2007)—and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System.[2] In addition, in its 2011 National Air Toxics Assessment, USEPA identified nine compounds, referred to as priority mobile source air toxics (MSAT), which account for substantial contributions from mobile sources and are among the national- and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors.[3] These compounds are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. FHWA considers these the priority MSAT.

The 2007 USEPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. FHWA, using USEPA's Motor Vehicle Emission Simulator (MOVES) model, estimates a combined nationwide reduction of 91 percent in the total annual emissions for the priority MSATs even as forecast VMT increases by 45 percent from 2010 to 2050 (**Figure 10-1**).[4] Furthermore, USEPA's *Final Rule for Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards,* which took effect in 2017, set new vehicle emissions standards and lowered the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system. The Tier 3 vehicle standards have further reduced both tailpipe and evaporative emissions, including MSATs, from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles.[5] As a result of these controls, overall reductions in MSAT are expected regardless of Project scenario.

2 EPA's Integrated Risk Information System; http://www.epa.gov/iris/.
3 EPA's 2011 National Air Toxics Assessment; https://www.epa.gov/national-air-toxics-assessment/2011-national-air-toxics-assessment.
4 Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents; https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/.
5 https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-air-pollution-motor-vehicles-tier-3.

Figure 10-1. FHWA Projected National MSAT Emission Trends (2010 to 2050) using EPA's MOVES2014a Model for Vehicles Operating on Roadways



Source: FHWA

Because of the unique properties of the Project (affecting a widespread area, located in proximity to populated areas), the Project has been analyzed as a Tier 3 project with higher potential MSAT effects, as defined by FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Thus, a quantitative MSAT emissions analysis was conducted for the Project. The MSAT analysis was conducted on a subregional basis to capture the overall changes in MSAT emissions in each county. Because of the Project's unique scope and the extent of its impact on roadways of all types throughout the region, the MSAT emissions analysis was conducted for the 12-county region (see Table 10-3 and Section 10.1.7.1).

As stated in FHWA's *Frequently Asked Questions (FAQ) Conducting Quantitative MSAT Analysis for FHWA NEPA Documents,*[6] Project-specific knowledge and consideration of local circumstances were considered in the overall MSAT analysis approach. In order to potentially focus on only those segments with the greatest benefits and effects, changes in annual average daily traffic (AADT) were screened (plus or minus 5 percent) across the 12-county region where the largest benefits and effects would be expected (**Appendix 10D, "Changes in Annual Average Daily Traffic (AADT)"**). Few roadway segments met these criteria, despite the extensive network and multiple types of roadways within the region. Thus, the quantitative MSAT emissions analysis included the entire traffic network of the 12-county study area. This approach is consistent with the regional pollutant burden and GHG analysis and provides a common basis for comparison across all analyses. In this chapter, maps and changes display VMT, which is the sum of the AADT multiplied by the individual link length.

10.1.5.1 Incomplete or Unavailable Information for Project-Specific Mobile Source Air Toxics Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict a project-specific health impact due to changes in MSAT emissions associated with a proposed set of alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

USEPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. USEPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects."[7] Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents.*[8] Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations[9] or in the future as vehicle emissions substantially decrease.

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6 https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm.
7 U.S. Environmental Protection Agency, https://www.epa.gov/iris.
8 https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/page04.cfm.
9 HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts—each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI.[10] As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. USEPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk."[11]

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by USEPA as provided by the CAA to determine whether more stringent controls are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires USEPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld USEPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.[12]

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties

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10 HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects.

11 U.S. Environmental Protection Agency. IRIS database, Diesel Engine Exhaust, Section II.C. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642.htm#quainhal.

12 https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf.

associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against a project's benefits—such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response—that are better suited for quantitative analysis.

10.1.6 Climate Change and Greenhouse Gases

Although no national standards, criteria, or thresholds are in effect for GHGs, their role in climate change is of important national and global concern. While Earth has gone through many natural changes in climate in its history, there is general agreement that Earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) GHG emissions contribute to this process.[13] Carbon dioxide (CO_2) makes up the largest component of these GHG emissions. Other prominent transportation GHGs include methane (CH_4) and nitrous oxide (N_2O).

There are many types of GHGs, and each GHG affects global warming differently. As a result, the Global Warming Potential (GWP) metric was developed to allow comparisons of the global warming impacts of different GHGs. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period, relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms Earth compared to CO_2 over that period. The time period used for GWPs is typically 100 years. GWPs provide the following common units of measure, allowing analysts to sum emission estimates of different gases (e.g., to compile a national GHG inventory) for comparison and to identify reduction opportunities:

- CO_2, by definition, has a GWP of 1 regardless of the period used. CO_2 remains in the atmosphere for a long time. CO_2 emissions cause increases in atmospheric CO_2 concentrations that will last thousands of years.
- CH_4 has a GWP 25 times that of CO_2 for a 100-year period. CH_4 emitted today lasts about a decade, which is a shorter period than CO_2. However, CH_4 absorbs much more energy than CO_2. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The CH_4 GWP also accounts for indirect effects, such as the fact that CH_4 is a precursor to O_3, and O_3 is itself a GHG.
- N_2O has a GWP 298 times that of CO_2 for a 100-year period. N_2O emitted today remains in the atmosphere for more than 100 years.

GHGs are reported in CO_2 Equivalents (CO_2e), which is a combined measure of GHG emissions weighted according to the GWP of each gas, relative to CO_2. CO_2e is calculated within USEPA's Motor Vehicle Emission Simulator (MOVES2014b) model from CO_2, N_2O, and CH_4 mass emissions according to the following equation:

$$\boldsymbol{CO_2e} = CO_2 \times GWP_{CO2} + CH_4 \times GWP_{CH4} + N_2O \times GWP_{N2O}$$

[13] Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Avery, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. https://www.ipcc.ch/report/ar4/wg1/.

10.1.7 Methodology

Air quality mesoscale, MSAT, and GHG analyses were conducted to determine how the Project would affect total mobile source emissions. Air quality was also analyzed on a local (microscale) level to evaluate potential CO and PM impacts. The mesoscale analysis was conducted to show the differences between the No Action Alternative and the CBD Tolling Alternative, whereas the local analysis demonstrated that the hot-spot requirements are satisfied for Project-level conformity per the CAA as well as for NEPA.

Analyses were conducted for the estimated time of completion (2023) and future analysis year (2045). It should be noted that the year 2023 No Action Alternative is also representative of existing conditions, as the Project will be implemented in a relatively short time period.

10.1.7.1 Mesoscale, MSAT, and GHG Analysis

USEPA's emission model, MOVES2014b, was used to estimate the mobile source emission factors for the mesoscale, MSAT, and GHG analyses. MOVES2014b provides great flexibility to capture the influence of time of day, car and bus/truck activity, vehicle speeds, and seasonal weather effects on emission rates from vehicles. MOVES2014b calculates emission-related parameters, such as total mass emissions and vehicle activity (hours operated and miles traveled). From this output, emission rates (e.g., grams/vehicle-miles for moving vehicles or grams/vehicle-hours for idling vehicles) can be determined for a variety of vehicle activities.

MOVES2014b requires site-specific input data for traffic volumes, vehicle types, fuel parameters, age distribution, and other inputs. By using site-specific data, the emission results reflect the traffic characteristics of the roadways affected by the Project. Appendix 10A, "Air Quality: Description of Pollutants and MOVES Modeling Files," provides electronic versions of all the MOVES modeling conducted for the Project.

The regional study area for the Project includes 28 counties in the New York City region (for more information on the 28-county regional study area, see Chapter 3, "Environmental Analysis Framework"). These 28 counties represent the main catchment area for trips to and from the Manhattan CBD and therefore the area where VMT would change as a result of the CBD Tolling Alternative.

Based on the methodology used to identify the most concentrated areas of change, the following 12 New York and New Jersey counties were used for the air quality mesoscale, MSAT, and GHG analyses for the Project:

- New York City:
  - Bronx
  - Kings (Brooklyn)
  - New York (Manhattan) / Manhattan CBD
  - Queens
  - Richmond (Staten Island)

- Long Island:
  - Nassau
  - Suffolk
- North of New York City:
  - Putnam
  - Rockland
  - Westchester
- New Jersey:
  - Hudson
  - Bergen

As shown in **Table 10-3**, the 12 counties analyzed include those in New York that are projected to have the largest increase in VMT (Richmond County [Staten Island]) and the largest decrease in VMT (New York County [Manhattan]) as a result of the Project, as well as those counties in New Jersey that are predicted to have the largest increase in VMT (Bergen County) and the largest decrease in VMT (Hudson County) as a result of the Project, in both 2023 and 2045. VMT in Connecticut is predicted to decrease in both 2023 and 2045 between the No Action Alternative and the CBD Tolling Alternative; as such, Connecticut counties were not included in the mesoscale, MSAT, and GHG analyses.

MOVES2014b was used to estimate emissions of criteria pollutants, MSATs, GHG, and energy from the mesoscale roadway network in the 12-county region. The NYSDEC has developed county-specific MOVES input data, and Project travel-demand analysts provided the traffic forecasts for each tolling scenario considered in the transportation analysis.

Table 10-4 and Table 10-5 describe the specific MOVES2014b inputs. County-specific data and Project-specific traffic data were used to develop Project-specific input files to demonstrate the effects of the CBD Tolling Alternative. The mesoscale, MSAT, and GHG analyses evaluated the No Action Alternative and the CBD Tolling Alternative (Tolling Scenario A) for the estimated time of completion (2023) and future analysis year (2045). Tolling Scenario A was used for the mesoscale, MSAT, and GHG analyses because it is the tolling scenario that would result in the smallest reduction of VMT compared to the No Action Alternative. Therefore, Tolling Scenario A would have the lowest beneficial effect on regional air quality because changes in regional air quality emissions burden are directly related to changes in VMT. As discussed in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** traffic data from 2019 were considered to be representative for 2023. These data were used in the emissions model to estimate 2023 emissions. Final Project-specific traffic data were received in October 2021. All other input parameters were received in July 2019, provided by the agencies highlighted in **Table 10-5**, and represent the latest and best planning assumptions at the time the analysis was initiated, which was 2019.

Table 10-3. Comparison of County-Level Vehicle-Miles Traveled in the Regional Study Area, No Action Alternative and CBD Tolling Alternative (Tolling Scenario A, Years 2023 and 2045)

COUNTY	2023 DAILY VEHICLE-MILES TRAVELED			2045 DAILY VEHICLE-MILES TRAVELED		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference
New York City						
Bronx, NY	7,590,398	7,600,486	0.13%	8,178,443	8,179,258	0.01%
Kings (Brooklyn), NY	10,015,002	9,962,630	-0.52%	10,482,095	10,429,946	-0.50%
New York (Manhattan), NY	7,128,128	6,794,749	-4.68%	7,560,139	7,230,456	-4.36%
Queens, NY	18,410,148	18,313,242	-0.53%	19,368,110	19,229,630	-0.71%
Richmond (Staten Island), NY	3,986,457	4,071,055	2.12%	4,158,480	4,235,660	1.86%
Long Island						
Nassau, NY	19,687,535	19,698,668	0.06%	21,724,946	21,682,338	-0.20%
Suffolk, NY	21,898,009	21,910,738	0.06%	25,088,580	25,069,954	-0.07%
New York Counties North of New York City						
Dutchess, NY	5,114,706	5,114,150	-0.01%	5,303,106	5,298,706	-0.08%
Orange, NY	8,064,737	8,042,718	-0.27%	8,861,047	8,834,459	-0.30%
Putnam, NY	2,029,067	2,030,526	0.07%	2,239,945	2,226,281	-0.61%
Rockland, NY	4,772,318	4,762,333	-0.21%	5,679,602	5,661,212	-0.32%
Westchester, NY	13,489,991	13,451,007	-0.29%	15,541,871	15,471,203	-0.45%
NEW YORK STATE TOTAL	**122,186,496**	**121,752,302**	**-0.36%**	**134,186,364**	**133,549,103**	**-0.47%**

COUNTY	2023 DAILY VEHICLE-MILES TRAVELED			2045 DAILY VEHICLE-MILES TRAVELED		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference
New Jersey Counties						
Bergen, NJ	13,728,764	13,879,578	1.10%	15,423,121	15,552,792	0.84%
Essex, NJ	9,979,337	9,935,201	-0.44%	11,361,522	11,317,134	-0.39%
Hudson, NJ	4,784,360	4,667,087	-2.45%	5,440,776	5,343,189	-1.79%
Hunterdon, NJ	4,133,193	4,133,747	0.01%	4,338,874	4,338,931	0.00%
Mercer, NJ	6,389,692	6,392,871	0.05%	6,503,376	6,495,154	-0.13%
Middlesex, NJ	13,089,664	13,114,154	0.19%	14,698,322	14,749,616	0.35%
Monmouth, NJ	6,877,937	6,883,108	0.08%	7,685,824	7,709,731	0.31%
Morris, NJ	8,738,129	8,768,247	0.34%	9,665,262	9,651,535	-0.14%
Ocean, NJ	4,207,545	4,205,186	-0.06%	4,370,243	4,370,004	-0.01%
Passaic, NJ	5,588,180	5,602,293	0.25%	6,213,768	6,213,808	0.00%
Somerset, NJ	5,239,808	5,225,201	-0.28%	5,951,792	5,943,608	-0.14%
Sussex, NJ	1,859,459	1,854,014	-0.29%	1,899,412	1,897,707	-0.09%
Union, NJ	8,105,458	8,076,600	-0.36%	9,255,263	9,236,597	-0.20%
Warren, NJ	4,856,570	4,857,644	0.02%	5,100,281	5,094,874	-0.11%
NEW JERSEY TOTAL	**97,578,096**	**97,594,931**	**0.02%**	**107,907,836**	**107,914,680**	**0.01%**
Connecticut Counties						
Fairfield, CT	14,696,567	14,686,082	-0.07%	16,284,959	16,277,217	-0.05%
New Haven, CT	20,213,303	20,192,591	-0.10%	18,778,510	18,768,017	-0.06%
CONNECTICUT TOTAL	**34,909,870**	**34,878,673**	**-0.09%**	**35,063,469**	**35,045,234**	**-0.05%**

Source: WSP
Note: State totals may differ slightly from VMT reported in other chapters due to rounding and summing by different geographies.

Table 10-4. MOVES2014b Input Parameters

MOVES TAB	MODEL SELECTIONS
Scale	▪ County scale ▪ Inventory calculation type
Time Span	Hourly time aggregation, including all months, days, and hours
Geographic Bounds	Each of the 12 individual counties analyzed
Vehicles/Equipment	All on-road vehicle and fuel type combinations were selected for criteria pollutant and mobile source air toxics runs; only diesel was selected for diesel particulate matter runs.
Road Type	All road types were selected (off-network, rural restricted, rural unrestricted, urban restricted, and urban unrestricted)
Pollutants and Processes	▪ Selected pollutants included criteria pollutants, mobile source air toxics, CO_2 equivalent, and their precursors. ▪ Processes included running exhaust, evaporative permeation, evaporative fuel leaks, and crankcase running exhaust. Brake-wear and tire-wear emissions are included in the particulate matter results.
Manage Input Data Sets	New York counties: Selected New York State Low Emission Vehicle program input database provided by New York State Department of Environmental Conservation. New Jersey counties: Selected EPA default Lowe Emission Vehicle program input database.
Output	Output was total annual emission by county.

Source: WSP

Table 10-5. MOVES2014b County Data Manager Inputs

COUNTY DATA MANAGER TAB	DATA SOURCE
Age Distribution	New York State Department of Environmental Conservation (NYSDEC) and North Jersey Transportation Planning Authority (NJTPA)
Inspection/Maintenance Programs	NYSDEC and NJTPA
Ramp Fraction	NYSDEC and NJTPA
Source Type Population	NYSDEC data scaled using New York Metropolitan Transportation Council growth factors and NJTPA
Fuel	NYSDEC and NJTPA
Meteorology Data	NYSDEC and NJTPA
Hoteling	NYSDEC and NJTPA
Average Speed Distribution	Created from Project traffic data received in November of 2021
Annual Vehicle-Miles Traveled (VMT)	Created from Project traffic data received in November of 2021
Monthly VMT Fraction	Created from New York Metropolitan Transportation Council monthly adjustment factors and NJTPA
Daily VMT Fraction, Hourly VMT Fraction	NYSDEC and NJTPA
Road Type Distribution	NYSDEC and NJTPA

Source: WSP

10.1.7.2 Microscale Analysis

The microscale analysis was performed in accordance with FHWA's NEPA implementing regulations and procedures and USEPA's regulatory guidance and procedures.

An initial review of all the tolling scenarios was conducted to determine the tolling scenario that demonstrates the highest traffic volume increases on the local streets. As a result of this initial review, a screening analysis was conducted primarily based on Tolling Scenario D. This is the tolling scenario that would have the highest traffic volume increases on the local streets, based on the results of the traffic modeling conducted for this Project (and is representative of the similar levels of traffic changes projected for Tolling Scenarios E and F). The only exception to this is the midday period in Downtown Brooklyn, which has the highest traffic volume increases on the local streets under Tolling Scenario C. The screening procedures were conducted for those pollutants that are of concern on a localized (or microscale) level: CO, PM_{10}, and $PM_{2.5}$. The screening was performed to determine whether detailed microscale modeling for CO, PM_{10}, or $PM_{2.5}$ would be required to assess the potential air quality effects of the Project. The screening was conducted using the criteria from the NYSDOT *The Environmental Manual* (TEM), Chapter 1.1.[14]

10.1.7.3 Carbon Monoxide Screening

Following NYSDOT's TEM, Chapter 1.1, a CO microscale/hot-spot screening procedure was used to screen the intersections predicted to be affected by the Project. As per the referenced guidance, if an intersection is predicted to have a build LOS C or better, the intersection is deemed to pass the screening, and no CO analysis is warranted.

If the intersection is predicted to have LOS D or below in a build alternative, the intersection is further screened by the following criteria:

- A 10 percent or more reduction in the source-receptor distance[15]
- A 10 percent or more increase in traffic volume on affected roadways
- A 10 percent or more increase in vehicle emissions
- Any increase in the number of queued lanes
- A 20 percent reduction in speed, when predicted average speed is at 30 miles per hour or less

If any of the intersections affected by a project meet or exceed any of these criteria, volume threshold screening (vehicle threshold tables that tie the volume threshold with emission factors, as detailed in NYSDOT's TEM, Chapter 1.1, Section I-3) is applied. The emission factors applied within this screening would come from USEPA's MOVES2014b emission factor program and represent the 2023 analysis year. If any intersection exceeds the traffic volume thresholds in NYSDOT's TEM, then a CO hot-spot analysis is conducted following the procedures in NYSDOT's TEM, Chapter 1.1.

10.1.7.4 Particulate Matter Screening (Determining Project of Air Quality Concern)

Following NYSDOT's TEM, Chapter 1.1 (Section 8), and in accordance with USEPA's October 2021 guidance, *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*, a project requires a quantitative particulate matter analysis if it is deemed to be a "Project of Air Quality Concern," based on the screening analysis presented in **Section 10.3.2.2**.

14 https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm.

15 In this case, source-receptor distance is the distance between a roadway and a sensitive receptor such as a house, school, etc. Because the Project is not widening any roadways or creating additional travel lanes, distances between sources and receptors would not change due to the Project.

Projects that require a quantitative $PM_{2.5}$ and PM_{10} hot-spot analysis, as defined in Section 93.123(b)(1) of the conformity rule, include the following:

- New highway projects that have a significant number of diesel vehicles and expanded highway projects that have a significant increase in the number of diesel vehicles – *not applicable to this Project*.
- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to a project – *potentially applicable to this Project; screening analysis was conducted*.
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location – *not applicable to this Project*.
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location – *not applicable to this Project*.
- Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation – *not applicable to this Project*.

For this Project, the screening analysis included all 102 intersections evaluated in the traffic analysis (Chapter 4B, "Transportation: Highways and Local Intersections").

Federal USEPA guidance for hot-spot $PM_{2.5}$ and PM_{10} analyses does not define a "significant increase in diesel trucks"; as such, a screening was performed to compare the maximum hourly changes in heavy-duty diesel vehicles for the intersections that would demonstrate a LOS of D or worse under the CBD Tolling Alternative (Tolling Scenario D and Tolling Scenario C where applicable) compared to the No Action Alternative. For this analysis, heavy-duty diesel vehicles included medium-duty trucks, heavy-duty trucks, and buses.

10.1.7.5 Highway Link Analyses

In response to concerns raised during public engagement for the Project, the effects of the link-level highway segments on localized communities—particularly on the Cross Bronx Expressway in the vicinity of Macombs Road and on the Franklin D. Roosevelt (FDR) Drive near 10th Street—were analyzed.

Microscale CO screening was conducted at the FDR Drive location following NYSDOT's TEM Volume Threshold Screening. Because the FDR Drive does not allow trucks, a microscale particulate matter screening or analysis was not warranted at that location.

Microscale particulate matter analyses were conducted following USEPA's October 2021 guidance*, Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.* These analyses were conducted at the Cross Bronx Expressway in the vicinity of Macombs Road and at two other locations representing those areas with the highest increases in truck traffic due to the Project and the highest AADT with the Project under all tolling scenarios and for all links analyzed in the mesoscale analysis (see **Table 10B-27** and **Table 10B-28** in **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure"**).

Details of the PM methodology, interagency consultation, and site selection are contained within **Appendix 10C, "Air Quality: Highway Link PM Hot-Spot Detailed Assessment (Methodology, Interagency Consultation & Results)."**

10.2 AFFECTED ENVIRONMENT

The regional study area for the traffic analyses includes a total of 28 counties in New York, New Jersey, and Connecticut. To provide background on existing air quality conditions in the study area, monitored air quality data collected by USEPA, per the CAA, around New York City and New Jersey was compiled and is presented in **Table 10-6**. **Figure 10-2** shows the USEPA monitoring locations closest to the regional study area. As shown in **Table 10-6**, when compared to the NAAQS presented in **Table 10-1**, there were several exceedances of the O_3 standard of 0.070 ppm, but no exceedances of any of the other criteria pollutants.

In addition to the USEPA monitoring used to assess compliance with the NAAQS, the New York City Department of Health and Mental Hygiene and Queens College of the City University of New York are conducting the NYCCAS, a program to monitor air quality across New York City. During public outreach, participants expressed interest in utilizing this information to characterize the air quality conditions in each neighborhood.

The purpose of NYCCAS is to better understand air pollution levels and patterns by revealing how pollution from traffic, buildings, and other sources varies among the city's neighborhoods. This helps identify which neighborhoods have the highest pollutant levels and where changes can be made to improve air quality. The difference in monitored values between the USEPA information and the NYCCAS information is due to different collection methods and averaging periods reported. NYCCAS data does not meet the regulatory requirements of a USEPA monitor and cannot be used to determine compliance with the NAAQS, or as a background value for regulatory modeling. It does, however, indicate the general air quality trend.

There are about 100 NYCCAS air pollution monitors[16] installed throughout the five boroughs, with at least one in each Community District. Many are in neighborhoods with high traffic volumes and high building density. Others are in quieter locations with fewer buildings. Some monitors are placed near unique facilities, like bus depots and ferry terminals.

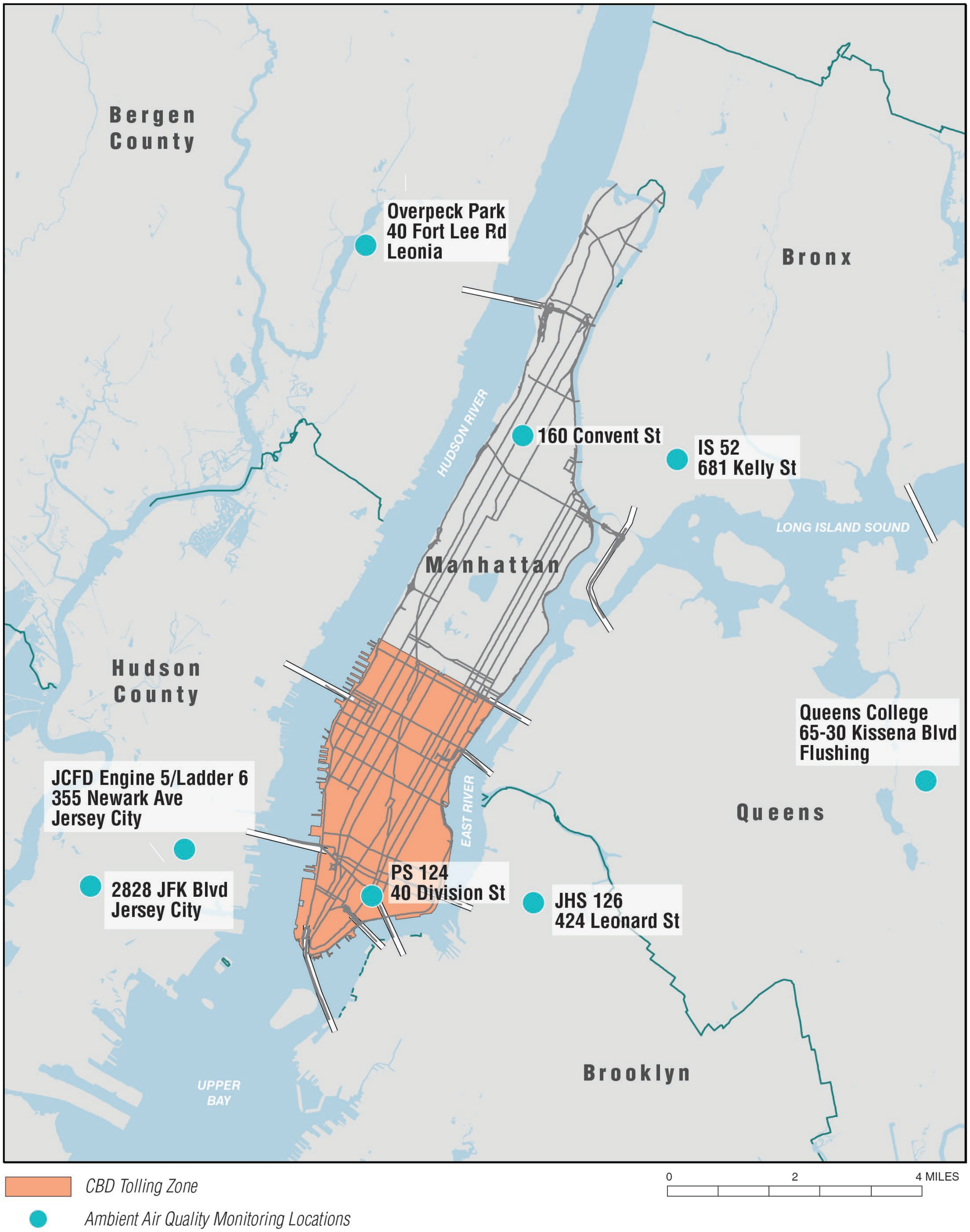
[16] More information on the monitors can be found at https://www1.nyc.gov/site/doh/data/data-sets/air-quality-nyc-community-air-survey.page.

Table 10-6. Ambient Air Quality Monitored Data

MONITORING LOCATION			MANHATTAN & BRONX PS 124 40 Division St., Manhattan — 160 Convent Ave., Manhattan — IS 52 681 Kelly St., Bronx			BROOKLYN & QUEENS JHS 126 424 Leonard St., Brooklyn — Queens College 65-30 Kissena Blvd., Queens			NEW JERSEY JCFD Engine 5/Ladder 6 355 Newark Ave., Jersey City — 2828 JFK Blvd., Jersey City — Overpeck Park 40 Fort Lee Rd., Leonia		
			2017	2018	2019	2017	2018	2019	2017	2018	2019
Carbon Monoxide (CO) [ppm]	1-hour	Maximum	1.6*	2.9*	1.8*	1.7^	1.9	1.5^	2.0**	5.1**	3.2**
		2nd Maximum	1.4*	2.5*	1.6*	1.3^	1.7^	1.4^	1.7**	4.8**	2.1**
		# of Exceedances	0	0	0	0^	0^	0^	0**	0**	0**
	8-hour	Maximum	1.1*	1.7*	1.3*	0.9^	1.3^	1.1^	1.1**	3.2**	1.2**
		2nd Maximum	0.9*	1.2*	1.1*	0.9^	1.2^	1.1^	1.1**	1.6**	1.2**
		# of Exceedances	0*	0*	0*	0^	0^	0^	0**	0**	0**
Particulate Matter (PM) [ug/m^3]	PM_{10}	Maximum 24 hours	35	40	43	30^	38^	28^	36	44	42
		2nd Maximum	31	38	29	28^	29^	23^	32	33	34
		# of Exceedances	0	0	0	0^	0^	0^	0	0	0
	$PM_{2.5}$	24-hour 98th percentile	18	22	20	17	18	18	21	21	25
		Mean Annual	8.8	9.6	8.6	7.5	7.9	7.6	10.3	9.5	8.9
Ozone (O_3) [ppm]	8-hour	1st Highest	0.077*	0.086*	0.081*	0.086^	0.082^	0.076^	0.082+	0.091+	0.085+
		2nd Highest	0.073*	0.082*	0.071*	0.080^	0.080^	0.072^	0.079+	0.090+	0.073+
		3rd Highest	0.070*	0.078*	0.067*	0.079^	0.076^	0.072^	0.074+	0.081+	0.072+
		4th Highest	0.070*	0.077*	0.066*	0.079^	0.073^	0.071^	0.074+	0.079+	0.071+
		# of days standard exceeded	2*.	10*	2*	6^	8^	4^	7+	13+	4+
Nitrogen Dioxide (NO_2) [ppb]	1-hour Maximum		64^^	79^^	67^^	79^	69^	61^	70**	85**	83**
	1-hour second Maximum		64^^	78^^	66^^	69^	66^	60^	59**	82**	73**
	98th Percentile		59^^	59^^	58^^	59^	53^	54^	53**	58**	56**
	Annual Mean		17.3^^	17.5^^	16.9^^	15.3^	14.4^	14.2^	20.2**	19.2**	21.2**
Sulfur Dioxide (SO_2) [ppb]	1-hour Maximum		12.2^^	12.9^^	7.2^^	5.7^	8.1^	6.5^	8**	6.4**	6.3**
	24-hour Maximum		3^^	6.3^^	2.4^^	2.3^	3.2^	2.7^	4.1**	4.1**	3.5**
	# of days standard exceeded		0^^	0^^	0^^	0^	0^	0^	0**	0**	0**

Source: U.S. Environmental Protection Agency AirData
Notes:
- 2020 and 2021 data not included due to potential impacts of COVID-19 pandemic on traffic and pollutant levels
- Manhattan & Bronx data from PS 124 unless noted as follows: *160 Convent Avenue; ^^681 Kelly Street
- Brooklyn & Queens data from JHS 126 unless noted as follows: ^Queens College
- New Jersey data from JCFD Engine 5/Ladder 6 unless noted as follows: **2828 JFK Blvd; +Overpeck Park

Figure 10-2. U.S. Environmental Protection Agency Ambient Air Quality Monitoring Locations

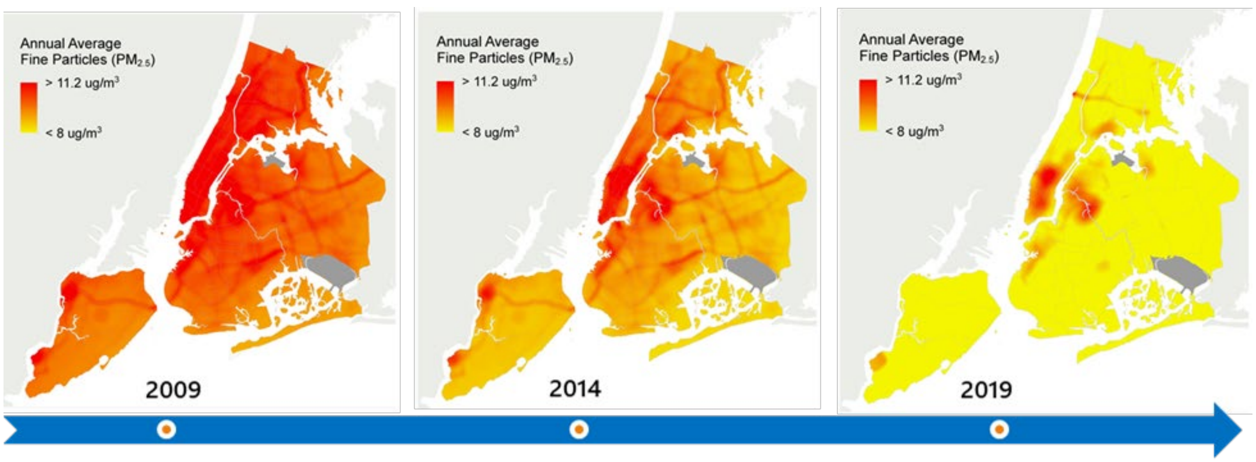


Source: WSP

The following key findings are the result of the NYCCAS monitoring over the past decade:

- Annual average levels of four key pollutants have decreased citywide between the first year of monitoring (2009) and the most recent year of data (2019):
  - $PM_{2.5}$ (fine particulate matter): -38 percent (**Figure 10-3**)
  - NO_2: -33 percent
  - Nitric Oxide: -52 percent
  - Black Carbon: -38 percent
- Air quality improved substantially after the City of New York required building owners to convert to cleaner heating oils by 2015; since the first winter of monitoring, average levels of SO_2 have declined by 95 percent.

Figure 10-3. $PM_{2.5}$ Trends in the Study Area (2009 to 2019)



Source: https://nyccas.cityofnewyork.us/nyccas2021v9/report/2.

10.3 ENVIRONMENTAL CONSEQUENCES

10.3.1 No Action Alternative

The No Action Alternative assumes no vehicular tolling program or associated tolling infrastructure and tolling system equipment. Any changes in traffic would be a result of projected background growth and other reasonably foreseeable factors not related to the Project. **Table 10-7** shows projected emission burdens for the No Action Alternative in the 12-county area for the mesoscale analysis would decrease for most pollutants in 2045, as compared to 2023, thereby continuing the trends presented in **Figure 10-3**.

10.3.2 CBD Tolling Alternative

10.3.2.1 Mesoscale, MSAT and GHG Analyses

Table 10-7 presents the predicted VMT and emission burdens of volatile organic compounds, nitrogen oxides, CO, PM_{10}, and $PM_{2.5}$ under the No Action Alternative and Tolling Scenario A (the tolling scenario predicted to result in the smallest change in VMT compared to the No Action Alternative). This table also presents the emission burdens of GHGs in terms of CO_2e under the No Action Alternative and CBD Tolling Alternative. In all analysis years, the overall regional VMT and emission burdens would be lower under the CBD Tolling Alternative than the No Action Alternative. Thus, the CBD Tolling Alternative would benefit regional air quality by reducing criteria pollutants in the 12-county study area. Table 10-8 and Table 10-9 provide the changes by county, which are depicted in Figure 10-4 through Figure 10-13.

As shown in Table 10-8:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Rockland, and Hudson Counties estimate decreases in all pollutants with the Project in 2023.
- Suffolk, Westchester, and Putnam Counties estimate mixed results, with some pollutants increasing slightly and some pollutant burdens decreasing with the Project in 2023.
- The Bronx, Richmond (Staten Island), Nassau, and Bergen Counties estimate increases in all pollutants with the Project in 2023.

As shown in Table 10-9:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, and Hudson Counties estimate decreases in all pollutants with the Project in 2045.
- The Bronx, Nassau, Westchester, Rockland, and Putnam Counties estimate mixed results with some pollutants increasing slightly and some pollutants decreasing with the Project in 2045.
- Richmond (Staten Island) and Bergen Counties estimate increases in all pollutants with the Project in 2045.

The regional emissions estimates are based on changes in VMT, speed, and vehicle mix. The interaction of these factors affects the relative decreases and increases in each county. While some counties are predicted to show increases in pollutant emissions, a local level analysis (detailed in Section 10.3.2.2) resulted in no intersections requiring a detailed analysis because they all passed the screening criteria.

Table 10-7. Mesoscale Emission Burdens, CBD Tolling Alternative (Tolling Scenario A, tons/year)

POLLUTANT	ANALYSIS YEAR 2023			ANALYSIS YEAR 2045		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference
Daily Vehicle-Miles Traveled (miles/day)	182,736,632	182,143,856	-0.3%	201,294,782	200,421,921	-0.4%
Volatile Organic Compounds (VOC)	17,698	17,667	-0.2%	10,692	10,676	-0.2%
Nitrogen Oxides (NO_x)	23,956	23,864	-0.4%	11,195	11,169	-0.2%
Carbon Monoxide (CO)	227,726	227,074	-0.3%	117,510	117,399	-0.1%
Particulate Matter (PM_{10})	5,884	5,828	-1.0%	6,095	6,016	-1.3%
Particulate Matter ($PM_{2.5}$)	1,452	1,441	-0.7%	1,050	1,038	-1.1%
Carbon Dioxide Equivalents (CO_2e)	32,445,206	32,236,481	-0.6%	27,883,351	27,648,782	-0.8%

Source: WSP, 2022

Note: Vehicle-miles traveled presented in this table are greater than the NYMTC Best Practice Model output as presented in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** due to a series of seasonal adjustments that were made to the travel-demand forecasts, consistent with NYMTC's procedures to generate maximum potential worst-case conditions for conformity analyses and are not applicable to evaluate general changes in travel patterns as is the purpose of **Subchapter 4A**. The NYMTC Post Processor software was used to apply Highway Performance Monitoring System reconciliation and travel-time adjustments for intersections. NYMTC's Transportation Conformity Determination includes details on these adjustments: https://www.nymtc.org/Required-Planning-Products/Transportation-Conformity/Transportation-Conformity-Determination-Documents-adopted

Table 10-8. Mesoscale Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

POLLUTANT	ANALYSIS YEAR 2023 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York												
	CBD Only	Entire County	Queens	Bronx	Kings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
Daily Vehicle-Miles Traveled (miles/day)	-11.56%	-5.88%	-0.36%	+0.15%	-0.74%	+1.73%	+0.03%	-0.03%	-0.22%	-0.17%	+0.28%	-2.24%	+0.88%
Volatile Organic Compounds (VOC)	-4.96%	-3.29%	-0.32%	+0.03%	-0.32%	+0.44%	+0.05%	+0.02%	+0.21%	-0.05%	-0.03%	-0.66%	+0.20%
Nitrogen Oxides (NO_x)	-9.54%	-5.96%	-0.56%	+0.09%	-0.68%	+1.26%	+0.09%	+0.00%	-0.25%	-0.12%	+0.37%	-1.85%	+0.63%
Carbon Monoxide (CO)	-7.58%	-4.58%	-0.37%	+0.02%	-0.51%	+0.89%	+0.03%	-0.03%	-0.13%	-0.05%	+0.00%	-1.02%	+0.49%
Particulate Matter (PM_{10})	-12.16%	-9.75%	-1.23%	+0.30%	-1.00%	+2.12%	+0.19%	+0.11%	-0.32%	-0.36%	+0.31%	-3.86%	+0.74%
Particulate Matter ($PM_{2.5}$)	-11.37%	-8.52%	-0.99%	+0.20%	-0.90%	+1.80%	+0.14%	+0.06%	-0.23%	-0.25%	+0.26%	-3.00%	+0.69%
Carbon Dioxide Equivalents (CO_2e)	-11.48%	-7.92%	-0.84%	+0.15%	-0.88%	+1.76%	+0.15%	+0.03%	-0.40%	-0.23%	+0.17%	-3.03%	+0.80%

Source: WSP, 2022

Table 10-9. Mesoscale Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

POLLUTANT	ANALYSIS YEAR 2045 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York												
	CBD Only	Entire County	Queens	Bronx	Kings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
Daily Vehicle-Miles Traveled (miles/day)	-11.32%	-5.71%	-0.46%	-0.05%	-1.14%	+1.83%	-0.26%	-0.04%	-0.38%	-0.41%	-0.43%	-1.59%	+0.69%
Volatile Organic Compounds (VOC)	-3.24%	-3.59%	-0.65%	+0.02%	-1.50%	+1.48%	+1.01%	-0.09%	+0.56%	-0.89%	+0.51%	-0.61%	+0.14%
Nitrogen Oxides (NO_x)	-5.89%	-5.64%	-0.83%	+0.01%	-6.97%	+8.69%	+0.49%	-0.11%	+4.45%	-2.53%	+3.79%	-1.31%	+0.36%
Carbon Monoxide (CO)	-6.55%	-3.61%	-0.42%	-0.06%	-1.00%	+1.12%	+1.37%	-0.07%	0.00%	-1.96%	-0.07%	-0.64%	+0.40%
Particulate Matter (PM_{10})	-11.55%	-10.24%	-1.55%	+0.21%	-1.72%	+2.40%	-0.51%	-0.37%	-0.75%	+5.14%	-0.25%	-3.06%	+0.67%
Particulate Matter ($PM_{2.5}$)	-11.04%	-9.42%	-1.41%	+0.16%	-1.85%	+2.51%	-0.45%	-0.31%	-0.38%	+2.44%	-0.02%	-2.48%	+0.63%
Carbon Dioxide Equivalents (CO_2e)	-10.72%	-7.80%	-0.90%	+0.05%	-1.57%	+2.04%	-0.31%	-0.23%	-0.38%	-2.82%	-0.30%	-2.34%	+0.64%

Source: WSP, 2022

Figure 10-4. Changes in Volatile Organic Compounds, Tolling Scenario A (Analysis Year 2023)

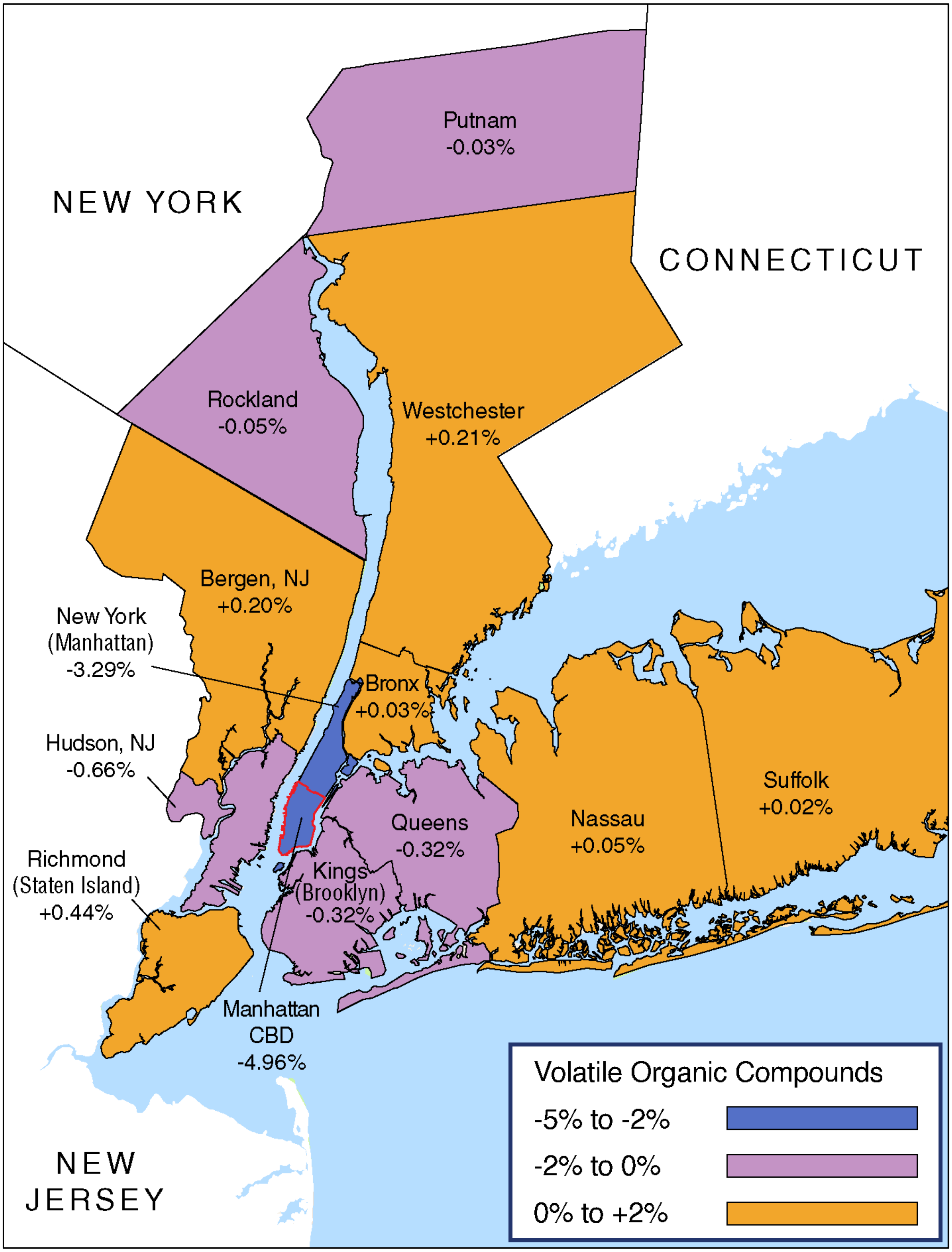


Figure 10-5. Changes in Nitrogen Oxides, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

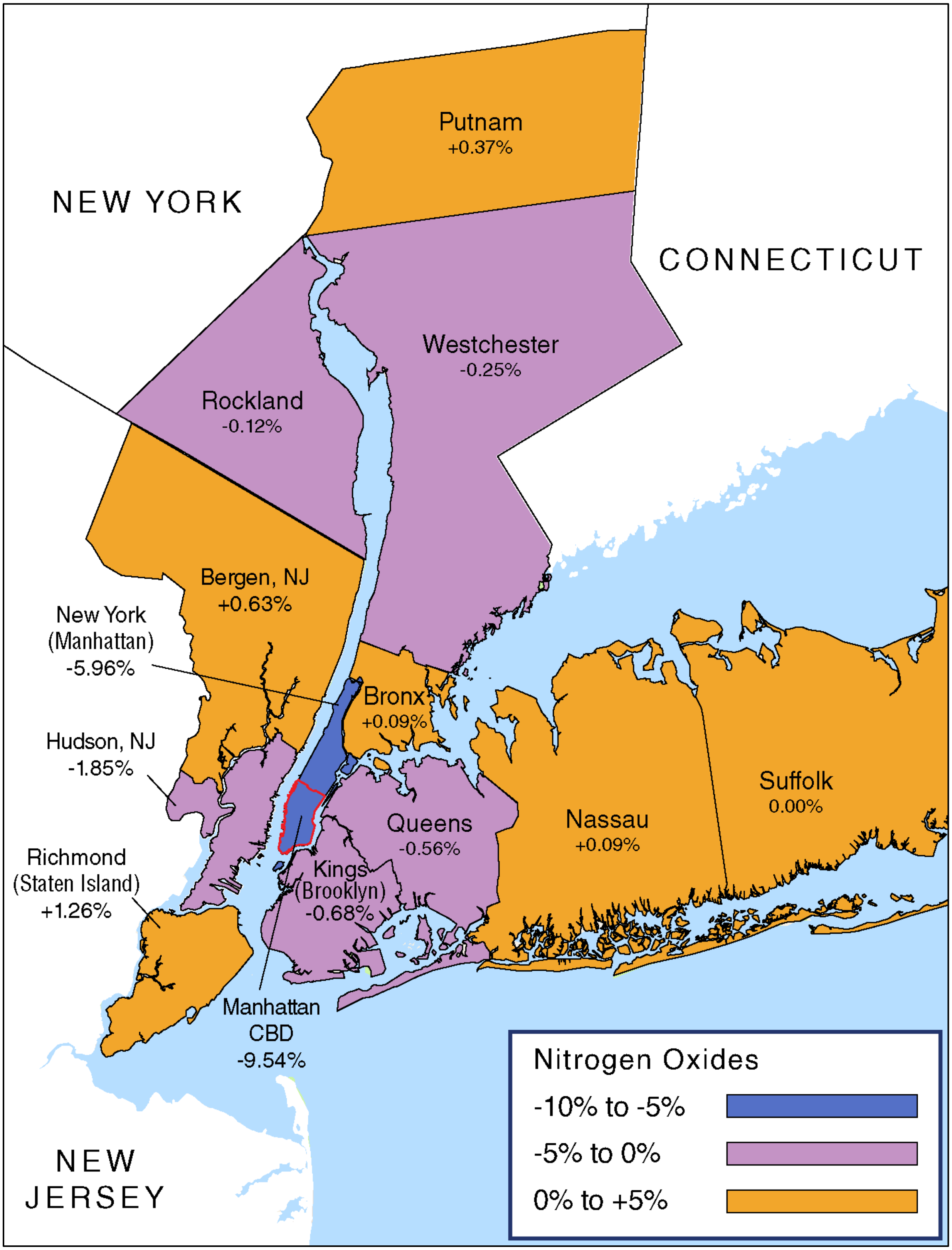


Figure 10-6. Changes in Carbon Monoxide, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

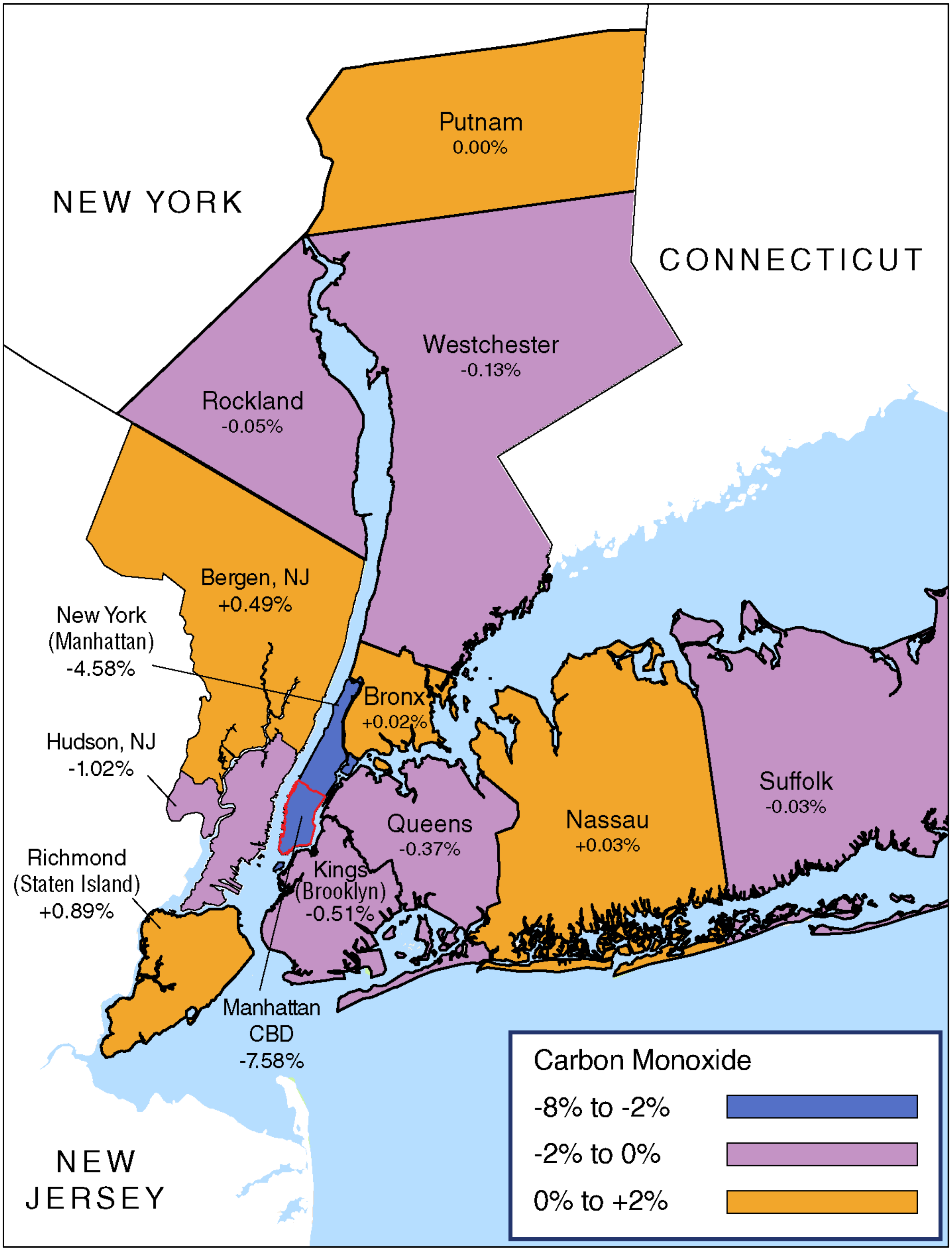


Figure 10-7. Changes in Particulate Matter 10 (PM_{10}), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

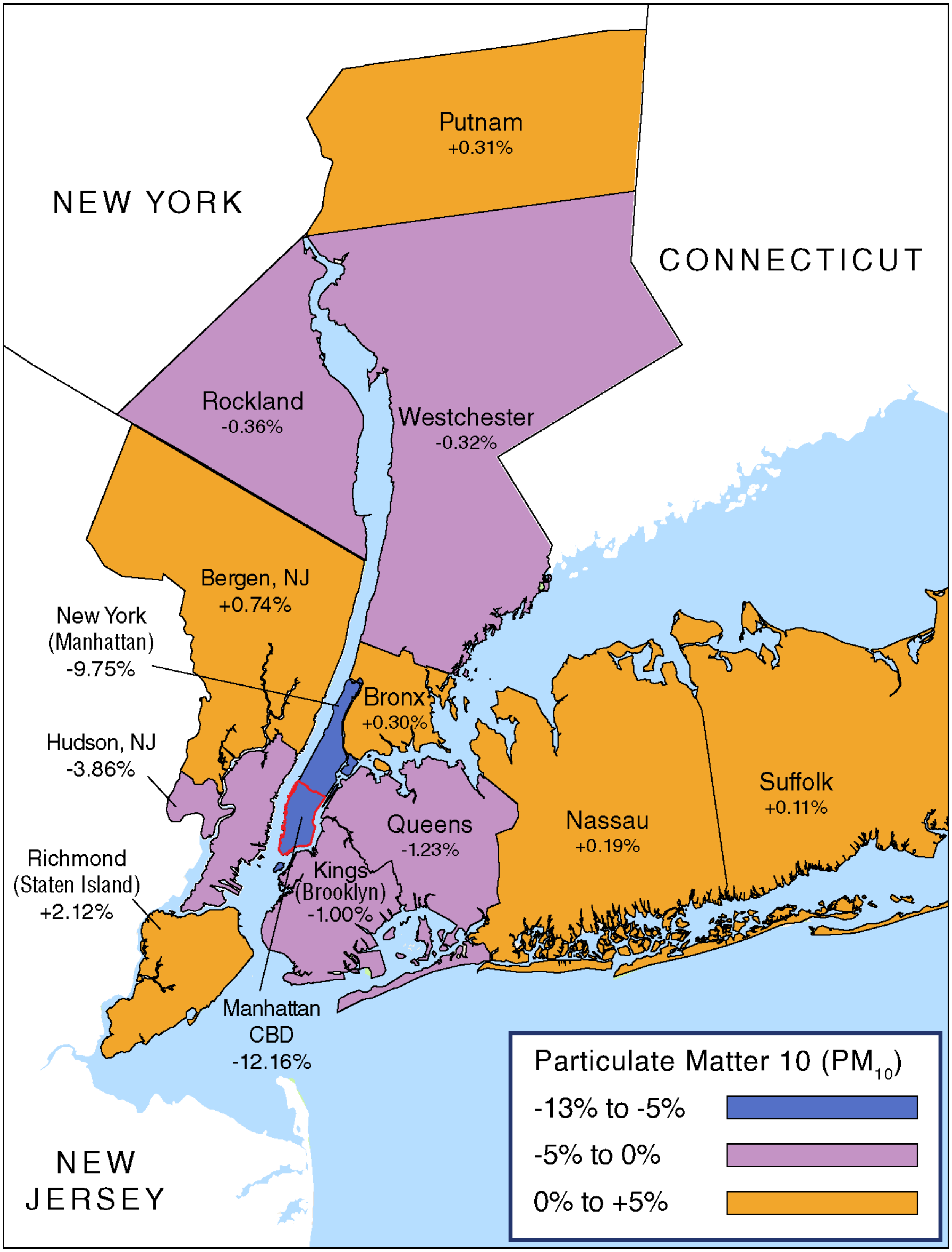


Figure 10-8. Changes in Particulate Matter 2.5 ($PM_{2.5}$), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

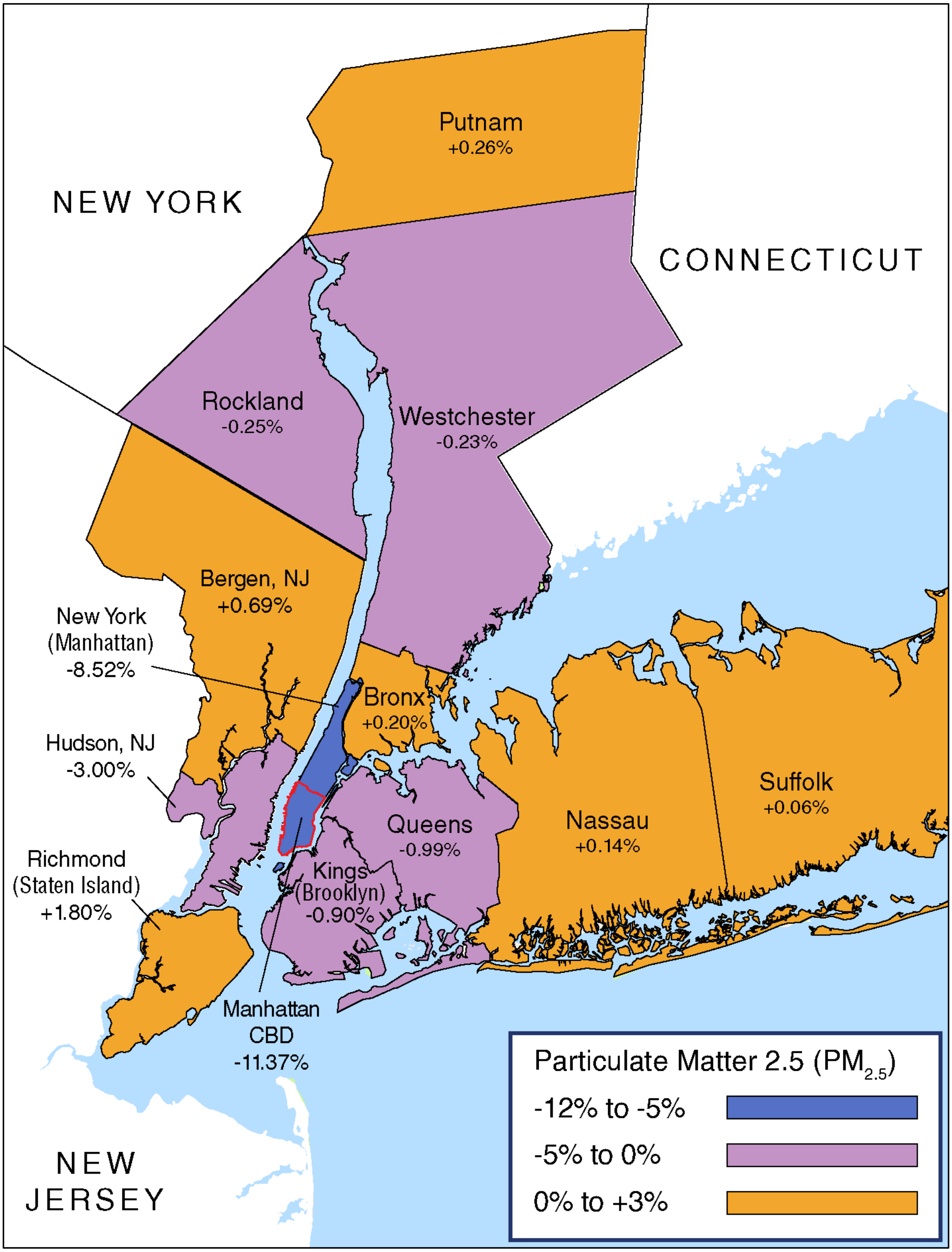


Figure 10-9. Changes in Volatile Organic Compounds, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

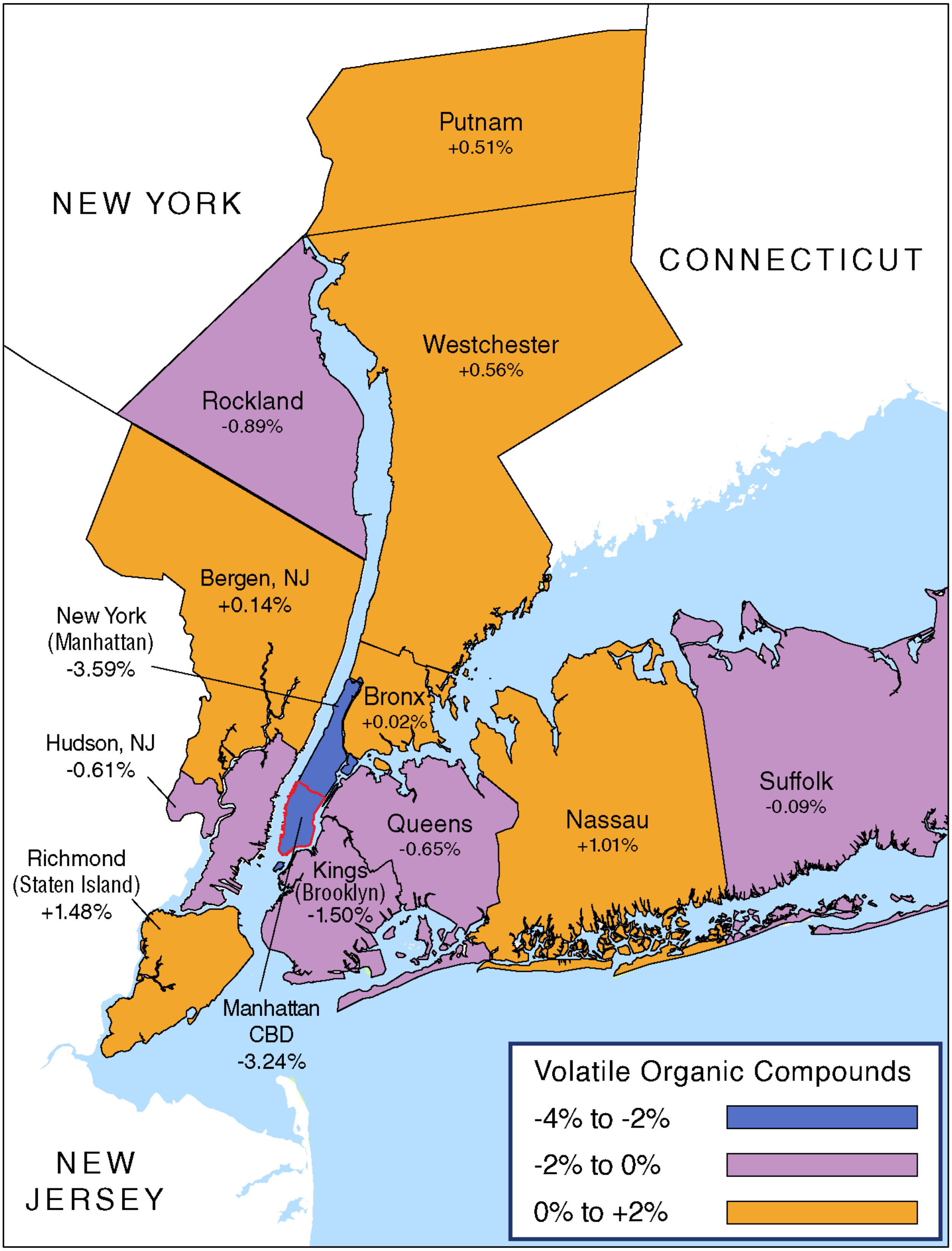


Figure 10-10. Changes in Nitrogen Oxides, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

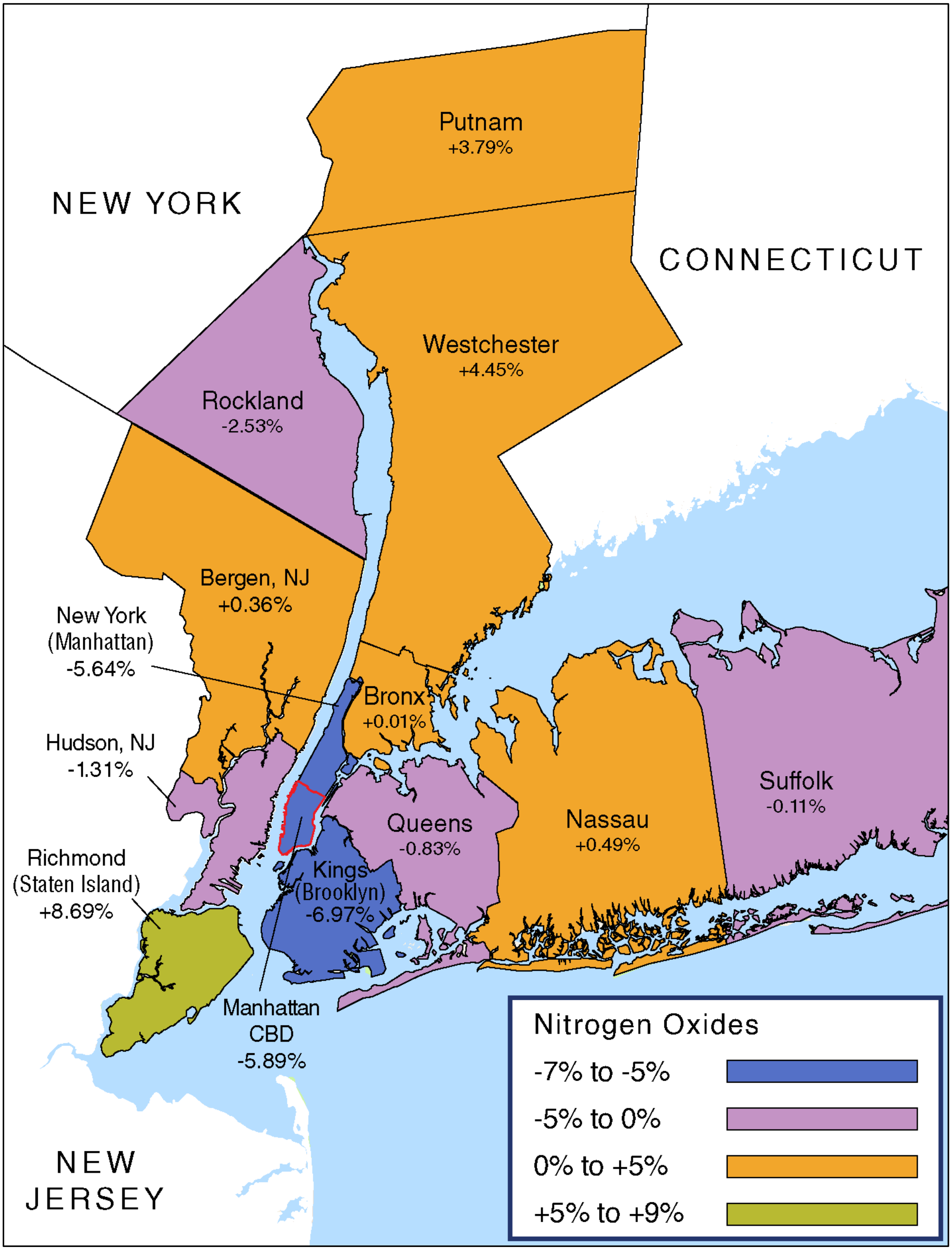


Figure 10-11. Changes in Carbon Monoxide, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

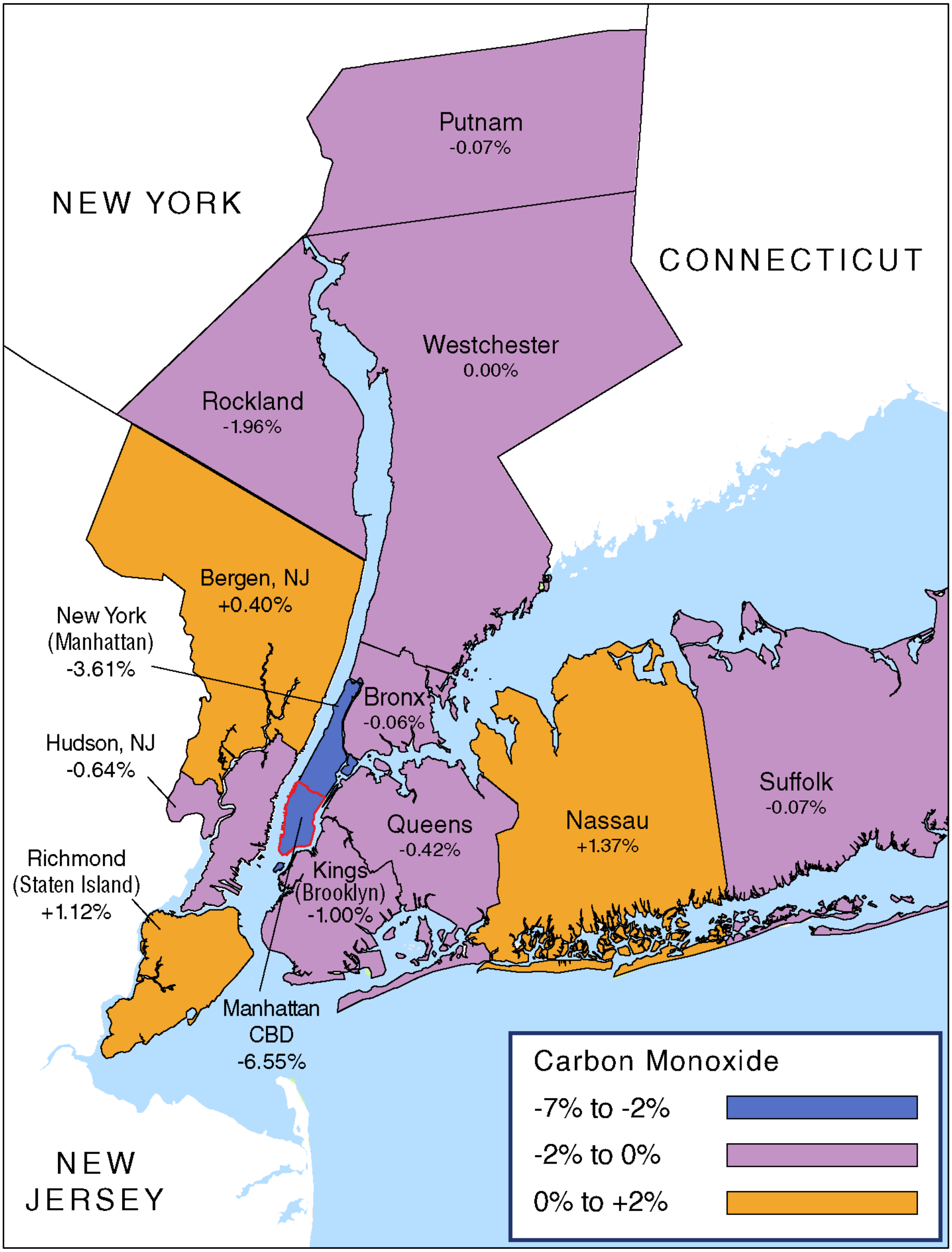


Figure 10-12. Changes in Particulate Matter 10 (PM_{10}), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

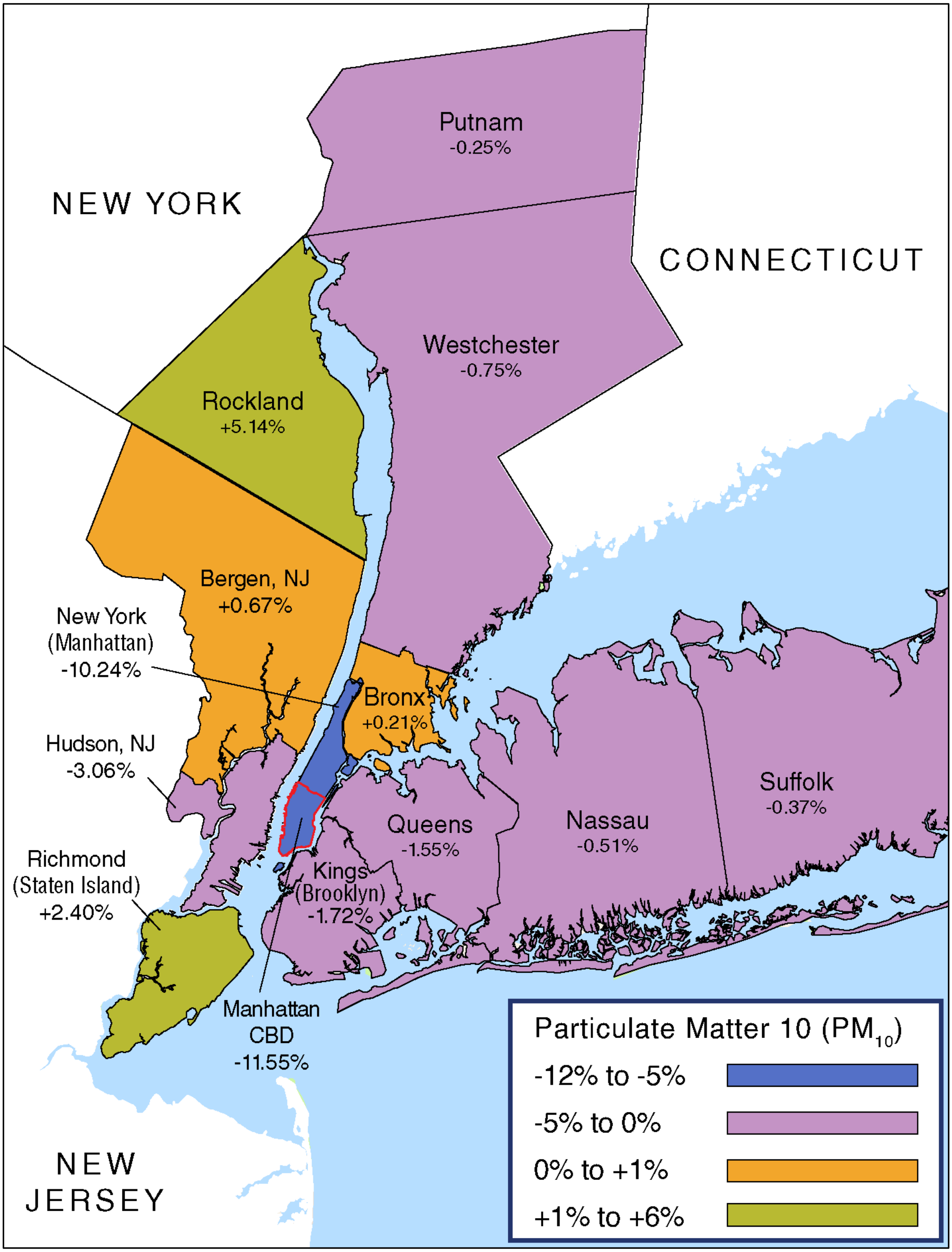


Figure 10-13. Changes in Particulate Matter 2.5 ($PM_{2.5}$), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

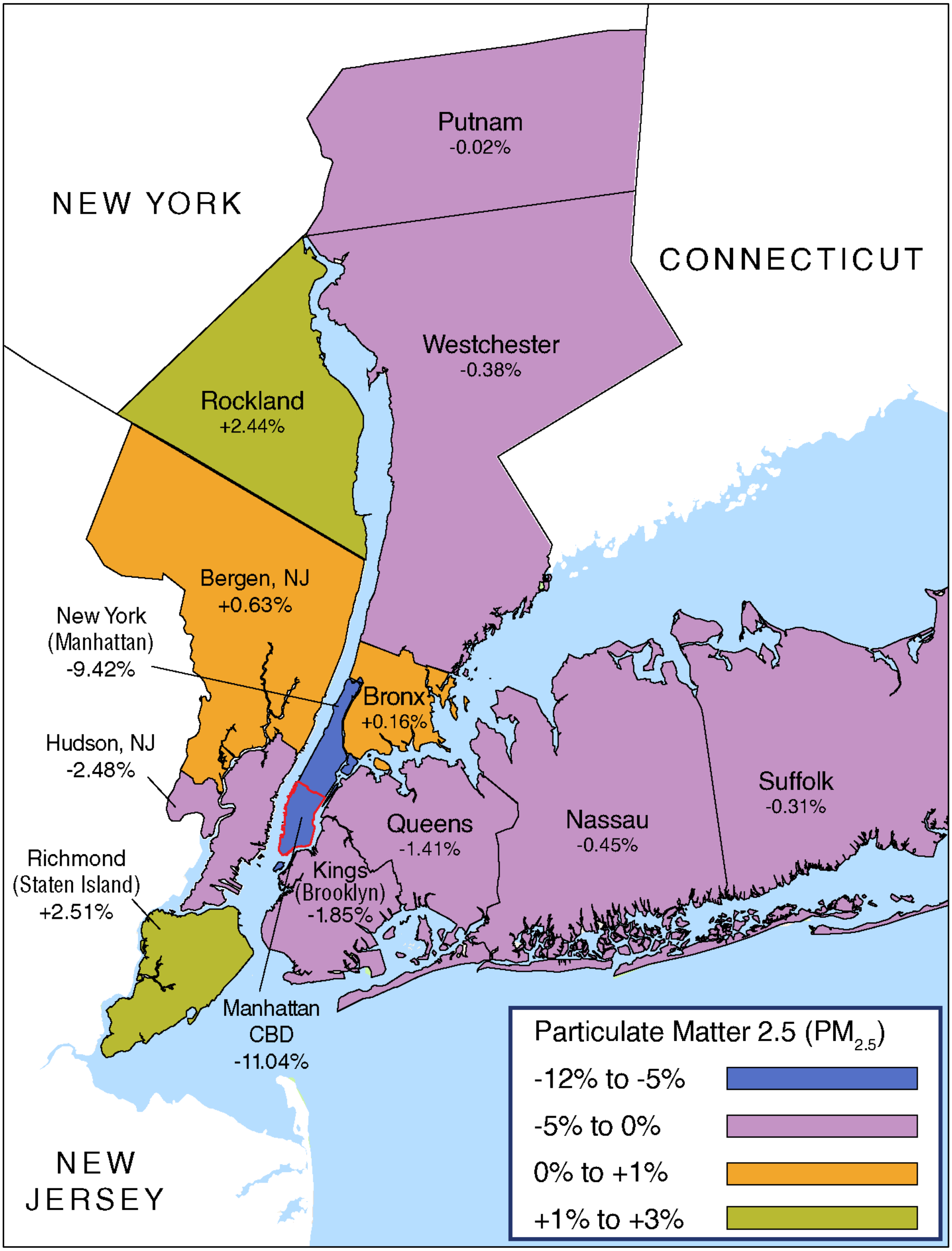


Table 10-10 presents the emission burdens of MSATs under the No Action Alternative and CBD Tolling Alternative. In all analysis years, when looking at the entire 12-county study area, all MSATs would be lower under the CBD Tolling Alternative compared to the No Action Alternative. **Table 10-11** and **Table 10-12** provide the estimated changes by county, which are graphically depicted in **Figure 10-14** and **Figure 10-15**.

As shown in **Table 10-11**:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Westchester, Rockland, and Hudson Counties estimate decreases in all MSATs with the Project in 2023.
- The Bronx, Richmond (Staten Island), Nassau, Suffolk, Putnam, and Bergen Counties estimate increases in all MSATs with the Project in 2023.

As shown in **Table 10-12**:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, Putnam, and Hudson Counties estimate decreases in all MSATs with the Project in 2045.
- The Bronx, Nassau, Westchester, and Rockland Counties estimate mixed results with some MSATs increasing slightly and some pollutants decreasing with the Project in 2045.
- Richmond (Staten Island) and Bergen Counties estimate increases in all MSATs with the Project in 2045.

When comparing the CBD Tolling Alternative to the No Action Alternative, some localized areas may experience increases in MSATs, while other areas may experience decreases. It should be noted, however, that MSAT emissions will likely be lower in the future years than present levels, regardless of whether the CBD Tolling Alternative is implemented, as a result of USEPA's national control programs that are projected to reduce annual MSAT emissions by more than 90 percent between 2010 and 2050 (**Figure 10-1**).

Changes in MSATs are expected to occur near the roadways that experience changes in VMT. **Figure 10-16** highlights the roadways with the VMT increases due to the Project. Furthermore, these VMT changes were tabulated for environmental justice and non-environmental justice communities and are presented in **Table 4A-23 and Table 4A-24 (Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling")** for the various subareas of the region.

Table 10-10. Mobile Source Air Toxics Emission Burdens, CBD Tolling Alternative (Tolling Scenario A, tons/year)

POLLUTANT	ANALYSIS YEAR 2023			ANALYSIS YEAR 2045		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	% Difference
Daily Vehicle-Miles Traveled (miles/day)	182,736,632	182,143,856	-0.3%	201,294,782	200,421,921	-0.4%
1,3-Butadiene	4.53	4.50	-0.7%	0.23	0.23	-1.5%
Acetaldehyde	50.23	49.76	-0.9%	26.49	26.11	-1.4%
Acrolein	6.47	6.41	-0.9%	3.38	3.33	-1.4%
Benzene	82.56	82.07	-0.6%	39.40	39.07	-0.8%
Diesel Particulate Matter	373.41	370.61	-0.7%	132.79	131.57	-0.9%
Ethylbenzene	90.55	90.16	-0.4%	67.59	67.21	-0.6%
Formaldehyde	115.22	114.10	-1.0%	75.49	74.39	-1.5%
Naphthalene	11.24	11.14	-0.9%	6.00	5.92	-1.4%
Polycyclic Organic Matter	4.32	4.29	-0.7%	1.29	1.27	-1.0%

Source: WSP, 2022

Note: Vehicle-miles traveled presented in this table are greater than the NYMTC Best Practice Model output as presented in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** due to a series of seasonal adjustments that were made to the travel-demand forecasts, consistent with NYMTC's procedures to generate maximum potential worst-case conditions for conformity analyses and are not applicable to evaluate general changes in travel patterns as is the purpose of **Subchapter 4A**. The NYMTC Post Processor software was used to apply Highway Performance Monitoring System reconciliation and travel-time adjustments for intersections. NYMTC's Transportation Conformity Determination includes details on these adjustments: https://www.nymtc.org/Required-Planning-Products/Transportation-Conformity/Transportation-Conformity-Determination-Documents-adopted.

Table 10-11. Mobile Source Air Toxics Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

POLLUTANT	ANALYSIS YEAR 2023 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York		Queens	Bronx	Kings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
	CBD Only	Entire County											
Daily VMT (miles/day)	-11.56%	-5.88%	-0.36%	+0.15%	-0.74%	+1.73%	+0.03%	-0.03%	-0.22%	-0.17%	+0.28%	-2.24%	+0.88%
1,3-Butadiene	-11.82%	-9.11%	-1.12%	+0.17%	-0.99%	+1.96%	+0.22%	+0.07%	-0.25%	-0.26%	+0.30%	-3.93%	+0.81%
Acetaldehyde	-11.78%	-9.09%	-1.13%	+0.16%	-0.99%	+1.95%	+0.26%	+0.08%	-0.25%	-0.27%	+0.30%	-3.96%	+0.79%
Acrolein	-11.79%	-9.25%	-1.17%	+0.15%	-1.01%	+1.98%	+0.29%	+0.10%	-0.26%	-0.28%	+0.29%	-4.05%	+0.77%
Benzene	-10.91%	-7.37%	-0.74%	+0.05%	-0.82%	+1.56%	+0.13%	+0.01%	-0.19%	-0.17%	+0.27%	-2.48%	+0.70%
Diesel PM	-11.79%	-8.64%	-0.94%	+0.20%	-0.94%	+1.99%	+0.23%	+0.10%	-0.28%	0.00%	+0.28%	-3.44%	+0.74%
Ethylbenzene	-8.58%	-6.14%	-0.65%	+0.07%	-0.63%	+1.01%	+0.12%	+0.03%	-0.11%	-0.12%	+0.15%	-1.57%	+0.40%
Formaldehyde	-11.78%	-9.18%	-1.15%	+0.16%	-1.00%	+1.96%	+0.29%	+0.09%	-0.26%	-0.28%	+0.29%	-4.02%	+0.77%
Naphthalene	-11.76%	-9.06%	-1.13%	+0.14%	-0.99%	+1.95%	+0.27%	+0.08%	-0.25%	-0.27%	+0.29%	-3.96%	+0.78%
Polycyclic Organic Matter	-11.59%	-8.46%	-0.99%	+0.09%	-0.96%	+1.84%	+0.20%	+0.04%	-0.24%	-0.25%	+0.30%	-3.62%	+0.82%

Source: WSP, 2022

Table 10-12. Mobile Source Air Toxics Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

POLLUTANT	ANALYSIS YEAR 2045 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE													
	New York		Queens	Bronx	Kings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
	CBD Only	Entire County											
Daily VMT (miles/day)	-11.32%	-5.71%	-0.46%	-0.05%	-1.14%	+1.83%	-0.26%	-0.04%	-0.38%	-0.43%	-0.41%	-1.59%	+0.69%
1,3-Butadiene	-11.13%	-10.02%	-1.56%	+0.16%	-1.77%	+2.23%	-0.45%	-0.44%	-0.73%	-0.31%	-9.14%	-3.32%	+0.68%
Acetaldehyde	-11.13%	-9.60%	-1.42%	+0.12%	-1.70%	+2.16%	-0.13%	-0.39%	-0.67%	-0.35%	-7.17%	-3.16%	+0.69%
Acrolein	-11.13%	-9.75%	-1.47%	+0.13%	-1.72%	+2.18%	-0.23%	-0.41%	-0.69%	-0.33%	-7.90%	-3.22%	+0.69%
Benzene	-10.11%	-7.81%	-0.84%	-0.03%	-1.41%	+1.71%	+0.84%	-0.23%	-0.42%	-0.35%	-2.24%	-2.00%	+0.54%
Diesel PM	-9.75%	-8.32%	-1.07%	+0.07%	-3.88%	+5.32%	-0.39%	-0.25%	+1.76%	+1.87%	-2.88%	-2.33%	+0.60%
Ethylbenzene	-6.90%	-5.82%	-0.73%	+0.05%	-0.96%	+0.93%	+0.03%	-0.19%	-0.23%	-0.13%	-1.76%	-1.19%	+0.28%
Formaldehyde	-11.13%	-9.73%	-1.46%	+0.13%	-1.72%	+2.18%	-0.21%	-0.41%	-0.69%	-0.34%	-7.76%	-3.21%	+0.69%
Naphthalene	-11.13%	-9.62%	-1.42%	+0.11%	-1.70%	+2.16%	-0.10%	-0.40%	-0.67%	-0.35%	-7.28%	-3.17%	+0.69%
Polycyclic Organic Matter	-11.04%	-8.44%	-1.04%	0.00%	-1.56%	+1.95%	+0.17%	-0.26%	-0.53%	-0.42%	-3.96%	-2.41%	+0.75%

Source: WSP, 2022

Figure 10-14. Changes in Total Mobile Source Air Toxics: CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

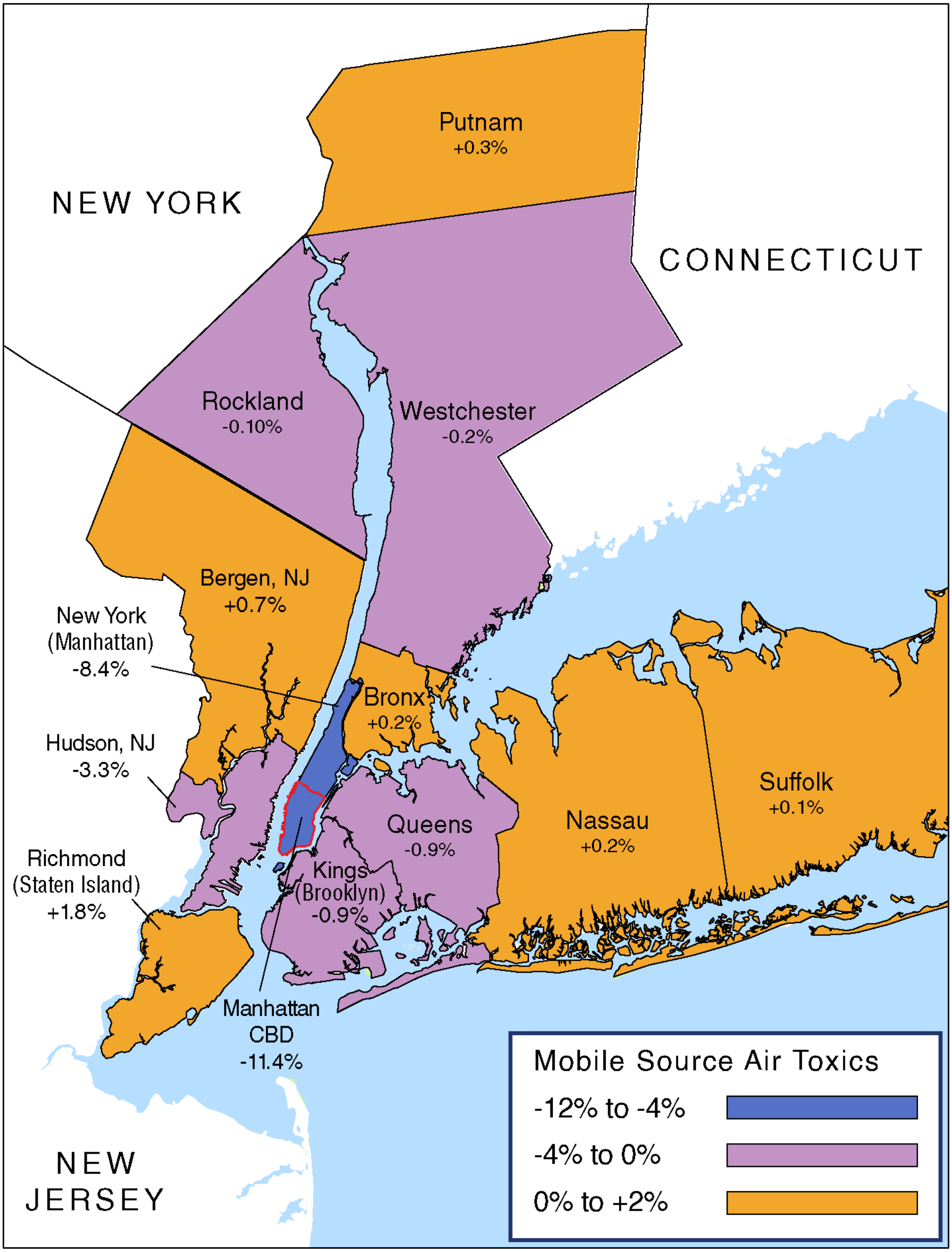


Figure 10-15. Changes in Total Mobile Source Air Toxics, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

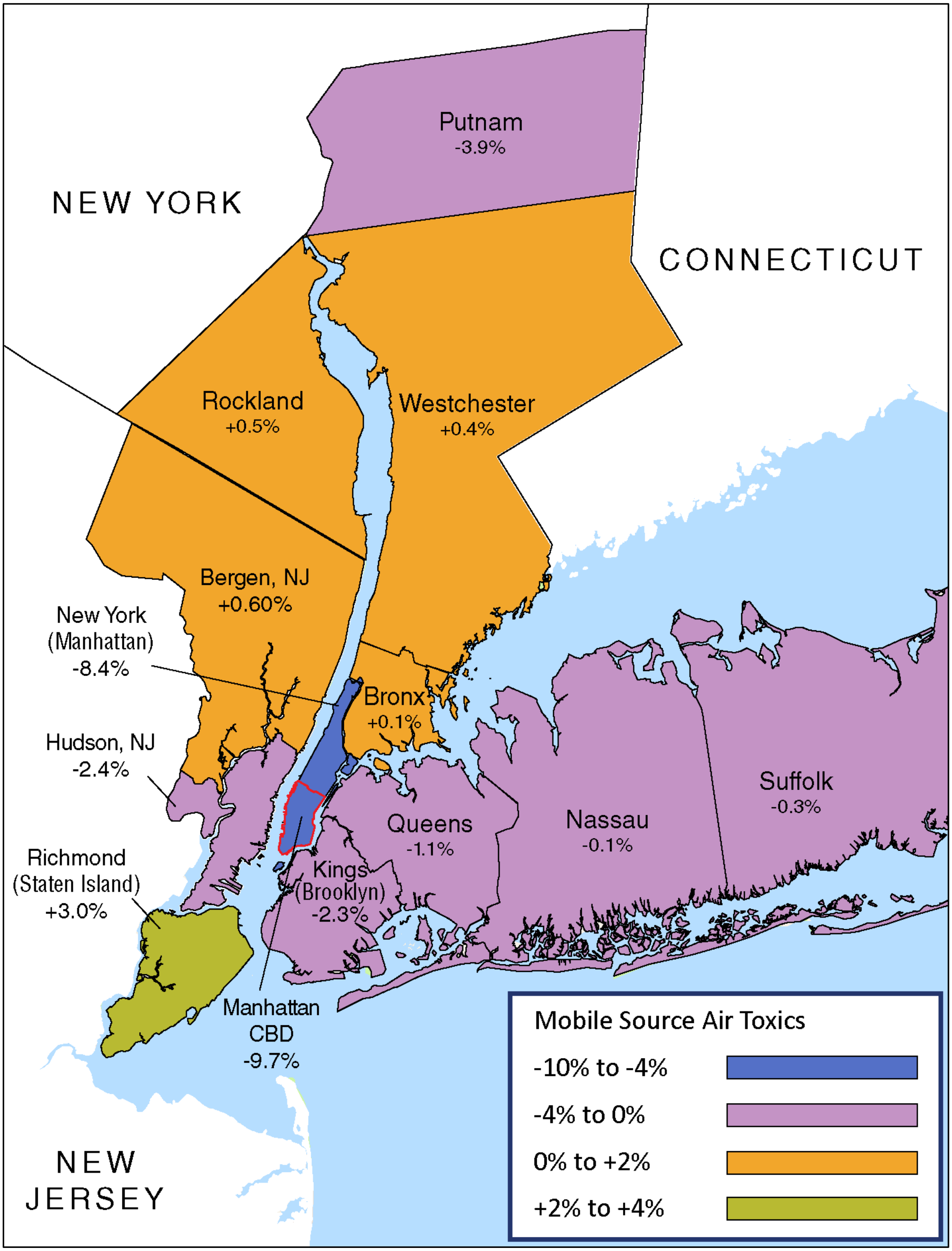
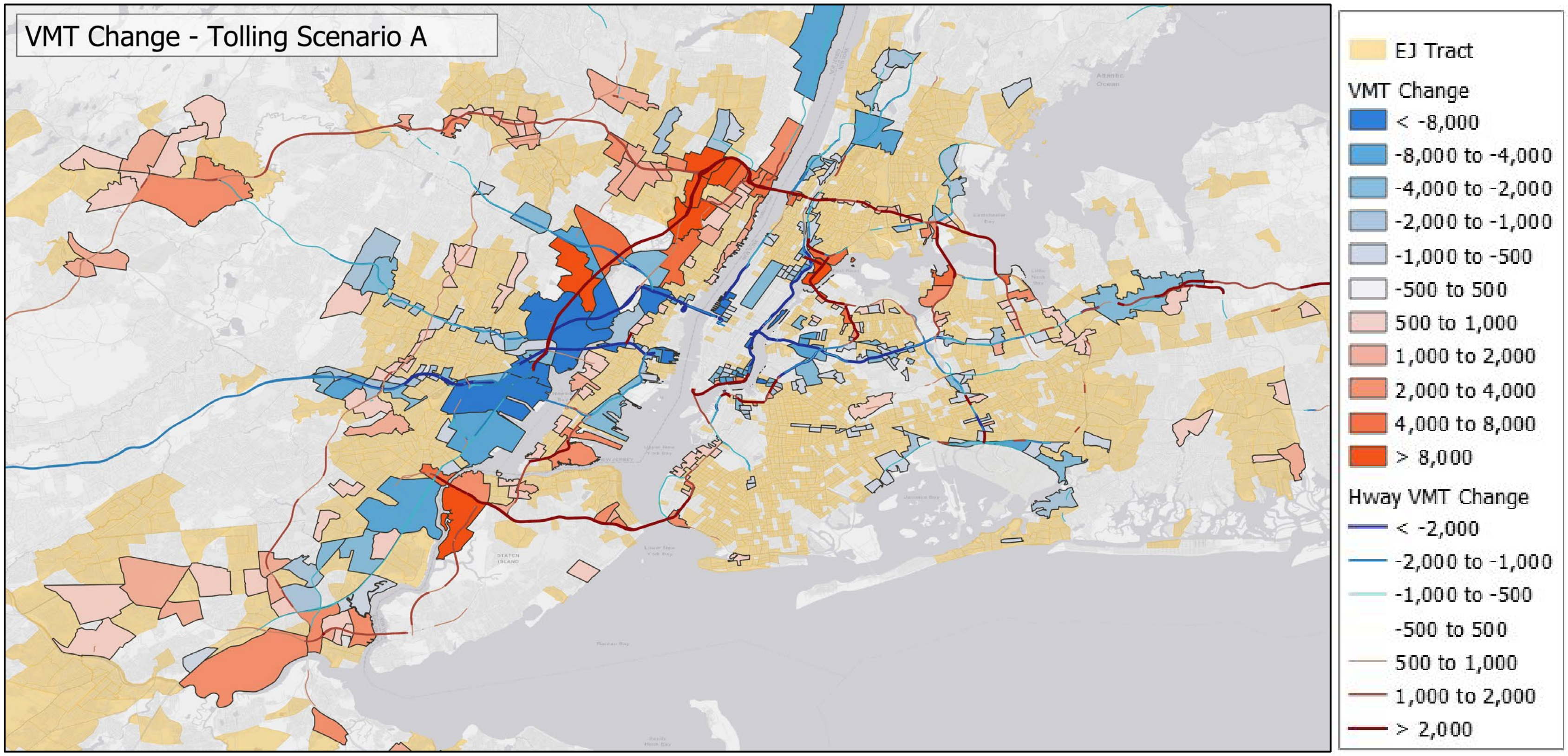


Figure 10-16. Vehicle-Miles Traveled Increase (Tolling Scenario A) and Environmental Justice Census Tracts



As shown in **Figure 10-16,** the Project would result in traffic diversions around Manhattan, into the Bronx and northern New Jersey and Staten Island. These circumferential diversions are due to implementation of the tolling in the Manhattan CBD, as drivers and trucks traveling to and from Long Island and Pennsylvania would divert around Manhattan to avoid the tolling in the Manhattan CBD. These diversions would be most pronounced at the approach to the Robert F. Kennedy Bridge in Queens, across the south Bronx and the George Washington Bridge, and into northern New Jersey. Diversions to the south would occur across the Verrazzano-Narrows Bridge and through Staten Island.

The environmental justice communities experiencing the largest traffic volumes and truck increases from these circumferential diversions are along I-95 in northern New Jersey and in Queens at the approach to the Robert F. Kennedy Bridge. Furthermore, during public engagement for the Project, members of the public expressed concerns regarding increased traffic volumes in environmental justice communities in the south Bronx, which would also be impacted by these circumferential diversions. To address these concerns, the Project team conducted detailed microscale PM analyses at these locations. **Section 10.3.2.3** provides more information on these analyses.

There are also environmental justice communities that would experience decreases in traffic volumes due to these circumferential diversions. These decreases would be mainly due to the traffic no longer traveling from Long Island through the Midtown Tunnel, across the Manhattan CBD, and through the Lincoln Tunnel into New Jersey. As such, the decreases in traffic volumes would be most pronounced along the Long Island Expressway in Queens, through the Midtown and Lincoln Tunnels, and into New Jersey. Those environmental justice communities that would experience the largest traffic volumes and truck decreases from the circumferential diversions are in central Queens, Hell's Kitchen in Manhattan, and in those portions of New Jersey to the south of the Lincoln Tunnel.

10.3.2.2 Microscale Screening Analysis

A screening analysis was conducted to determine whether detailed microscale analyses of CO and $PM_{2.5}$/PM_{10} impacts are required for the CBD Tolling Alternative, or if the traffic would be below the screening thresholds and thus require no further analysis. Based on the predicted traffic volumes for Tolling Scenario D and Tolling Scenario C, as applicable, all 102 intersections in the regional study area were screened using NYSDOT CO screening parameters. These 102 intersections, shown in **Subchapter 4B, "Transportation: Highways and Local Intersections," Figure 4B-13**, were analyzed because they are the locations expected to demonstrate the largest changes in traffic due to the Project. Of these 102 intersections, approximately half are in environmental justice communities.

An intersection passed the CO screening analysis by either having a LOS of C or better with the Project, or, if the LOS was D or worse, demonstrating less than a 10 percent increase in volume between the No Action Alternative and the CBD Tolling Alternative. **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure,"** details the LOS and overall volumes for each peak hour in the AM, midday, PM, and overnight time periods, for the 102 intersections used for this screening.

The NYSDOT screening procedure was applied for $PM_{2.5}$/PM_{10}. As per NYSDOT guidance, this procedure was based on the maximum hourly changes in heavy-duty diesel vehicles under Project conditions, compared to conditions without the Project, for intersections that demonstrated a LOS of D or worse under the CBD Tolling Alternative. A maximum hourly change in heavy-duty diesel vehicles over 10 vehicles at those intersections predicted to operate at LOS D or below was determined to be the threshold for a significant increase, thereby warranting more detailed analysis. **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure,"** details the LOS and overall volumes and volume changes used for this screening for each of the 102 intersections analyzed.

As detailed in **Appendix 10B**, **"Air Quality: Project-Level Hot-Spot Screening Procedure,"** intersections predicted to experience an incremental increase of 10 or more diesel vehicles in the peak period are all predicted to operate at LOS C or better. Furthermore, the largest increase at those intersections predicted to operate at LOS D or worse and experience an increased volume of diesel vehicles is five additional diesel vehicles per hour.

Intersections operating at LOS C or better do not warrant hot-spot analysis according to NYSDOT guidance and 40 CFR Part 93.123.

As shown in **Table 10-13,** all 102 analysis locations passed the NYSDOT CO and $PM_{2.5}$/PM_{10} screening analysis; therefore, no further analysis for CO or $PM_{2.5}$/PM_{10} is warranted. In addition, over 80 percent of the intersections show a decrease or no change in heavy-duty diesel vehicle volumes with the CBD Tolling Alternative compared to the No Action Alternative. For the 20 percent of intersections that show an increase, the change was less than the screening threshold of 10 or more diesel vehicles in the peak period. During early public outreach, concern was raised specifically around potential increases in heavy-duty vehicles in environmental justice communities given that heavy-duty diesel vehicles are closely linked to particulate matter emissions and associated health effects including cardiovascular and respiratory disease.[17] Of the 43 intersections that are located in environmental justice communities (see **Chapter 17, "Environmental Justice," Figure 17-7**), 74 percent would experience a decrease of heavy-duty diesel vehicles. For those that are predicted to experience an increase, the change was less than the screening threshold of 10 or more diesel vehicles in the peak period.

17 See, for example, Hime, Neil J.; Guy B. Marks; and Christine T. Cowie, "A comparison of the health effects of ambient particulate matter air pollution from five emission sources," *International Journal of Environmental Research and Public Health* 15(6), 2018, https://www.mdpi.com/1660-4601/15/6/1206; and Aryal, Aryal; Ashlyn C. Harmon; and Tammy R. Dugas, "Particulate matter air pollutants and cardiovascular disease: Strategies for intervention," *Pharmacology & Therapeutics* 223, July 2021, https://www.sciencedirect.com/science/article/abs/pii/S0163725821000929.

Table 10-13. CO and $PM_{2.5}/PM_{10}$ Microscale Screening Results, CBD Tolling Alternative (Tolling Scenario C and Tolling Scenario D)

LOCATION	INTERSECTION	CO SCREENING	$PM_{2.5}/PM_{10}$ SCREENING
Downtown Brooklyn	Flatbush Avenue and Tillary Street	Passed	Passed
	Adam Street and Tillary Street	Passed	Passed
	Old Fulton Street and Vine Street	Passed	Passed
Lincoln Tunnel (Manhattan)	Ninth Avenue and West 33rd Street	Passed	Passed
	Dyer Avenue and West 34th Street	Passed	Passed
	Twelfth Avenue and West 34th Street	Passed	Passed
	Eleventh Avenue and West 42nd Street	Passed	Passed
	Dyer Avenue and West 36th Street	Passed	Passed
	Tenth Avenue and West 33rd Street	Passed	Passed
	Eleventh Avenue and West 34th Street	Passed	Passed
	Tenth Avenue and West 41st Street	Passed	Passed
	Twelfth Avenue and West 42nd Street	Passed	Passed
Long Island City (Queens)	Pulaski Bridge/11th Street and Jackson Avenue	Passed	Passed
	11th Street and 48th Avenue	Passed	Passed
	50th Avenue at Vernon Boulevard	Passed	Passed
	Green Street and McGuiness Boulevard	Passed	Passed
	McGuinness Boulevard and Freeman Street	Passed	Passed
	21st Street and 49th Avenue	Passed	Passed
	11th Street and Borden Avenue	Passed	Passed
	Van Dam Street and Queens-Midtown Tunnel Expressway	Passed	Passed
	Van Dam Street and Borden Avenue	Passed	Passed
	Jackson Ave/Northern Boulevard and Queens Plaza	Passed	Passed
	Thomson Avenue and Dutch Kills Street	Passed	Passed
	Thomson Avenue and Dutch Kills Street	Passed	Passed
	21st Street and Queens Plaza N	Passed	Passed
Lower Manhattan (Manhattan)	Trinity Place and Edgar Street	Passed	Passed
	Trinity Place and Rector Street	Passed	Passed
	Hugh L. Carey Tunnel Entrance/Exit and West Street	Passed	Passed
	Hugh L. Carey Tunnel Exit and West Street and West Thames Street	Passed	Passed
	Chambers Street and Centre Street	Passed	Passed
	Canal and Hudson Streets/Holland Tunnel On-Ramp	Passed	Passed
	Canal Street and Holland Tunnel On-Ramp	Passed	Passed
	Canal Street S and West Street	Passed	Passed
	West Street and Albany Street	Passed	Passed
	West Street and Vesey Street	Passed	Passed
	West Street and Chambers Street	Passed	Passed
	Canal Street/Manhattan Bridge and Bowery	Passed	Passed
	Manhattan Bridge and Bowery	Passed	Passed
	Sixth Avenue and Watts Street	Passed	Passed
	Canal Street and Sixth Avenue/Laight Street	Passed	Passed
New Jersey	14th Street/Holland Tunnel (E-W) and Marin Boulevard (N-S)	Passed	Passed
	14th Street (E-W) and Jersey Avenue (N-S)	Passed	Passed
	12th Street (E-W) and Jersey Avenue (N-S)	Passed	Passed
	12th Street/Holland Tunnel (E-W) and Marin Boulevard (N-S)	Passed	Passed

LOCATION	INTERSECTION	CO SCREENING	$PM_{2.5}/PM_{10}$ SCREENING
Queens-Midtown Tunnel (Manhattan)	East 37th Street and Third Avenue	Passed	Passed
	East 36th Street and Second Avenue	Passed	Passed
	East 34th Street and Third Avenue	Passed	Passed
	East 35th Street and Third Avenue	Passed	Passed
	East 34th Street and Second Avenue	Passed	Passed
	East 35th Street and Second Avenue	Passed	Passed
Red Hook (Brooklyn)	Hamilton Avenue, Clinton Street and West 9th Street	Passed	Passed
	Hamilton Avenue (northbound) and West 9th Street	Passed	Passed
Robert F. Kennedy Bridge (Manhattan, the Bronx, Queens)	East 126th Street and Second Avenue	Passed	Passed
	East 125th Street and Second Avenue	Passed	Passed
	East 134th Street and St. Ann's Avenue	Passed	Passed
	St. Ann's Avenue and Bruckner Boulevard	Passed	Passed
	31st Street and Astoria Boulevard	Passed	Passed
	Hoyt Avenue North and 31st Street	Passed	Passed
	Hoyt Avenue South and 31st Street	Passed	Passed
Upper East Side (Manhattan)	East 60th Street and Ed Koch Queensboro Bridge Exit	Passed	Passed
	East 60th Street and Third Avenue	Passed	Passed
	East 60th Street and York Avenue	Passed	Passed
	East 59th Street and Second Avenue	Passed	Passed
	East 60th Street and Second Avenue	Passed	Passed
	East 60th Street and First Avenue	Passed	Passed
	East 60th Street and Lexington Avenue	Passed	Passed
	East 60th Street and Park Avenue (northbound)	Passed	Passed
	East 60th Street and Park Avenue (south- and westbound)	Passed	Passed
	East 60th Street and Madison Avenue	Passed	Passed
	East 62nd Street and Ed Koch Queensboro Bridge Exit	Passed	Passed
	East 60th Street and Fifth Avenue	Passed	Passed
	East 63rd Street and York Avenue	Passed	Passed
	East 53rd Street and Franklin D. Roosevelt Drive	Passed	Passed
	East 61st Street and Fifth Avenue	Passed	Passed
	East 65th Street and Fifth Avenue	Passed	Passed
	East 66th Street and Fifth Avenue	Passed	Passed
	East 79th Street and Fifth Avenue	Passed	Passed
	East 71st Street and York Avenue	Passed	Passed

LOCATION	INTERSECTION	CO SCREENING	$PM_{2.5}/PM_{10}$ SCREENING
Upper West Side (Manhattan)	West 72nd Street and West End Avenue	Passed	Passed
	West 61st Street and West End Avenue	Passed	Passed
	West 79th Street and Riverside Drive	Passed	Passed
	West 56th Street and Twelfth Avenue	Passed	Passed
	West 56th Street and West Side Highway	Passed	Passed
	West 55th Street and West Side Highway	Passed	Passed
	West 55th Street and Twelfth Avenue	Passed	Passed
	West 55th Street and West Side Highway Arterial	Passed	Passed
	West 60th Street and Broadway	Passed	Passed
	West 60th Street and Columbus Avenue	Passed	Passed
	West 60th Street and Amsterdam Avenue	Passed	Passed
	West 60th Street and West End Avenue	Passed	Passed
	West 61st Street and Amsterdam Avenue	Passed	Passed
	West 61st Street and Columbus Avenue	Passed	Passed
	West 61st Street and Broadway	Passed	Passed
	West 61st Street and Columbus Avenue	Passed	Passed
	West 81st Street and Central Park West	Passed	Passed
	West 66th Street and Central Park West	Passed	Passed
	West 65th Street and Central Park West	Passed	Passed
West Side Highway/ Route 9A (Manhattan)	West 24th Street and Twelfth Avenue	Passed	Passed
Little Dominican Republic (Manhattan)	West 179th Street and Broadway	Passed	Passed
Lower East Side (Manhattan)	Park Row/Chatham Square, Worth/Oliver Street and Mott Street	Passed	Passed
	Chatham Square and East Broadway	Passed	Passed
	Chatham Square/Bowery and Division Street	Passed	Passed

Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure," provides details of the CO and $PM_{2.5}/PM_{10}$ screening analysis.

10.3.2.3 Highway Link Analysis

During early outreach, concerns were raised related to a specific location at FDR Drive and 10th Street, as it is near low-income housing locations. A volume threshold screening was conducted and results were compared to the thresholds in Table 3B of Section I-3 of the NYSDOT TEM Chapter 1.1. The emission factors applied within this screening are from USEPA's MOVES model. CO emission factors were generated for various speeds along FDR Drive (from 10 to 40 miles per hour) for opening-year conditions and ranged from 1.9 to 2.9 grams per mile. Upon comparison to Table 3B in the TEM, when applying the above emission factors, the peak-hour volumes in the Project would not result in an adverse effect if they have approach volumes of less than 8,000 vehicles. According to the traffic analysis, approach volumes on FDR Drive at 10th Street are under the 8,000-vehicle threshold with the Project. As such, the travel lanes in this area do not meet the criteria that would warrant a microscale analysis, and the Project would not increase traffic volumes or change other existing conditions to such a degree as to jeopardize attainment of the NAAQS for CO.

Similar to concerns expressed regarding truck volumes on local intersections, concerns were also raised during early public outreach regarding changes in truck volumes on nearby highways, the resulting impact on particulate matter at a localized level. Specifically, there was concern that in communities that already are overburdened by pollution, even a single additional truck is of concern. Though all sites analyzed passed the particulate matter screening parameters established for the Project, in recognition of the association of particulate matter and health effects, it was decided to conduct hot-spot analyses on highway links throughout the study area to quantify the Project's impact on localized air quality levels. A highway link screening analysis was conducted to determine which locations should be analyzed. Since the tolling scenarios affect individual highway links differently, this screening analysis evaluated every highway link under every scenario and selected those sites that demonstrated the highest AADT and the highest increase in heavy-duty diesel trucks (see **Table 10B-27** and **Table 10B-28**). Furthermore, due to specific community concerns in the South Bronx, an additional analysis location was selected on the Cross Bronx Expressway at Macombs Road. This location was also screened under every scenario.

The sites chosen for analysis are the following:

- I-95 west of the George Washington Bridge, Tolling Scenario C
  - Highest AADT in all scenarios
  - New Jersey location
  - Environmental justice community
- Cross Bronx Expressway at Macombs Road, Tolling Scenario B
  - Community concern
  - Scenario with highest truck increase at that location
  - Bronx location
  - Environmental justice community
- Robert F. Kennedy (Triborough) Queens Approach, Tolling Scenario E
  - Highest truck increase across all scenarios
  - Queens location
  - Environmental justice community

According to the results of the PM microscale analyses, all levels were below the applicable NAAQS. Details of the analysis results, as well as electronic versions of the MOVES and AERMOD files, are contained within **Appendix 10C, "Air Quality: Highway Link PM Hot-Spot Detailed Assessment (Methodology, Interagency Consultation, & Results)."**

As an independent action, MTA is currently transitioning its fleet to zero-emission buses. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, MTA will prioritize the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which will begin later in 2022. This independent effort by MTA is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.

Furthermore, the Project Sponsors will monitor air quality for the life of the Project through the NYCCAS, a citywide network of roughly 100 sensors (see **Section 10.2**). NYCDOT will coordinate to expand the existing network of sensors to monitor priority locations and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring is necessary.

10.4 TRANSPORTATION CONFORMITY DETERMINATION

The Project was included in the regional emissions analysis for NYMTC's most recent Transportation Conformity Determination. FHWA and FTA determined that NYMTC's 2022-2050 Plan and 2020-2024 Transportation Improvement Program (TIP) conform to the New York State Implementation Plan (SIP) for Air Quality on September 30, 2021.

Using screening criteria established by NYSDOT's TEM, traffic volume changes resulting from the CBD Tolling Alternative would not be substantial enough to warrant detailed analysis of CO and PM at the 102 intersections analyzed. Furthermore, the analyzed highway links passed NYSDOT's screening criteria for CO and did not exceed the NAAQS for particulate matter. As such, the Project satisfied the hot-spot analysis requirements for CO and PM in 40 CFR 93.116 and 123.

10.5 CONCLUSION

The Project was included in the regional emissions analysis for NYMTC's most recent Transportation Conformity Determination. FHWA and FTA determined that NYMTC's 2022-2050 Plan and 2020-2024 TIP conform to the New York SIP.

Air quality analyses were completed on both a regional (mesoscale) and a local (microscale) level. The mesoscale, MSAT and GHG analyses focused on 12 counties in New York and New Jersey.[18] Those New Jersey counties included in the analysis demonstrate both the biggest increase and decrease in VMT (Bergen and Hudson Counties, respectively). VMT in Connecticut is predicted to decrease between the No Action Alternative and the CBD Tolling Alternative; as such, Connecticut counties were not included in the mesoscale analysis.

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18 New York City: the Bronx, Kings (Brooklyn), New York (Manhattan), Queens, and Richmond (Staten Island) Counties; Long Island: Nassau and Suffolk Counties; North of New York City: Putnam, Rockland, and Westchester Counties; New Jersey: Hudson and Bergen Counties.

At the county level, for criteria pollutants in 2023:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Rockland, and Hudson Counties estimate decreases in all pollutants with the Project.
- Suffolk, Westchester, and Putnam Counties estimate mixed results, with some pollutants increasing slightly and some pollutant burdens decreasing with the Project.
- The Bronx, Richmond (Staten Island), Nassau, and Bergen Counties estimate increases in all pollutants with the Project.

At the county level, for criteria pollutants in 2045:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, and Hudson Counties estimate decreases in all pollutants with the Project.
- The Bronx, Nassau, Westchester, Rockland, and Putnam Counties estimate mixed results with some pollutants increasing slightly and some pollutants decreasing with the Project.
- Richmond (Staten Island) and Bergen Counties estimate increases in all pollutants with the Project.

At the county level, for MSATs in 2023:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Westchester, Rockland, and Hudson Counties estimate decreases in all MSATs with the Project.
- The Bronx, Richmond (Staten Island), Nassau, Suffolk, Putnam, and Bergen Counties estimate increases in all MSATs with the Project.

At the county level, for MSATs in 2045:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, Putnam, and Hudson Counties estimate decreases in all MSATs with the Project.
- The Bronx, Nassau, Westchester, and Rockland, Counties estimate mixed results with some MSATs increasing slightly and some pollutants decreasing with the Project.
- Richmond (Staten Island) and Bergen Counties estimate increases in all MSATs with the Project.

The microscale analysis focused on 102 intersections in the following areas:

- Long Island City
- Lower Manhattan
- Queens-Midtown Tunnel
- Red Hook Brooklyn
- Upper East Side
- Lincoln Tunnel

- West Side Highway/Route 9A
- Downtown Brooklyn
- Robert F. Kennedy Bridge
- Upper West Side
- Washington Heights
- Lower East Side
- New Jersey

Through interagency consultation and follow-up discussions, screening analyses were conducted following NYSDOT criteria for both CO and particulate matter ($PM_{2.5}$/PM_{10}). All 102 intersections passed the NYSDOT CO and $PM_{2.5}$/PM_{10} screening analysis. For intersections that are located within the CO maintenance areas, CO hot-spot analysis requirements in 40 CFR 93.123(a) are met. Based on the screening analyses, it was determined that the Project is not a project of air quality concern as defined in 40 CFR 93.123(b)(1); therefore, no hot-spot analysis for $PM_{2.5}$/PM_{10} is required. The Project meets the project-level conformity requirements and would not create any new or worsen any existing violation of the NAAQS or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones.

In response to public comments received, a highway segment CO screening was conducted on FDR Drive near 10th Street using NYSDOT's volume threshold screening. The analyzed location passed the screening, and no further CO analysis is warranted.

Furthermore, through interagency consultation and to address community concerns, particulate matter hot-spot analyses were conducted on highway segments at three locations representing worst-case conditions (largest increases in truck traffic and highest AADT under the Project) and community concerns. According to the analyses, there were no violations of the NAAQS with the Project, and no further analysis is warranted.

Table 10-14 summarizes the air quality-related effects of the CBD Tolling Alternative.

Table 10-14. Summary of Effects of the CBD Tolling Alternative on Air Quality

SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
			A	B	C	D	E	F	G		
Increases or decreases in emissions related to truck traffic diversions	Cross Bronx Expressway at Macombs Road, Bronx, NY	Increase or decrease in Annual Average Daily Trips (AADT)	3,901	3,996	2,056	1,766	3,757	2,188	3,255	No	**No mitigation needed.** No adverse effects **Enhancements** **1.** Refer to the overall Project enhancement on monitoring at the end of this table. **2.** NYCDOT will coordinate to expand the existing network of sensors to monitor priority locations, and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring is necessary. **3.** MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which will begin later in 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.
		Increase or decrease in daily number of trucks	509	704	170	510	378	536	50		
		Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
	I-95, Bergen County, NJ	Increase or decrease in AADT	9,843	11,459	7,980	5,003	7,078	5,842	12,506	No	
		Increase or decrease in daily number of trucks	801	955	729	631	696	637	-236		
		Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
	Robert F. Kennedy Bridge, NY	Increase or decrease in AADT	18,742	19,440	19,860	19,932	20,465	20,391	21,006	No	
		Increase or decrease in daily number of trucks	2,257	2,423	2,820	3,479	4,116	3,045	432		
		Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		

OVERALL PROJECT ENHANCEMENT. The Project Sponsors commit to ongoing monitoring and reporting of potential effects on the Project, including for example, traffic entering the Manhattan CBD, taxi/FHV vehicle-miles traveled in the Manhattan CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent possible. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed.

11. Energy

11.1 INTRODUCTION

This chapter assesses the potential effect of the CBD Tolling Alternative on transportation energy usage. Transportation energy use also affects air quality and greenhouse gases, both of which are evaluated in **Chapter 10, "Air Quality."**

Transportation energy use comprises operational (direct) and construction (indirect) energy consumption. Direct transportation energy is a function of traffic volumes and vehicle types that affect fuel consumption (i.e., volume, speed, distance traveled, vehicle mix, and the thermal value of the fuel being used for roadway vehicles), as well as the energy required for the tolling equipment. Indirect energy consumption consists of nonrecoverable, one-time energy expenditures associated with construction of physical infrastructure associated with a project. Energy is commonly measured in terms of British thermal units (Btu), which is defined as the amount of heat required to raise the temperature of a pound of water by 1 degree Fahrenheit. As discussed in **Subchapter 4C, "Transportation: Transit,"** the frequency of transit service is expected to accommodate any projected increase in transit ridership due to the Project; therefore, no incremental energy would be required for increased transit service.

11.2 AFFECTED ENVIRONMENT

Transportation accounts for a major portion of the energy consumed in New York State. According to the U.S. Energy Information Administration's State Energy Data System,[1] the transportation sector (including losses) was New York State's largest consumer of energy in 2019, accounting for 31.1 percent of all energy consumption in the state. Transportation energy includes the following:[2]

- Gasoline, diesel fuel, natural gas, propane, and biofuels used in cars, motorcycles, light trucks, and boats (879 trillion Btu in 2019)
- Aviation fuel (307 trillion Btu in 2019)
- Electricity used by public mass transit systems and electric vehicles (10 trillion Btu in 2019)

The residential sector consumed 29.7 percent of total energy consumption, the commercial sector 29.2 percent, and the industrial sector 10.0 percent.

1 https://www.eia.gov/state/?sid=NY.
2 https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_use/tra/use_tra_NY.html&sid=NY.

Across all sectors, petroleum was the largest of the energy sources used, which can be attributed to the transportation sector being the largest consumer of energy in New York State. Petroleum accounted for 36.2 percent of energy consumption in New York State in 2019. Natural gas followed at 34.7 percent, renewable energy at 12.9 percent, nuclear energy at 12.2 percent, out-of-state electricity imports at 3.7 percent, and coal at 0.4 percent.

11.3 ENVIRONMENTAL CONSEQUENCES

The U.S. Environmental Protection Agency's MOVES2014b emissions model was used to estimate the mobile source energy use from the mesoscale roadway network in a 12-county region, consistent with the study area used for the mesoscale air quality and greenhouse gas analyses (see **Chapter 10, "Air Quality**"). As discussed in **Chapter 10, "Air Quality**" (**Section 10.1.7.1** and shown in **Table 10-3**), this study area captures the most concentrated area of change resulting from the Project and the vast majority of the modeled VMT change. The 12 counties analyzed include those in New York that are projected to have the largest increase in VMT (Richmond County [Staten Island]) and the largest decrease in VMT (New York County [Manhattan]) as a result of the Project, as well as those counties in New Jersey that are predicted to have the largest increase in VMT (Bergen County) and the largest decrease in VMT (Hudson County) as a result of the Project. VMT in Connecticut is predicted to decrease in both 2023 and 2045 between the No Action Alternative and the CBD Tolling Alternative; as such, Connecticut counties were not included in the energy analysis.

As with the mesoscale air quality analysis, the energy analysis evaluated the No Action Alternative and the CBD Tolling Alternative, Tolling Scenario A, for the estimated time of completion (2023) and design year (2045). Tolling Scenario A was used for the energy analysis because it is the tolling scenario that would result in the smallest reduction of VMT compared to the No Action Alternative and therefore would provide the smallest potential regional energy benefit.

Based on the methodology used to identify the most concentrated areas of change, the following 10 New York counties and 2 New Jersey counties were used to analyze the CBD Tolling Alternative's energy impacts:

- New York City:
  – Bronx
  – Kings (Brooklyn)
  – New York (Manhattan)
  – Queens
  – Richmond (Staten Island)
- Long Island:
  – Nassau
  – Suffolk
- North of New York City:
  – Putnam
  – Rockland
  – Westchester
- New Jersey
  – Bergen
  – Hudson

MOVES2014b was used for the energy analysis. MOVES2014b provides great flexibility to capture the influence of time of day, vehicle activity (including VMT and speeds for autos, buses, and trucks), and seasonal weather effects on energy use from vehicles. MOVES2014b calculates energy usage parameters, such as total energy use and vehicle activity (hours operated and miles traveled). From this output, energy rates (e.g., Btu/vehicle miles for moving vehicles or Btu/vehicle hours for idling vehicles) can be determined for a variety of vehicle activities. County-specific MOVES2014b input data from the New York State Department of Environmental Conservation were used in combination with link-by-link traffic data and VMT data from the New York Metropolitan Transportation Council Best Practice Model for the CBD Tolling Alternative.

11.3.1 No Action Alternative

As **Table 11-1** shows, the No Action Alternative would not implement a vehicular tolling program and therefore would not reduce energy consumption through reductions in VMT.

11.3.2 CBD Tolling Alternative

Because Tolling Scenario A was used for the energy analysis, it is expected that the other tolling scenarios with larger VMT reductions would show greater regional energy benefits.

As **Table 11-1** shows, Tolling Scenario A would result in lower energy use in the region compared to the No Action Alternative for both completion year (2023) and design year (2045) because VMT would be reduced. In addition to the change in energy usage due to changes in roadway VMT, the Project would require energy to power monitoring and tolling equipment, including network detection systems and servers that process the data collected by the network detection systems. **Table 11-1** details the energy use for these systems.

Table 11-1. Total Energy Consumption: No Action Alternative and CBD Tolling Alternative, Tolling Scenario A (2023 and 2045)

PARAMETER (Million Btu)	ANALYSIS YEAR 2023 (Completion Year)			ANALYSIS YEAR 2045 (Design Year)		
	No Action Alternative	CBD Tolling Alternative	Difference	No Action Alternative	CBD Tolling Alternative	Difference
Roadway Energy	384,117,220	381,663,310	-2,453,910	329,538,610	326,649,830	-2,888,780
Server Energy	0	945	945	0	945	945
Systems	0	5,552	5,552	0	5,552	5,552
TOTAL OPERATIONAL ENERGY	**384,117,220**	**381,669,807**	**-2,447,413**	**329,538,610**	**326,656,327**	**-2,882,283**

Source: WSP

The CBD Tolling Alternative would result in an overall benefit for the region in terms of reduced energy usage.

11.3.3 Construction Effects

The CBD Tolling Alternative is anticipated to have a construction duration of up to 310 days. Construction would begin with the deployment of various monitoring devices throughout the street networks. The estimated construction cost of the Project is $108,687,261.00,[3] which includes the following:

- **Supporting System Tolling Infrastructure Installation ($94,919,283)** includes the cost of work, labor, tolling system equipment, and materials required for the tolling infrastructure construction (except for signage and pavement markings) that would be required to achieve tolling infrastructure readiness in accordance with the contract documents. Design services are excluded in this value.
- **Signage and Pavement Marking Installation ($13,767,978)** includes the cost of work, labor, equipment, and materials required for the signage and pavement markings within NYCDOT, NYSDOT, and Metropolitan Transportation Authority controlling jurisdictions that would be required to achieve infrastructure readiness in accordance with the contract documents. Design services are excluded in this value.

Based on this cost and using the NYSDOT construction cost calculation procedures to quantify energy use, the construction of the Project would require 268,000 million Btu of energy. This energy usage is expected to be paid back through the operational energy savings (detailed in **Table 11-1**) in less than one year.

11.4 CONCLUSION

An energy analysis was completed for the Project's operational and construction phases. The operational analysis shows that the Project would reduce energy use in the region in both 2023 and 2045. The construction of the Project would require 268,000 million Btu of energy, which is expected to be paid back through the operational energy savings in less than one year. **Table 11-2** summarizes the energy-related effects of the CBD Tolling Alternative.

Table 11-2. Summary of Effects of the CBD Tolling Alternative on Energy

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Reductions in regional energy consumption	Reductions in regional VMT would reduce energy consumption.	No	**No mitigation needed.** Beneficial effects

[3] Data provided by HDR on March 28, 2022, and April 6, 2022.

12 Noise

12.1 INTRODUCTION

This chapter evaluates the potential changes in traffic noise exposure that would result from the implementation of the CBD Tolling Alternative as a result of projected changes in traffic volumes. The Project would not change the horizontal or vertical alignment of roadways, nor would it add travel-lane capacity beyond current conditions; therefore, the Project does not meet the definition of a FHWA Type I noise project. However, it does meet the definition of a Type III noise project as defined under 23 Code of Federal Regulations 772.5, “Procedures for Abatement of Highway Traffic Noise and Construction Noise: Definitions.” In this case, FHWA does not require a noise analysis or consideration of abatement measures. Nevertheless, due to the nature of the Project and its potential effects to result in changes in traffic patterns, the screening methodology outlined in Chapter 19 of the City of New York’s *CEQR Technical Manual* was used to quantify and assess potential changes in noise exposure from the Project.

12.1.1 Context

Sound is energy generated by the vibration of air molecules, and almost any activity will generate varying degrees of sound energy. Noise is considered unwanted sound, and with Manhattan having the highest population density in the nation, noise generating activities occur in close proximity to where people live and work. The combination of various activities amplifies total noise exposure, resulting in a nearly constant elevated background noise level that city dwellers are exposed to. A 1974 U.S. Environmental Protection Agency research effort[1] showed a strong correlation between population density and ambient noise exposure. Typical frequent and dominant noise sources—ranging between 70 A-weighted decibels (dB(A)) and 90 dB(A)—include those generated by traffic and transit movements, aircraft flyovers, emergency vehicle sirens, construction activities, and building heat and air conditioning systems.

In general, the traffic noise exposure generated by the Project is not anticipated to raise future noise exposure levels appreciably above ambient noise levels experienced today and if implemented, the Project would result in a net decrease in traffic noise exposure along most local roadways evaluated.

12.1.2 Methodology

Noise can be quantified in different ways, depending on its duration (time), tonal (frequency), or magnitude (loudness). Sound is typically measured in units of decibels (dB). The human hearing range is more sensitive to midrange frequencies compared to either low or very high frequencies. This characteristic of the human ear is accounted for by adjusting or weighting the spectrum of the measured sound level for the sensitivity

1 U.S. Environmental Protection Agency. June 1974. *Population Distribution of the United States as a Function of Outdoor Noise Level*, Report No. 550/9-74-009.

of the human hearing range, referred to as the A-weighted scale, and is denoted by the dB(A) notation. The definitions for the standardized environmental noise criteria metrics follow:

- L_{eq} is called the equivalent noise level, a single-value metric derived from the sum of actual time of varying and fluctuating sound over a fixed period of time (typically a one-hour period) that is denoted as L_{eq} (1-hr). The L_{eq} is the noise descriptor most commonly used in noise impact assessment criteria because it provides a measure of the average sound energy over a fixed period of time and correlates with human perception and annoyance.
- L_{max} and L_{min} are metrics for the highest and lowest measured sound levels, respectively, that occur during a measurement period. The L_{max} is commonly used in establishing construction noise exposure limits.
- L_n is a statistical representation of changing noise levels indicating that the fluctuating noise level is equal to, or greater than, the stated level for "n" percent of the time. For example, L_{10}, L_{50}, and L_{90} represent noise levels exceeding 10, 50, and 90 percent of the time, respectively. The L_{10} metric is widely used under the CEQR criteria to define and categorize the exterior noise environment and to establish noise attenuation requirements for maintaining an acceptable interior noise environment.

Table 12-1 provides a summary of an average human's ability to perceive changes in noise levels. Generally, the average human is unable to perceive noise-level changes until the changes measure in the 2-3 dB(A) range, but these increases are barely perceptible to most listeners, and it is not until the noise level change reaches 5 dB(A) or more that most humans can readily perceive changes in noise levels. **Table 12-2** provides a summary of noise levels generated and experienced in everyday life, ranging from 130 dB(A) (disruptive noise generated by a military jet) to 30 dB(A) (a soft whisper that would be unnoticeable to most listeners). Highway and urban traffic noise is typically in the 70 dB(A) to 80 dB(A) range. **Section 12.1.2** provides a discussion of noise exposure guidelines.

Table 12-1. Average Human Ability to Perceive Changes in Noise Levels

NOISE-LEVEL CHANGE (dB(A))	HUMAN PERCEPTION
0 to 2	Not perceptible to most listeners
2 to 3	Barely perceptible
5	Readily perceptible
10	Clearly perceptible

Source: Bolt Beranek and Newman, Inc. June 1973. *Fundamentals and Abatement of Highway Traffic Noise,* Report No. PB-222-703. Prepared for FHWA.

Table 12-2. Range of Recognizable Noise Levels

SOUND SOURCE	TYPICAL NOISE LEVEL dB(A)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Train horn at 30 meters	90
Busy city street, loud shout	80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Background noise in an office	50
Public library	40
Soft whisper at 5 meters	30

Source: Cowan, James P. 1994. *Handbook of Environmental Acoustics*, Van Nostrand Reinhold, New York
Egan, M. David. 1988. *Architectural Acoustics*. McGraw-Hill Book Company.

12.1.2.1 Summary Effects of All Tolling Scenarios and Determination of Worst-Case Tolling Scenario

This evaluation considered the effects of noise that would result from changes in traffic patterns as a result of implementation of the CBD Tolling Alternative. Potential increases in noise levels would be the result of changes in traffic characteristics that would produce higher noise levels than the No Action Alternative. These characteristics include changes in vehicle types, volumes, and travel speeds. Because the CEQR screening methodology is a high-level screening analysis technique, it considers only traffic volumes and vehicle classification, and does not account for the potential noise effects from changes in traffic speeds. CEQR exceedances occur, when the screening analysis shows a 3 dB(A) or greater increase in noise exposure with the Project versus the No Action Alternative. When this occurs, more detailed traffic noise modeling using the FHWA Traffic Noise Model (TNM version 2.5) would be performed; these detailed analyses, if required, would consider changes in traffic speeds. An adverse effect is defined to occur if the TNM analysis shows 3 dB(A) or greater increase in noise levels with the Project at the affected receptor site.

Because potential increases in noise levels are partly tied to instances where there would be increases in vehicular traffic, the potential worst-case noise exposure across the tolling scenarios should be consistent with the worst-case, highest incremental increase in traffic volumes. Those findings described in **Subchapter 4B, "Transportation: Highways and Local Intersections"** found Tolling Scenario D to be the representative worst-case tolling scenario based on the modeled level of traffic diversions; Tolling Scenario D is similar to Tolling Scenarios E and F, with comparable levels of traffic diversion. Tolling scenarios without extensive crossing credits (Tolling Scenarios A, B, C, and G) would have little or no incremental increases in traffic; therefore, there would be little or no increases in traffic noise exposure. The Tolling Scenario D traffic volumes were used for the 24-hour bridge and tunnel Passenger Car Equivalent (PCE) noise analysis in **Section 12.3.2.1** and for the local street peak-hour PCE analysis in **Section 12.3.2.2**. However, an exception would occur for the Downtown Brooklyn local street intersections, where Tolling Scenario C was used as the more representative worst-case tolling scenario.

12.1.2.2 CEQR Noise Criteria

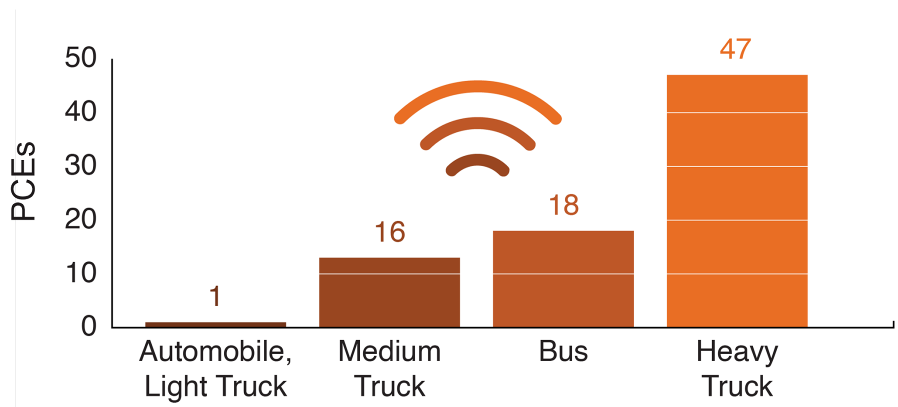
The *CEQR Technical Manual* contains exterior noise exposure guidelines as well as required attenuation values to maintain an acceptable interior noise environment inside buildings. **Table 12-3** shows these values. Noise exposure is classified into four principal categories: "Clearly Acceptable," "Marginally Acceptable," "Marginally Unacceptable," and "Clearly Unacceptable." The CEQR guidelines are based on maintaining an acceptable interior noise level, defined as an L_{10} value of 45 dB(A) or less for residential properties and hotels.

In addition to providing guidelines for acceptable interior noise environment, CEQR defines an adverse effect[2] as occurring when a project "build condition" exterior $L_{eq(1hr)}$ noise level—estimated at a sensitive receptor, such as a residence, play area, park, school, library or house of worship—exceeds a future "no action scenario" by more than 3 dB(A). The 3 dB(A) threshold is used because it represents a doubling of the Project traffic PCE volume over the No Action Alternative

12.1.2.3 CEQR Guidance for Estimating Projected Noise-Level Changes

The *CEQR Technical Manual* sets forth guidelines and procedures for determining potential changes to traffic noise generated as a result of a project and the effects those changes would have on the affected communities. Pursuant to these guidelines, the assessment requires converting the traffic volume into the various vehicle types (i.e., cars, trucks, and buses) traveling on each evaluated roadway to PCE values. For example, the PCE value for an automobile is 1 unit, 16 units for one medium truck, 18 units for one bus and 47 units for one heavy truck (**Figure 12-1**). In coordination with the traffic studies, hourly volumes were converted to PCEs based on the different vehicle types on each evaluated roadway. For each traffic movement, a logarithmic ratio of the hourly CBD Tolling Alternative PCEs divided by the hourly No Action Alternative PCEs was computed. A ratio increasing by 100 percent (doubling) or more would represent an increase of 3 dB(A) or higher in future L_{eq} values under the CBD Tolling Alternative, which would trigger a more detailed noise analysis using the FHWA TNM to verify the increase is accurate. On the other hand, a change of less than 3 dB(A) would indicate no adverse effect and would warrant no further action.

Figure 12-1. Traffic Noise Comparison in Passenger Car Equivalents (PCEs)



Source: City of New York's *City Environmental Quality Review Technical Manual*

[2] CEQR terminology refers to an adverse effect as a "significant adverse impact."

Table 12-3. New York City Environmental Quality Review External Noise Exposure Guidelines

RECEPTOR TYPE[1]	TIME PERIOD	ACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]	MARGINALLY ACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]	MARGINALLY UNACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]	CLEARLY UNACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]
1. Outdoor area requiring serenity and quiet[2]		$L_{10} \le 55$ dB(A)							
2. Hospital, Nursing Home		$L_{10} \le 55$ dB(A)	$L_{dn} \le 60$ dB(A)	$55 < L_{10} \le 65$ dB(A)	$L_{dn} \le 65$ dB(A)	$65 < L_{10} \le 80$ dB(A)	$65 < L_{dn} \le 70$ dB(A)[(i)]	$L_{10} > 80$ dB(A)	$L_{dn} > 75$ dB(A)
3. Residence, residential hotel or motel	7 AM–10 PM	$L_{10} \le 65$ dB(A)		$65 < L_{10} \le 70$ dB(A)		$70 < L_{10} \le 80$ dB(A)		$L_{10} > 80$ dB(A)	
	10 PM–7 AM	$L_{10} \le 55$ dB(A)		$55 < L_{10} \le 70$ dB(A)		$70 < L_{10} \le 80$ dB(A)		$L_{10} > 80$ dB(A)	
4. School, museum, library, court, house of worship or transient hotel or motel, public meeting room, auditorium, out-patient public health facility		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)	
5. Commercial or office		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)	
6. Industrial, public areas only[4]	Note[4]	Note[4]		Note[4]		Note[4]		Note[4]	

Source: New York Department of Environmental Protection (adopted policy 1983).

(i) In addition, any new activity shall not increase the ambient noise level by 3 dB(A) or more.

1 Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute Standards; all values are for the worst hour in the time period.

2 Tracts of land where serenity and quiet are extraordinarily important and serve an important public need and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, parks or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and old-age homes.

3 One may use the Federal Aviation Administration-approved L_{dn} contours supplied by the Port Authority of New York and New Jersey, or the noise contours may be computed from the Federally approved Integrated Noise Model using data supplied by the Port Authority of New York and New Jersey.

4 External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts. (Performance standards are octave band standards.)

The PCE methodology does not account for traffic travel speed, but the traffic studies showed that the Project would result in a reduction in traffic volumes on many of the streets, particularly near and within the Manhattan CBD. Given the low posted speed limits for city streets (25 miles per hour) and limited-access highways (50 miles per hour or less), as well as the general lack of free-flow conditions, any potential increases in travel speed resulting from lower traffic volumes are not anticipated to result in perceptible noise increases.

12.2 AFFECTED ENVIRONMENT

As described in **Subchapter 4B, "Transportation: Highways and Local Intersections,"** the traffic study areas chosen to assess potential changes in traffic volumes as a result of the Project include 102 intersections primarily grouped around key approaches to the Manhattan CBD (i.e., tunnels and bridges) and the local streets that enter the Manhattan CBD from north of 60th Street. The traffic assessment also includes highway segments leading to these approaches, as well as highways that may see an increase from circumferential diversions around the Manhattan CBD (to avoid the Manhattan CBD toll). The traffic noise assessment took the traffic data information and utilizing a conservative screening assessment determined the resultant noise level changes of the No Action Alternative versus the CBD Tolling Alternative at each of the tunnel and bridge crossings and all 102 intersections.

12.3 ENVIRONMENTAL CONSEQUENCES

12.3.1 No Action Alternative

As set forth in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"** as well as **Subchapter 4B, "Transportation: Highways and Local Intersections,"** the baseline travel demand model and traffic conditions were developed with pre-COVID-19 pandemic peak volumes and are used to approximate 2023 No Action Alternative conditions, along with known changes to the road network.

12.3.2 CBD Tolling Alternative

Based on the methodology presented in **Section 12.1.2**, the noise assessment was undertaken by first using the traffic assignment data from **Subchapter 4B** to calculate a PCE volume change for the 13 local street study area locations. The PCE volume changes were evaluated compared to the No Action Alternative condition to calculate an estimate of Project-generated incremental changes in noise levels. **Table 12-4** presents the projected noise-level changes derived from PCE calculations under the representative worst-case tolling scenarios (Tolling Scenario D overall and Tolling Scenario C for Downtown Brooklyn intersections) versus the No Action Alternative estimated PCE volumes.

12.3.2.1 Bridge and Tunnel Crossing Noise Assessment

The PCE analysis was completed at the crossings into and out of the Manhattan CBD and at highway crossings north of the Manhattan CBD (e.g., George Washington Bridge, Robert F. Kennedy Bridge). This noise assessment was completed to measure the bulk sound energy that is projected to be generated by vehicles moving into and out of Manhattan across these major entry points, without focusing on a specific sensitive receptor. Once the traffic leaves these crossings, the volume flow would be absorbed into the local street network, where the local street PCE analysis was performed to determine maximum noise-level changes within each community.

As indicated on **Table 12-4**, for the majority of the bridge and tunnel crossings, the 24-hour PCE-based traffic noise screening analysis projected little, or no noise-level increases between the No Action Alternative and CBD Tolling Alternative. Moreover, those locations with a negative value are projected to see a slight decrease in overall noise exposure. The maximum noise-level increases would remain below the CEQR 3 dB(A) PCE doubling threshold level and is considered barely perceptible to most listeners.

According to the modeling, the highest increases in noise exposure would occur adjacent to the Queens-Midtown and Hugh L. Carey Tunnels. In the former, a 2.7 dB(A) to 2.9 dB(A) increase in noise levels would occur from 11:00 p.m. to 6:00 a.m.; in the latter, a 1.8 dB(A) to 1.9 dB(A) increase would occur from 9:00 p.m. to 6:00 a.m. When using the PCE methodology, small increases in a projected future build condition PCE volume can result in larger projected magnitude increases in noise level changes than may actually occur. (Because the model uses a logarithmic formula, small increases in traffic can seem magnified.) Importantly, the increases predicted at the tunnel portals remain below the threshold (3.0 dB(A)) that would require further analysis to determine whether these increases are adverse. Further, the projected increases also remain below the level of increase that would be perceived by the human ear. Finally, as vehicles disperse from the portals into the local street network, these imperceptible noise increases would be diminished at properties farther away from the immediate portals. The local street analysis, discussed in the next section, supports this conclusion

12.3.2.2 Local Street Noise Assessment

To assess the potential noise exposure of the traffic moving across the major bridge and tunnel crossings into and out of Manhattan on local streets, a localized PCE-based noise screening assessment was completed. The assessment was performed for those communities identified by the Project traffic studies as areas where changes in traffic would likely contribute to changes in noise exposure.

The local street PCE-based assessment was completed for the Project's peak traffic travel-time periods for Tolling Scenario D, except in Downtown Brooklyn where Tolling Scenario C was used because it would result in greater trip generation at that location. These evaluated peak periods consisted of AM, midday, PM, and, in some cases, a late-night assessment period. The traffic analysis determined the addition of the late-night assessment hour.

Table 12-4. Projected Noise-Level Changes (in dB(A)) for CBD Tolling Alternative (Worst-Case Tolling Scenarios D and C)

TIME	ED KOCH QUEENSBORO BRIDGE	QUEENS-MIDTOWN TUNNEL (SITE R1)	HUGH L. CAREY TUNNEL (SITE R2)	HOLLAND TUNNEL	LINCOLN TUNNEL	RFK BRIDGE – BRONX	RFK BRIDGE – MANHATTAN	RFK BRIDGE – QUEENS	WILLIAMSBURG BRIDGE	MANHATTAN BRIDGE	BROOKLYN BRIDGE	GEORGE WASHINGTON + HENRY HUDSON BRIDGES	HENRY HUDSON BRIDGE	VERRAZZANO-NARROWS BRIDGE	60TH STREET CROSSINGS	GEORGE WASHINGTON BRIDGE
12 AM	-1.9	2.9	1.8	-0.6	-0.3	0.0	0.5	0.0	-2.4	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
1 AM	-1.9	2.9	1.8	-0.7	-0.4	0.0	0.5	0.0	-2.4	-1.7	-0.3	0.0	-0.1	0.2	-0.6	0.1
2 AM	-1.9	2.9	1.9	-0.7	-0.2	0.0	0.5	0.0	-2.6	-1.7	-0.3	0.0	-0.1	0.3	-0.6	0.1
3 AM	-1.7	2.9	1.8	-0.6	-0.1	0.0	0.4	0.0	-2.9	-1.6	-0.4	0.0	-0.1	0.2	-0.6	0.1
4 AM	-1.6	2.9	1.8	-0.6	0.0	0.0	0.4	0.0	-3.2	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
5 AM	-1.5	2.7	1.8	-0.4	0.2	0.0	0.3	0.0	-3.3	-1.8	-0.5	0.0	-0.1	0.1	-0.6	0.1
6 AM	0.0	0.4	1.1	-0.3	-0.2	0.0	0.2	0.0	-0.3	-0.6	-0.2	0.0	0.0	0.0	-0.2	0.0
7 AM	0.0	0.1	0.6	-0.3	-0.2	0.0	0.2	0.0	-0.1	-0.6	-0.2	0.0	0.0	0.1	-0.2	0.0
8 AM	0.0	0.1	0.7	-0.3	-0.2	0.0	0.3	0.0	-0.1	-0.6	-0.1	0.0	0.0	0.1	-0.2	0.0
9 AM	0.0	0.1	1.0	-0.3	-0.2	0.0	0.3	0.0	-0.2	-0.6	-0.1	0.0	0.0	0.1	-0.2	0.0
10 AM	-0.4	0.4	1.1	-0.5	-0.4	0.0	0.3	0.0	-0.7	-1.8	-0.1	0.0	-0.1	0.2	-0.6	0.1
11 AM	-0.5	0.5	1.5	-0.5	-0.5	0.0	0.3	0.0	-1.0	-1.8	-0.2	0.0	-0.1	0.3	-0.6	0.1
12 PM	-0.8	0.7	1.7	-0.6	-0.5	0.0	0.3	0.0	-1.0	-1.7	-0.2	0.0	-0.1	0.3	-0.6	0.1
1 PM	-0.7	0.4	1.7	-0.6	-0.6	0.0	0.3	0.0	-0.9	-1.7	-0.3	0.0	-0.1	0.2	-0.6	0.1
2 PM	-0.7	0.3	1.1	-0.6	-0.6	0.0	0.4	0.0	-0.7	-1.6	-0.3	0.0	-0.1	0.2	-0.6	0.1
3 PM	-0.7	0.3	0.7	-0.5	-0.7	0.0	0.4	0.0	-0.5	-1.4	-0.3	0.0	-0.1	0.2	-0.6	0.1
4 PM	-0.9	0.7	0.7	-0.3	-0.6	0.0	0.3	0.0	-0.8	-0.4	-0.1	0.0	0.0	0.1	-0.2	0.0
5 PM	-1.0	0.6	0.7	-0.3	-0.6	0.0	0.3	0.0	-0.8	-0.5	-0.1	0.0	0.0	0.1	-0.2	0.0
6 PM	-0.7	0.6	0.8	-0.4	-0.6	0.0	0.3	0.0	-1.0	-0.5	-0.1	0.0	0.0	0.1	-0.2	0.0
7 PM	-0.8	0.8	1.1	-0.4	-0.6	0.0	0.3	0.0	-1.2	-0.5	-0.1	0.0	0.0	0.1	-0.2	0.0
8 PM	-1.5	1.2	1.4	-0.6	-0.3	0.0	0.6	0.0	-1.5	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
9 PM	-1.6	1.7	1.8	-0.6	-0.3	0.0	0.5	0.0	-2.0	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
10 PM	-1.5	2.2	1.8	-0.6	-0.3	0.0	0.5	0.0	-2.2	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
11 PM	-1.8	2.8	1.8	-0.7	-0.2	0.0	0.5	0.0	-2.6	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1

Source: WSP, 2022.

The local street noise assessment shows that traffic movements disperse fairly quickly from major crossings into the Manhattan CBD, with lower incremental changes in dB(A) than at the major crossings. The peak-hour, local street intersection-based PCE assessment was completed for the 13 local street traffic analysis areas shown below. Appendix 12, "Noise," contains the details of those findings in the appendix tables noted below:

- Long Island City Traffic Analysis Area (Table 12-1)
- Lower Manhattan Traffic Analysis Area (Table 12-2)
- Queens-Midtown Tunnel Traffic Analysis Area (Table 12-3)
- Red Hook Brooklyn Traffic Analysis Area (Table 12-4)
- Upper East Side Traffic Analysis Area (Table 12-5)
- Lincoln Tunnel Traffic Analysis Area (Table 12-6)
- West Side Highway/Route 9A Traffic Analysis Area (Table 12-7)
- Downtown Brooklyn Traffic Analysis Area (Table 12-8)
- Robert F. Kennedy Bridge Traffic Analysis Area (Table 12-9)
- Upper West Side Traffic Analysis Area (Table 12-10)
- Little Dominican Republic (Washington Heights) Traffic Analysis Area (Table 12-11)
- Lower East Side Traffic Analysis Area (Table 12-12)
- Jersey City, New Jersey (Table 12-13)

The local street PCE-based analysis identified the maximum noise exposure level changes that potentially would occur during peak travel periods. The analysis findings indicate that no roadways would experience a 3 dB(A) or more noise-level increase. Noise-level changes at approximately 90 percent of the roadways analyzed would range from -1 dB(A) to +1 dB(A), and less than 1 percent would show an increase between 1 dB(A) and 2 dB(A). There are a few isolated turning movements, as described below, that result in noise level increases in the range of 2 to 2.5 dB(A). However, these maximum noise level increases were determined using the PCE ratio values for a single sub-movement, and the PCE sum of all the sub-movements (for example right turn, through and left turn) on a given roadway segment would result in lower overall noise level increases than the values shown below.

The PCE-based analysis found that noise levels would remain below the 3 dB(A) CEQR threshold for the evaluated travel-time periods within all Long Island Rail Road (LIRR) 13 traffic analysis areas and therefore no TNM analysis was found warranted to verify if a 3 dB(A) or greater increase in noise exposure would occur. The highest projected noise-level increase would occur during the midday time period in the Lower Manhattan Traffic Analysis Area (Appendix 12, "Noise," Table 12-2) adjacent to Trinity Place and Edgar Street (Intersection #1), where a 2.5 dB(A) increase is projected to occur along the eastbound left-turn movement. Other locations yielding a noise-level increase between 2 dB(A) and 2.5 dB(A) would occur in the peak PM time period on the following roadway segments:

- The Long Island City Traffic Analysis Area (Appendix 12, "Noise," Table 12-1) at Intersection #1a (Pulaski Bridge/11th Street and Jackson Avenue), at both the eastbound left-turn and through approaches, where 2.4 dB(A) and 2.1 dB(A) increases are projected, respectively.

- The Long Island City Traffic Analysis Area (Appendix 12, "Noise," Table 12-1) at Intersection #7 (11th Street and Borden Avenue), at the southbound right-turn, though, and left-turn approaches, where 2.3 dB(A), 2.2 dB(A), and 2.3 dB(A) increases are projected, respectively.
- The Robert F. Kennedy Bridge Traffic Analysis Area (Appendix 12, "Noise," Table 12-9) at Intersection #2 (East 125th Street and Second Avenue), at the southwest-bound left- and right-turn approaches, where 2.1 dB(A) increases are projected at each approach.

The maximum approach noise-level changes in a given direction would be lower than the approach sub-movement values shown above, as these values would include the PCE values for all the movements in a given direction; therefore, these maximum noise-level increase estimates represent an overstatement of overall noise-level changes on a given roadway segment direction.

In conclusion, local street PCE analysis findings indicate that the projected noise-level increases would be below the CEQR 3 dB(A) screening threshold necessary to warrant a more detailed analysis using the FHWA TNM and noise exposure levels with the Project would remain within their current CEQR exterior noise exposure categories. As a result, the CBD Tolling Alternative would result in no noise effects within any of the communities evaluated.

12.4 CONCLUSION

A traffic noise assessment was completed in those communities identified by the Project traffic studies (Subchapter 4B, "Transportation: Highways and Local Intersections") as areas where changes in traffic would likely contribute to changes in noise exposure. Potential noise-level changes resulting from the variations in traffic patterns due to the Project were determined using the passenger car equivalent (PCE) screening methodology outlined in Chapter 19 of the *CEQR Technical Manual*. CEQR defines a noise level increase of more than 3 dB(A) over comparable future no build (i.e., no action) conditions to result in an adverse impact.

The PCE-based assessment was completed for Project peak AM, midday, PM, and late-night time periods at the following 13 traffic analysis areas:

- Long Island City
- Lower Manhattan
- Queens-Midtown Tunnel
- Red Hook Brooklyn
- Upper East Side
- Lincoln Tunnel
- West Side Highway/Route 9A
- Downtown Brooklyn
- Robert F. Kennedy Bridge
- Upper West Side
- Little Dominican Republic

- Lower East Side
- Jersey City, New Jersey

The PCE analysis found that projected noise-level changes on all roadways in the Project area would be below the 3 dB(A) CEQR impact threshold. Furthermore, because changes in noise levels of less than 3 dB(A) are barely perceptible to the human ear, ambient noise levels with the Project would not be perceptibly different from those without the Project.

Noise-level changes at approximately 90 percent of the evaluated roadways would range from -1 dB(A) to +1 dB(A), and less than 1 percent of the roadways evaluated would show an increase between 1 dB(A) and 2 dB(A). Based on the conservative PCE analysis, the highest reported increase is projected to occur adjacent to the Queens Midtown Tunnel portal area with a 2.9 dB(A) increase during the late night hours with the nearest sensitive property located more than 100 feet away. The overall Project study area would result in a net decrease in traffic noise exposure along most local roadways evaluated.

As a result, the CBD Tolling Alternative would result in no noise impacts within the evaluated traffic analysis areas (**Table 12-5**).

Table 12-5. Summary of Effects of the CBD Tolling Alternative on Noise

<table>
<tr><th>SUMMARY OF EFFECTS</th><th>LOCATION</th><th>EFFECT FOR ALL TOLLING SCENARIOS</th><th>POTENTIAL ADVERSE EFFECT</th><th>MITIGATION AND ENHANCEMENTS</th></tr>
<tr><td rowspan="2">Imperceptible increases or decreases in noise levels resulting from changes in traffic volumes</td><td>Bridge and tunnel crossings</td><td>The maximum noise level increases (2.9 dB(A)), which were predicted adjacent to the Queens-Midtown Tunnel in Tolling Scenario D, would not be perceptible.</td><td>No</td><td rowspan="2">▪ No mitigation needed. No adverse effects
▪ See overall Project enhancement below.</td></tr>
<tr><td>Local streets</td><td>Tolling Scenario C was used to assess noise level changes in Downtown Brooklyn, Tolling Scenario D was used at all other locations assessed. The maximum predicted noise level increases (2.5 dB(A)), which were at Trinity Place and Edgar Street, would not be perceptible. There was no predicted increase in noise levels in the Downtown Brooklyn locations.</td><td>No</td></tr>
<tr><td colspan="5">Overall Project Enhancement. The Project Sponsors commit to ongoing monitoring and reporting of potential effects on the Project, including, for example, traffic entering the Manhattan CBD; taxi/FHV VMT in the Manhattan CBD; transit ridership from providers across the region; bus speeds within the Manhattan CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent possible. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed.</td></tr>
</table>

13. Natural Resources

13.1 INTRODUCTION

This chapter describes the effects of implementing the CBD Tolling Alternative on general ecology, wildlife resources, and water resources (collectively, natural resources), consistent with NYSDOT *The Environmental Manual*.[1]

13.2 AFFECTED ENVIRONMENT

Natural resources were evaluated within the local study area for tolling infrastructure and tolling system equipment (local study area) as shown in **Chapter 3**, "**Environmental Analysis Framework,**" **Figure 3-2a through Figure 3-2g**. **Figures 13-1 through 13-3** show terrestrial natural resources and wetlands, floodplains, and the designated New York State Coastal Area within and near the local study area. The Project would be located within a highly urbanized environment that consists of buildings, paved surfaces, and transportation infrastructure with limited natural resources.

13.2.1 Wetlands

13.2.1.1 New York State Jurisdiction Wetlands

The New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper,[2] Freshwater Wetland maps for Manhattan do not show any freshwater wetlands or freshwater wetland adjacent areas (100-foot buffer) regulated by NYSDEC under Article 24 of the New York State Environmental Conservation Law (ECL) within the local study area.

NYSDEC regulates portions of the shoreline of the Hudson River and East River under ECL Article 25 as littoral zone tidal wetlands[3] (**Figure 13-1**). NYSDEC also regulates activities within an adjacent area, potentially consisting of the area within 150 feet of a tidal wetland or up to the 10-foot above mean sea level elevation contour. The adjacent area does not extend landward past a stabilized shoreline structure present as of 1977. Because the shoreline in the local study area was stabilized before 1977, none of the local study area is regulated tidal wetlands adjacent area.[4]

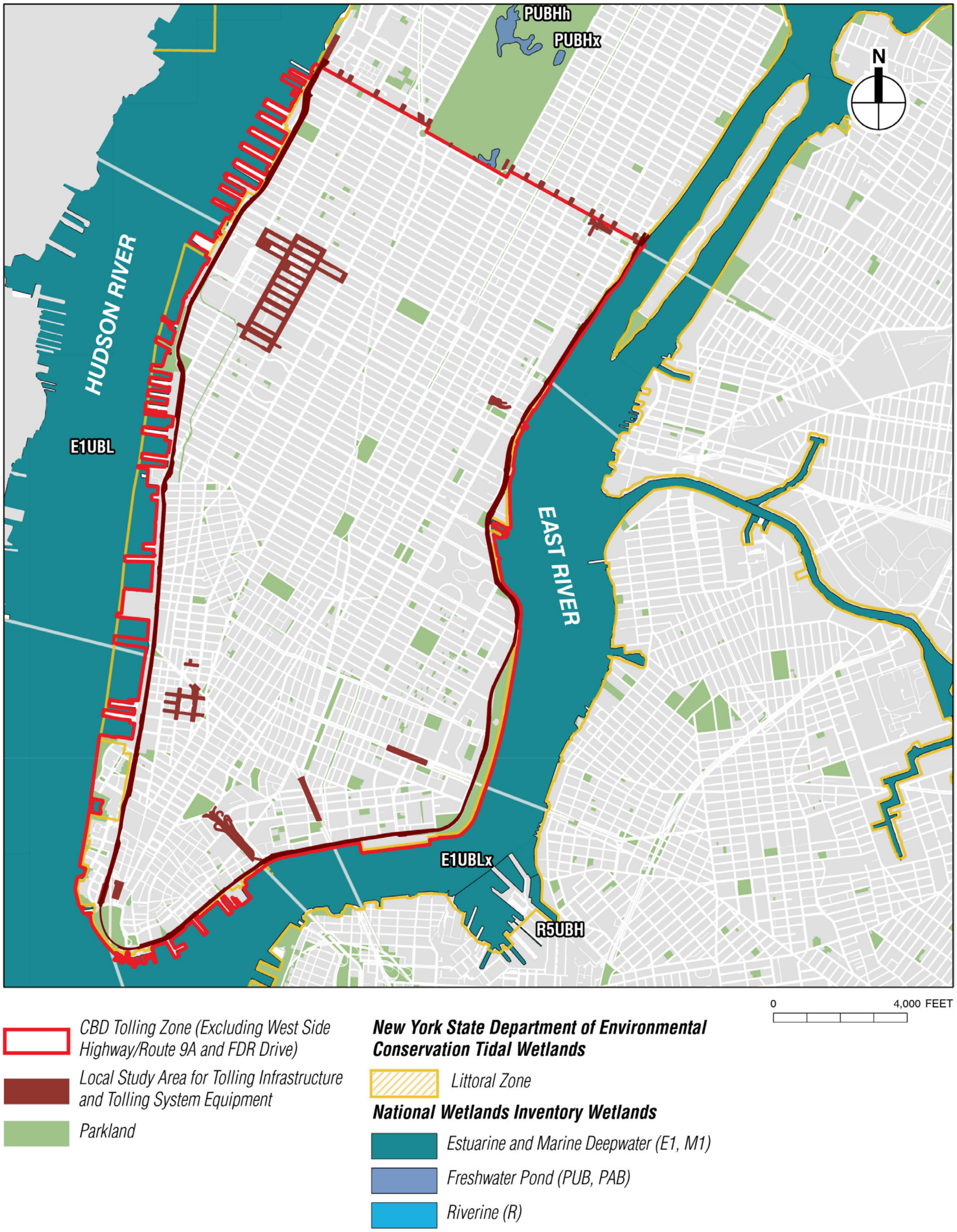
1 NYSDOT. 2010. *The Environmental Manual*. https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm.

2 https://gisservices.dec.ny.gov/gis/erm/.

3 Lands under tidal waters extending seaward from shore to a depth of 6 feet at mean low water (and that are not identified in any other NYSDEC tidal wetland category). NYSDEC tidal wetland maps accessed from http://opdgig.dos.ny.gov/.

4 Per 6 NYCRR Part 661.4, the regulated adjacent area ends at "the seaward edge of the closest lawfully and presently existing (i.e., as of August 20, 1977), functional and substantial fabricated structure (including, but not limited to, paved streets and highways, railroads, bulkheads and sea walls, and rip-rap walls) which lies generally parallel to said most tidal wetland landward boundary and which is a minimum of 100 feet in length as measured generally parallel to such most landward boundary, but not including individual buildings."

Figure 13-1. National Wetlands Inventory and NYSDEC Mapped Wetlands and Existing Parkland



Source: U.S. Fish and Wildlife Service, May 2021; NYSDEC, 2016.

13.2.1.2 Federal Jurisdiction Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) has mapped the Hudson River and East River adjacent to the local study area as subtidal estuarine wetlands with unconsolidated bottoms (E1UBL) (see **Figure 13-1**). Immediately north of the local study area, the Pond in Central Park is an NWI-mapped palustrine[5] wetland with an unconsolidated bottom that is diked and permanently flooded. The CBD Tolling Alternative would not involve any activities in the Hudson River, the East River, or the Pond in Central Park.

13.2.2 Surface Waters and Navigable Waters

The Hudson and East Rivers are Waters of the United States and navigable waters regulated by the U.S. Army Corps of Engineers (USACE), and are protected under Article 15 of the New York State ECL. The Pond in Central Park is protected under NYSDEC regulations (6 NYCRR Part 608).

13.2.3 Wild, Scenic, and Recreational Rivers

NYSDEC has no designated Study or Inventory State Wild, Scenic, or Recreational Rivers within or adjacent to the local study area. The local study area also does not include any rivers listed on the Nationwide Rivers Inventory List of National Wild and Scenic Rivers.

13.2.4 Floodplains

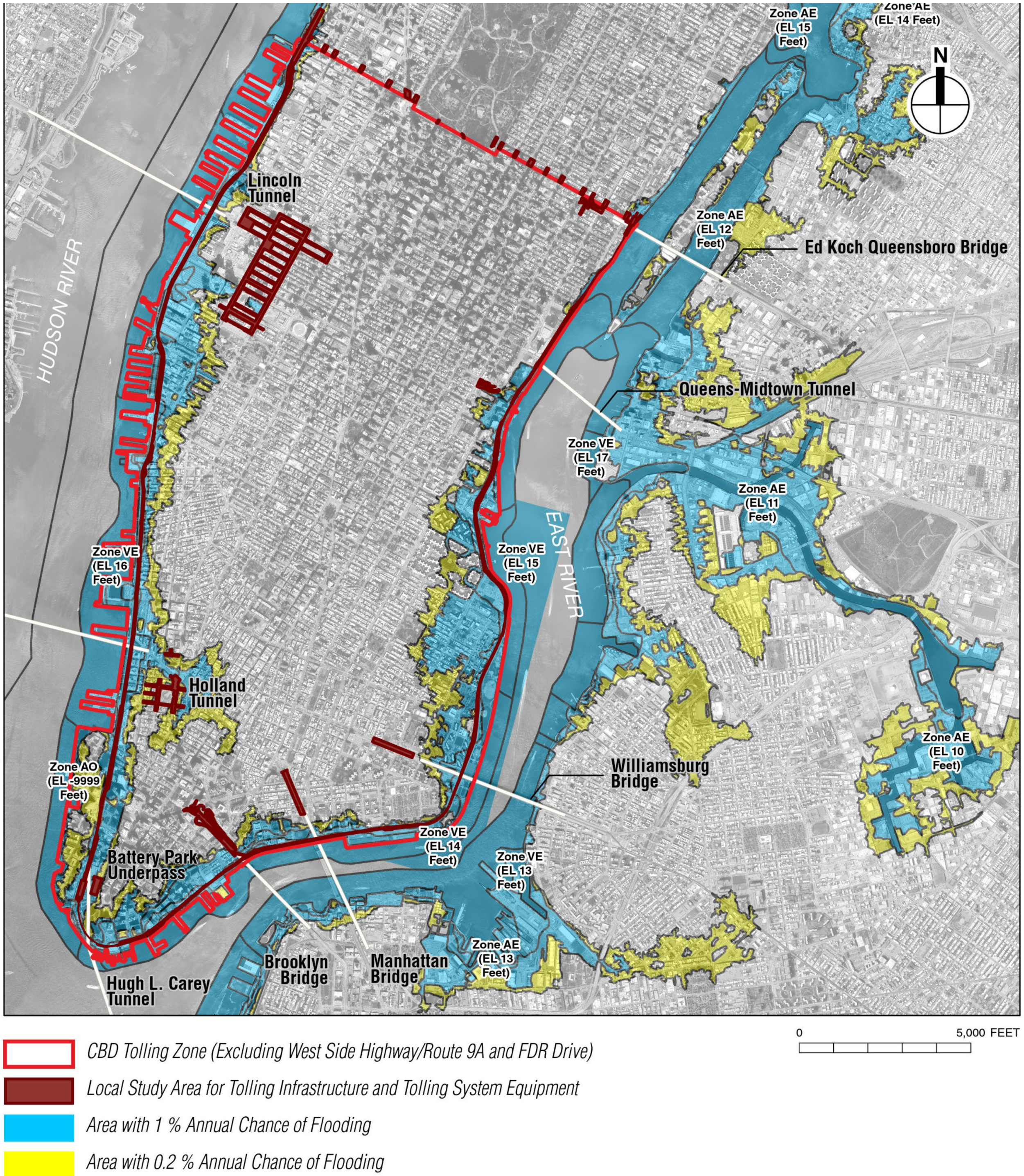
Figure 13-2 shows that portions of the local study area are within the 100-year floodplain (the area with a 1 percent chance of flooding in any given year) and 500-year floodplain (0.2 percent chance of flooding in any given year) of the East River and Hudson River.

13.2.5 Coastal Resources

Portions of the local study area are within the designated New York State Coastal Area (**Figure 13-3**), and therefore, the Project is subject to a coastal zone policies consistency review. The local study area is not in or near any coastal erosion hazard areas regulated by the State of New York pursuant to 6 NYCRR Part 505 and ECL Article 34. The local study area also does not include any areas regulated by the Coastal Barrier Resources Act or the Coastal Barrier Improvement Act.

[5] Palustrine wetlands are nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation.

Figure 13-2. Federal Emergency Management Agency 2015 Preliminary Flood Insurance Rate Map



Source: Federal Emergency Management Agency, January 2015/New York State GIS Program Office. New York City Orthoimagery, 6-inch resolution.

Figure 13-3. New York City Coastal Zone Boundary

Source: New York City Coastal Zone Boundary; New York City Department of City Planning, November 2018.

13.2.6 Groundwater Resources, Aquifers, and Reservoirs

In the Manhattan CBD, groundwater is generally at least 10 feet below the surface. NYSDEC aquifer data files show that the local study area is not in an identified Primary Water Supply or Principal Aquifer Area. No Sole Source Aquifers regulated by the U.S. Environmental Protection Agency are present in the local study area. New York City receives its drinking water from a system of aqueducts and reservoirs north of the city boundaries. No municipal drinking water wells, wellhead influence zones, or drinking water reservoirs are in or near the local study area.[6, 7]

13.2.7 Stormwater Management

In the Manhattan CBD, stormwater runoff generally flows into catch basins, and then into the city's combined sewer system. The discharge of stormwater and sanitary waste differ during dry weather and storm events. The City of New York's State Pollutant Discharge Elimination System permits govern these discharges. The New York City Department of Environmental Protection regulates stormwater discharges from development lots to the city sewer system under Chapter 31 of Title 15 of the Rules of the City of New York.

13.2.8 General Ecology and Wildlife Resources

The terrestrial ecological communities of the local study area are highly urbanized and can be considered "terrestrial cultural communities."[8, 9] These vegetated ecological communities provide limited ecological value. Adjacent to the local study area, terrestrial ecological communities and related natural resources are largely limited to parks (e.g., Central Park and East River Park). Given the limited habitat areas in the local study area, wildlife diversity and bird populations, in general, are low and limited to common native and nonnative species adapted to urban conditions. This may include migratory birds protected by the Migratory Bird Treaty Act.[10]

6 NYSDEC. Area Hydrography mapping. http://gis.ny.gov/gisdata/metadata/alis.hydrography.areahydrography.xml#Top.

7 https://www1.nyc.gov/site/dep/water/drinking-water.page.

8 Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. *Ecological Communities of New York State*. Second Edition. A revised and expanded edition of Carol Reschke's *Ecological Communities of New York State*. 1990. New York Natural Heritage Program, NYSDEC, Albany, NY.

9 These communities are "created and maintained by human activities, or are modified by human influence to such a degree that the physical conformation of the substrate, or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence." Examples include flower/herb gardens, mowed lawn and mowed lawn with trees, mowed roadside/pathway, paved road/pathway, and urban vacant lot.

10 The Migratory Bird Treaty Act makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed therein. The statute applies equally to both live and dead birds, and grants full protection to any bird parts, including feathers, eggs, and nests. The USFWS implements the Migratory Bird Treaty Act.

13.2.9 Endangered and Threatened Species

According to USFWS's Information, Planning, and Consultation database (reviewed on May 24, 2022; see **Appendix 13A, "Natural Resources: Natural Resource Correspondence"**), one species has the potential to occur within the local study area, the monarch butterfly. The monarch butterfly is listed as a candidate species, and it currently does not have any protection under Section 7 of the Endangered Species Act (ESA).

Based on a review of the National Oceanic and Atmospheric Administration ESA Section 7 Mapper for the Greater Atlantic Region,[11] several Federally listed marine species could occur in the East River and Hudson River adjacent to the local study area (see **Appendix 13A**). Additionally, the Hudson River has been identified as critical habitat for the New York Bight Distinct Population Segment of Atlantic sturgeon. The CBD Tolling Alternative would not involve any activities in the Hudson River or East River.

Based on a review of the New York Natural Heritage Program database on May 24, 2022, four species listed by the State of New York as endangered or threatened could be present in the local study area: the peregrine falcon (New York State endangered); coastal plain blue-eyed grass (New York State endangered); little ladies' tresses (New York State threatened); and red pigweed (New York State threatened), which was present in or near the local study area in the 1890s and could still be present today.

- Peregrine falcons nest on rocky cliffs near river gorges but can also nest on man-made structures such as bridges and skyscrapers. Peregrine falcons generally mate for life and return to the same nest year after year. In New York, nesting season begins in late winter and ends when the birds migrate south in early autumn. In New York City, nest sites are located high above the ground on buildings and other structures such as bridges. With nests in urban areas with high levels of noise and human activity, peregrine falcons demonstrate a high tolerance of and exposure to disturbance and an ability to exploit resources in human-dominated landscapes.[12, 13]
- Coastal plain blue-eyed grass is a perennial wildflower that grows in grasslands, meadows and fields, sandplains, and barrens.[14] The only potential habitat within the local study area for this species is Central Park.
- Little ladies' tresses is a perennial wildflower that typically grows in dry fields and open woods.[15] The only potential habitat within the local study area for little ladies' tresses is within Central Park.

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11 https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater.

12 Cade, T.J, M. Martell, P. Redig, G. Septon, and H. Tordoff. 1996. Peregrine falcons in urban North America. In: D.M. Bird, D. Varland, and J. Negro (eds.) Raptors in human landscapes: adaptations to built and cultivated environments. Academic Press, San Diego, CA.

13 White, Clayton M., Nancy J. Clum, Tom J. Cade and W. Grainger Hunt. 2002. Peregrine Falcon (*Falco peregrinus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; http://bna.birds.cornell.edu/bna/species/660doi:10.2173/bna.660.

14 Massachusetts Division of Fisheries and Wildlife. 2015. Sandplain Blue-eyed Grass (*Sisyrinchium fuscatum*). Natural Heritage & Endangered Species Program. https://www.mass.gov/doc/sandplain-blue-eyed-grass/download.

15 Newcomb, L., Morrison, G., & Clement, R. C. 1977. Newcomb's wildflower guide: An ingenious new key system for quick, positive field identification of the wildflowers, flowering shrubs and vines of Northeastern and North Central North America.

- Red pigweed occurs in coastal areas including interdunal swales, stony beaches, shorelines of coastal ponds and rivers, salt marshes, brackish soils, and waste places, which is a broadly encompassing term that includes, but is not limited to, abandoned lots, areas containing construction and demolition debris and other refuse, and areas containing contaminated soils. It has also been found in ship ballasts. The natural habitats in which red pigweed is expected to occur do not occur within the local study area. However, areas described as waste places (e.g., abandoned lots, dumping areas, contaminated sites) are present within the local study area. Therefore, red pigweed has the potential to occur within the local study area.

13.2.10 Essential Fish Habitat

The National Marine Fisheries Service Essential Fish Habitat (EFH) Mapper[16] lists EFH for several species potentially present in the Hudson River and East River adjacent to the local study area. The CBD Tolling Alternative would not involve any activities in the Hudson River or East River.

13.2.11 Critical Environmental Areas, Habitat Areas, Wildlife Refuges, and Wildfowl Refuges

According to NYSDEC, the local study area does not have any Critical Environmental Areas or state forest preserve lands.[17, 18] The local study area also is not in or adjacent to any wildlife or waterfowl refuges.

13.3 ENVIRONMENTAL CONSEQUENCES

13.3.1 No Action Alternative

The No Action Alternative would not result in a vehicular tolling program and any associated tolling infrastructure and tolling system equipment; therefore, it would not affect natural resources.

13.3.2 CBD Tolling Alternative

For the most part, the CBD Tolling Alternative would have new tolling infrastructure and tolling system equipment within the transportation right-of-way in developed areas of Manhattan where there are limited natural features. The new tolling system equipment would be on new or existing infrastructure or would consist of infrastructure comparable in form to existing streetlight poles, sign poles, and overhead sign structures on and adjacent to existing transportation infrastructure (e.g., roads, bridges, and sidewalks).

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16 National Marine Fisheries Service Essential Fish Habitat Mapper. https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper.

17 NYSDEC. Critical Environmental Areas. https://www.dec.ny.gov/permits/6184.html.

18 NYSDEC provides the following definition for state forest preserves: Protected by Article XIV of the New York State Constitution, the Forest Preserve is defined as public lands in the Adirondack and Catskill Parks within "forest preserve counties" as defined by the New York State Legislature. These lands are identified as [ECL 9-0101] "...lands owned or hereafter acquired by the state within the county of Clinton, except the towns of Altona and Dannemora, and the counties of Delaware, Essex, Franklin Fulton, Hamilton, Herkimer, Lewis, Oneida, Saratoga, Saint Lawrence, Warren, Washington, Greene, Ulster and Sullivan,..." https://www.dec.ny.gov/lands/7811.html.

Limited soil disturbance would occur during construction for excavation of foundations for new poles and associated utility connections.

Tolling infrastructure and tolling system equipment is proposed at three locations just inside Central Park near Central Park South (59th Street) where streetlight poles currently exist along the existing park roadway system. Tolling infrastructure and tolling system equipment would be installed on the landside portions of bridges over the East River, but no in-water or over-water activities would occur.

13.3.2.1 Wetlands

New York State Jurisdiction Wetlands

No NYSDEC-regulated freshwater wetlands or regulated freshwater wetland adjacent areas are within the local study area. Therefore, the CBD Tolling Alternative is not subject to the requirements of ECL Article 24.

Tolling infrastructure and tolling system equipment would be installed on the landside portions of bridges that cross the East River. No in-water or over-water activities would occur. Erosion and sediment control measures will be used during construction to protect catch basins, drainage channels, waterways, etc. No construction activities would occur within tidal wetlands or their regulated adjacent areas, and ground disturbance during construction would not affect regulated tidal wetlands. Therefore, New York State ECL Article 25 does not apply to the Project.

Federal Jurisdiction Wetlands

No tolling infrastructure or tolling system equipment would be installed in or over water, and no construction would occur in any Federally regulated wetlands. Erosion and sediment control measures implemented during construction will protect nearby water bodies from adverse effects related to debris and other materials.

13.3.2.2 Surface Waters and Navigable Waters

No in-water or over-water activities would occur as part of the CBD Tolling Alternative. Tolling infrastructure and tolling system equipment would be installed on the landside portions of bridges that cross the East River and on highways adjacent to the East and Hudson Rivers. The installation of tolling infrastructure and tolling system equipment would not change the navigable channels of the East or Hudson Rivers, the navigable clearance of bridges for marine traffic, alter the volume or course of marine traffic, or affect the navigability of the East and Hudson Rivers in any other way. There would be no excavation in, or discharge of dredged or fill material into, surface waters. During construction, TBTA will provide erosion and sediment control measures to protect catch basins, drainage channels, waterways, etc. Therefore, the CBD Tolling Alternative would not affect the Hudson River or East River.

The CBD Tolling Alternative would place tolling infrastructure and tolling system equipment on replacement streetlight poles in Central Park. The closest such poles would be more than 125 feet away from the Pond in Central Park and would have no effect on the Pond in Central Park.

13.3.2.3 Floodplains

Tolling infrastructure and tolling system equipment would be placed on new or replacement poles, existing overhead sign structures, and existing pedestrian bridges that are within mapped floodplains of the Hudson River and East River. The floodplains within the local study area are affected by coastal rather than riverine flooding, and therefore, controlled by tidal conditions, occupation of the floodplain by larger or new poles for the CBD Tolling Alternative would not result in increased flooding within or adjacent to the local study area. The new tolling infrastructure and tolling system equipment would be within and adjacent to the transportation right-of-way and would not impede emergency access or limit the efficacy of natural floodplains. Therefore, the CBD Tolling Alternative would not affect floodplains.

Because the sources of floodwaters in the local study area are tidal, there would be no loss of storage capacity or increase because of permanent structures associated with the CBD Tolling Alternative. The larger or new poles for the CBD Tolling Alternative would not constitute an encroachment, because it would not endanger citizens or workers, cause likely future damage, or notably affect natural or beneficial floodplain values. Therefore, with respect to the findings required by Executive Order 11988, "Floodplains Management":

- A significant encroachment would not occur.
- There would be no significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles.
- There would be no significant effects on natural beneficial floodplain values.

The CBD Tolling Alternative would comply with Executive Order 11988.

13.3.2.4 Coastal Resources

Some of the new tolling infrastructure and tolling system equipment would be within the boundaries of the State of New York's designated Coastal Area (see **Figure 13-3**). The Project Sponsors completed the New York State Coastal Assessment Form and the New York City Waterfront Revitalization Program Consistency Assessment Form (see **Appendix 13B, "Natural Resources: Coastal Zone Consistency Assessments"**). The forms certify that the CBD Tolling Alternative would be implemented consistent with applicable coastal policies. The Project Sponsors will seek concurrence on their coastal zone consistency finding from the New York State Department of State and the New York City Department of City Planning.

13.3.2.5 Groundwater Resources, Aquifers, and Reservoirs

The local study area is not in an identified Primary Water Supply or Principal Aquifer Area and does not have any Sole Source Aquifers. Depending on the type of pole or mounting structure and its configuration, the depth of excavation would range from approximately 2 to 12 feet. This excavation is unlikely to encounter groundwater, which is generally more than 10 feet below grade in the Manhattan CBD.

13.3.2.6 Stormwater Management

Most of the construction for the CBD Tolling Alternative would occur on existing impervious surfaces and would not result in a disturbance of more than one contiguous acre of soil. If applicable, TBTA would require the contractor to obtain coverage under State Pollutant Discharge Elimination System General Permit (GP-0-20-001 or current version, if applicable) for construction. In accordance with the general permit, TBTA would require the contractor to develop a Stormwater Pollution Prevention Plan, which would describe the erosion and sediment control measures that would be implemented during construction. The CBD Tolling Alternative would not result in any permanent changes to the quantity of impervious surfaces in the local study area.

13.3.2.7 General Ecology and Wildlife Resources

The tolling infrastructure and tolling system equipment for the CBD Tolling Alternative would be within and adjacent to existing transportation right-of-way that is highly disturbed and generally unlikely to provide habitat for wildlife.

Trees

Trees regulated by NYC Parks, which include trees in New York City parks and street trees in the public right-of-way, are present in the local study area. TBTA will undertake required tree protection measures. Tree work permits will be obtained as required.[19] If trees must be removed or are damaged during construction, TBTA will follow NYC Parks specifications for all replacement trees, including the planting of new trees or restitution in the form of a monetary payment to the NYC Parks Tree Fund.

Fish, Wildlife, and Waterfowl

Wildlife in the local study area is accustomed to high levels of urban noise. As described in **Chapter 12, "Noise,"** the CBD Tolling Alternative would not result in substantial changes to noise levels, and the effects on wildlife from noise increases would be negligible.

To avoid adverse effects on migratory bird species protected by the Migratory Bird Treaty Act, construction activities that require tree removal will be scheduled outside the early May through July primary bird breeding season to the extent practicable. Should construction activities require tree removal during April or August (i.e., the beginning and end of the breeding period), preconstruction activities will include coordination with FHWA with respect to conducting surveys of active nests. These surveys will be focused on the presence of active nests, eggs, or young in trees targeted for removal. FHWA will be informed of the results before any tree removal begins, and if active nests, eggs, or young are present, the tree will not be removed until after the nest is no longer in active use.[20] These surveys will be undertaken if habitat were

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[19] NYC Parks: https://www.nycgovparks.org/trees/street-tree-planting/best-practices.

[20] The primary breeding period for most land bird species in New York State and those that breed in New York City specifically spans from approximately the beginning of April through the end of July.
Sommers, L.A. 2008. "Appendix 2: Breeding season table," pp. 635 to 641. *The Second Atlas of Breeding Birds of New York State* (K. McGowan and K. Corwin, eds.). Cornell University Press, Ithaca, NY.

likely to be disturbed. If active nests, eggs, or young are not present, TBTA will inform FHWA of the results before commencing any tree cutting.

Fish and waterfowl would not be affected because the CBD Tolling Alternative would not involve in-water or over-water activities, and tolling infrastructure and tolling system equipment would generally be constructed on and adjacent to transportation right-of-way at heights similar to other infrastructure in the right-of-way and below the heights that would impede migratory patterns.[21]

Therefore, the CBD Tolling Alternative would not adversely affect fish, wildlife, and waterfowl.

13.3.2.8 Endangered and Threatened Species

The ESA does not apply to the CBD Tolling Alternative due to the absence of listed terrestrial species within New York County where the local study area is located; the absence of any in-water activities within the East River and Hudson River or any potential to affect Federally protected species within those waters; and the nature of the activity, which includes construction in disturbed, currently maintained transportation right-of-way and would not involve the removal of any pollinator habitat. The monarch butterfly is listed as a candidate species. Therefore, consultation or conference (formal or informal) with USFWS is not required. No effects to the monarch butterfly are anticipated. The CBD Tolling Alternative would meet the requirements of item 13 "Traffic Management Systems Maintenance (communications cable, hardware for intelligent transportation system, road weather information system, etc.)" on FHWA New York Division's "Activity-Based No Effect List," and no further review or consultation under Section 7 of the ESA is required.[22]

One New York State protected species, the peregrine falcon (listed as endangered in New York State), could be present in the local study area. The CBD Tolling Alternative would not disturb peregrine falcon nesting habitat, forage areas, or nests on bridges and buildings. No tolling infrastructure and tolling system equipment would be mounted directly on the portions of buildings or bridges where peregrine falcons would have a greater potential to nest. At the start of construction, should it be determined that peregrine falcon nesting activities are observed on the signs and/or structural elements, NYSDEC will be consulted to confirm any measures necessary to avoid a take of peregrine falcon nests at that time.

Because habitat for the New York State endangered coastal plain blue-eyed grass and little ladies' tresses may be present in Central Park, a preconstruction survey will be conducted to determine their presence within specific areas of the park where construction would take place. Similarly, surveys for red pigweed

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[21] In the Northeast, birds migrate in the greatest volume between altitudes of 500 and 2,000 meters above sea level (La Sorte et al. 2015), and at a minimum altitude of approximately 150 meters above sea level (Horton et al. 2016).

Horton, K.G., Van Doren, B.M., Stepanian, P.M., Farnsworth, A. and Kelly, J.F. 2016. "Where in the air? Aerial habitat use of nocturnally migrating birds." *Biology Letters* 12(11):20160591.

La Sorte, F.A., Hochachka, W.M., Farnsworth, A., Sheldon, D., Van Doren, B.M., Fink, D. and Kelling, S. 2015. "Seasonal changes in the altitudinal distribution of nocturnally migrating birds during autumn migration." *Royal Society Open Science 2(12):150347*.

[22] FHWA New York Division. Endangered Species Act, Section 7, Essential Fish Habitat, and Marine Mammal Protection Act: Process for Compliance and Consultation. June 2020. https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm/repository/4.4.9.3_AppG_FHWA_ESA_Section_7.pdf.

will occur in the local study area should habitat for this plant be present in the construction locations and if the habitat were likely to be disturbed. If any of these species are found during the surveys, then a protection plan will be developed in consultation with NYC Parks and NYSDEC.

13.3.2.9 Essential Fish Habitat

The CBD Tolling Alternative would not involve any activities in or over the waters of the East or Hudson Rivers nor any discharges to those rivers during construction. Therefore, the CBD Tolling Alternative would result in no effects on EFH.

13.3.2.10 Invasive Species

The CBD Tolling Alternative would be constructed within and adjacent to transportation right-of-way in areas that are predominantly paved. Any soil disturbance would be limited to the removal of existing structures (e.g., foundations and poles) and replacement with new poles and limited construction for utility connections. Any fill used during construction would be clean. The CBD Tolling Alternative would involve limited disturbance to existing vegetation and would not introduce invasive plants. Therefore, the CBD Tolling Alternative would comply with Executive Order 13112, "Invasive Species."

13.4 CONCLUSION

The CBD Tolling Alternative would not involve the installation of tolling infrastructure and tolling system equipment within or over surface waters and wetlands; therefore, it would not affect these resources, including the navigability of the Hudson River and East River and coastal zone polices for the area. There would be tolling infrastructure and tolling system equipment within the designated floodplains, but the installation of this equipment would not alter flood conditions.

Construction of the CBD Tolling Alternative would unlikely encounter groundwater, as most of the construction for the CBD Tolling Alternative would occur on existing impervious surfaces and would not result in a disturbance of more than one contiguous acre of soil. If applicable, TBTA will require the contractor to obtain coverage under State Pollutant Discharge Elimination System General Permit (GP-0-20-001 or current version, if applicable) for construction.

Protected species have the potential to occur within the local study area. The CBD Tolling Alternative would not disturb peregrine falcon nesting habitat, forage areas, or nests on bridges and buildings. A preconstruction survey will be conducted to determine the presence of coastal plain blue-eyed grass, little ladies' tresses, and red pigweed in specific areas where construction would occur; if habitat is identified, then a protection plan (e.g., relocation, propagation) will be developed in consultation with NYC Parks and NYSDEC. TBTA will undertake tree protection measures consistent with the requirements of and in consultation with NYC Parks.

Table 13-1 summarizes the effects of the CBD Tolling Alternative on natural resources. Overall, the CBD Tolling Alternative would be within and adjacent to existing transportation rights-of-way that are highly disturbed. With the implementation of measures to protect certain resources during construction, the CBD Tolling Alternative would not adversely affect natural resources.

Table 13-1. Summary of Effects of the CBD Tolling Alternative on Natural Resources

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Construction activities to install tolling infrastructure near natural resources	No effects on surface waters, wetlands, or floodplains. Potential effects on stormwater and ecological resources during construction will be managed through construction commitments. The Project is consistent with coastal zone policies.	No	▪ Implement sediment and erosion control measures and any conditions contained in an approved Stormwater Pollution Discharge Elimination System Permit, If necessary ▪ Consult with NYSDEC on any measures necessary to avoid a potential take of peregrine falcon nests. ▪ Schedule construction activities that would require tree removal, if applicable, outside the primary bird breeding season ▪ Undertake a preconstruction survey to determine if coastal plain blue-eyed grass, little ladies' tresses, and red pigweed are present at construction locations and develop a protection plan if found ▪ Undertake tree protection measures consistent with the requirements of and in consultation with NYC Parks

14. Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials

14.1 INTRODUCTION

This chapter discusses the potential for construction activities associated with the CBD Tolling Alternative to encounter contaminants—such as suspect asbestos-containing materials (ACM), lead-based paint, subsurface (i.e., soil and groundwater) contamination, and other hazardous waste and contaminated materials—and describes the measures that would be implemented to address these materials during construction and avoid exposure to humans.

14.2 AFFECTED ENVIRONMENT

The potential to expose ACM, lead-based paint, hazardous wastes, and contaminated materials would occur during construction at locations where the Project Sponsors would install tolling infrastructure and tolling system equipment. This tolling infrastructure and tolling system equipment would be installed at approximately 120 locations in Manhattan, generally in the area south of 61st Street. A variety of infrastructure and equipment types would be used, depending on the location. **Figures 32a through 32g** in **Chapter 3, "Environmental Analysis Framework,"** illustrate the proposed locations for the tolling infrastructure and tolling system equipment. In general, tolling infrastructure would involve replacing existing streetlight poles with new poles in the same location, adding new poles within the transportation right-of-way where none are present today, or modifying existing transportation infrastructure (including sign poles, overhead sign structures, and bridge superstructures) to accommodate new tolling system equipment. The locations of the tolling infrastructure and tolling system equipment comprise the local study area for this assessment of ACM, lead-based paint, hazardous wastes, and contaminated materials.

TBTA would require that the contractor test and dispose of all soils according to applicable Federal, state, and local waste management regulations, including Title 6 of the New York Codes, Rules, and Regulations (NYCRR). To date, the contractor has tested 35 anticipated tolling infrastructure and tolling system equipment locations. This section describes the results of the testing to date.

Soil waste classification testing was conducted between May 2020 and August 2021 by GTA Engineering Services, Inc. at locations where soil is to be disturbed/excavated as part of the Project's construction. The analyses conducted were consistent with those required by the New York State Department of Environmental Conservation (NYSDEC) to evaluate soil quality for the management of environmental conditions during construction, including laboratory analysis for volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, polychlorinated biphenyls (PCBs), and metals. Soil encountered during the testing comprised fill materials—which are the byproduct of the reworking of soil during construction or the filling of shoreline to increase Manhattan's land mass—was often imported to the area to raise the grade. Such materials can include wastes and byproducts (such as coal ash), which can contain contaminants (such as lead and arsenic) at higher concentrations than found naturally, and organic compounds (such as polycyclic aromatic hydrocarbons [PAHs]), which are byproducts of combustion.

Results of the analysis generally showed levels of organic compounds and metals well below NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives or laboratory minimum detection limits. Samples from approximately 30 percent of the locations detected marginally more elevated levels of organic compounds and metals; however, the specific compounds (PAHs and metals) were detected at levels consistent with the presence of urban fill and within applicable NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives. Concentrations of mercury detected at two locations were more elevated but were nonetheless at levels typically found in urban fill throughout New York City. Analysis of the samples via the Resource Conservation and Recovery Act Toxicity Characteristic Leaching Procedure did not detect hazardous levels of contaminants, including at locations with identified elevated mercury concentrations. Based on the history of the area, the known history of filling, and the levels and distribution of contaminants detected by the waste classification testing, identified conditions demonstrate the presence of the urban fill and not a release or spill.

It is also possible for soil and groundwater to become contaminated by migration of contaminants from nearby activities, such as a current or previous gasoline service station. Such contamination, which is generally highly localized and typically found at or below the water table (which is generally deeper than 10 feet below surface grade in Manhattan), would not likely be encountered during the shallow disturbance associated with construction of the CBD Tolling Alternative. Nor was such contamination identified by any of the waste classification testing conducted by GTA Engineering, Inc.

14.3 ENVIRONMENTAL CONSEQUENCES

14.3.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program. The No Action Alternative would not involve any ground disturbance, removal, or alteration of existing structures, or change in the production or transport of hazardous wastes or contaminated materials. Therefore, the No Action Alternative would not result in any effects from exposure to or removal of hazardous wastes or the production or removal of contaminated materials.

14.3.2 CBD Tolling Alternative

Construction of the CBD Tolling Alternative would result in soil disturbance and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain ACM, lead-based paint, or PCBs. Therefore, its construction could encounter and disturb ACM, lead-based paint, PCBs, hazardous wastes, or contaminated materials. Construction will also require the management of the urban fill identified by the waste classification testing.

Tolling system equipment would be mounted on existing infrastructure, which could require minor alterations to support the new equipment, or tolling system equipment would be on new or replacement infrastructure, such as new streetlight poles. The installation of tolling infrastructure and tolling system equipment would require subsurface utility connections. Depending on the pole type and configuration, excavation areas would range from approximately 11 to approximately 80 square feet, and the depth of excavation would range from approximately 2 to approximately 12 feet below grade. Although not anticipated, if excavation below the water table is necessary, it would be done in accordance with New York City Department of Environmental Protection and NYSDEC requirements. The volume of excavated material at any location would be up to approximately 15 cubic yards. Additional trenching (approximately 2 feet below grade) could be required for utility connections.

Construction would involve subsurface disturbance of soil and fill that could contain heavy metals (e.g., lead and arsenic) and/or organic contaminants (e.g., PAHs) at concentrations higher than natural background levels. It is possible that other types of contamination from historic releases could be present at some locations; however, no such conditions were identified by GTA Engineering, Inc.'s soil testing.

Construction activities associated with the CBD Tolling Alternative are common and routinely occur in the local study area. Established regulatory programs mandate specific control measures for disturbance of these types of materials. Through its contract documents, TBTA will require the contractor to implement the following plans and adhere to specific protocols developed to be consistent with Federal, State of New York, and City of New York regulations and requirements:[1]

- Prepare and implement a Waste Handling Plan describing procedures to comply with regulations and best management practices for identifying, collecting, handling, storing, and disposing of solid waste generated during construction.
- Prepare and implement a Construction Health and Safety Plan that would identify potential hazards that could be encountered during construction and specify measures to ensure that subsurface disturbance is performed in a manner that protects workers, the community, and the environment.
- Employ best management practices and comply with Federal and state requirements if petroleum storage tanks or contamination be encountered, including for release reporting to NYSDEC (17 NYCRR Parts 32.3 and 32.4).
- For disturbed areas and stockpiled materials (e.g., excavated soil, construction fill, building debris) that have not been restored and would not be disturbed for a period of 21 days, stabilize these areas within 14 days of initial disturbance by use of mulching, seeding, geotextile fabric, or other approved methods; securely cover stockpiles at the end of each workday.

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1 TBTA would require its contractor to comply with all applicable Federal, State of New York, and local laws, codes, rules, and regulations, including, but not limited to, the regulations of the U.S. Environmental Protection Agency, Occupational Safety and Health Administration, NYSDEC, New York State Department of Health, New York State Department of Labor, and the New York City Department of Environmental Protection.

- Dispose of waste and demolition and excavation material at an approved site in accordance with Federal, state, and local laws and regulations.
- Upon completion of construction, restore the ground surface to its preconstruction condition; if uncapped soils would remain exposed, conduct testing to ensure soils are clean and there is no risk of human exposure to hazardous wastes or contaminated materials.
- If necessary, the importation of certified clean fill would be conducted to replace surficial urban fill where a solid cap (i.e., asphalt, concrete, etc.) is not currently present or would not be restored.
- Employ the following measures to minimize fugitive dust emissions from construction activities: cover disturbed soil and stockpiled materials or treat these materials with dust suppressors; use dust-tight protective shields; use vacuuming, wet mopping, wet sweeping, or wet power brooming in lieu of dry power brooming or air blowing; use only wet cutting of stone, concrete, and/or asphalt; inspect vehicles for dirt prior to their leaving the work site and remove dirt, soils, or rubble likely to be dislodged during transit; comply with local requirements for covering trucks and other equipment used to transport soils and other construction materials.
- Prepare an Emergency Response Plan and Contingency Plan detailing procedures to follow in the event of an accident, emergency situation, or release or spill of hazardous wastes during construction.
- Sample any paint that would be removed for lead and other heavy metals or presume that the paint is lead-based paint; remove lead-based paint in accordance with the Occupational Safety and Health Administration Standard 1926.62 (Lead) and perform lead abatement and disposal in accordance with safety and health codes and Federal and state regulations.
- Perform an asbestos survey of any suspect ACM that may be disturbed by construction, and if such materials are present and would be disturbed, perform asbestos abatement and disposal in accordance with state and Federal regulations.

With these measures in place, construction of the CBD Tolling Alternative would not result in adverse effects associated with hazardous waste and contaminated materials. Once operational, there would be no human exposure pathways to any residual hazardous materials, so operation of the CBD Tolling Alternative would also not result in effects related to contaminated or hazardous materials.

14.4 CONCLUSION

The CBD Tolling Alternative would involve replacing existing or installing new infrastructure to support tolling system equipment, including the excavation of subsurface soil. GTA Engineering Services, Inc. conducted soil testing to identify the potential contamination in subsurface soil based on the known history of development of the Project area (including manufacturing and industrial facilities), which also involved extensive landfilling and regrading resulting in the formation of non-native urban fill with a wide range of potential contaminants. Soil testing found that contaminated soils could be disturbed by the Project’s construction, although the soil characteristics were typical of urban fill in the Manhattan CBD.

The Project Sponsors have developed measures to anticipate and address potential contaminants that are typical in urban settings. TBTA will ensure that these measures are implemented during construction of the CBD Tolling Alternative, which would avoid or minimize any potential adverse effects resulting from potential exposure. **Table 14-1** summarizes the potential effects of the CBD Tolling Alternative and commitments to mitigate the effects.

Table 14-1. Summary of Effects of the CBD Tolling Alternative Related to Asbestos-Containing Materials, Lead-Based Paint, Hazardous Waste, and Contaminated Materials

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Potential for disturbance of existing contaminated or hazardous materials during construction	Soil disturbance during construction and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain ACM, lead-based paint, or other hazardous substances. Potential effects will be managed through construction commitments.	No	Refer to **Section 14.3.2** for a list of commitments that the Project Sponsors will undertake to address ACM, lead-based paint, hazardous waste, and contaminated materials.

15. Construction Effects

15.1 INTRODUCTION

This chapter describes the potential construction effects related to implementing the CBD Tolling Alternative.

15.2 AFFECTED ENVIRONMENT

The locations where construction of tolling infrastructure and tolling system equipment would occur are predominantly transportation rights-of-way, including roads, bridges, tunnel entrances and exits, and sidewalks. Limited work would also be required at sites along roadways in and along the edges of Central Park and on the structure of the High Line.

15.3 ENVIRONMENTAL CONSEQUENCES

15.3.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program and would not involve any construction activities. Therefore, the No Action Alternative would have no construction-related effects.

15.3.2 CBD Tolling Alternative

Construction activities for the CBD Tolling Alternative would involve reusing or replacing existing traffic and tolling infrastructure to install tolling system equipment along transportation rights-of-way within and near the Manhattan CBD. The overall duration of construction for the CBD Tolling Alternative is expected to be less than one year. At each location, the total construction duration would generally be approximately one to two weeks, although inclement weather or other unforeseen conditions could extend the duration of construction at individual locations. Concurrent construction at multiple sites would likely occur to allow efficient construction management.

Construction activities would be typical of those required for the installation of streetlight poles and tolling infrastructure throughout the city. At most locations, the CBD Tolling Alternative would require the replacement of existing poles or installation of new poles. Construction activities would include excavating and constructing the foundation(s), placing the new support poles or structures, attaching the tolling system equipment, and restoring the roadway, sidewalk, or ground surface. Depending on the type of pole or mounting structure and its configuration, excavation areas would range from 11 square feet to approximately 80 square feet, and the depth of excavation would range from 2 feet to approximately 12 feet below grade. The volume of excavated material at any location would be up to approximately 15 cubic yards. At locations where tolling infrastructure and tolling system equipment are installed, additional trenching, approximately 2 feet below grade, could be required for utility and communications connections. At those locations where new connections are needed, trenches would be dug from each pole to the nearest utility access point and conduits would be laid in the trenches. Once the new connections are installed, trenches would be covered and returned to their original condition.

Although not anticipated, if excavation below the water table is necessary, it would be done in accordance with New York City Department of Environmental Protection (NYCDEP) and New York State Department of Environmental Conservation (NYSDEC) requirements.

Construction activities would include the use of mini excavators, skid steer loaders, small foundation drilling equipment, pavement saws, bucket trucks, boom trucks, truck-mounted equipment for placing new infrastructure, concrete deliveries, dump trucks for the removal and delivery of soil and materials, and flatbed trucks to deliver equipment and materials. Hand-held equipment would be used to excavate and construct the foundations and to repair the roadway and/or sidewalk surface at the conclusion of construction. Approximately four to six construction workers and two to three trucks would be present for the entirety of the workday at each construction site, and additional individuals would be present throughout the workday to deliver materials or supervise and inspect work.

Temporary lane closures would be needed to accommodate construction work at most locations. Most construction work would occur during the weekday, during daytime hours, unless the localized short-term lane closures required would result in substantial disruptions to traffic. For operations that require access across a larger portion of the roadway, and/or where daytime lane closures are not practical because of traffic concerns, construction would occur at night (10 p.m. to 5 a.m.). The contractor would coordinate construction work with the NYCDOT Office of Construction Management Coordination for work on city streets and the Brooklyn, Manhattan, Williamsburg, and Ed Koch Queensboro Bridges and in accordance with a Maintenance and Protection of Traffic Plan. The Project Sponsors would coordinate with the Port Authority of New York and New Jersey for work near the Lincoln and Holland Tunnels, as necessary. Coordination with NYSDOT and NYC Parks would occur for any work within or near their facilities.

Construction activities for the CBD Tolling Alternative would result in the following temporary effects on the built and natural environment:

- **Regional Traffic:** There would be approximately one to two weeks of traffic disruption at any individual location over the less than one year duration of construction. Any temporary changes in traffic operations would not have the potential to change regional travel patterns.
- **Highways, Local Traffic, and Parking:** The duration of lane closures at any individual location would be approximately one to two weeks. Individual lane closures could last from several hours up to several days. No streets would be fully closed to traffic, except when staging or lifting operations may require a short-period closure (up to several hours) for the safety of construction workers and the traveling public. TBTA, acting on behalf of the Project Sponsors, and the contractor would coordinate on the scheduling of construction activities to minimize neighborhood disruptions to the extent practicable. As specified in the contract, the contractor would support communication strategies by TBTA that seek

to inform the affected public about roadway closures, commuter alternatives, and any potential effects on traffic during construction.

- **Transit:** Construction would occur on streets and sidewalks with bus routes and bus stops, within a block of the Roosevelt Island Tramway station at Second Avenue and East 60th Street, and near some subway station entrances. If a bus stop must be temporarily relocated to install tolling infrastructure and tolling system equipment, TBTA would coordinate with NYCDOT and New York City Transit (NYCT) to temporarily relocate the stop to a nearby location. TBTA would ensure that construction of the CBD Tolling Alternative would not affect access to the Roosevelt Island Tramway station or subway station entrances.
- **Pedestrians and Bicycles:** Individual sidewalk and bicycle lane closures could last from several hours up to multiple days during the approximately one- to two-week construction period. Sidewalks would only be closed for pedestrians potentially to accommodate staging or lifting operations for a short period (up to several hours) for the safety of construction workers and the traveling public. TBTA would implement temporary pedestrian and bicycle detours if necessary for public safety, to protected sections of the adjacent travel lane or to the opposite side of the street. To the extent practical, TBTA and the contractor would avoid restricting access to bicycle docking stations. Construction activities within and adjacent to transportation rights-of-way would be subject to approval by the applicable transportation agency.
- **Social and Economic Conditions:** Construction of the CBD Tolling Alternative would result in limited and temporary disturbances and inconveniences, of short duration, to residents, workers, visitors, and businesses in areas where construction work is taking place, and would not result in any lasting adverse effects to social and economic conditions. TBTA will ensure that the contractor maintains access to businesses and residences along affected roadways during construction.
- **Parks and Recreational Resources:** Construction would take place adjacent to some New York City parks, but would not affect access to those parks. It would also occur within Central Park where park roadways approach Central Park South (59th Street) and along the sidewalks abutting the park on Fifth Avenue and Central Park West. In Central Park, trenches would be dug for utility connections, and the surface would be restored to its original condition. The CBD Tolling Alternative would attach tolling equipment to the underside of the High Line. Park users would be able to use these parks throughout construction, and construction would not result in any lasting impairment of the enjoyment of these publicly accessible open spaces. Construction may be required within 50 feet of NYC Parks-regulated trees, which include street trees and trees in city parks. TBTA will avoid effects to regulated trees to the extent feasible. If construction activities could affect a regulated tree, the work would comply with the measures set on the following pages.
- **Historic and Cultural Resources:** Construction would occur in streets and sidewalks adjacent to historic properties (see **Appendix 8, Historic and Cultural Resources: Section 106 Finding Documentation,** for a list of historic properties that would be close to construction sites. There would be no adverse effects on historic properties. As described in **Chapter 8, "Historic and Cultural Resources,"** the proposed areas for excavation have already been heavily disturbed, and it is unlikely that any archaeological resources

would be encountered. See the preceding bullet for construction activities within and adjacent to Central Park and the High Line, which are listed or eligible for listing on the State and National Registers of Historic Places.

- **Visual Resources:** Construction vehicles and equipment would install tolling infrastructure and tolling system equipment, and signage, cones, and Jersey barriers would direct vehicle and pedestrian traffic around construction zones. While the equipment and detours could temporarily impair views for some viewer groups, construction would be of short duration and would not have any lasting adverse effects on visual resources.
- **Air Quality:** Use of diesel-fuel-powered construction equipment and generators would produce pollutant emissions. Excavation to install new tolling infrastructure and tolling system equipment would also expose soils beneath streets and sidewalks, which could result in airborne dust. The brief duration and limited nature of construction at each construction site would limit emissions. TBTA will ensure the contractor employs measures to limit and avoid adverse effects on air quality.
- **Noise:** Jackhammers, pavement breakers, backhoes, compressors, generators, trucks, and other equipment would generate noise. The use of this equipment would last from a few minutes on one day up to a few hours on multiple days during the approximately one- to two-week construction period at each location. Jackhammers and pavement breakers generate the highest noise levels of the anticipated construction equipment, with a sound level of 85 to 89 decibels at 50 feet from the source. The changes in noise associated with certain construction equipment would be perceptible to people near the construction zones. TBTA will ensure that the contractor complies with the New York City Noise Code and other measures to minimize the effects of construction noise.[1]
- **Natural Resources:** As described in **Chapter 13, "Natural Resources,"** there are limited natural features where new tolling infrastructure and tolling system equipment would be installed. The endangered coastal plain blue-eyed grass and New York State's threatened red pigweed and little ladies' tresses may be present in areas where construction would occur, and their presence will be confirmed prior to construction. Peregrine falcons nest on bridges within New York City, but construction activities associated with the CBD Tolling Alternative are unlikely to affect them. Use of sediment control measures and tree protection measures will limit potential adverse effects on natural resources. Overall, the potential to disturb natural resources during construction would be minimal.
- **Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials:** Construction of the CBD Tolling Alternative would result in soil disturbance and the potential alteration or removal of existing structures (e.g., streetlight poles) that may contain asbestos or lead-based paint. TBTA will ensure that the contractor manages hazardous wastes and contaminated materials according to established practices, described in **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials."**

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[1] Local Laws of the City of New York, Local Law 113 of 2005. https://www1.nyc.gov/assets/dep/downloads/pdf/air/noise/noise-code-full-version.pdf.

TBTA, acting on behalf of the Project Sponsors, will ensure that the contractor complies with measures to avoid and minimize construction effects set forth below and in **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials."**

- Develop a Maintenance and Protection of Traffic Plan for all work in public streets and sidewalks; coordinate with NYCDOT's Office of Construction Management Coordination for any proposed detours and coordinate with NYCDOT's Bike Unit and Pedestrian Unit for any bicycle lane detours, effects on bicycle docking stations, and/or pedestrian detours; and coordinate with NYCT for any potential temporary changes in bus stops.
- Avoid interference with existing utilities to the extent practicable. Where the Project's construction could conflict with existing utilities, coordinate with the utility owner and protect in place or relocate existing utilities per utility owner requirements.
- Comply with the Diesel Emissions Reduction Act of 2006, including best available retrofit technology or ultra-low sulfur diesel fuel for construction vehicles.
- Comply with the New York City Noise Code and apply best practices such as using manufacturer's noise reduction devices on construction equipment, operating construction devices at lower engine speeds, wrapping loud equipment in noise-insulating material, using quieter backup alarms, and training construction workers in quieter work methods; prepare and implement a Construction Noise Mitigation Plan, which would include a Construction Noise Monitoring Plan, noise control measures used to reduce or eliminate noise effects, and mitigation techniques to be used during construction.
- Acquire tree work permits whenever construction would occur within 50 feet of a NYC Parks-regulated tree, including street trees and trees in city parks; should trees be damaged during construction, plant new trees or provide restitution in the form of a monetary payment to the NYC Parks Tree Fund; follow NYC Parks specifications for new trees.
- Schedule construction activities that could require tree removal outside the primary bird breeding season of early May through July, to the extent practicable; should construction activities require tree removal during April or August (i.e., the beginning and end of the bird breeding season), the Project Sponsors would coordination with FHWA with respect to surveys of active nests.
- Undertake a survey to determine if coastal plain blue-eyed grass, little ladies' tresses, and red pigweed are present at construction locations within the Manhattan CBD. If species are found, then develop a protection plan in consultation with NYC Parks and NYSDEC.
- If applicable, obtain coverage under the New York State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activities (GP-0-20-001 or current version, if applicable). In accordance with the general permit, develop and implement a Stormwater Pollution Prevention Plan.
- Provide erosion and sediment control measures to protect catch basins, drainage channels, and waterways; prevent debris or other materials from entering drainage systems, per site-specific soil erosion and sediment control countermeasures.

- Implement communications strategies to inform the public about lane closures, commuter alternatives, and any potential temporary impacts on traffic during construction; develop a communications plan with strategies for outreach during construction.

15.4 CONCLUSION

Construction associated with the CBD Tolling Alternative would be typical of street construction that occurs regularly within the Manhattan CBD. Construction would result in temporary disruptions to traffic and pedestrian patterns and temporary noise disruption at nearby land uses such as residences and businesses. The Project Sponsors will require the contractor to develop and comply with plans and procedures to minimize construction effects. With these measures and because of the brief timeframe, low intensity, and limited scope of construction of the CBD Tolling Alternative, adverse construction effects would not occur.

Table 15-1 summarizes the construction effects of the CBD Tolling Alternative and commitments to minimize or mitigate the effects.

Table 15-1. Summary of Construction Effects of the CBD Tolling Alternative

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Potential disruption related to construction for installation of tolling infrastructure	Temporary disruptions to traffic and pedestrian patterns, and noise from construction activities, with a duration of less than one year overall, and approximately two weeks at any given location. These effects will be managed through construction commitments.	No	Refer to **Section 15.3.2** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.

16. Summary of Effects

16.1 INTRODUCTION

The Council on Environmental Quality's regulations implementing NEPA require Federal agencies to consider the reasonably foreseeable effects of a proposed action before a project can be approved. This chapter summarizes the direct, indirect, and cumulative effects of the CBD Tolling Alternative as discussed in the previous chapters of this Environmental Assessment (EA). It also summarizes the effects of the tolling scenarios and additional sensitivity analyses for the CBD Tolling Alternative, and it describes the results for a scenario that incorporates the Long Island Rail Road (LIRR) East Side Access Project into the background condition and presents the cumulative effects of East Side Access and the CBD Tolling Alternative.

16.2 SUMMARY OF DIRECT AND REASONABLY FORESEEABLE EFFECTS IDENTIFIED IN THIS EA

Chapters 4 through 15 of this EA present the direct, indirect, and cumulative effects of the Project. Table 16-1 summarizes these effects and measures to avoid or minimize potential adverse effects.

16.2.1 Direct Effects

The CBD Tolling Alternative would change travel patterns in the regional study area and the Manhattan CBD, resulting in an overall reduction in trips in the regional study area and the Manhattan CBD. The CBD Tolling Alternative could cause localized increases in traffic on highway segments and at local intersections because some drivers would alter their trip or divert around the Manhattan CBD to avoid the toll. The Project Sponsors will conduct a monitoring program and implement mitigation measures to alleviate adverse effects on traffic operations. Changes in travel patterns associated with the CBD Tolling Alternative would not result in any potential adverse effects on air quality or noise.

As described in other chapters of this EA, the new tolling infrastructure and tolling system equipment would be similar in form to streetlight poles and signs already present, and in many locations would replace existing infrastructure in the same location. As such, the tolling infrastructure and tolling system equipment associated with the CBD Tolling Alternative would not adversely affect nearby parks, historic properties, natural resources, visual character, or neighborhood character where they are installed. Construction activities for the CBD Tolling Alternative would involve installing tolling infrastructure and tolling system equipment along transportation rights-of-way within and near the Manhattan CBD. This would be similar to typical construction activities for the installation of new traffic lights or streetlights typically used throughout the city.

Where the CBD Tolling Alternative would require new poles or mounting structures, construction activities would include the following:

- Excavating and constructing the foundation(s)
- Placing the new support poles or structures
- Attaching the tolling system equipment and making utility connections
- Restoring the roadway and/or sidewalk surface

The overall duration of construction for the CBD Tolling Alternative would be approximately one year or less, and at each location, the total construction duration would be approximately two weeks. While construction activities could result in temporary effects in the neighborhoods where construction would occur due to sidewalk or traffic-lane closures and noise generated by construction equipment, TBTA would require the contractor to implement protocols and plans to minimize construction disruptions to the extent feasible and practical. Overall, based on the short duration and limited magnitude of work, construction activities would not have adverse effects in the neighborhoods where construction would occur.

16.2.2 Indirect Effects

Chapters 4 through 15 of this EA describe the potential effects of the CBD Tolling Alternative on the New York City metropolitan region, using a regional study area consisting of 28 counties. This EA examines effects of the Project in 2023, when the CBD Tolling Alternative would become operational, and in 2045, to identify any lasting effects of the Project.

The CBD Tolling Alternative would not create or extend the transportation network in a manner that would lead to long term induced growth in the region. As shown in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the Project would result in congestion relief within the Manhattan CBD through the reduction of vehicle trips and overall VMT. In the 2045 analysis year, the CBD Tolling Alternative would reduce vehicle trips entering and leaving the Manhattan CBD by a range of 13 percent (Tolling Scenario A) to 18 percent (Tolling Scenario E). This would result in a reduction in the regional VMT ranging from 0.2 percent (Tolling Scenario A) to 0.5 percent (Tolling Scenario E). These reductions in VMT would occur throughout the region, with the greatest percentage change in the Manhattan CBD and less change in the counties on Long Island, north of New York City, New Jersey, and Connecticut.

These changes would support the regional economy by enhancing regional mobility but would not be of a magnitude that would induce growth or larger changes. Generally, the CBD Tolling Alternative would decrease volumes on area highways and roadways to, from, and within the Manhattan CBD, resulting in less congestion and improved travel speeds and travel times for motorists who continue to use these roads, except for a limited number of locations where traffic volumes would increase as drivers adjust their routes to avoid the Manhattan CBD. In tolling scenarios with crossing credits that make the tolls similar among currently tolled bridges and tunnels and untolled bridges, people may alter their current routes to shorter or more direct routes since they would no longer take certain routes to avoid a toll. In local neighborhoods where traffic increases would occur, the changes in traffic volumes and patterns would not change community character or land uses in the nearby area (refer to **Subchapter 5B, "Social Conditions: Neighborhood Character"**).

Table 16-1. Summary of Effects of the CBD Tolling Alternative with Tolling Scenarios Detail

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4A – Transportation: Regional Transportation Effects and Modeling	Vehicle Volumes	Decreases in daily vehicle trips to Manhattan CBD overall. Some diversions to different crossings to Manhattan CBD or around the Manhattan CBD altogether, depending on tolling scenario. As traffic, including truck trips, increase on some circumferential highways, simultaneously there is a reduction in traffic on other highway segments to the CBD. Diversions would increase or decrease traffic volumes at local intersections near the Manhattan CBD crossings. Overall decrease in vehicle-miles traveled (VMT) in the Manhattan CBD and region overall in all tolling scenarios and some shift from vehicle to transit mode.	Crossing locations to Manhattan CBD	% Increase or decrease in daily vehicles entering the Manhattan CBD relative to No Action Alternative	-15%	-16%	-17%	-19%	-20%	-18%	-17%	No	**No mitigation needed.** Beneficial effects
	Auto Journeys to Manhattan CBD		Manhattan CBD	% Increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-5%	-5%	-7%	-9%	-11%	-10%	-6%	No	**No mitigation needed.** Beneficial effects
				Absolute increase or decrease in daily worker auto trips to Manhattan CBD relative to No Action Alternative	-12,571	-12,883	-17,408	-24,017	-27,471	-24,433	-14,578		
	Truck Trips Through Manhattan CBD		Manhattan CBD	Increase or decrease in daily truck trips through Manhattan CBD (without origin or destination in the CBD) relative to No Action Alternative	-4,645 (-55%)	-5,695 (-59%)	-5,253 (-63%)	-5,687 (-68%)	-6,604 (-79%)	-6,784 (-81%)	-6,567 (-21%)	No	**No mitigation needed.** Beneficial effects
	Transit Journeys		Manhattan CBD	% Increase or decrease in daily Manhattan CBD-related transit journeys relative to No Action Alternative	+1 to +3%							No	**No mitigation needed.** No adverse effects
	Traffic Results		Manhattan CBD	% Increase or decrease in daily VMT relative to No Action Alternative	-9% to -7%							No	**No mitigation needed.** Beneficial effects in Manhattan CBD, New York City (non-CBD), north of New York City, and Connecticut; although there would be VMT increases in Long Island and New Jersey, the effects would not be adverse.
			NYC (non-Manhattan CBD)		-1 to 0%								
			New York north of NYC		-1% to 0%								
			Long Island		Less than (+) 0.2% change								
			New Jersey		Less than (+) 0.2% change								
			Connecticut		Less than (+) 0.2% change								

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4B – Transportation: Highways and Local Intersections	Traffic – Highway Segments	The introduction of the CBD Tolling Program may produce increased congestion on highway segments approaching on circumferential roadways used to avoid Manhattan CBD tolls, resulting in increased delays and queues in midday and PM peak hours on certain segments in some tolling scenarios: Westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel (midday) Approaches to westbound George Washington Bridge on I-95 (midday) Southbound and northbound FDR Drive between East 10th Street and Brooklyn Bridge (PM) Other locations will see an associated decrease in congestion particularly on routes approaching the Manhattan CBD	10 highway segments (AM)	Highway segments with increased delays and queues in peak hours that would result in adverse effects	0 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D)							Yes	**Mitigation needed.** The Project Sponsors will implement a monitoring plan prior to implementation with post-implementation data collected approximately three months after the start of operations and including thresholds for effects; if the thresholds are reached or crossed, the Project Sponsors will implement Transportation Demand Management (TDM) measures, such as ramp metering, motorist information, signage at all identified highway locations with adverse effects upon implementation of the Project. Post-implementation, the Project Sponsors will monitor effects and, if needed, TBTA will modify the toll rates, crossing credits, exemptions, and/or discounts to reduce adverse effects.
			10 highway segments (midday)		2 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
			10 highway segments (PM)		1 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
	Intersections	Shifts in traffic patterns, with increases in traffic at some locations and decreases at other locations, would change conditions at some local intersections within and near the Manhattan CBD. Of the 102 intersections analyzed, most intersections would see reductions in delay. Potential adverse effects on four local intersections in Manhattan: Trinity Place and Edgar Street (midday); East 36th Street and Second Avenue (midday); East 37th Street and Third Avenue (midday); East 125th Street and Second Avenue (AM, PM)	**363 locations (All day)**	Number of instances of intersections with an increase in volumes of 50 or more vehicles in the peak hours.	**9**	**10**	**24**	**50**	**48**	**50**	**10**	Yes	**Mitigation needed.** The Project Sponsors will monitor those intersections where adverse effects were identified and implement appropriate signal timing adjustments to mitigate the effect, per NYCDOT's normal practice. **Enhancement** Refer to the overall enhancement on monitoring at the end of this table.
			102 locations (AM)		2	2	3	3	3	3	2		
			102 locations (midday)		1	2	4	16	16	17	0		
			102 locations (PM)		1	1	1	10	9	9	1		
			57 locations (overnight)		5	5	16	21	20	21	5		
			4 locations	Locations with potential adverse effects that would be addressed with signal timing adjustments	0	0	0	4	4	4	0		
4C – Transportation: Transit	Transit Systems	The Project would generate a dedicated revenue source for investment in the transit system. Transit ridership would increase by 1 to 2 percent systemwide for travel to and from the Manhattan CBD, because some people would shift to transit rather than driving. Increases in transit ridership would not result in adverse effects on line-haul capacity on any transit routes.	New York City Transit	% Increase or decrease in total daily transit ridership systemwide	1.5% to 2.1%							No	**No mitigation needed.** No adverse effects
			PATH		0.8% to 2.0%								
			Long Island Rail Road		0.6% to 2.0%								
			Metro-North Railroad		0.6% to 1.9%								
			NJ TRANSIT commuter rail		0.3% to 2.3%								
			MTA/NYCT Buses		1.3% to 1.6%								
			NJ TRANSIT Bus		0.5% to 1.1%								
			Other buses (suburban and private operators)		0.0% to 0.9%								
			Ferries (Staten Island Ferry, NYC Ferry, NY Waterway, Seastreak)		2.5% to 3.5%								
			Roosevelt Island Tram		1.7% to 4.1%								

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO A	B	C	D	E	F	G	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
4C – Transportation: Transit (Cont'd)	Bus System Effects	Decreases in traffic volumes within the Manhattan CBD and near the 60th Street boundary of the Manhattan CBD would reduce the roadway congestion that adversely affects bus operations, facilitating more reliable, faster bus trips.	Manhattan local buses	% Increase or decrease at maximum passenger load point	Increases of 0.5% to 1.2%							No	**No mitigation needed.** No adverse effects
			Bronx express buses		-1.6% to 2.2%								
			Queens local and express buses (via Ed Koch Queensboro Bridge)		2.0% to 2.8%								
			Queens express buses (via Queens-Midtown Tunnel)		-1.3% to 4.1%								
			Brooklyn local and express buses		1.3% to 2.6%								
			Staten Island express routes (via Brooklyn)		3.7% to 4.5%								
			Staten Island express routes (via NJ)		1.0% to 2.8%								
			NJ/West of Hudson buses (via Holland Tunnel)		-1.4% to 1.4%								
			NJ/West of Hudson buses (via Lincoln Tunnel)		0.4% to 1.5%								
	Transit Elements	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations: Hoboken Terminal, Hoboken, NJ PATH station Times Sq-42 St/42 St-Port Authority Bus Terminal subway station in the Manhattan CBD (N, Q, R, W, and S; Nos. 1, 2, 3, and 7; and A, C, E lines) Flushing-Main St subway station, Queens (No. 7 line) 14th Street-Union Square subway station in the Manhattan CBD (Nos. 4, 5, and 6; and L, N, Q, R, W lines) Court Square subway station, Queens (No. 7 and E, G, M lines)	Hoboken Terminal–PATH station (NJ) Stair 01/02	Net passenger increases or at stair in the peak hour	45	72	122	164	240	205	139	Yes	**Mitigation needed for Tolling Scenarios E and F.** TBTA will coordinate with NJ TRANSIT and PANYNJ to monitor pedestrian volumes on Stair 01/02 one month prior to commencing tolling operations to establish a baseline, and two months after Project operations begin. If a comparison of Stair 01/02 passenger volumes before and after implementation shows an incremental change that is greater than or equal to 205, then TBTA will coordinate with NJ TRANSIT and PANYNJ to implement improved signage and wayfinding to divert some people from Stair 01/02, and supplemental personnel if needed.
			42 St-Times Square–subway station (Manhattan) Stair ML6/ML8 connecting mezzanine to uptown 1/2/3 lines subway platform	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	59%	68%	82%	100%	82%	56%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to remove the center handrail and standardize the riser, so that the stair meets code without the hand rail. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO A	B	C	D	E	F	G	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
4C – Transportation: Transit (Cont'd)	Transit Elements (Cont'd)	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations (cont'd)	Flushing-Main St subway station (Queens)–Escalator E456 connecting street to mezzanine level	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	116%	91%	108%	116%	100%	133%	72%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the speed from 100 feet per minute (fpm) to 120 fpm.
			Union Sq subway station (Manhattan)–Escalator E219 connecting the L subway line platform to the Nos. 4/5/6 line mezzanine	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	82%	87%	102%	100%	95%	61%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the escalator speed from 100 fpm to 120 fpm.
			Court Sq subway station (Queens)–Stair P2/P4 to Manhattan-bound No. 7 line	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	98%	90%	102%	104%	100%	117%	97%	Yes	**Mitigation needed.** TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to construct a new stair from the northern end of the No. 7 platform to the street. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.
4D – Transportation: Parking	Parking Conditions	All tolling scenarios would result in a reduction in parking demand within the Manhattan CBD of a similar magnitude to the reduction in auto trips into the Manhattan CBD. With a shift from driving to transit, there would be increased parking demand at subway and commuter rail stations and park-and-ride facilities outside the Manhattan CBD.	Manhattan CBD	Narrative	Reduction in parking demand due to reduction in auto trips to CBD							No	**No mitigation needed.** Beneficial effects
			Transit facilities	Narrative	Small changes in parking demand at transit facilities, corresponding to increased commuter rail and subway ridership							No	**No mitigation needed**. No adverse effects
4E – Transportation: Pedestrians and Bicycles	Pedestrian Circulation	Increased pedestrian activity on sidewalks outside transit hubs because of increased transit use. At all but one location in the Manhattan CBD (Herald Square/Penn Station), the increase in transit riders would not generate enough new pedestrians to adversely affect pedestrian circulation in the station area. Outside the Manhattan CBD, transit usage at individual stations would not increase enough to adversely affect pedestrian conditions on nearby sidewalks, crosswalks, or corners.	Herald Square/Penn Station NY	Sidewalks, corners, and crosswalks with pedestrian volumes above threshold in AM / PM peak periods	Adverse effects on pedestrian circulation at one sidewalk segment and two crosswalks							Yes	**Mitigation needed.** The Project Sponsors will implement a monitoring plan at this location. The plan will include a baseline, specific timing, and a threshold for additional action. If that threshold is reached, the Project Sponsors will increase pedestrian space on sidewalks and crosswalks via physical widening and/or removing or relocating obstructions.

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					A	B	C	D	E	F	G		
4E – Transportation: Pedestrians and Bicycles (Cont'd)	Bicycles	Small increases in bicycle trips near transit hubs and as a travel mode	Manhattan CBD	Narrative	Small increases in bicycle trips near transit hubs with highest increases in pedestrian trip share							No	**No mitigation needed**. No adverse effects
			Outside Manhattan CBD	Narrative	Some shifts from automobile to bicycles							No	**No mitigation needed**. No adverse effects
	Safety	No adverse effects	Overall	Narrative	No substantial increases in pedestrian volumes or increased safety concerns, including at existing identified high-crash locations. Overall, fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety.							No	**No mitigation needed.** No adverse effects
5A – Social Conditions: Population	Benefits	Benefits in and near the Manhattan CBD	28-county study area	Narrative	Benefits in and near the Manhattan CBD related to travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety, reduced air pollutant emissions, and predictable funding source for transit improvements. This would positively affect community connections and access to employment, education, healthcare, and recreation for residents.							No	**No mitigation needed.** Beneficial effects
	Community Cohesion	Changes to travel patterns, including increased use of transit, resulting from new toll	28-county study area	Narrative	Changes to travel patterns, including increased use of transit, as a result of the Project would not adversely affect community cohesion or make it more difficult for people to connect with others in their community, given the extensive transit network connecting to the Manhattan CBD and the small change in trips predicted.							No	**No mitigation needed.** No adverse effects (see "Environmental Justice" below for mitigation related to increased costs for low-income drivers).
	Indirect Displacement	No notable changes in socioeconomic conditions or cost of living so as to induce potential involuntary displacement of residents	Manhattan CBD	Narrative	The Project would not result in the potential for indirect (involuntary) residential displacement. It would not result in substantial changes to market conditions so as to lead to changes in housing prices, given that real estate values in the Manhattan CBD are already high and the many factors that affect each household's decisions about where to live. In addition, low-income residents of the CBD would not experience a notable increase in the cost of living as a result of the Project because of the lack of change in housing costs, the many housing units protected through New York's rent-control, rent-stabilization, and other similar programs, the tax credit available to CBD residents with incomes of up to $60,000, and the conclusion that the cost of goods would not increase as a result of the Project (see "Economic Conditions" below).							No	**No mitigation needed**. No adverse effects
	Community Facilities and Services	Increased cost for community facilities and service providers in the Manhattan CBD, their employees who drive, and clientele who drive from outside the CBD	Manhattan CBD	Narrative	The Project would increase costs for community service providers that operate vehicles into and out of the Manhattan CBD and for people who travel by vehicle to community facilities and services in the Manhattan CBD, as well as residents of the CBD and employees of community facilities who use vehicles to travel to community facilities outside the CBD. Given the wide range of travel options other than driving, the cost for users to drive to community facilities and services would not constitute an adverse effect on community facilities and services.							No	**No mitigation needed**. No adverse effects

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5A – Social Conditions: Population (Cont'd)	Effects on Vulnerable Social Groups	Benefits to vulnerable social groups from new funding for MTA Capital Program	28-county study area	Narrative	The Project would benefit certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and non-driver populations by creating a funding source for the MTA 2020–2024 Capital Program (and subsequent capital programs and by reducing congestion in the Manhattan CBD). Elderly individuals would benefit from the travel-time and reliability improvements to bus service with the CBD Tolling Alternative, as bus passengers tend to be older than riders on other forms of transit, such as the subway and, as described above, bus passengers in the Manhattan CBD would benefit from travel-time savings due to the decrease in congestion. People over the age of 65 with a qualifying disability receive a reduced fare on MTA subways and buses, and elderly individuals with a qualifying disability can also receive MTA's paratransit service, including taxis and FHVs operating on behalf of MTA to transport paratransit users. Elderly people with disabilities and low-income individuals who drive to the Manhattan CBD would be entitled to the same mitigation and enhancements proposed for low-income and disabled populations, in general. Other elderly individuals who drive to the Manhattan CBD would pay the toll.							No	**No mitigation needed.** No adverse effects
	Access to Employment	Increased cost for small number of people who drive to work	28-county study area	Narrative	Decrease in work trips by driving modes to and within the Manhattan CBD, with an offsetting increase in transit ridership. Those who would drive despite the CBD toll would do so based on the need or convenience of driving and would benefit from the reduced congestion in the Manhattan CBD. Negligible effect (less than 0.1%) on travel to employment within the Manhattan CBD and reverse-commuting from the CBD due to the wide range of transit options available and the small number of commuters who drive today.							No	**No mitigation needed.** No adverse effects
5B – Social Conditions: Neighborhood Character		No notable change in neighborhood character	Manhattan CBD	Narrative	The changes in traffic patterns on local streets are unlikely to change the defining elements of the neighborhood character of the Manhattan CBD.							No	**No mitigation needed.** No adverse effects
			Area near 60th Street Manhattan CBD boundary	Narrative	Changes in parking demand near the 60th Street CBD boundary (including increases just north of 60th Street and decreases just to the south) would not create a climate of disinvestment that could lead to adverse effects on neighborhood character nor alter the defining elements of the neighborhood character of this area.							No	**No mitigation needed.** No adverse effects
5C – Social Conditions: Public Policy		No effect	28-county study area	Narrative	The Project would be consistent with regional transportation plans and other public policies in place for the regional study area and the Manhattan CBD.							No	**No mitigation needed.** No adverse effects
6 – Economic Conditions	Benefits	Regional economic benefits	28-county study area	Narrative	Economic benefit through congestion relief in terms of travel-time savings and travel-time reliability improvements, which would increase productivity and utility, as well as safety improvements and reduced vehicle operating costs associated with reductions in congestion.							No	**No mitigation needed.** Beneficial effects
	Economic Effects of Toll Costs	Cost of new toll for workers and businesses in the CBD that rely on vehicles	Manhattan CBD	Narrative	No adverse effects to any particular industry or occupational category in the Manhattan CBD. Given the high level of transit access in the CBD and high percentage of transit share, the toll would affect only a small percentage of the overall workforce. This would not adversely affect operations of businesses in the Manhattan CBD or the viability of any business types, including the taxi/FHV industry.							No	**No mitigation needed.** No adverse effects
	Price of Goods	Cost of new toll would not result in changes in the cost of most consumer goods	Manhattan CBD	Narrative	Unlikely to result in meaningful change in cost for most consumer goods. Any cost increase associated with the new toll in the CBD Tolling Alternative that would be passed along to receiving businesses would be distributed among several customers per toll charge (since trucks make multiple deliveries) especially for businesses, including small businesses and micro-businesses, receiving smaller deliveries. This would minimize the cost to any individual business. Some commodity sectors (construction materials, electronics, beverages) are more prone to increases due to less competition within delivery market.							No	**No mitigation needed.** No adverse effects

<table>
<tr><th rowspan="2">EA CHAPTER / ENVIRONMENTAL CATEGORY</th><th rowspan="2">TOPIC</th><th rowspan="2">SUMMARY OF EFFECTS</th><th rowspan="2">LOCATION</th><th rowspan="2">DATA SHOWN IN TABLE</th><th colspan="7">TOLLING SCENARIO</th><th rowspan="2">POTENTIAL ADVERSE EFFECT</th><th rowspan="2">MITIGATION AND ENHANCEMENTS</th></tr>
<tr><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th><th>G</th></tr>
<tr><td rowspan="3">6 – Economic Conditions (Cont'd)</td><td rowspan="2">Taxi and FHV Industry</td><td rowspan="2">Depending on the tolling scenario, the toll could reduce taxi and FHV revenues due to a reduction in taxi/FHV VMT with passengers within the CBD. While this could adversely affect individual drivers (see "Environmental Justice" below), the industry would remain viable overall.</td><td rowspan="2">28-county study area</td><td>Net change in daily taxi/FHV VMT regionwide</td><td>-126,993 (-2.9%)</td><td>-14,028 (-0.3%)</td><td>-73,413 (-1.7%)</td><td>-217,477 (-5.0%)</td><td>-116,065 (-2.7%)</td><td>-4,888 (-1.0%)</td><td>-137,815 (-3.2%)</td><td rowspan="2">No</td><td rowspan="2">No mitigation needed. No adverse effects (see "Environmental Justice" below for mitigation related to effects on taxi and FHV drivers).</td></tr>
<tr><td>Net change in daily taxi/FHV VMT in the CBD</td><td>-21,498 (-6.6%)</td><td>+15,020 (+4.6%)</td><td>-11,371 (-3.5%)</td><td>-54,476 (-16.8%)</td><td>-25,621 (-7.9%)</td><td>+4,962 (+1.5%)</td><td>-27,757 (-8.6%)</td></tr>
<tr><td>Local Economic Effects</td><td>Changes in parking demand near the 60th Street CBD boundary</td><td>Area near 60th Street Manhattan CBD boundary</td><td>Narrative</td><td colspan="7">Changes in parking demand near the 60th Street Manhattan CBD boundary (including increases just north of 60th Street and decreases just to the south) could jeopardize the viability of one or more parking facilities in the area south of 60th Street but would not create a climate of disinvestment that could lead to adverse effects on neighborhood character.</td><td>No</td><td>No mitigation needed. No adverse effects</td></tr>
<tr><td colspan="2">7 – Parks and Recreational Resources</td><td>New tolling infrastructure, tolling system equipment, and signage in the southern portion of Central Park</td><td>Manhattan CBD</td><td>Narrative</td><td colspan="7">The Project would replace four existing streetlight poles at three detection locations in Central Park near 59th Street and on two adjacent sidewalks outside the park's wall. These poles would be in the same locations as existing poles and would not reduce the amount of park space or affect the features and activities of the park. The Project would also place tolling infrastructure beneath the structure of the High Line, outside the park area atop the High Line structure. FHWA through the public involvement process is soliciting public input related to the Project's effects on these parks (see Chapter 19, "Section 4(f) Evaluation)."</td><td>No</td><td>No mitigation needed. Refer to Chapter 7, "Parks and Recreational Resources," for a listing of measures to avoid adverse effects to parks.</td></tr>
<tr><td colspan="2">8 – Historic and Cultural Resources</td><td>New tolling infrastructure and tolling system equipment on or near historic properties</td><td>45 historic properties within the Project's Area of Potential Effects (APE)</td><td>Narrative</td><td colspan="7">Based on a review of the Project in accordance with Section 106 of the National Historic Preservation Act, FHWA has determined that the Project would have No Adverse Effect on historic properties and the State Historic Preservation Office has concurred.</td><td>No</td><td>No mitigation needed. Refer to Chapter 8, "Historic and Cultural Resources," for a listing of measures to avoid adverse effects to historic properties.</td></tr>
<tr><td colspan="2">9 – Visual Resources</td><td>Changes in visual environment resulting from new tolling infrastructure and tolling system equipment</td><td>Area of visual effect</td><td>Narrative</td><td colspan="7">Infrastructure and equipment would be similar in form to streetlight poles, sign poles, or similar structures already in use throughout New York City. Cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light. The Project would have a neutral effect on viewer groups and no adverse effect on visual resources</td><td>No</td><td>No mitigation needed. No adverse effects</td></tr>
</table>

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10 – Air Quality		Increases or decreases in emissions related to truck traffic diversions	Cross Bronx Expressway at Macombs Road, Bronx, NY	Increase or decrease in Annual Average Daily Trips (AADT)	3,901	3,996	2,056	1,766	3,757	2,188	3,255	No	**No mitigation needed.** No adverse effects **Enhancements** **1.** Refer to the overall enhancement on monitoring at the end of this table. **2.** NYCDOT will coordinate to expand the existing network of sensors to monitor priority locations, and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring is necessary. **3.** MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which will begin later in 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.
				Increase or decrease in daily number of trucks	509	704	170	510	378	536	50		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
			I-95, Bergen County, NJ	Increase or decrease in AADT	9,843	11,459	7,980	5,003	7,078	5,842	12,506	No	
				Increase or decrease in daily number of trucks	801	955	729	631	696	637	-236		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
			RFK Bridge, NY	Increase or decrease in AADT	18,742	19,440	19,860	19,932	20,465	20,391	21,006	No	
				Increase or decrease in daily number of trucks	2,257	2,423	2,820	3,479	4,116	3,045	432		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		

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11 – Energy		Reductions in regional energy consumption	28-county study area	Narrative	Reductions in regional VMT would reduce energy consumption							No	**No mitigation needed.** Beneficial effects
12 – Noise		Imperceptible increases or decreases in noise levels resulting from changes in traffic volumes	Bridge and tunnel crossings	Narrative	The maximum noise level increases (2.9 dB(A)), which were predicted adjacent to the Queens-Midtown Tunnel in Tolling Scenario D, would not be perceptible.							No	**No mitigation needed**. No adverse effects **Enhancement** Refer to the overall enhancement on monitoring at the end of this table.
			Local streets	Narrative	Tolling Scenario C was used to assess noise level changes in Downtown Brooklyn, Tolling Scenario D was used at all other locations assessed. The maximum predicted noise level increases (2.5 dB(A)), which were at Trinity Place and Edgar Street, would not be perceptible. There was no predicted increase in noise levels in the Downtown Brooklyn locations.							No	
13 – Natural Resources		Construction activities to install tolling infrastructure near natural resources	Sites of tolling infrastructure and tolling system equipment locations	Narrative	No effects on surface waters, wetlands, or floodplains. Potential effects on stormwater and ecological resources will be managed through construction commitments. The Project is consistent with coastal zone policies.							No	Refer to **Chapter 13, "Natural Resources,"** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.
14 – Hazardous Waste		Potential for disturbance of existing contaminated or hazardous materials during construction	Sites of tolling infrastructure and tolling system equipment locations	Narrative	Soil disturbance during construction and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain asbestos-containing materials, lead-based paint, or other hazardous substances. Potential effects will be managed through construction commitments.							No	Refer to **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials,"** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.
15 – Construction Effects		Potential disruption related to construction for installation of tolling infrastructure	Sites of tolling infrastructure and tolling system equipment locations	Narrative	Temporary disruptions to traffic and pedestrian patterns, and noise from construction activities, with a duration of less than one year overall, and approximately two weeks at any given location. These effects will be managed through construction commitments.							No	Refer to **Chapter 15, "Construction Effects,"** for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.

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17 – Environmental Justice	Potential disproportionately high and adverse effects on low-income drivers	The increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD who do not have an alternative transportation mode for reaching the Manhattan CBD.	28-county study area	Narrative	The increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD in all tolling scenarios.							Yes	**Mitigation needed.** The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) to ensure availability of documentation needed for drivers eligible for the NYS tax credit. TBTA will post information related to the tax credit on the Project website, with a link to the appropriate location on the NYS DTF website to guide eligible drivers to information on claiming the credit. TBTA will eliminate the $10 refundable deposit currently required for E-ZPass customers who do not have a credit card linked to their account, and which is sometimes a barrier to access. TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-load balance), refill their accounts with cash at participating retail locations, and discount plans already in place, about which they may not be aware. TBTA will coordinate with MTA to provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware. The Project Sponsors commit to establishing an Environmental Justice Community Group that would meet on a bi-annual basis, with the first meeting six months after Project implementation, to share updated data and analysis and hear about potential concerns.

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17 – Environmental Justice (Cont'd)	Potential disproportionately high and adverse effects on taxi and FHV drivers	A potential disproportionately high and adverse effect would occur to taxi and FHV drivers in New York City, who largely identify as minority populations, in tolling scenarios that toll their vehicles more than once a day. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers, it would also occur in Tolling Scenarios C and E. The adverse effect would be related to the cost of the new CBD toll and the reduction of VMT for taxis and FHVs, which would result in a decrease in revenues that could lead to losses in employment.	New York City	Narrative	Potential adverse effect would occur in Tolling Scenarios A, D, and G, which would not have caps or exemptions for taxis and FHV drivers.							Yes	**Mitigation needed for New York City taxi and/or FHV drivers if a tolling scenario is implemented with tolls of more than once per day for their vehicles.** The Project Sponsors will work with the appropriate city and state agencies so that when passengers are present, they pay the toll, rather than the driver. TBTA will work with MTA NYCT to institute an Employment Resource Coordination Program to connect drivers experiencing job insecurity with a direct pathway to licensing, training, and job placement with MTA or its affiliated vendors at no cost to the drivers. For those who may not want a commercial driver's license, TBTA will coordinate with MTA NYCT to submit a request to the Federal Transit Administration for a pilot program that will help increase eligibility of taxi and FHV drivers to use their vehicles to provide paratransit trips, and will implement this program if approved.
				Change in daily taxi/FHV VMT with passengers in the CBD relative to No Action Alternative: Scenarios included in EA	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)		
				Net change in daily taxi/FHV trips to CBD relative to scenarios included in EA: Additional analysis to assess effects of caps or exemptions	Tolls capped at 1x / Day: +2%	—	—	Tolls capped at 1x / Day: +3% Exempt: +50%	—	—	Tolls capped at 1x / Day: +2%		

OVERALL PROJECT ENHANCEMENT. The Project Sponsors commit to ongoing monitoring and reporting of potential effects on the Project, including for example, traffic entering the CBD, vehicle-miles traveled in the CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent possible. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed.

Similarly, while the CBD Tolling Alternative would increase the number of passengers on the regional transit network, this increase would be spread across the network and would not be large enough at any specific stations to result in changes in neighborhood character or economic conditions there due to increased traffic, parking demand, or pedestrian activity.

The CBD Tolling Alternative would result in regional economic benefits associated with travel-time savings, reduced VMT, regional air quality benefits, and the introduction of a reliable funding source for the MTA 2020–2024 Capital Program and subsequent programs.

Within and close to the Manhattan CBD, the CBD Tolling Alternative would reduce traffic congestion as well as parking demand. As described in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion,"** and **Subchapter 5B, "Social Conditions: Neighborhood Character,"** this would benefit neighborhood character, but the benefits would not have a large influence on real estate and development trends or property values, either negatively or positively. The introduction of the new toll could induce a small number of residents to relocate outside the Manhattan CBD, but as stated in **Subchapter 5A**, this would not substantively change the population characteristics of the Manhattan CBD. Conversely, the CBD Tolling Alternative is unlikely to increase residential property values in the Manhattan CBD because of the reduction in congestion, given the well-established property values and development patterns of the Manhattan CBD, which are influenced by many factors (refer to **Subchapter 5A).**

Near 60th Street in Manhattan, the CBD Tolling Alternative would likely reduce the demand for off-street parking south of 60th Street and increase the demand north of 60th Street. This could jeopardize the viability of one or more parking facilities in the area south of 60th Street. If one or more parking facilities were to close, these facilities could be redeveloped or repurposed with other uses; the sites would be unlikely to remain vacant and would not create a climate of disinvestment that could lead to adverse effects on neighborhood character. It is unlikely that new off-street parking capacity would be added just north of 60th Street. The area is built-out and lacks available sites, and there has been a decades-long trend toward lower parking demand combined with high real estate values in this area (see **Subchapter 5B, "Social Conditions: Neighborhood Character"**).

In summary, the analyses conducted for this EA do not identify any adverse effects of the CBD Tolling Alternative that would occur later in time (i.e., over the long term) or farther removed in distance from the Project. Where changes in travel patterns because of the CBD Tolling Alternative could affect the operation of transportation facilities (i.e., local intersections, highway segments, and transit stations), the Project Sponsors are committed to post-implementation assessments to monitor conditions to confirm the need for Project improvements. Over the long term and for the larger region, the CBD Tolling Alternative would result in benefits for the regional study area and the Manhattan CBD.

16.2.3 Cumulative Effects

Cumulative effects occur when a project in combination with other independently planned projects could result in adverse effects. This EA considers cumulative effects of the Project and other proposed undertakings in the regional study area. The Best Practice Model (BPM) incorporates comprehensive social and economic projections based on population and employment trends as well as planned land use and transportation projects in the region. The 2023 and 2045 No Action Alternative analysis in this EA incorporates these forecasts for the respective analysis years; therefore, these trends and projects are part of the background condition for the assessment of the CBD Tolling Alternative. Accordingly, the analyses that incorporate BPM results to project future conditions with the Project account for the potential cumulative effect of the Project and other independently planned projects in the regional study area, which include:

- Reconstruction of the Lincoln Tunnel (NJ 495) helix
- Reconstruction of the Port Authority Bus Terminal
- Metro-North Penn Station Access, including four new stations in the Bronx
- Phase 2 of the Second Avenue Subway Project
- The Hudson Tunnel Project

Where potential adverse effects have been identified, the EA recommends measures to mitigate these effects, and the cumulative effects of the CBD Tolling Alternative in combination with other planned projects would also be mitigated.

The improvements to the MTA transportation network included in the MTA 2020–2024 Capital Program and subsequent capital programs would benefit from the introduction of a reliable, sustained source of funding as a result of the CBD Tolling Alternative. Conversely, the increases in transit ridership that would result from the CBD Tolling Alternative would be served by those transit improvements. Cumulatively, the implementation of the CBD Tolling Alternative along with current and planned transit improvements would benefit the region’s transportation network.

MTA and LIRR are completing the East Side Access Project in late 2022, which will provide a second terminal for LIRR trains in Manhattan beneath Madison Avenue and adjacent to Grand Central Terminal, to be called Grand Central Madison. Once complete, LIRR trains will call on both Penn Station New York and Grand Central Madison, New York, providing direct service to the east and west sides of Midtown Manhattan. The Project Sponsors prepared analysis of the cumulative effects of the completion of East Side Access and implementation of the Project, and the analysis concludes that the effects of the CBD Tolling Alternative are similar with or without completion of East Side Access. The analysis is described in **Section 16.3**.

As an independent action, MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA’s next major procurement of battery electric buses, which will begin later in

2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities.

16.2.4 Tolling Scenarios

16.2.4.1 Tolling Scenarios A, B, C, D, E, F, and G

As described in **Chapter 2, "Project Alternatives,"** this EA considers multiple tolling scenarios under the CBD Tolling Alternative. The tolling scenarios incorporate different toll schedules to explore the range of effects of various toll policies. By examining multiple tolling scenarios, the Project Sponsors aim to give the Traffic Mobility Review Board flexibility in identifying the toll schedule that it will recommend to the TBTA Board, while ensuring that this EA identifies effects and addresses mitigation to minimize or eliminate potential adverse effects associated with certain tolling scenarios. **Table 2-3** in **Chapter 2** shows the tolling scenarios examined in this EA.

All tolling scenarios would incorporate the same types and locations of tolling infrastructure and tolling system equipment. Therefore, effects related to the location of this tolling infrastructure and tolling system equipment and its construction are the same for all tolling scenarios. The categories of effects that would be the same for all tolling scenarios are parklands and recreational resources, historic and cultural resources, visual resources, natural resources, asbestos-containing materials, lead-based paint, hazardous wastes, and contaminated materials, and construction effects. The mitigation measures identified for any potential adverse effects associated with the CBD Tolling Alternative on these resources would also be the same for all tolling scenarios.

For the analyses that depend on the tolling scenario to assess the potential effects, this EA examines the scenario predicted to result in the most negative effects from implementation of the CBD Tolling Alternative. The scenario with the most negative effects was not the same scenario for every technical analysis, and therefore, the chapters of this EA identify the scenario or scenarios used for the analysis presented in that chapter.

Table 16-1 and the following summarize the differences in the effects of the tolling scenarios:

- **Regional Transportation Effects and Modeling:** All tolling scenarios would reduce traffic volumes within the Manhattan CBD, but to varying degree. Tolling Scenario D results in the greatest overall reduction in vehicle trips entering the Manhattan CBD because it has the greatest reduction in daily work trips by automobile. Tolling Scenario E results in the greatest reduction of truck trips traveling through the Manhattan CBD. Overall, the tolling scenarios result in a 7 percent to 9 percent reduction in VMT in the Manhattan CBD and less than 1 percent reduction in VMT elsewhere in the regional study area.
- **Highways and Local Intersections:** The tolling scenarios would adversely affect up to three highway segments in the midday peak hour and one highway segment in the PM peak hour. The tolling scenarios would not adversely affect highway segments in the AM peak hour. As described in **Table 16-1**, the Project Sponsors would implement travel demand management measures to mitigate these effects as necessary, based on the results of a post-implementation study.

Tolling Scenarios D and F would increase traffic by more than 50 vehicles at the greatest number of local intersections throughout the day (50 intersections) while Tolling Scenario A would affect the least number of intersections throughout the day (nine intersections). The analysis concluded that potential adverse effects would occur at four local intersections in Manhattan and the Project Sponsors have identified measures to mitigate the effects on traffic operations at local intersections. Refer to **Appendix 4B.5, "Transportation: Traffic LOS: CBD Tolling Alternative with Mitigation,"** for more information.

- **Transit:** All tolling scenarios would increase ridership on commuter rail, subways, PATH, buses, ferries, and the tram. None of the tolling scenarios would adversely affect the ability of transit services to accommodate riders by resulting in an exceedance of guideline capacities at the peak load points.

  Tolling Scenarios E and F would cause an adverse effect on Stairway 01/02 at Hoboken Terminal, but other tolling scenarios would avoid the adverse effect at this location. The adverse effect may be mitigated with additional wayfinding

  In contrasting the projected increases in passenger volumes among the various tolling scenarios, it can be expected that Tolling Scenarios D and F would yield the same or comparable adverse effects that could be addressed with the same Project improvements identified for the representative tolling scenario (Tolling Scenario E). While these adverse effects and need for Project improvements may also materialize for Tolling Scenarios A, B, C, and G, the severity of the adverse effects and extent of Project improvements needed is likely to be relatively less than the other three tolling scenarios (D, E, and F) and varies by station element as a function of projected net passenger increase at the station. Nevertheless, so that the Project does not create an adverse effect at any of the four NYCT station elements described above, monitoring at all four NYCT station elements will be undertaken regardless of the tolling scenario selected. Monitoring of actual conditions before and after program implementation would determine if the potential Project improvement measures identified or variations thereof are warranted for implementation.

- **Parking:** While there would be increased demand for parking at commuter rail stations and some locations outside the Manhattan CBD, none of the tolling scenarios would increase demand enough to result in adverse parking shortfalls.

- **Pedestrians and Bicyclists:** Tolling Scenario E would result in the greatest potential increase in new pedestrian trips near the Herald Square/Penn Station complex and would result in adverse effects on three pedestrian elements (one sidewalk and two crosswalks). These impacts can be mitigated. The other tolling scenarios would result in the same or lesser effects and, based on the results of the analysis for Tolling Scenario E, any adverse effects can be mitigated.

- **Population and Community Cohesion:** None of the tolling scenarios would result in adverse effects on populations and community cohesion. Because the tolling scenarios would increase the cost of trips to the Manhattan CBD, tolling scenarios would affect people that drive to community facilities and services, elderly people that drive a private vehicle or use a taxi/FHV, and disabled people that drive a private vehicle or take a taxi/FHV. Because the tolls differ among tolling scenarios, the degree of these effects vary based on the time of day and the type of vehicle used for the trip (private automobile or taxi/FHV).

- **Neighborhood Character:** All tolling scenarios would result in minimal changes in neighborhood character within the Manhattan CBD, near the 60th Street Manhattan CBD boundary study area, and within the regional study area.
- **Public Policy:** All tolling scenarios would be generally consistent with regional transportation plans and other relevant public policies, including those that aim to reduce congestion.
- **Economic Considerations:** Most economic effects of the CBD Tolling Alternative would not vary for the tolling scenarios except for effects related to the toll costs. The tolling scenarios and additional analyses assess a variety of tolling policies for taxis and FHVs ranging from charging a toll each time a taxi or FHV enters or remains in the Manhattan CBD to a complete exemption from paying the Manhattan CBD toll. Tolling scenarios that cap or exempt tolls for certain classes of vehicles result in lower costs for those drivers than other tolling scenarios. In particular, Tolling Scenarios B and E would result in lower trip costs for taxis and FHVs, and therefore, a lower reduction in trips by taxis and FHVs than other tolling scenarios. However, the decreased cost for taxis and FHVs would be offset by increased costs for other drivers. (Refer to **Section 16.2.4.3**, for a discussion of modified scenarios with exemptions or caps for taxis and FHVs.)
- **Air Quality:** The tolling scenarios would change the volume of truck trips on local highways at varying locations and of varying degree as compared to the No Action Alternative. The greatest increases in truck trips would occur with Tolling Scenario E at the RFK Bridge. Tolling Scenario B would result in the greatest increase in truck trips on I-95 in Bergen County, New Jersey and on the Cross Bronx Expressway at the McCombs Dam Bridge. For all tolling scenarios, the changes in traffic volumes, including changes in truck trips, would not result in regional or localized exceedances of National Ambient Air Quality Standards, and there would be no adverse effects on air quality from implementation of the CBD Tolling Alternative.
- **Energy:** Because all tolling scenarios would reduce VMT, all tolling scenarios would result in a reduction in energy demand.
- **Noise:** For all tolling scenarios, the predicted increase in traffic at locations in the regional study area would not result in a barely perceptible (between 2 dBA and 3 dBA) or lesser change in noise.
- **Environmental Justice:** All tolling scenarios would increase costs, ranging from $9 to $23 per trip for peak automobile E-ZPass customers, for low-income drivers who live outside the Manhattan CBD and drive to the Manhattan CBD. The taxi and FHV industries have a predominance of drivers that identify as a minority population. Mitigation is proposed for New York City taxi and/or FHV drivers for tolling scenarios with tolls of more than once per day for their vehicles.

As previously noted, the Traffic Mobility Review Board would recommend the toll schedule to the TBTA Board. The Project Sponsors would provide information from this EA, including the public review of this EA, to the Traffic Mobility Review Board to inform their decision.

16.2.4.2 Tolling Scenario B with 30 Percent Higher Tolls

Though Tolling Scenario B would not generate sufficient revenue to support the required $15 billion for the MTA Capital Program, it was retained in this analysis because public comments requested consideration of a low toll, combined with certain exemptions and discounts. To meet the revenue goals of the Project screening criteria, an additional variation of the original Tolling Scenario B was modeled. In this variation, toll rates were increased 30 percent from the original Tolling Scenario B for all vehicle classes across all time periods. All other tolling policies in this variation are consistent with the original Tolling Scenario B.

This variation of Tolling Scenario B would meet all the Project objectives. This variation of Tolling Scenario B would reduce VMT in the Manhattan CBD by 8.6 percent compared to the No Action Alternative. This variation would also reduce traffic entering the Manhattan CBD by 17.5 percent. This variation would have minor changes to transit ridership where transit mode share to the Manhattan CBD would grow from 78.2 percent to 79.5 percent of the total journeys accessing the Manhattan CBD. This is a 0.3 percent greater transit mode share than the original Tolling Scenario B, and less than the transit mode share increases in Tolling Scenarios D, E, and F.

For this variation of Tolling Scenario B, truck trips entering the Manhattan CBD would decline 13.8 percent. Similar to the original Tolling Scenario B, taxi and FHV person-journeys into the Manhattan CBD would remain nearly unchanged from the No Action Alternative in this variation of Tolling Scenario B.

16.2.4.3 Additional Analyses of Caps and Exemptions for Taxis and FHVs

In response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on taxi and FHV drivers, additional analyses were conducted. Specifically, analyses were done to assess the revenue and traffic effects of implementing Tolling Scenarios A and D with a cap of once per day for taxis and FHVs (like Tolling Scenarios B and F), implementing Tolling Scenario D with both taxis and FHVs exempt from the toll, and implementing Tolling Scenario G with a cap of once per day for taxis and FHVs. The effects of the modifications would be as follows:

- **Tolling Scenario A with Taxis/FHVs Capped at Once Per Day –** The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $100 million in forgone net annual revenue under the tolling rates used in Tolling Scenario A. The cap would result in about 22 percent more taxis and FHVs entering the Manhattan CBD as compared to the original tolling scenario. To still meet the congestion and revenue objectives of the Project, tolls would need to be raised 10 percent to 15 percent on all vehicle classes in Tolling Scenario A to offset forgone taxi and FHV revenues. This would further reduce personal vehicles and trucks at the Manhattan CBD boundary by 2 percent to 3 percent compared to Tolling Scenario A. However, the decline in personal vehicles and trucks would be mostly offset by the increase in taxis and FHVs entering the Manhattan CBD. As a result, the volumes of all vehicles entering the Manhattan CBD would not change overall.
- **Tolling Scenario D with Taxis/FHVs Capped at Once Per Day –** The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $150 million to $180 million in forgone net annual revenue with the tolling rates in original Tolling Scenario D. The cap would result in about 25 percent more taxis and FHVs entering the Manhattan CBD compared to the

original Tolling Scenario D. Since original Tolling Scenario D (with uncapped tolling of taxis and FHVs) would have annual net revenue higher than the Project objectives by about $300 million, this modified Tolling Scenario D would continue to meet the revenue objective without needing to raise toll rates from those in original Tolling Scenario D.

- **Tolling Scenario D with Taxi/FHV Tolling Exemption –** The estimated value of implementing an exemption for taxis and FHVs is $200 million to $250 million in forgone net annual revenue with the tolling rates in original Tolling Scenario D. Exempting taxis and FHVs from the Manhattan CBD toll would increase the number of additional taxis and FHVs entering the Manhattan CBD by up to 50 percent compared to original Tolling Scenario D. Since original Tolling Scenario D (with no exemption for taxis and FHVs) would have annual net revenue higher than the Project objectives by about $300 million, an exemption for taxis and FHVs could be accommodated without needing to raise toll rates presented in Tolling Scenario D.
- **Tolling Scenario G with Taxis/FHVs Capped at Once Per Day –** A variation of Tolling Scenario G was run to test the impact of adding a one-charge-per-day cap to taxis and FHVs. Adding this cap required increasing tolls on other vehicles by about 10 percent to meet the Project’s revenue goal. This toll increase was low enough so as not to notably affect the results from Tolling Scenario G, and importantly, still addresses the concerns regarding commercial truck traffic in the South Bronx, though the number of trucks on the Cross Bronx Expressway at Macombs Road, would shift from 50 to 251, which is still lower than every other tolling scenario except Tolling Scenario C.

16.3 SENSITIVITY ANALYSIS OF EAST SIDE ACCESS PROJECT

The environmental analysis of the Project, including the development of a travel demand model, commenced in June 2019, shortly after the New York State legislature enacted the legislation authoring the Project. At that time, the Project was anticipated to commence operations in early 2021 before the East Side Access Project, a new LIRR connection to Grand Central Terminal, was anticipated to open in late 2022.

The Project uses the BPM for the regional travel demand forecasting. The BPM was refined and updated in 2019 and 2020 with the understanding, as explained above, that East Side Access would start operations after the Project’s anticipated commencement. Therefore, East Side Access was not included in the BPM’s 2021 No Action Alternative or CBD Tolling Alternative forecasts, but it was included in the 2045 BPM. This allowed the forecasting to capture the opening year of Project operation without East Side Access, and the 2045 forecast to include East Side Access. This approach allowed the forecast to show results both without and with East Side Access, and thus to show the ramifications of both then-anticipated scenarios.

The environmental review for the Project was delayed for a variety of reasons, including the robust public outreach program undertaken by the Project Sponsors and changes in transportation conditions. Consequently, the Project’s proposed commencement date was pushed back from 2021 to 2023, while East Side Access was accelerated and is now expected to start operations in 2022. To make sure that the EA fully assesses predicted conditions in 2023, given the certainty of East Side Access completion by that date, the Project Sponsors have prepared a supplemental analysis to incorporate the East Side Access into the 2023 analysis condition.

For most environmental topics, the incorporation of the East Side Access Project into the 2023 background condition would not result in substantive changes in the potential effects of the CBD Tolling Alternative. However, the changes in travel patterns associated with the East Side Access will increase subway ridership at certain stations and will increase pedestrian and bicycle activity in the vicinity of Grand Central Terminal. The following is an assessment of subway operations and pedestrian circulation and safety for the CBD Tolling Alternative with the East Side Access Project as part of its background condition.

16.3.1.1 Subways

In consideration of the conclusions presented in **Subchapter 4C, "Transportation: Transit,"** there was a comparison of the projected change in ridership for the 2023 build conditions with and without East Side Access to determine if the anticipated differences in riders would change any findings. This increment comparison categorized the analyzed stations into the following: 1) decrease or no increase in incremental subway trips with East Side Access; 2) small increase in incremental subway trips with East Side Access; and 3) notable increase in incremental subway trips with East Side Access.

<u>Category 1: Decrease or No Increase in Incremental Subway Trips with East Side Access</u>

For stations under the without East Side Access condition where no adverse effects were identified, there would likewise be no adverse effects anticipated with East Side Access. These stations would include the following locations:

- Grand Central-42 Street
- Lexington Avenue/53 Street and 51 Street
- Broadway-Lafayette Street and Bleecker Street
- Fulton Street (Manhattan)
- 168 Street-Washington Heights
- 59 Street-Columbus Circle
- Lexington Avenue/59 Street

Conditions with East Side Access would not change the identified effects or recommended improvements identified in **Subchapter 4C, "Transportation: Transit,"** for the following locations:

- 14 Street¬-Union Square
- Times Square-42 Street/42 Street-Port Authority Bus Terminal

<u>Category 2: Small Increase in Incremental Subway Trips with East Side Access</u>

The following small increases in incremental subway trips with East Side Access were identified for two of the analyzed stations:

- Canal Street (station at Canal and Broadway that serves the No. 6 and J, N, Q, R, and Z subway lines)
- Broadway Junction

The associated increase in riders in the AM peak hour with East Side Access would be 230 to 236 riders at the Canal Street station and 245 to 248 riders at the Broadway Junction station. Both stations have multiple entrances and exits and several stairways that lead between the street, the mezzanine, and the platform levels. Thus, these small differences would be dispersed across various station elements such that the increase in volume would not result in adverse effects.

Category 3: Notable Increase in Incremental Subway Trips with East Side Access

Five of the stations analyzed in **Subchapter 4C, "Transportation: Transit,"** would experience a notable increase in incremental subway trips with East Side Access over and above the increments identified without East Side Access. For the 34 Street-Herald Square station, which is expansive and adjacent to Penn Station New York and two other subway stations, the projected AM peak-hour incremental trips would increase from 319 without East Side Access to 380 with East Side Access. These trips would traverse an expansive network of street-level entrances and underground passageways extending from West 32nd to West 35th Streets across Broadway and Sixth Avenue, and onto multiple mezzanine areas and subway platforms. Accordingly, these incremental ridership increases (for both with or without East Side Access) would result in imperceptible changes to operations at these station facilities and are not expected to result in adverse effects.

For the four stations that were analyzed in detail in **Subchapter 4C, "Transportation: Transit,"** the projected increases for the AM peak hour as a result of East Side Access would be 342 to 405 for the 42 St-Bryant Park-5 Avenue station, 313 to 340 for the Atlantic Avenue-Barclays Center station, 268 to 305 for the 14 Street (Sixth Avenue/Seventh Avenue) station, and 332 to 386 for the Court Square station. The application of the higher increments (with East Side Access) to the **Subchapter 4C** analyses results identified no changes in the previously made adverse effect findings. Specifically, there would continue to be no adverse effects at the 42 Street-Bryant Park-5 Avenue, Atlantic Avenue-Barclays Center, and 14th Street (Sixth Avenue/Seventh Avenue) stations. For the Court Square station, the higher "with East Side Access" trip increments would result in the same adverse effect described for the without East Side Access condition and the same improvements identified (i.e., constructing a new stair on the Manhattan-bound No. 7 train platform) would similarly address the adverse effect under the with East Side Access condition.

In addition to the above, the Canal Street station (at Sixth Avenue, which serves the A, C, and E routes) would experience an increase in projected ridership under the East Side Access condition that triggered the need for further analyses. Following the analysis procedures and methodologies detailed in **Subchapter 4C "Transportation: Transit,"** additional data were collected at this station and calibrated against volume data provided by NYCT and projected volumes presented in the October 2021 SoHo/NoHo Neighborhood Plan Final Environmental Impact Statement (CEQR Technical Manual, No.: 21DCP059M) to establish a representative baseline for analysis. In coordination with NYCT, projected trip increments were assigned to the station's various control areas and circulation elements and analyzed. This assessment concluded that the incremental increase in trips at this station under the East Side Access condition would not result in any potential adverse effects. **Appendix 4C.7, "Transportation: Level of Service Tables – New York City."** presents the analysis details.

16.3.1.2 Parking

Results of the transportation modeling conducted for the Project with East Side Access using the BPM show that all tolling scenarios evaluated would result in a decrease in the number of vehicle trips entering and leaving the Manhattan CBD and a corresponding increase in the number of trips made to the Manhattan CBD using public transit. Consequently, there would be a decrease in demand for parking within the Manhattan CBD and an increase in demand for parking at the region's transit stations and commuter park-and-ride locations. Based on the BPM results with East Side Access, the increase in commuters at individual stations or park-and-ride facilities outside the Manhattan CBD would be distributed throughout the region, and no locations would have increases in vehicle trips of 50 or more vehicles in the peak hour for any tolling scenario. Moreover, the new vehicle trips at stations would include some customers who would be dropped off without parking and therefore would not add to the demand for parking. Because other modes of public transit in the regional study area (e.g., subways, light rail) would incur even fewer additional vehicle trips as a result of the Project with East Side Access, those locations would also not exceed 50 more vehicles in the peak hour for any tolling scenario. Consequently, using the tiered methodology summarized above and described in greater detail in Subchapter 4D, "Transportation: Parking," no adverse effect would occur to parking conditions at locations in the regional study area.

The number of commuters and visitors to the Manhattan CBD who would use transit for their journey would increase in all tolling scenarios. Although the BPM predicts it would be at far lower numbers than commuter rail and park-and-ride facilities described in the regional study area, some of these new transit users would drive to transit stations in New York City outside the Manhattan CBD to access transit to complete their journey. Consequently, the CBD Tolling Alternative with East Side Access would increase the number of drivers who would seek parking near transit facilities in New York City outside the Manhattan CBD. Based on the BPM results with East Side Access, the increase in the number of travelers at individual transit facilities in New York City outside the Manhattan CBD would be distributed across the city, and no transit destinations would have increases of 50 or more vehicles in the peak hour. Moreover, the new vehicle trips at transit facilities would include some customers who would be dropped off without parking and therefore would not add to the demand for parking. Consequently, using the tiered methodology summarized above and described in more detail in Subchapter 4D, "Transportation: Parking," no adverse effect would occur to parking conditions at locations in New York City outside the Manhattan CBD.

16.3.1.3 Pedestrians and Bicyclists

Analysis prepared for the CBD Tolling Alternative without East Side Access in the background condition identified 16 transit stations where there would be more than 200 new peak-hour pedestrian trips (refer to Figure 4E-1 and Table 4E-1). When including the East Side Access Project in the background condition, fifteen of these stations would receive more than 200 new peak-hour pedestrian trips in peak hours, but one station—Secaucus NJ TRANSIT station—would not. The CBD Tolling Alternative with East Side Access would not result in any new or additional transit stations that would exceed more than 200 new peak-hour pedestrian trips as compared to the analysis presented in Subchapter 4E, "Transportation: Pedestrians and Bicyclists." Figure 4E-1 and Table 4E-1 shows the pedestrian analysis study area with East Side Access.

Three areas (**Table 4E-1** and **Figure 4E-1**) would have more than 200 new pedestrians in the peak hour at an individual pedestrian element (i.e., crosswalk, sidewalk, or corner reservoir) as follows:

- Herald Square/Penn Station New York
- Grand Central Terminal
- World Trade Center/Fulton Street

Based on revised analysis that incorporates the East Side Access Project into the background condition, future pedestrian conditions would not change at the World Trade Center/Fulton Street station area as compared to analysis presented in **Subchapter 4E, "Transportation: Pedestrians and Bicyclists,"** and there would be no adverse effects on pedestrian circulation at this location. The detailed analysis results for this station location are presented in **Appendix 4E.5, "Pedestrian Analysis at Commuter Rail Stations in the Regional Study Area including the East Side Access Project."**

For the Herald Square/Penn Station New York and Grand Central Terminal areas, **Table 16-2** presents the assessment of pedestrian facilities that would accommodate an increase of 200 or more peak-hour pedestrian trips as a result of the CBD Tolling Alternative with East Side Access in the background condition.

Table 16-2. CBD Tolling Alternative Pedestrian Analysis Results with East Side Access

TRANSIT STATION AREA	PEAK HOUR	PEDESTRIAN ELEMENT	NUMBER OF ANALYSIS LOCATIONS	NUMBER OF LOCATIONS THAT OPERATE AT			
				LOS C OR BETTER	LOS D	LOS E	LOS F
Herald Square/Penn Station New York	AM	Sidewalks	4	3	1	0	0
		Corner Reservoirs	4	4	0	0	0
		Crosswalks	2	1	0	1	0
	PM	Sidewalks	4	4	0	0	0
		Corner Reservoirs	4	4	0	0	0
		Crosswalks	2	1	0	0	1
Grand Central Terminal	AM	Sidewalks	1	0	0	1	0
	PM	Sidewalks	1	0	0	1	0

Because the East Side Access Project would divert some pedestrians from Penn Station New York to the new terminal under Madison Avenue, there would be changes in pedestrian volumes near Penn Station New York. At some locations, volumes would be lower than and the potential effects would be lesser than for the CBD Tolling Alternative without the East Side Access Project. With implementation of the CBD Tolling Alternative, all analysis locations near Herald Square/Penn Station New York would operate at marginally acceptable Level of Service (LOS) D or better except for the following:

- The north crosswalk of Sixth Avenue and West 34th Street would operate at LOS E in the AM peak hour and LOS F in the PM peak hour.

Although there would be no change in the number of congested LOS E or LOS F pedestrian elements with or without the Project, there would be slight deteriorations in square feet per pedestrian (SFP) values.

Based on the *CEQR Technical Manual* adverse effects criteria presented in **Subchapter 4E, "Transportation: Pedestrians and Bicycles,"** the CBD Tolling Alternative would result in potential adverse pedestrian effects near Herald Square/Penn Station New York, as follows:

- The Sixth Avenue and West 34th Street north crosswalk would operate at LOS E with a decrease of 1.8 SFP in the AM peak hour and at LOS F with a decrease of 0.6 SFP in the PM peak hour compared to the No Action Alternative.

The potential adverse effects at this location can be resolved through measures that would be implemented as part of the Project. This measure would not affect existing bicycle infrastructure in the street. Increased pedestrian space on the crosswalk can be achieved via physical widening. **Table 16-3** shows the recommended measure and predicted conditions with the implementation. This measure would be developed in coordination with NYCDOT prior to its implementation. **Table 16-3** also notes the relative ease of implementation of the recommended measure.

Table 16-3. CBD Tolling Alternative with Improvement Measures with East Side Access—Pedestrian Level of Service Analysis—Herald Square/Penn Station New York

LOCATION	PROJECT IMPROVEMENT MEASURES	NO ACTION		CBD TOLLING		CBD TOLLING (IMPROVED)	
		SFP	LOS	SFP	LOS	SFP	LOS
Weekday AM Peak Hour							
Sixth Avenue and West 34th Street: north crosswalk	Widen the crosswalk by 1.5 feet (easy to implement). Crosswalk widening of 2.0 feet needed without East Side Access.	12.8	E	11.0	E	12.0	E
Weekday PM Peak Hour							
Sixth Avenue and West 34th Street: north crosswalk	Widen the crosswalk by 1.5 feet (easy to implement). Crosswalk widening of 2.0 feet needed without East Side Access.	6.8	F	6.2	F	6.8	F

Note: SFP = square feet per pedestrian.

The adverse effects and Project improvement measures presented in **Subchapter 4E, "Transportation: Pedestrians and Bicycles"** on the west sidewalk of Eighth Avenue between 35th and West 34th Streets and the north crosswalk of Seventh Avenue and West 32nd Street without East Side Access would not occur with East Side Access.

With implementation of the CBD Tolling Alternative, the west sidewalk of Lexington Avenue between East 44th and East 45th Streets during the AM and PM peak hours would continue to operate at LOS E, with decreases of 1.0 SFP in both peak hours compared to the No Action Alternative. Based on the expected LOS and the adverse effects criteria, the CBD Tolling Alternative would not result in any adverse pedestrian effects at this or any other pedestrian elements near Grand Central Terminal.

There would be imperceptible volume differences (fewer than 20 pedestrians per peak hour) at the World Trade Center/Fulton Street station area with East Side Access. Therefore, the same conclusion from **Subchapter 4E, "Transportation: Pedestrians and Bicycles,"** can be drawn, which is that bicycle trip increases with the Project would be negligible compared to the magnitude of existing bicycle use adjacent to that transit station complex. A comparison of pedestrian trips at the two other transit hubs with and without East Side Access is presented. With up to 1,695 and 1,407 pedestrian trips, 34 and 28 new hourly bicycle trips would be generated by the Project at Herald Square/Penn Station New York and Grand Central Terminal with East Side Access, assuming a 2 percent bike share, respectively. This is in comparison to 2,051 and 1,205 new pedestrian trips predicted in the peak hours, where 41 and 24 new hourly bicycle trips would be generated by the Project at Herald Square/Penn Station New York and Grand Central Terminal, without East Side Access, assuming a 2 percent bike share, respectively. With or without East Side Access, because there would be an average of fewer than one new bicycle trip per minute, these increases would be negligible compared to the magnitude of existing bicycle use adjacent to the two transit station complexes.

Outside the Manhattan CBD under the CBD Tolling Alternative with East Side Access, the shift to bicycle use because of the CBD Tolling Alternative would not be substantial, based on the predicted numbers of commuters who would shift from automobiles to transit for their daily trips (as well as the inefficiencies of switching from auto to bicycle as distances increase). Although the BPM cannot predict such activity, a small proportion of commuters would shift from automobiles to bicycles for their daily trips, depending on distance, available bicycle facilities, comfort, and other factors. Therefore, the CBD Tolling Alternative would not result in any adverse effects on bicycle operations.

The CBD Tolling Alternative with East Side Access would not result in substantial increases in pedestrian volumes or exacerbate safety concerns at the three identified high-crash locations, which experience high pedestrian volumes throughout the day. The CBD Tolling Alternative with East Side Access would also not result in substantial increases in pedestrian volumes or exacerbate safety concerns at other locations in the Manhattan CBD that do not already experience high pedestrian volumes throughout the day. The CBD Tolling Alternative with East Side Access would not result in substantially modified geometric or operational traffic, pedestrian, or bicycle conditions, with or without recommended improvement measures, which would therefore not exacerbate safety concerns. Also, because of fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative with East Side Access could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety. Therefore, the CBD Tolling Alternative with East Side Access would not result in any adverse effects on vehicular, pedestrian, and bicycle safety.

17 Environmental Justice

17.1 INTRODUCTION

This chapter presents an analysis of the potential effects of the CBD Tolling Alternative on low-income and minority populations (collectively, environmental justice populations) and provides an analysis of whether the Project would result in disproportionately high and adverse effects on low-income and minority populations. The analysis in this chapter is based on the conclusions of the other analyses presented in previous chapters of this EA as well as concerns raised during the extensive public outreach that FHWA and the Project Sponsors conducted for the Project during preparation of this EA. **Appendix 17, "Environmental Justice,"** provides more detailed information on the methodology used to conduct this analysis.

17.2 REGULATORY CONTEXT

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994), directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse effects of Federal actions on minority and low-income populations. Its purpose is to focus Federal attention on the environmental and human health effects of Federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. FHWA defines environmental justice as identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens. This also includes the full and fair participation by all potentially affected environmental justice populations in the transportation decision-making process.[1]

The following Federal regulatory and guidance documents were used for the environmental justice analysis:

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994)[2]
- U.S. Department of Transportation (USDOT) Order 5610.2C, Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (May 2021)[3]
- USDOT, Environmental Justice Strategy (November 2016)[4]
- FHWA Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (June 2012)[5]

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1 https://www.fhwa.dot.gov/Environment/environmental_justice/.
2 https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf.
3 https://www.transportation.gov/sites/dot.gov/files/Final-for-OST-C-210312-003-signed.pdf.
4 https://www.transportation.gov/transportation-policy/environmental-justice/environmental-justice-strategy.
5 https://www.fhwa.dot.gov/legsregs/directives/orders/664023a.cfm.

- FHWA, Guidance on Environmental Justice and the National Environmental Policy Act (NEPA) (December 2011)[6]
- FHWA, Environmental Justice Reference Guide (April 2015)[7]
- Federal Interagency Working Group on Environmental Justice & NEPA Committee, Promising Practices for Environmental Justice Methodologies in NEPA Reviews (March 2016)[8]

17.3 METHODOLOGY

17.3.1 Overview

This chapter evaluates the potential for disproportionately high and adverse effects to environmental justice populations, consistent with FHWA's 2011 *Guidance on Environmental Justice and NEPA*, USDOT Order 5610.2C, and FHWA Order 6640.23A. FHWA and the Project Sponsors conducted extensive public outreach, including outreach targeted to environmental justice populations, during preparation of the EA. The following methodology was used to conduct the environmental justice analysis:

1. Review Project effects to identify appropriate study areas for analysis of environmental justice (**Section 17.4**).
2. Identify existing minority and low-income (environmental justice) populations in the study areas (**Section 17.5**).
3. Determine whether the Project would result in beneficial and/or adverse effects on the identified environmental justice populations. This includes consideration of measures to avoid, minimize, and/or mitigate any adverse effects of the Project as well as potential offsetting benefits to the affected environmental justice populations (**Section 17.6**). Input from environmental justice populations regarding potential issues of concern and mitigation measures is an important part of this step.
4. Identify whether the Project would result in disproportionately high and adverse effects on environmental justice populations (**Section 17.7**). These are effects that would be predominately borne by environmental justice populations or are appreciably more severe or greater in magnitude on environmental justice populations than the adverse effect suffered by the non-minority or non-low-income population.
5. If disproportionately high and adverse effects on environmental justice populations are anticipated, evaluate whether there is a further practicable mitigation measure or practicable alternative that would avoid or reduce the disproportionately high and adverse effects (**Section 17.8**).
6. Provide meaningful opportunities for environmental justice populations to provide input on the Project (**Section 17.10**).

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6 https://www.environment.fhwa.dot.gov/env_topics/ej/guidance_ejustice-nepa.aspx.

7 https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/index.cfm.

8 The Project Sponsors reviewed this document in developing the analysis but used the guidance set forth in FHWA's 2011 Environmental Justice and NEPA. https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

17.3.2 Data Sources

The environmental justice analysis is based on the conclusions of the other chapters of this EA, in combination with supplemental data on environmental conditions and information from the U.S. Census Bureau, as follows:

- Information on the effects of the CBD Tolling Alternative is based on the conclusions of the other analyses presented in this EA. These conclusions were informed, in part, by concerns raised by the public during early public outreach for the Project in fall 2021.
- Areas where residents are minority and/or low-income were identified using data from the U.S. Census Bureau 2015-2019 American Community Survey (ACS) 5-Year Estimates. The 2015–2019 ACS 5-Year Estimates is the most current full set of demographic information, including racial and ethnic characteristics and household income and poverty status, available from the U.S. Census Bureau at the census tract level. The 2020 Census information now available does not include a full set of information.
- Socioeconomic characteristics of the traveling public, including minority and/or low-income populations, were based on data from the U.S. Census Bureau's Census Transportation Planning Package (CTPP). The CTPP provides special tabulations, based on the U.S. Census Bureau ACS 5-Year Estimates, that are useful for transportation planning, including commuter flow data at varying geographic scales by mode of commute and household income. The CTPP data include information on commuter patterns for a range of income levels. The most recent CTPP is based on the 2012-2016 ACS 5-Year Estimates and has not been updated to reflect more recent ACS data.
- Conclusions about the effects of the CBD Tolling Alternative on low-income and/or minority populations and potential measures to avoid, minimize, or mitigate those effects were informed by the early public outreach for the Project in fall 2021. That outreach included public webinars to engage with environmental justice populations throughout the 28-county region, coordination with an Environmental Justice Technical Advisory Group, and meetings with an Environmental Justice Stakeholder Working Group (see **Section 17.10**).

17.4 ENVIRONMENTAL JUSTICE STUDY AREAS

The environmental justice analysis evaluates two types of potential effects of the CBD Tolling Program, neighborhood effects and regional effects:

- **Local (Neighborhood) Effects:** These are effects on local communities. Based on the conclusions of the other chapters of this EA, the potential neighborhood effects of the CBD Tolling Alternative would be primarily related to diverted trips and changes in traffic patterns, and the potential resulting effects in terms of traffic congestion, air emissions, and noise.
- **Regional Effects:** These are effects on regional mobility. The analysis considers how implementation of the CBD Tolling Alternative would affect the regional population in terms of increased costs (tolls), changes in trip time, and changes in transit conditions.

The information presented in **Chapters 4 through 15** of this EA and summarized in **Chapter 16, "Summary of Effects"** (see **Table 16-1**) describe the local and regional effects of implementation of the CBD Tolling Alternative on the general population and identify potential adverse effects and measures to avoid, minimize, or mitigate those effects. FHWA and the Project Sponsors reviewed those conclusions as well as concerns raised during public outreach for the Project to determine what Project effects have the potential to affect environmental justice populations. This informed selection of study areas for the environmental justice analysis, as discussed in **Sections 17.4.1 and 17.4.2**, and the topics to be considered in the analysis (see **Section 17.6**).

In addition, during public outreach conducted for the Project in fall 2021 (see **Section 17.10**), members of the public raised a number of concerns related to the Project's potential for effects on environmental justice populations, and FHWA and the Project Sponsors reviewed those concerns and included them in the analysis of environmental justice presented in this chapter:

- **Potential Project Effects on Traffic, Air Quality, and Noise Near Environmental Justice Neighborhoods:** Participants in public webinars and meetings of the Environmental Justice Stakeholder Working Group and Environmental Justice Technical Advisory Group raised concerns that the CBD Tolling Alternative would divert traffic to circumferential highways around the Manhattan CBD and that these additional vehicles would adversely affect the nearby neighborhoods, including by degrading air quality and increasing noise. Participants also commented that the Project would affect local traffic volumes and potentially air quality and noise, in environmental justice neighborhoods, including on the Lower East Side in the Manhattan CBD and in the South Bronx outside the Manhattan CBD. **Section 17.6.1** of this chapter presents the results of the detailed analysis the Project Sponsors conducted of these issues (see **Sections 17.6.1.1, 17.6.1.2, 17.6.1.3, and 17.6.1.4**).

  In response to comments during the fall 2021 outreach, the Project Sponsors expanded the analyses of traffic, air quality, and noise to include additional locations in environmental justice neighborhoods where concerns were raised, more detailed evaluation of changes in truck volumes on highways and local roadways, and more detailed evaluation of air pollutants of concern in the air quality evaluation. In addition, the Project Sponsors added a tolling scenario for analysis throughout the EA, Tolling Scenario G, to evaluate opportunities for reducing truck diversions that would result from the CBD Tolling Alternative.

  In addition, as a result of comments received during public outreach related to air quality concerns, MTA will prioritize two bus depots that serve environmental justice populations in Upper Manhattan and the South Bronx for the transition of MTA New York City Transit's (NYCT) bus fleet to zero-emissions buses (see **Section 17.6.1.3**).

- **Potential Effects of the Project on Bus Ridership:** Participants in the early outreach commented that the Project has the potential to overburden local bus service as people shift from automobile to public transportation to avoid the toll. The EA includes a detailed analysis of the effects of the Project on public transportation ridership throughout the region, including on bus routes that serve environmental justice neighborhoods. **Section 17.6.1.5** provides information on the results of the analysis.

- **Potential for Indirect Displacement of Low-Income Residents in the Manhattan CBD:** The Environmental Justice Technical Advisory Group raised concerns about the potential involuntary displacement of environmental justice populations. They stated a concern that the CBD Tolling Alternative would attract new middle- and upper-income residents to the Manhattan CBD because of its proximity to transit and reduced vehicle congestion, allowing the new residents to avoid paying the toll. Commenters believed that this would put upward pressure on rents, forcing low-income residents to move to more affordable locations outside the Manhattan CBD. They also expressed concern about the potential increase in the cost of goods for Manhattan CBD and how this might affect the cost of living for low-income residents in the Manhattan CBD (see the next item in this discussion). **Section 17.6.1.8** provides an analysis of the potential for indirect displacement.
- **Potential Effects on the Cost of Goods in the Manhattan CBD:** During public outreach for the Project related to environmental justice, the Environmental Justice Technical Advisory Group raised concerns about the potential for the introduction of a new CBD toll to affect the price of consumer goods in the Manhattan CBD if the costs of new tolls on commercial vehicles would be passed on to customers. **Section 17.6.1.9** provides summarizes the conclusions related to this issue.
- **Increased Cost of Travel to the Manhattan CBD for Low-Income Drivers:** Speakers at the environmental justice webinars and members of the Environmental Justice Technical Advisory Group and Environmental Justice Stakeholder Working Group expressed concerns about increased costs for low-income drivers traveling to the Manhattan CBD. This included concerns related to potential adverse effects on community cohesion and access to the Manhattan CBD as well as the effect of increased costs for low-income drivers who commute to work in the Manhattan CBD. See **Section 17.6.2.1**.

17.4.1 Local Study Area

Based on the review of Project effects identified in other chapters of the EA, most of the potential effects of the CBD Tolling Alternative on environmental justice populations would be local effects. **Appendix 17, "Environmental Justice,"** provides more detail on the conclusions of the EA and how issues were evaluated for consideration in this environmental justice analysis. To evaluate the local effects on environmental justice populations, the Project Sponsors used a 10-county local study area consisting of New York City and the five adjacent counties where the greatest change in traffic volumes and vehicle-miles traveled (VMT) are predicted to occur (**Figure 17-1**). This local study area is the area where localized effects (such as changes in traffic volumes, air emissions, or noise) would occur as a result of the Project. This 10-county study area includes the following:

- Bronx County, New York
- Kings County (Brooklyn), New York
- New York County (Manhattan), New York
- Queens County, New York
- Richmond County (Staten Island), New York
- Nassau County, New York
- Bergen County, New Jersey
- Essex County, New Jersey

- Hudson County, New Jersey
- Union County, New Jersey

17.4.2 Regional Study Area

For consideration of the effects of the new toll on people who travel throughout the region, the Project Sponsors used a larger, regional study area (see **Figure 17-1**). The regional study area is the main catchment area for trips to and from the Manhattan CBD and the area where changes in travel patterns and mobility would occur. The 28-county regional study area, which is the same regional study area used in other chapters of the EA, includes the following:

- New York City (Bronx, Kings [Brooklyn], New York [Manhattan], Queens, and Richmond [Staten Island] Counties)
- Long Island (Nassau and Suffolk Counties)
- New York counties north of New York City (Dutchess, Orange, Putnam, Rockland, and Westchester)
- New Jersey counties (Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren)
- Connecticut counties (Fairfield and New Haven)

17.5 EXISTING MINORITY AND LOW-INCOME POPULATIONS IN THE ENVIRONMENTAL JUSTICE STUDY AREAS

17.5.1 Defining Minority and Low-Income Populations

USDOT Order 5610.2C and FHWA Order 6640.23A define minority and low-income populations as follows:

- **Minority:** A person who is Black or African American (not Hispanic), American Indian and Alaskan Native, Asian American, Native Hawaiian or other Pacific Islander, and Hispanic or Latino. This analysis also includes people who identified themselves as “some other race” or “two or more races” in the U.S. Census. In addition, *minority population* is any readily identifiable groups of minority persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed FHWA program, policy, or activity.
- **Low-Income:** A person whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.[9] In addition, a *low-income population* is any readily identifiable groups of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed FHWA program, policy, or activity.

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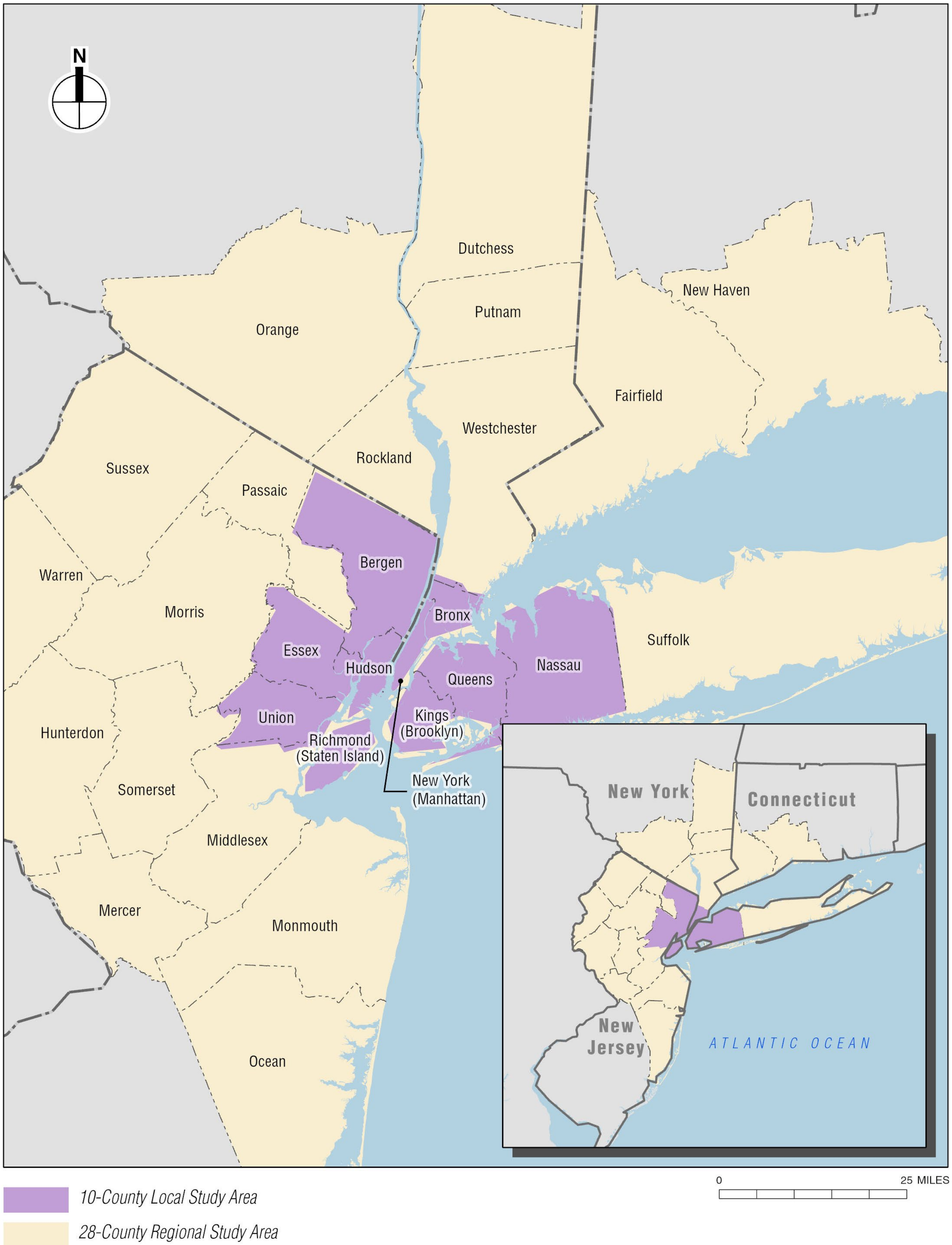
[9] The analysis for this Project used information related to the annual poverty threshold established by the U.S. Census Bureau rather than the U.S. Department of Health and Human Services poverty guidelines. The Health and Human Services poverty guidelines are a simplified version of those Federal poverty thresholds that are used for administrative purposes—for instance, determining financial eligibility for certain Federal programs.

Figure 17-1. Environmental Justice Study Areas



Source: ArcGIS Online, https://www.arcgis.com/index.html.

For the analysis of the local (neighborhood) study area, the following approach was used to identify minority and low-income populations (for more information, see **Appendix 17, "Environmental Justice"**):

- Census tracts in the local study area were considered to be **minority** when either: (1) at least 50 percent of the census tract's population identifies as minority; or (2) the percentage of population identifying as minority in the census block group exceeds the share of minority population in the county where that census tract is located.
- Census tracts in the local study area were considered to be **low-income** when the percentage of individuals with household incomes up to twice the Federal poverty threshold in the census tract was higher than that percentage for the 28-county region.[10] The Project Sponsors in consultation with FHWA identified this income threshold, rather than using the lower Federal poverty threshold, to reflect local conditions and the cost of living in the study area (see **Appendix 17, "Environmental Justice,"** for more information).

For evaluation of the potential effects on people who travel throughout the region (i.e., commuters, travelers, or individuals in specific industries, businesses, or other groups that could be affected by increased cost associated with accessing the Manhattan CBD), the following approach was used to identify minority and low-income populations:

- **Minority** populations who commute to work in the Manhattan CBD were identified based on census information available in the CTPP.
- **Low-income** populations who commute to work in the Manhattan CBD were identified based on information available in the CTPP related to worker flows by mode and household income. A household income threshold of $50,000 was used to identify low-income drivers, since no data are available on workers who have household incomes of up to twice the poverty threshold. This is approximately equivalent to, although higher than, the low-income threshold of twice the Federal poverty threshold for a three-person family, consistent with the average household size for the Project study area of 2.8 people per household.[11]

17.5.2 Environmental Justice Populations in the Local Study Area

The local study area includes the Manhattan CBD and the surrounding area that is most likely to be affected by changes in traffic volumes resulting from the CBD Tolling Alternative.

Approximately 617,00 residents live in the Manhattan CBD, with a wide range of income levels and racial and ethnic characteristics. The Manhattan CBD includes a number of different neighborhoods, which the New York City Department of City Planning combines together into neighborhood groupings for analysis purposes. These are illustrated in **Figure 17-2**. As shown in **Figure 17-2**, the Manhattan CBD includes areas

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10 For this analysis, the Project Sponsors used data from the U.S. Census on the number of individuals in each census tract with household incomes up to 1.99 times the Federal poverty threshold. For simplicity, this chapter refers to that information as twice the Federal poverty threshold.

11 The average household size is 2.8 people per household in New York City, the 10-county study area, and the 28-county regional study area.

with environmental justice census tracts, generally located in the Chinatown, Lower East Side, and Clinton neighborhoods, with additional tracts in other neighborhoods.

Outside the Manhattan CBD, the rest of the local study area includes more than 300 different neighborhoods and local communities. **Figure 17-3** provides an overview of the local study area and **Appendix 17, "Environmental Justice,"** provides additional, more detailed maps and information for each of these neighborhoods. As **Figure 17-3** illustrates, most census tracts in the area immediately surrounding the Manhattan CBD are environmental justice census tracts. **Table 17-1** provides a summary of the population characteristics of the local study area.

17.5.3 Environmental Justice Populations in the Regional Study Area

17.5.3.1 Regional Overview

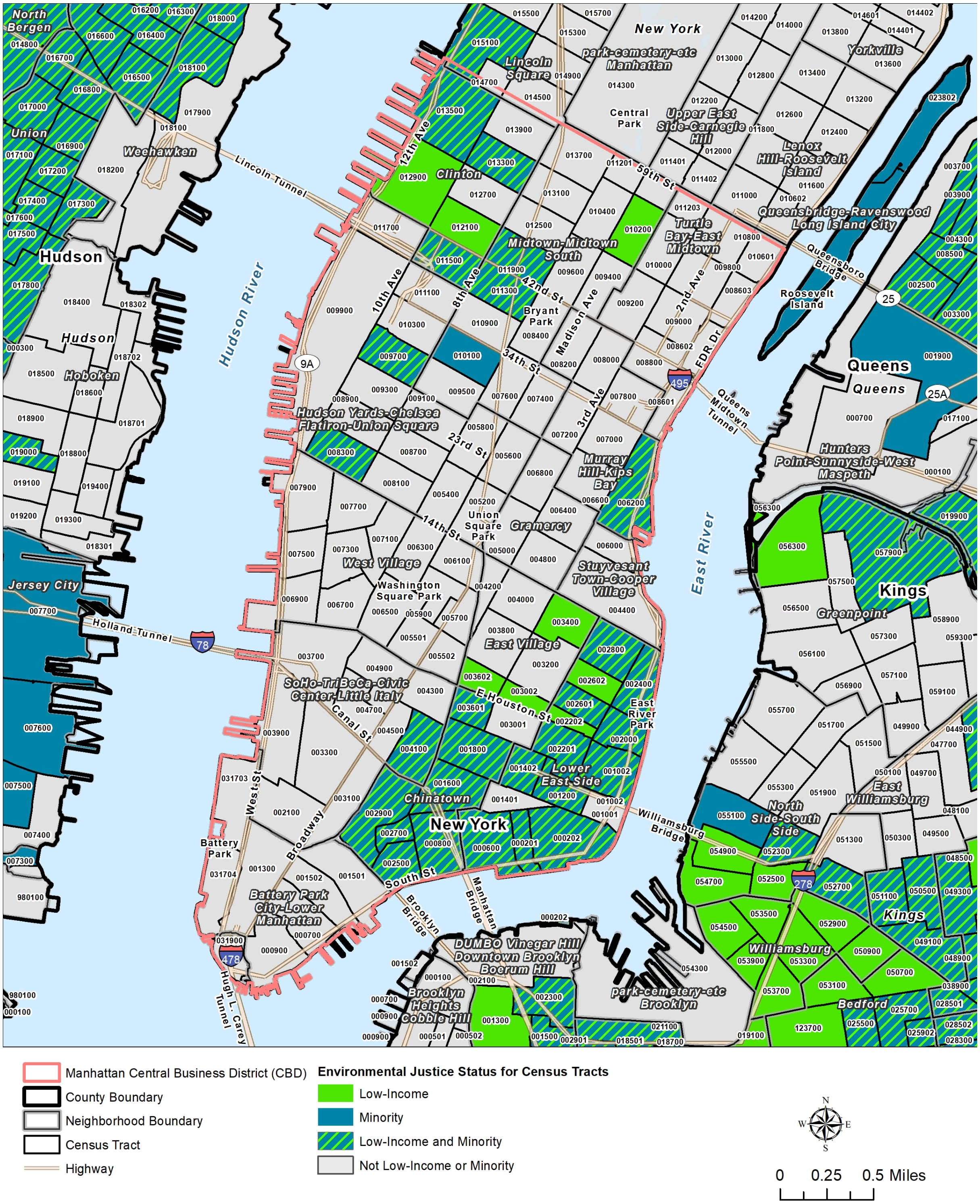
Minority and low-income populations live throughout the regional study area, which consists of 28 counties around and including New York City. As shown in **Figure 17-4**, environmental justice census tracts are predominantly located close to New York City in the area that constitutes the local study area. **Table 17-2** shows the population characteristics of the regional study area.

Table 17-1. Population Characteristics of the Local Study Area

GEOGRAPHIC AREA	TOTAL POPULATION	ASIAN (NON-HISPANIC)	BLACK (NON-HISPANIC)	OTHER (NON-HISPANIC)	HISPANIC OR LATINO	WHITE (NON-HISPANIC)	% MINORITY	% LOW-INCOME
Bronx County	1,435,068	3.6%	29.2%	2.0%	56.0%	9.1%	90.9%	51.0%
Kings County (Brooklyn)	2,589,974	11.8%	30.0%	2.8%	19.0%	36.4%	63.6%	39.1%
New York County (Manhattan)	1,631,993	12.1%	12.5%	2.7%	25.8%	46.9%	53.1%	28.9%
Queens County	2,287,388	25.3%	17.2%	4.4%	28.0%	25.0%	75.0%	31.0%
Richmond County (Staten Island)	474,893	9.2%	9.4%	2.0%	18.4%	61.0%	39.0%	23.0%
Nassau County	1,356,509	9.6%	11.1%	2.4%	16.9%	60.0%	40.0%	14.5%
Bergen County	930,390	16.2%	5.3%	2.0%	19.9%	56.6%	43.4%	16.1%
Essex County	795,404	5.3%	38.4%	2.7%	23.0%	30.5%	69.5%	33.3%
Hudson County	670,046	15.0%	10.5%	2.6%	43.1%	28.8%	71.2%	32.8%
Union County	554,033	5.0%	20.1%	3.8%	31.6%	39.5%	60.5%	24.8%
TOTAL	**12,725,698**	**1,628,214 (12.8%)**	**2,525,656 (19.8%)**	**365,709 (2.9%)**	**3,509,208 (27.6%)**	**4,696,911 (36.9%)**	**63.1%**	**31.4%**

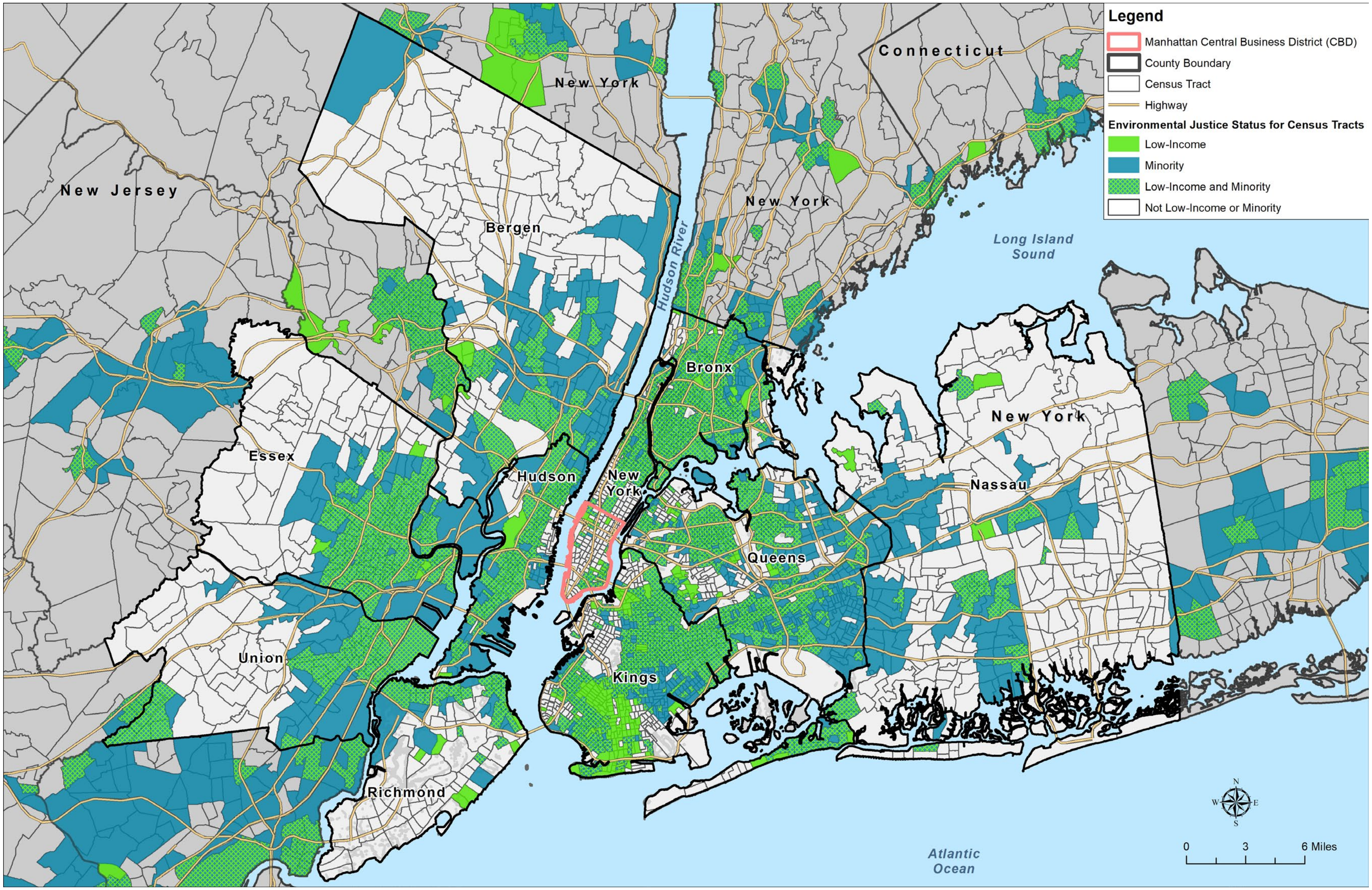
Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.
Notes:
1. Percentages may not add to 100 percent due to rounding.
2. Other includes the census categories of American Indian and Alaska Native, Native Hawaiian or other Pacific Islander, Some Other Race, and Two or More Races. People of any race may also be Hispanic.
3. Total minority percentage consists of all population other than non-Hispanic White people.
4. Low-income population is population with annual household incomes of up to twice (1.99 times) the Federal poverty threshold.

Figure 17-2. Environmental Justice Census Tracts in the Manhattan CBD



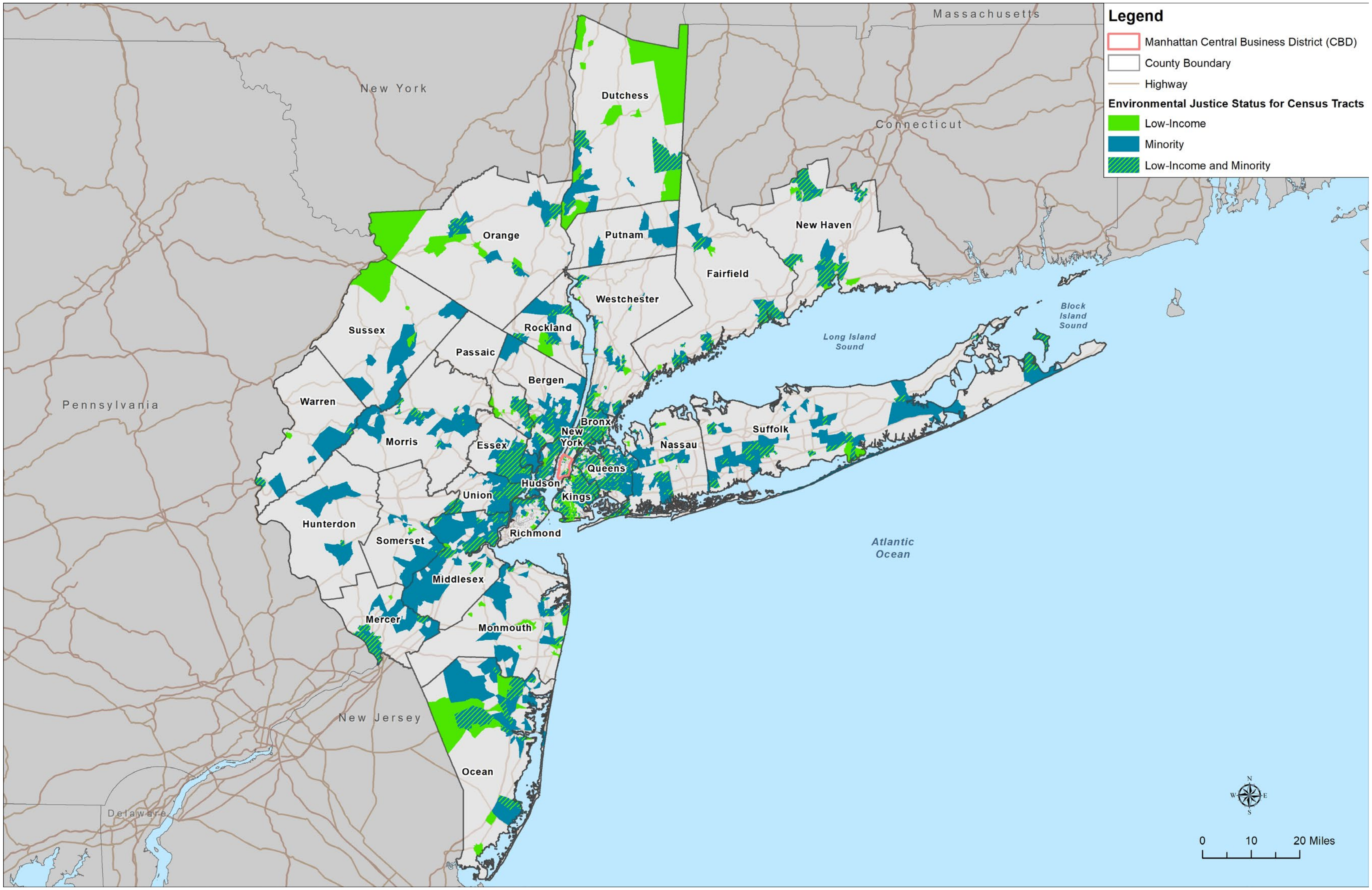
Source: U.S. Census Bureau ACS 2015–2019 5-Year Estimates.

Figure 17-3. Environmental Justice Census Tracts in the Local Study Area



Source: U.S. Census Bureau ACS 2015–2019 5-Year Estimates.

Figure 17-4. Environmental Justice Census Tracts in the Regional Study Area



Source: U.S. Census Bureau ACS 2015–2019 5-Year Estimates.

Table 17-2. Population Characteristics of the Regional Study Area

GEOGRAPHIC AREA	TOTAL POPULATION	ASIAN (NON-HISPANIC)	BLACK (NON-HISPANIC)	OTHER (NON-HISPANIC)	HISPANIC OR LATINO	WHITE (NON-HISPANIC)	% MINORITY	% LOW-INCOME
New York City	**8,419,316**	**1,176,762 (14.0%)**	**1,837,549 (21.8%)**	**254,857 (3.0%)**	**2,447,862 (29.1%)**	**2,702,286 (32.1%)**	**67.9%**	**36.0%**
Bronx County	1,435,068	3.6%	29.2%	2.0%	56.0%	9.1%	90.9%	51.0%
Kings County (Brooklyn)	2,589,974	11.8%	30.0%	2.8%	19.0%	36.4%	63.6%	39.1%
New York County (Manhattan)	1,631,993	12.1%	12.5%	2.7%	25.8%	46.9%	53.1%	28.9%
Queens County	2,287,388	25.3%	17.2%	4.4%	28.0%	25.0%	75.0%	31.0%
Richmond County (Staten Island)	474,893	9.2%	9.4%	2.0%	18.4%	61.0%	39.0%	23.0%
Long Island Counties	**2,840,341**	**187,841 (6.6%)**	**258,946 (9.1%)**	**61,423 (2.2%)**	**515,858 (18.2%)**	**1,816,273 (63.9%)**	**36.1%**	**15.6%**
Nassau County	1,356,509	9.6%	11.1%	2.4%	16.9%	60.0%	40.0%	14.5%
Suffolk County	1,483,832	3.9%	7.3%	2.0%	19.3%	67.6%	32.4%	16.7%
New York Counties North of New York City	**2,065,938**	**98,893 (4.8%)**	**236,310 (11.4%)**	**50,928 (2.5%)**	**424,962 (20.6%)**	**1,254,845 (60.7%)**	**39.3%**	**22.3%**
Dutchess County	293,754	3.5%	9.8%	3.0%	12.2%	71.5%	28.5%	21.4%
Orange County	380,085	2.7%	10.0%	2.6%	20.5%	64.2%	35.8%	25.8%
Putnam County	98,787	2.0%	2.7%	1.5%	15.0%	78.7%	21.3%	12.7%
Rockland County	324,422	5.9%	11.3%	2.0%	17.7%	63.1%	36.9%	28.3%
Westchester County	968,890	5.9%	13.4%	2.5%	24.7%	53.5%	46.5%	20.2%
New Jersey Counties	**7,060,811**	**749,331 (10.6%)**	**856,041 (12.1%)**	**155,823 (2.2%)**	**1,546,228 (21.9%)**	**3,753,388 (53.2%)**	**46.8%**	**22.5%**
Bergen County	930,390	16.2%	5.3%	2.0%	19.9%	56.6%	43.4%	16.1%
Essex County	795,404	5.3%	38.4%	2.7%	23.0%	30.5%	69.5%	33.3%
Hudson County	670,046	15.0%	10.5%	2.6%	43.1%	28.8%	71.2%	32.8%
Hunterdon County	124,823	4.1%	2.4%	1.4%	6.5%	85.5%	14.5%	10.7%
Mercer County	367,922	11.1%	19.8%	1.8%	17.5%	49.7%	50.3%	25.0%
Middlesex County	825,920	23.9%	9.5%	2.3%	21.2%	43.1%	56.9%	19.4%
Monmouth County	621,659	5.4%	6.7%	1.9%	10.8%	75.2%	24.8%	16.3%
Morris County	493,379	10.3%	3.2%	1.9%	13.3%	71.4%	28.6%	12.4%

Table 17-2. Population Characteristics of the Regional Study Area

GEOGRAPHIC AREA	TOTAL POPULATION	ASIAN (NON-HISPANIC)	BLACK (NON-HISPANIC)	OTHER (NON-HISPANIC)	HISPANIC OR LATINO	WHITE (NON-HISPANIC)	% MINORITY	% LOW-INCOME
Ocean County	596,415	1.8%	2.8%	1.5%	9.2%	84.7%	15.3%	24.8%
Passaic County	503,637	5.1%	10.4%	1.6%	41.5%	41.3%	58.7%	32.8%
Somerset County	329,838	17.6%	9.2%	2.2%	14.7%	56.3%	43.7%	12.1%
Sussex County	141,483	2.0%	2.1%	1.3%	8.2%	86.3%	13.7%	13.6%
Union County	554,033	5.0%	20.1%	3.8%	31.6%	39.5%	60.5%	24.8%
Warren County	105,862	2.7%	4.4%	2.0%	9.3%	81.7%	18.3%	19.1%
Connecticut Counties	**1,801,439**	**84,153 (4.7%)**	**207,373 (11.5%)**	**46,465 (2.6%)**	**341,331 (18.9%)**	**1,122,117 (62.3%)**	**37.7%**	**23.1%**
Fairfield County	943,926	5.3%	10.6%	2.6%	19.7%	61.7%	38.3%	20.8%
New Haven County	857,513	4.0%	12.5%	2.5%	18.1%	62.9%	37.1%	25.6%
TOTAL	**22,187,845**	**2,296,980 (10.4%)**	**3,396,219 (15.3%)**	**569,496 (2.6%)**	**5,276,241 (23.8%)**	**10,648,909 (48.0%)**	**52.0%**	**26.8%**

Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.

Notes:

1. Percentages may not add to 100 percent due to rounding.
2. Other includes the census categories of American Indian and Alaska Native, Native Hawaiian or other Pacific Islander, Some Other Race, and Two or More Races. People of any race may also be Hispanic.
3. Total minority percentage consists of all population other than non-Hispanic White people.
4. Low-income population is population with annual household incomes of up to twice (1.99 times) the Federal poverty threshold.

17.5.3.2 Regional Travel Characteristics

According to 2012–2016 CTPP data, nearly 10.7 million people had their place of employment in the regional study area, and about 14 percent of them (approximately 1.5 million) work in the Manhattan CBD, based on the 2012-2016 CTPP. Of those, approximately 1,262,400 commute from locations outside the Manhattan CBD and the remainder live and work in the Manhattan CBD. Table 17-3 shows the counties of residence for people who commute to the Manhattan CBD for work, including people who live within the Manhattan CBD itself.

Table 17-3. Comparison of Origins for Commuters to the Manhattan CBD

ORIGIN (PLACE OF RESIDENCE)	COMMUTERS TO MANHATTAN CBD	PERCENTAGE OF STUDY AREA TOTAL
New York City	**1,074,244**	**70.9%**
Bronx County	99,929	6.6%
Kings County (Brooklyn)	277,884	18.4%
New York County (Manhattan)	454,981	30.0%
Queens County	210,661	13.9%
Richmond County (Staten Island)	30,789	2.0%
Long Island Counties	**96,458**	**6.4%**
New York Counties North of New York City	**89,410**	**5.9%**
New Jersey Counties	**226,300**	**14.9%**
Connecticut Counties	**27,697**	**1.8%**
TOTAL	**1,514,109**	**100.0%**

Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate. Percentages may not sum to 100 percent due to rounding.
Notes:
1. Numbers from different tables in the CTPP (e.g., total commuters to the Manhattan CBD) may not be identical due to rounding and different methods of estimating inherent in the CTPP.
2. Long Island counties include Nassau and Suffolk.
   New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
   New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
   Connecticut counties include Fairfield and New Haven.

Approximately 28 percent of households in the regional study area do not have a vehicle available for their use (and, conversely, 72 percent of households have one or more vehicles available), although vehicle access varies widely across the region, as shown in Table 17-4. The proportion of households that do not have access to a vehicle is substantially higher in Manhattan (77 percent in Manhattan as a whole, 80 percent in the Manhattan CBD), the Bronx (59 percent), and Brooklyn (56 percent), than in the region (28 percent).

Table 17-4. Vehicle Access in the Regional Study Area

GEOGRAPHIC AREAS	TOTAL HOUSEHOLDS	HOUSEHOLDS WITH NO ACCESS TO A VEHICLE	PERCENTAGE OF HOUSEHOLDS WITH NO ACCESS TO A VEHICLE
New York City	**3,167,034**	**1,730,704**	**54.6%**
Bronx County	503,829	297,663	59.1%
Kings County (Brooklyn)	958,567	534,368	55.8%
New York County (Manhattan)	759,460	584,710	77.0%
Queens County	778,932	286,141	36.7%
Richmond County (Staten Island)	166,246	27,822	16.7%
Long Island Counties	**936,278**	**56,401**	**6.0%**
New York Counties North of New York City	**721,013**	**84,061**	**11.7%**
New Jersey Counties	**2,558,509**	**314,320**	**12.3%**
Connecticut Counties	**670,761**	**64,645**	**9.6%**
TOTAL	**8,053,595**	**2,250,131**	**27.9%**

Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.
Note:
Long Island counties include Nassau and Suffolk.
New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
Connecticut counties include Fairfield and New Haven.

Residents of New York City in particular are most likely to use transit[12] to travel to work in the Manhattan CBD. With a dense network of public transportation options throughout New York City and 24-hour service throughout that network, CTPP data indicate that 88 percent of the New York City residents who travel to the Manhattan CBD for work from outside the Manhattan CBD use public transportation for their commute. All of New York City is within one-half mile of a commuter rail station, subway station, or bus stop except one small area in southern Queens, a gated community called Breezy Point (see **Figure 5A-3 in Subchapter 5A**). Most of New York City is also within one-half mile of the faster public transportation modes available—commuter rail, subway, or Select Bus Service (SBS), New York City's growing bus rapid transit system.[13]

Approximately 440,000 people (or about 5.2 percent of the city's 8.4 million residents) live in areas of New York City that are more than one-half mile from these faster public transportation modes (commuter rail, subway, or express bus or SBS service), and approximately 33,900 of them commute to the Manhattan CBD. Approximately 5,200 (15 percent) of these commuters to the Manhattan CBD travel by car.

12 Unless otherwise noted, the terms "public transportation" and "transit" are used interchangeably throughout this chapter.
13 One-half mile represents an approximately 10- to 15-minute walk for an average pedestrian, and therefore indicates the availability of these transportation services.

17.5.3.3 Minority Commuters to Manhattan CBD from the Regional Study Area

More than half of the population of the regional study area (52 percent) identifies as minority, as shown in Table 17-2 earlier in this chapter. The percentage of population who identify as minority populations is highest in New York City (68 percent), where all but Richmond County (Staten Island) are more than 50 percent minority and the Bronx (91 percent) and Queens (75 percent) have the highest proportions. In New Jersey, the counties closest to New York City also have populations with more than half identifying as minority (in particular, Essex County, with 70 percent; Hudson County, with 71 percent, Middlesex, with 57 percent; Passaic, with 59 percent; and Union, with 61 percent).

Consequently, many of the people who commute to work in the Manhattan CBD identify as minority. Table 17-5 provides information on the number of minority commuters to the Manhattan CBD from the different origins in the regional study area. A total of 715,195 of the region's commuters to the Manhattan CBD (47.2 percent) identify as minority populations. Of these commuters, over three-quarters (76.9 percent) are from New York City, 14.5 percent are from New Jersey, 0.8 percent are from Connecticut, and 7.8 percent are from the other New York counties in the study area.

Table 17-5. Origins for All Commuters and Minority Commuters to the Manhattan CBD (All Modes)

ORIGIN (PLACE OF RESIDENCE)	ALL COMMUTERS	MINORITY COMMUTERS	% OF COMMUTERS WHO ARE MINORITY
New York City	**1,074,244**	**549,993**	**51.2%**
Bronx County	99,929	89,406	89.5%
Kings County (Brooklyn)	277,884	142,988	51.5%
New York County (Manhattan)	454,981	163,832	36.0%
Queens County	210,661	143,214	68.0%
Richmond County (Staten Island)	30,789	10,553	34.3%
Long Island Counties	**96,458**	**28,897**	**30.0%**
New York Counties North of New York City	**89,410**	**26,962**	**30.2%**
New Jersey Counties	**226,300**	**103,685**	**45.8%**
Connecticut Counties	**27,697**	**5,658**	**20.4%**
TOTAL	**1,514,109**	**715,195**	**47.2%**

Source: U.S. Census Bureau. CTPP, 2012–2016 Estimate. Percentages may not sum to 100 percent due to rounding.
Notes:
1. Numbers from different tables in the CTPP (e.g., total commuters to the Manhattan CBD) may not be identical due to rounding and different methods of estimating inherent in the CTPP.
2. Long Island counties include Nassau and Suffolk.
   New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
   New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
   Connecticut counties include Fairfield and New Haven.

Table 17-6 provides information on the mode of transportation to work for all workers and for minority workers in the Manhattan CBD. As shown in **Table 17-6**, approximately 10 percent of the minority commuters to the Manhattan CBD, or close to 73,000 people, use cars to make their trip. This is similar to the overall population of all commuters, of whom approximately 10.2 percent use cars.

Table 17-6. Travel Mode to Manhattan CBD for All Workers and Minority Workers

COMMUTERS TO MANHATTAN CBD	COMMUTE BY AUTO	COMMUTE BY TRANSIT	COMMUTE BY BICYCLE OR WALK	COMMUTE BY OTHER MODE
All workers	157,852 (10.2%)	1,213,793 (78.1%)	128,638 (8.3%)	53,530 (3.4%)
Minority workers	72,936 (10.0%)	602,493 (82.4%)	42,080 (5.8%)	13,425 (1.8%)

Source: U.S. Census Bureau. CTPP, 2012–2016 Estimate. Percentages may not sum to 100 percent due to rounding.
Notes:
1. Numbers from different tables in the CTPP (e.g., total commuters to the Manhattan CBD) may not be identical due to rounding and different methods of estimating inherent in the CTPP. Total workers shown in this table are those for whom means of transportation is available.
2. Commute by other mode includes taxicab, motorcycle, other modes, and people who work at home.

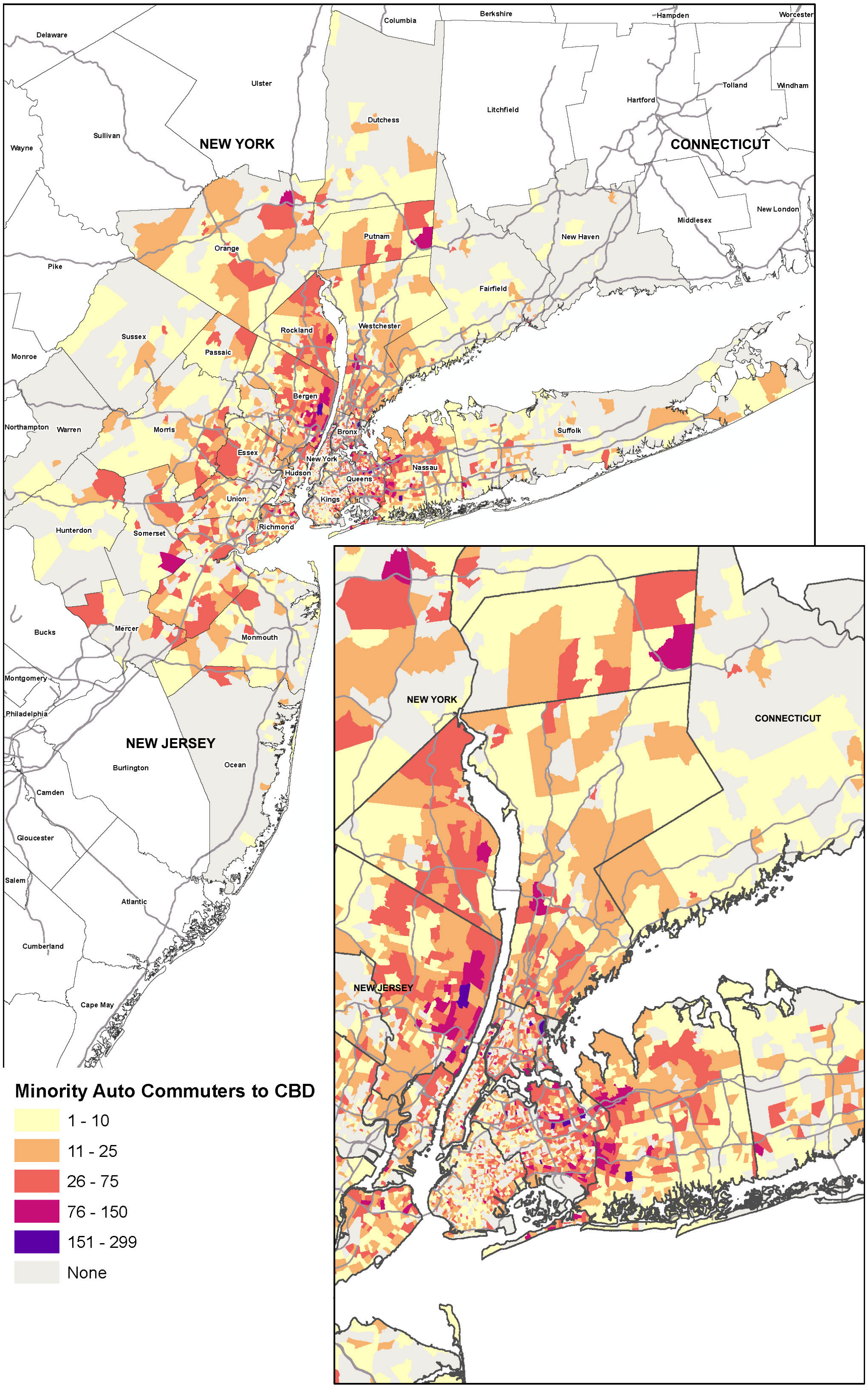
Table 17-7 and **Figure 17-5** provide more specific information on the origins of minority auto commuters to the Manhattan CBD, based on the CTPP. As shown, more than half of the minority auto commuters come from locations in New York City, including more than 20 percent from Queens. About one-quarter of the minority auto commuters come from locations in New Jersey.

Table 17-7. Estimated Origins of Minority Auto Commuters to the Manhattan CBD

ORIGIN (PLACE OF RESIDENCE)	MINORITY AUTO COMMUTERS TO MANHATTAN CBD	PERCENTAGE OF STUDY AREA TOTAL
New York City	**41,505**	**56.9%**
Bronx County	8,125	11.1%
Kings County (Brooklyn)	9,528	13.1%
New York County (Manhattan)	5,143	7.1%
Queens County	16,410	22.5%
Richmond County (Staten Island)	2,299	3.2%
Long Island Counties	**6,740**	**9.2%**
New York Counties North of New York City	**6,756**	**9.3%**
New Jersey Counties	**17,070**	**23.4%**
Connecticut Counties	**864**	**1.2%**
TOTAL	**72,936**	**100.0%**

Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate.
Estimates of origins for minority commuters based on analysis by AKRF, Inc. for this EA.
For more information on the methodology for this estimate, see **Appendix 17, "Environmental Justice."**

Figure 17-5. Origins of Minority Auto Commuters to the Manhattan CBD



Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate.

17.5.3.4 Low-Income Commuters to Manhattan CBD from the Regional Study Area

About 14 percent of the commuters to the Manhattan CBD (about 219,000 people) are low-income. Most of these low-income commuters (88 percent, or just under 193,000 people) live in New York City, and about 14 percent (close to 32,000 people) live and work within the Manhattan CBD. About 8 percent of the low-income commuters to the Manhattan CBD are from New Jersey, about 2 percent are from Long Island and the New York counties north of New York City, and fewer than 1 percent are from Connecticut (See Table 17-8.)

Table 17-8. Origins for All Commuters and Low-Income Commuters to the Manhattan CBD (All Modes)

ORIGIN (PLACE OF RESIDENCE)	ALL COMMUTERS	LOW-INCOME COMMUTERS	% OF COMMUTERS WHO ARE LOW-INCOME
New York City	**1,074,244**	**192,497**	**17.9%**
Bronx County	99,929	36,718	36.7%
Kings County (Brooklyn)	277,884	49,910	18.0%
New York County (Manhattan)	454,981	64,439	14.2%
Queens County	210,661	38,959	18.5%
Richmond County (Staten Island)	30,789	2,471	8.0%
Long Island Counties	**96,458**	**3,773**	**3.9%**
New York Counties North of New York City	**89,410**	**4,443**	**5.0%**
New Jersey Counties	**226,300**	**16,830**	**7.4%**
Connecticut Counties	**27,697**	**980**	**3.5%**
TOTAL	**1,514,109**	**218,523**	**14.4%**

Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate. Percentages may not sum to 100 percent due to rounding.
Notes:
1. Numbers from different tables in the CTPP (e.g., total commuters to the Manhattan CBD) may not be identical due to rounding and different methods of estimating inherent in the CTPP.
2. Low-income commuters are those with household incomes of less than $50,000.
3. Long Island counties include Nassau and Suffolk.
   New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
   New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
   Connecticut counties include Fairfield and New Haven.

A total of 16,100 low-income workers drive to the Manhattan CBD for work, based on the CTPP. The CTPP provides information on income level and mode by commuters' origin, but only at the county level. However, information on commuting patterns to Manhattan overall help to understand where low-income drivers to the Manhattan CBD live. As shown in Table 17-9, about 72 percent of the low-income commuters who drive to Manhattan for work come from locations within New York City, and the largest share comes from Queens, followed by Brooklyn and the Bronx. About 14 percent of the low-income drivers come from New Jersey.

Table 17-9. Travel Modes for Low-Income Commuters to Manhattan Overall by Origin

ORIGIN (PLACE OF RESIDENCE)	ALL LOW-INCOME COMMUTERS	LOW-INCOME COMMUTERS BY TRANSIT	LOW-INCOME COMMUTERS BY AUTO	% OF ALL LOW-INCOME COMMUTERS BY AUTO
New York City	**401,220**	**319,400**	**28,485**	**72%**
Bronx County	81,005	73,210	6,200	16%
Kings County (Brooklyn)	93,785	85,685	6,280	16%
New York County (Manhattan)	137,510	83,965	5,300	13%
Queens County	83,335	72,215	9,580	24%
Richmond County (Staten Island)	5,585	4,325	1,125	3%
Long Island Counties	**7,375**	**4,690**	**2,520**	**6%**
New York Counties North of New York City	**8,247**	**5,245**	**2,880**	**7%**
New Jersey Counties	**27,328**	**21,465**	**5,406**	**14%**
Connecticut Counties	**1,705**	**1,215**	**480**	**1%**
TOTAL	**445,875**	**352,015**	**39,771**	**100%**

Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate.
Notes:
1. Auto commuters include those who drive alone and those who carpool.
2. Low-income commuters are those with household incomes of less than $50,000.
3. Long Island counties include Nassau and Suffolk.
New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
Connecticut counties include Fairfield and New Haven.

17.5.3.5 Businesses Dependent on Vehicles: Taxi and For-Hire Vehicles

The analysis presented in **Chapter 6, "Economic Conditions,"** examines the effects of the Project on various vehicle-dependent industries and concludes that the implementation of a new toll with the CBD Tolling Alternative would not result in adverse effects on businesses in the Manhattan CBD because of the introduction of a new toll.

Tolling scenarios included in the CBD Tolling Alternative include a range of treatments of taxis and FHV trips. Some scenarios exempt taxi and FHV trips from the charge entirely, some include discounts in the form of caps on the number of trips that would be subject to the charge, some charge taxi and FHV trips once per day, and others charge them for every trip entering or remaining in the Manhattan CBD. Scenarios that charge every taxi and FHV trip would lead to higher overall prices paid by customers for these trips. While the CBD Tolling Alternative would not result in an adverse economic impact on the taxi and FHV industry overall, it could reduce employment of taxi and FHV drivers in some tolling scenarios. **Section 17.6.2.2** later in this chapter describes the potential adverse effect on these drivers in more detail. This section presents information about the population characteristics of those drivers, based on available information from the New York City Taxi and Limousine Commission (TLC), which grants licenses for taxi cabs and FHVs in the city.

Taxis include yellow cabs (which are authorized to operate throughout New York City) and green cabs (which are authorized to pick up passengers by street-hail outside of the core service area of Manhattan).

Street-hail livery cabs can accept trips in Manhattan north of East 96th Street and West 110th Street, and in any location in the boroughs outside of Manhattan. FHVs include "traditional" FHVs, which are pre-arranged trips via black cars, liveries, and luxury limousine dispatched from a base that handles fewer than 10,000 trips each day, and "high-volume" for-hire services, which are pre-arranged trips dispatched from a base that handles more than 10,000 trips each day. The high-volume FHV category includes Lyft and Uber.

The TLC provides data for both licensed vehicles and drivers (those who are currently in good standing with TLC's licensing division) and active vehicles and drivers (those who provided at least one trip in a given time period). According to the TLC's 2020 Fact Book, in 2019 there were 13,587 yellow cabs, 2,895 green cabs, and 101,663 FHVs licensed by the TLC.[14] In 2019 the TLC licensed more than 118,000 vehicles and nearly 185,000 drivers in total. The number of active vehicles differs from the number of licensed vehicles, because not every licensed vehicle is actively in use during a given time period. In April 2022, there were 7,053 yellow cabs, 1,027 green cabs, and 70,281 FHVs that made at least one trip.

Data from the TLC indicates that approximately 96 percent of yellow and green cab drivers and 91 percent of FHV drivers were born in countries other than the United States. Based on this data, more than half the taxi or FHV drivers are from countries in Asia, Africa, and the Caribbean that have high percentages of populations that would be considered minority populations for this analysis.[15] **Table 17-10** lists the countries of birth for taxi and FHV drivers according to the 2020 TLC Fact Book. Because no more specific data on the racial and ethnic characteristics of these drivers is available, for this analysis, all taxi and FHV drivers are identified as a minority population.

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14 The New York City TLC's 2020 Fact Book defines paratransit vehicles as vehicles that provide pre-arranged service for medical-related purposes. Trips are usually to or from healthcare facilities and vehicles must be dispatched by a paratransit base. These do not include ADA-accessible yellow cabs.

15 New York City TLC. 2020 Fact Book. https://www1.nyc.gov/assets/tlc/downloads/pdf/2020-tlc-factbook.pdf.

Table 17-10. Country of Birth for Taxi and FHV Drivers, 2018–2019

COUNTRY OF ORIGIN	YELLOW CAB	GREEN CAB	TRADITIONAL FHV	HIGH VOLUME FHV
Bangladesh	23%	23%	4%	9%
China	–	–	5%	3%
Côte d'Ivoire	–	2%	–	–
Dominican Republic	2%	12%	31%	14%
Ecuador	–	3%	6%	–
Egypt	4%	3%	2%	3%
Ghana	4%	–	–	–
Guinea	–	3%		
Haiti	6%	3%	3%	3%
India	8%	8%	4%	5%
Morocco	3%	–	–	–
Nepal	–	–	–	3%
Pakistan	9%	12%	6%	9%
Senegal	2%	–	–	–
United States	4%	3%	8%	9%
Uzbekistan	–	–	3%	3%
TOTAL REPORTED	**65%**	**72%**	**69%**	**58%**
OTHER ORIGINS NOT REPORTED	**35%**	**28%**	**31%**	**42%**

Source: New York City TLC. 2020 Fact Book. https://www1.nyc.gov/assets/tlc/downloads/pdf/2020-tlc-factbook.pdf.
Note: Data are as presented in the 2020 Fact Book. Information on country of birth for other drivers of each type is not available.

17.6 POTENTIAL ADVERSE EFFECTS ON ENVIRONMENTAL JUSTICE POPULATIONS

This section provides an analysis of the issues identified as warranting further investigation, based on the information in previous chapters of this EA and the concerns related to environmental justice raised during public outreach (see **Table 17-14** for a summary of the effects for each tolling scenario). This analysis considers whether potential adverse effects would occur to minority and/or low-income populations, given the context specific to those populations, even when no adverse effects would occur to the general population.

Consideration of whether effects would be adverse includes consideration of any measures to avoid, minimize, or mitigate potentially adverse effects.

17.6.1 Potential Adverse Effects in the Local Study Area

As noted earlier in this chapter, most of the effects of the CBD Tolling Alternative on environmental justice populations would be local effects. This section of the chapter evaluates each of those local effects to identify whether potential adverse effects on environmental justice populations would occur. The discussion includes the following topics, based on the issues identified in other chapters of this EA and as a result of environmental justice outreach for the Project:

- Increased traffic congestion on highway segments (**Section 17.6.1.1**)

- Changes in traffic conditions at local intersections (**Section 17.6.1.2**)
- Traffic-related effects on air quality (**Section 17.6.1.3**)
- Traffic-related effects on noise (**Section 17.6.1.4**)
- Increases to transit ridership (**Section 17.6.1.5**)
- Changes in passenger flows at transit stations (**Section 17.6.1.6**)
- Changes in pedestrian circulation on sidewalks near transit hubs (**Section 17.6.1.7**)
- Potential for indirect displacement (**Section 17.6.1.8**)

17.6.1.1 Increased Traffic Congestion on Highway Segments

During the targeted environmental justice public outreach for the Project in fall 2021, some commenters voiced concerns about the potential for increases in traffic on regional highways and how that might affect nearby environmental justice neighborhoods. This section describes the Project's potential effects on traffic operations on highways in and around the Manhattan CBD. **Section 17.6.1.3** presents the potential air quality effects of these traffic changes and **Section 17.6.1.4** describes the conclusions of the noise analysis.

In response to comments during the fall 2021 outreach, the traffic analyses for the EA were expanded to include additional locations in environmental justice neighborhoods where concerns were raised and more detailed evaluation of changes in truck volumes on highways and local roadways. In addition, the Project Sponsors added a tolling scenario for analysis throughout the EA, Tolling Scenario G, to evaluate opportunities for reducing truck diversions that would result from the CBD Tolling Alternative.

As described in **Subchapter 4B, "Transportation: Highways and Local Intersections,"** detailed modeling was conducted for 10 highway segments near the Manhattan CBD that provide access to the Manhattan CBD or are circumferential routes around the Manhattan CBD that drivers could use to avoid the toll. These are the locations most likely to experience an increase in traffic due to a shift in traffic from currently toll-free facilities to currently tolled facilities and diversion of through Manhattan CBD traffic to circumferential routes. Several of these highway corridors were raised as a concern during early public outreach for the Project, given their proximity to neighborhoods with environmental justice populations.

The analysis presented in **Subchapter 4B, "Transportation: Highways and Local Intersections,"** concludes that with implementation of the CBD Tolling Alternative, traffic patterns would shift throughout the study area because of drivers who divert to avoid the new toll. The level of diversions would depend on the toll value and potential crossing credits or exemptions.

Tolling Scenario D—with the highest crossing credits, exemptions, and discounts—was determined to be representative of the tolling scenarios with the highest potential for diversions and increases in traffic at certain Manhattan CBD crossings, Manhattan CBD highway approaches, intersections within and outside of the Manhattan CBD, and circumferential routes bypassing the Manhattan CBD. Based on the results of the modeling, Tolling Scenario D would result in increased traffic congestion on 8 of those 10 highway segments, resulting in increased delays and queues in peak hours. The effects of Tolling Scenarios E and F would be similar. The projected increases in delays are discussed further in **Subchapter 4B, "Transportation: Highways and Local Intersections."** On 3 of the 10 segments analyzed in detail, the increases in delay and queue length due to the Project would constitute adverse effects on traffic conditions according to New York State's State Environmental Quality Review Act (SEQRA) impact criteria, as follows:

- Approaches to westbound George Washington Bridge on the Trans-Manhattan Expressway (I-95) between the Harlem River and the bridge during the midday peak hour
- The westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel during the midday peak hours
- The southbound and northbound Franklin D. Roosevelt (FDR) Drive between East 10th Street and the Brooklyn Bridge during the PM peak hour

With implementation of the CBD Tolling Alternative, a robust post-implementation traffic monitoring program will be implemented to identify and quantify actual traffic effects associated with the adopted tolling scenario and to inform the development of appropriate mitigation measures, if needed, including Intelligent Transportation Systems (ITS) measures, signing, motorist information, and targeted toll policy modifications. Depending on the tolling program implemented, it is possible that some residual traffic effects along certain highway segments may remain. However, given the relatively few locations where there is a potential for adverse traffic effects along highways leading to and from the Manhattan CBD and circumferential highways, the offsetting reductions in traffic volumes and improvements in travel times along routes from which traffic would divert, and the overall Project benefits in the Manhattan CBD and regionally due to a reduction in vehicular travel, the Project when viewed holistically would not have an adverse effect on traffic. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** provides more specific information on the adverse effects and proposed mitigation.

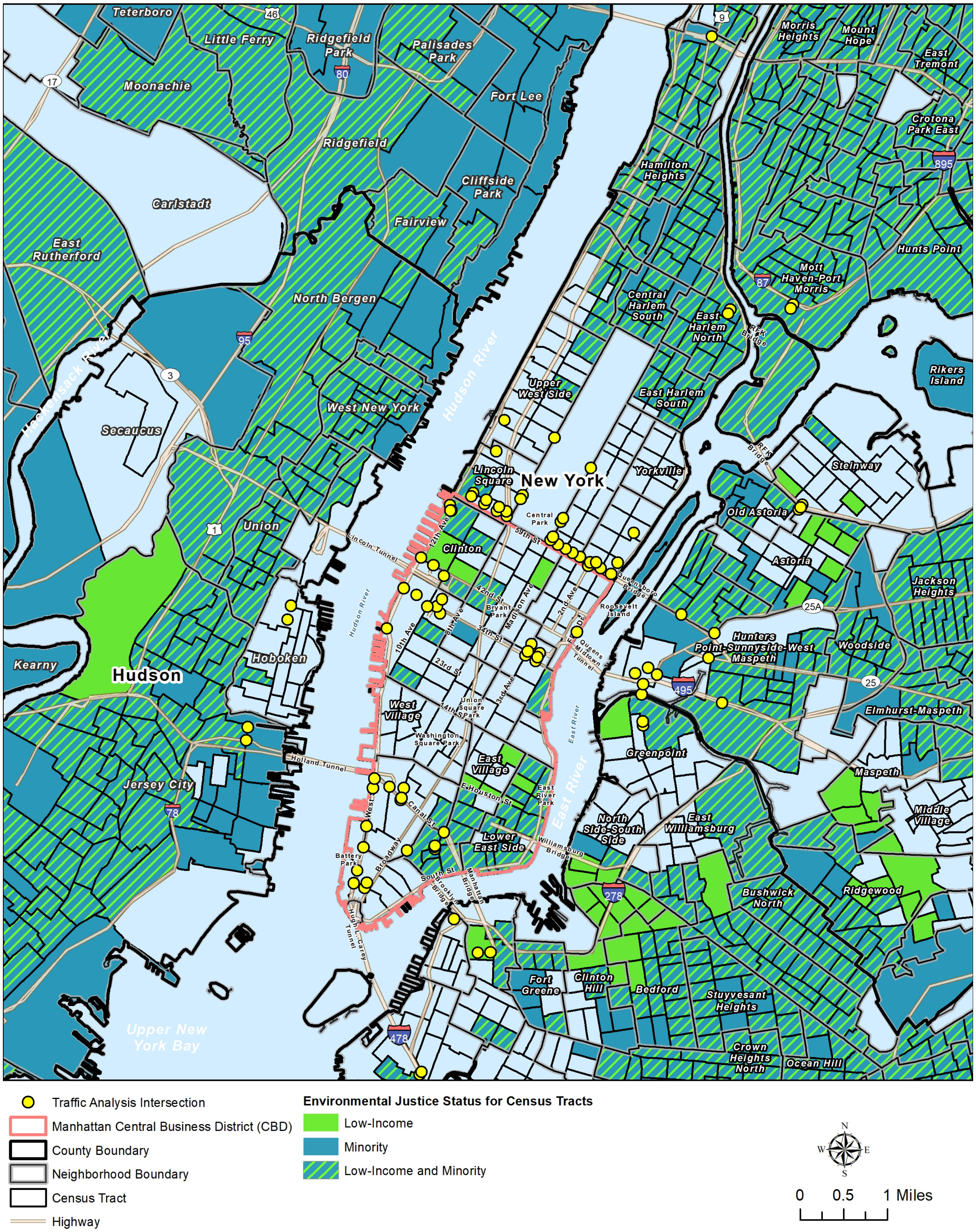
All 10 highway segments analyzed in detail for this EA are within or adjacent to environmental justice census tracts. As shown in **Figure 17-3**, much of the area around the Manhattan CBD consists of neighborhoods with environmental justice census tracts. However, as major regional highways, these highway segments predominantly serve regional and interstate traffic rather than local traffic.

17.6.1.2 Changes in Traffic Conditions at Local Intersections

Subchapter 4B, "Transportation: Highways and Local Intersections," presents the results of a detailed analysis of traffic conditions in and near the Manhattan CBD. To evaluate the potential localized traffic effects of the Project, multiple study areas were defined based on the key entry points to the Manhattan CBD, including along the 60th Street Manhattan CBD boundary and on either side of the bridges and tunnels that provide access to and from the Manhattan CBD. These local study areas are the intersections most likely to have increases in traffic, based on the regional transportation modeling for the Project. A total of 102 intersections were evaluated (see **Figure 17-6**).

Many of these intersections were identified through the public outreach process to reflect locations where communities expressed concerns regarding the Project's potential to affect traffic conditions there. Of these 102 intersections, almost half are in environmental justice neighborhoods, reflecting the concerns that were expressed during public outreach.

Figure 17-6. Local Traffic Analysis Intersections Relative to Environmental Justice Neighborhoods



Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.

The traffic analysis concluded that shifts in traffic patterns would change conditions at some local intersections within and near the Manhattan CBD. Of the 102 intersections analyzed (with more than 363 analyses in multiple peak hours), most intersections would have reductions in delay under all tolling scenarios. The detailed evaluation conducted for the tolling scenarios with the greatest change in traffic volumes showed that those tolling scenarios (Tolling Scenarios D, E, and F) would result in increases in average delays at four intersections that would exceed the impact threshold established for SEQRA evaluations. These delays will be mitigated through the use of signal-timing adjustments and, therefore, there would not be an adverse traffic effect at any intersection. **Subchapter 4B, "Transportation: Highways and Local Intersections,"** provides more information on the proposed mitigation at each potentially affected location.

Consequently, the changes in traffic conditions at local intersections would not result in adverse effects on environmental justice populations.

17.6.1.3 Traffic-Related Effects on Air Quality

During early public outreach for the Project, participants in the environmental justice outreach sessions raised concerns that the CBD Tolling Alternative would divert traffic to circumferential highways around the Manhattan CBD and that these additional vehicles would adversely affect the nearby neighborhoods by degrading air quality. Other participants were concerned that changes in traffic at local intersections, including on the Lower East Side in the Manhattan CBD and in the South Bronx outside the Manhattan CBD, would adversely affect air quality nearby.

Air pollution is a concern because of its associated adverse effects on human health. This is a particular concern for environmental justice populations, who often live in areas already considered overburdened by pollution. Exhaust from trucks, which has a higher level of particulate matter (PM) than automobile exhaust, and has been associated with adverse health effects like cardiovascular and respiratory diseases, is a particular concern for many environmental justice populations (for more information on health effects of air pollutants, see **Appendix 10, "Air Quality"**). Members of the Environmental Justice Technical Advisory Group for the Project requested additional information on the Project's potential to increase the number of trucks on highways outside the Manhattan CBD, especially on the Cross Bronx Expressway in the South Bronx.

Chapter 10, "Air Quality," of this EA presents the results of the evaluation conducted of the Project's potential effects on air quality. The analysis included consideration of highway segments throughout the region and local intersections where traffic would be most likely to change as a result of the Project. In response to specific environmental justice concerns identified above, the Project Sponsors included locations on the Lower East Side, in the South Bronx, and at other locations in environmental justice neighborhoods in and near the Manhattan CBD.

The air quality analysis included evaluation of the following types of air pollutants (for more information, see **Chapter 10, "Air Quality"**):

- Pollutants regulated by the National Ambient Air Quality Standards (NAAQS): Referred to as "criteria" pollutants, these include carbon monoxide (CO); nitrogen dioxide (NO_2); ozone (O_3); PM regulated in two sizes, 2.5 microns and 10 microns ($PM_{2.5}$ and PM_{10}); sulfur dioxide (SO_2); and lead (Pb).
- Mobile source air toxics (MSAT): These are air pollutants associated with vehicular traffic that are hazardous to human health and are also regulated by the U.S. Environmental Protection Agency (EPA).

Effects of the Project on Regional Air Quality

The regional analysis focused on 12 counties in New York and New Jersey. Emissions estimates were based on predicted changes in VMT, speed, and vehicle mix since the interaction of these factors affects the relative decreases and increases in each county. Some counties are predicted to show increases in pollutant emissions, while others would have decreases, as shown in **Table 17-11** (for more information, see **Chapter 10, "Air Quality"**).

Effects of the Project on Local, Neighborhood Air Quality

The analysis of the Project's potential effect on local air quality near roadways where traffic would increase considered all 102 intersections for which traffic analyses were conducted as presented in **Subchapter 4B, "Transportation: Highways and Local Intersections"** (**Figure 17-6**). Those intersections are the locations most likely to experience increases in traffic, based on the regional transportation modeling for the Project. Of these 102 intersections, approximately half are in environmental justice neighborhoods, reflecting the concerns that were expressed during public outreach.

Based on the air quality analyses conducted, the level of potential change in CO and $PM_{2.5}$/PM_{10} at all 102 intersections would not result in adverse effects on local air quality, based on evaluation criteria developed by NYSDOT. All locations passed the screening criteria used to identify the potential for adverse effects requiring further evaluation.

Effects of the Project on Highway Traffic Related to Diversions

To address specific concerns related to truck diversions raised during environmental justice public outreach, the air quality analysis also included specific consideration of the potential truck diversions that could occur as a result of the CBD Tolling Alternative. In addition, the Project Sponsors also evaluated a segment of the FDR Drive near the Lower East Side in Manhattan because of the potential for notable traffic diversions there. Truck traffic is not permitted on the FDR Drive, so this analysis considered the effects of automobile traffic only.

Table 17-11. Summary of Effects of CBD Tolling Alternative on Air Pollutants at the County Level

GEOGRAPHY	CRITERIA POLLUTANTS (2023)	CRITERIA POLLUTANTS (2045)	MSATs (2023)	MSATs (2045)
Manhattan CBD	Decreases of all pollutants	Decreases of all pollutants	Decreases in all MSATs	Decreases in all MSATs
New York County (Manhattan)	Decreases of all pollutants	Decreases of all pollutants	Decreases in all MSATs	Decreases in all MSATs
Bronx County	Increases of all pollutants	Decreases of some pollutants; increases of other pollutants	Increases in all MSATs	Decreases of some MSATs; increases of others
Kings County (Brooklyn)	Decreases of all pollutants	Decreases of all pollutants	Decreases in all MSATs	Decreases in all MSATs
Queens County	Decreases of all pollutants	Decreases of all pollutants	Decreases in all MSATs	Decreases in all MSATs
Richmond County (Staten Island)	Increases of all pollutants	Increases of all pollutants	Increases in all MSATs	Increases in all MSATs
Bergen County	Increases of all pollutants	Increases of all pollutants	Increases in all MSATs	Increases in all MSATs
Hudson County	Decreases of all pollutants	Decreases of all pollutants	Decreases in all MSATs	Decreases in all MSATs
Nassau County	Increases of all pollutants	Decreases of some pollutants; increases of other pollutants	Increases in all MSATs	Decreases of some MSATs; increases of others
Putnam County	Decreases of some pollutants; increases of other pollutants	Decreases of some pollutants; increases of other pollutants	Increases in all MSATs	Decreases in all MSATs
Rockland County	Decreases of all pollutants	Decreases of some pollutants; increases of other pollutants	Decreases in all MSATs	Decreases of some MSATs; increases of others
Suffolk County	Decreases of some pollutants; increases of other pollutants	Decreases of all pollutants	Increases in all MSATs	Decreases in all MSATs
Westchester County	Decreases of some pollutants; increases of other pollutants	Decreases of some pollutants; increases of other pollutants	Decreases in all MSATs	Decreases of some MSATs; increases of others

The Project Sponsors also developed and evaluated a modified tolling scenario, Tolling Scenario G, following completion of a preliminary analysis of Tolling Scenarios A through F, specifically in response to concerns about truck diversions. Scenario G was developed as a potential modification to the Base Plan (Tolling Scenario A) that would reduce the number of trucks that would divert around the Manhattan CBD. This modification, Tolling Scenario G, has lower toll rates for trucks than the other tolling scenarios (see **Chapter 2, "Project Alternatives," Section 2.4.2.4** for more information).

Traffic modeling for the Project indicates that the CBD Tolling Alternative would result in some traffic diversions around Manhattan, into the Bronx and northern New Jersey and Staten Island in all tolling scenarios. These circumferential diversions are due to implementation of the tolling in the Manhattan CBD, as drivers and trucks traveling to and from Long Island and Pennsylvania would divert around Manhattan to avoid the tolling in the Manhattan CBD. These diversions would be most pronounced at the approach to the Robert F. Kennedy Bridge in Queens, across the South Bronx and the George Washington Bridge, and into northern New Jersey. Diversions to the south would occur across the Verrazzano-Narrows Bridge and through Staten Island. Diversions would be greatest in Tolling Scenarios D, E, and F, and smallest in Tolling Scenario G.

To address concerns related to the potential effects on local air quality from those traffic diversions, the Project Sponsors conducted additional, more detailed analyses for four highway segments near environmental justice neighborhoods. These segments were selected based on the potential increases in diesel-truck traffic that might occur due to the Project, community concern, and/or existing high volumes of Annual Average Daily Traffic. The following locations were evaluated:

- FDR Drive at 10th Street, Manhattan, New York
- I-95 west of the George Washington Bridge, Fort Lee, New Jersey
- Cross Bronx Expressway (I-95) at Macombs Road, Bronx, New York
- Robert F. Kennedy Bridge approach, Queens, New York

For the FDR Drive, where Project-related changes would be related to automobiles and no trucks are permitted, the Project Sponsors conducted additional evaluation of the potential Project-related effects on CO. For the three other highway segments, because of the concern about increases in truck traffic, the Project team conducted detailed microscale PM analyses at these locations. The analyses for all four highway segments concluded that the CBD Tolling Alternative would not result in adverse effects on air quality at any of those locations. **Chapter 10, "Air Quality,"** provides more information on these analyses.

Changes in Traffic Volumes and VMT in Environmental Justice Neighborhoods vs. Non-Environmental Justice Neighborhoods

The air quality analyses presented in **Chapter 10** conclude that no adverse effects to air quality would occur at local intersections or along highway segments due to the CBD Tolling Alternative in any of the tolling scenarios. This section compares the changes in traffic volumes, and particularly VMT, that would occur in environmental justice neighborhoods to those that would occur in non-environmental justice neighborhoods. **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** provides more detailed information on where increases and decreases in traffic volumes would occur due to diversions, as well as a comparison of Project-related changes in VMT in environmental justice communities vs. non-environmental justice communities.

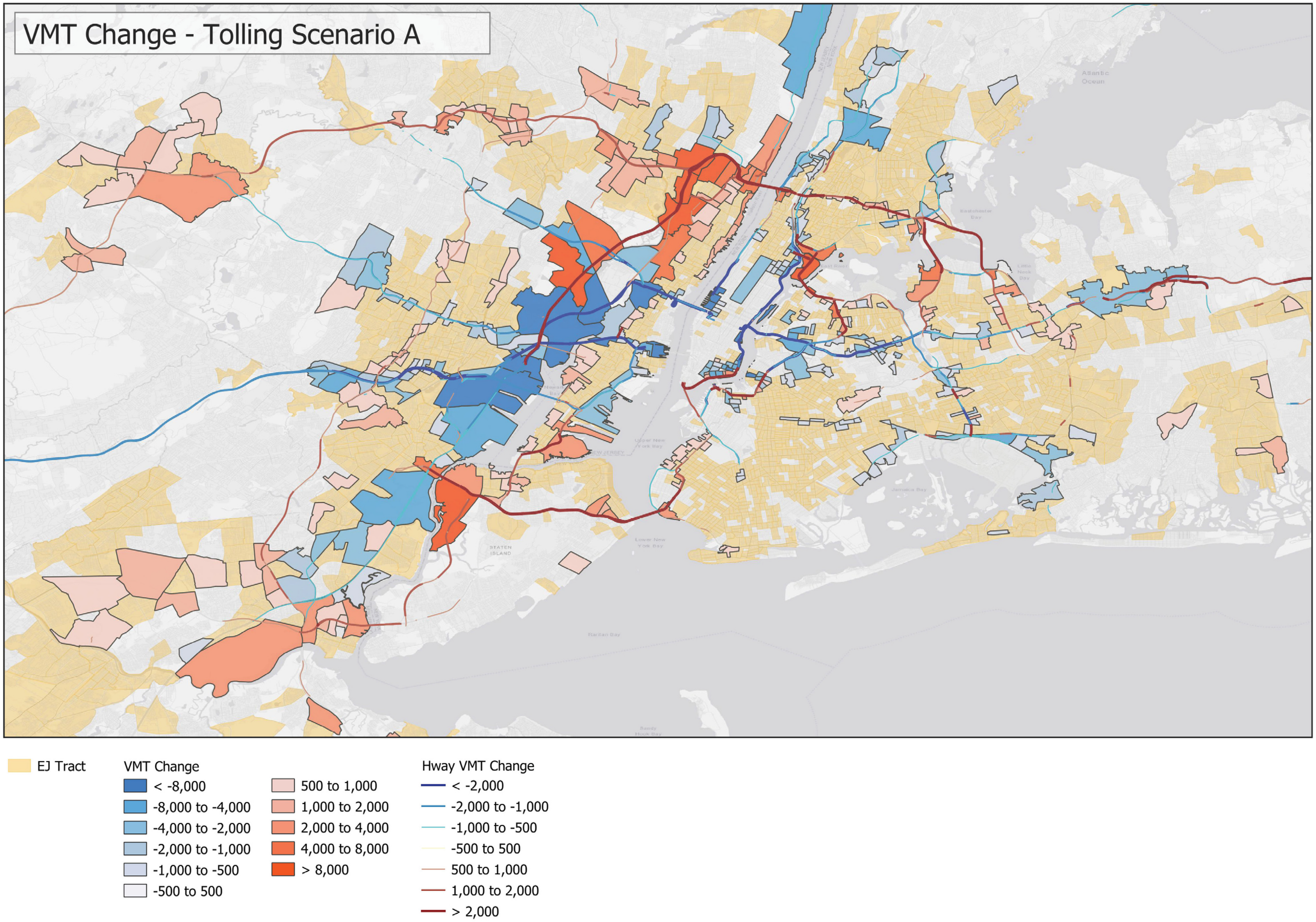
Tolling Scenarios A, B, C, and G, with the lowest level of discounts, exemptions, and/or crossing credits, would reduce the overall traffic volumes entering and leaving the Manhattan CBD with the least potential effect on travel patterns and diversions. However, VMT would increase slightly in Staten Island and the Bronx due to drivers to and from New Jersey diverting around the Manhattan CBD to avoid paying the CBD toll. Tolling Scenarios D, E, and F, with higher discounts, exemptions and/or crossing credits would create the highest overall reduction in traffic entering and leaving the Manhattan CBD, but with higher potential changes in travel patterns and diversions to several highways.

Overall, increases in traffic volumes due to diversions would occur near some environmental justice communities, and decreases would occur at other locations near environmental justice communities, depending on the tolling scenario. The environmental justice communities experiencing the largest increases in traffic volumes, including trucks, from circumferential diversions would be along I-95 in northern New Jersey and in Queens at the approach to the Robert F. Kennedy Bridge. Environmental justice communities experiencing the largest decreases in traffic volumes, including trucks, would be along the Long Island Expressway (I-495) in Queens, Hell's Kitchen in Manhattan (near the Lincoln Tunnel), and in areas of New Jersey south of the Lincoln Tunnel. Decreases would result primarily from traffic no longer traveling from Long Island through the Queens-Midtown Tunnel, across the Manhattan CBD, and through the Lincoln Tunnel into New Jersey. As shown in Subchapter 4A:

- Within New York City, non-environmental justice areas would have slightly higher reductions in VMT in most tolling scenarios compared to environmental justice areas.
- Within the Manhattan CBD, environmental justice areas would have substantially higher reductions in VMT for all tolling scenarios compared to non-environmental justice areas.
- Within New York City areas outside the Manhattan CBD closest to the Manhattan CBD crossings (i.e., near 60th Street; the Brooklyn, Manhattan, Williamsburg, and Ed Koch Queensboro Bridge, and the Queens-Midtown Tunnel), environmental justice areas would have slightly lower reductions in VMT compared to non-environmental justice areas for Tolling Scenarios A, B, and G (tolling scenarios without crossing credits) and slightly higher reductions in VMT compared to non-environmental justice areas for Tolling Scenarios C, D, E, and F (tolling scenarios with crossing credits).
- Within areas of New York City outside but relatively close to the Manhattan CBD (i.e., the Upper East Side, Upper West Side, East Harlem, and western portions of Queens and Brooklyn), environmental justice areas would experience similar but slightly lower reductions in VMT compared to non-environmental justice areas.
- Within other areas of New York City outside the Manhattan CBD, environmental justice areas would experience slight reductions in VMT, while non-environmental justice areas would experience increases in VMT.
- Outside New York City in other New York counties north of New York City, environmental justice areas would experience slightly higher reductions in VMT compared to non-environmental justice areas for Tolling Scenarios C, D, E, and F.
- In New Jersey and Long Island counties, environmental justice areas would experience similar or deeper reductions in VMT compared to non-environmental justice areas for all tolling scenarios.

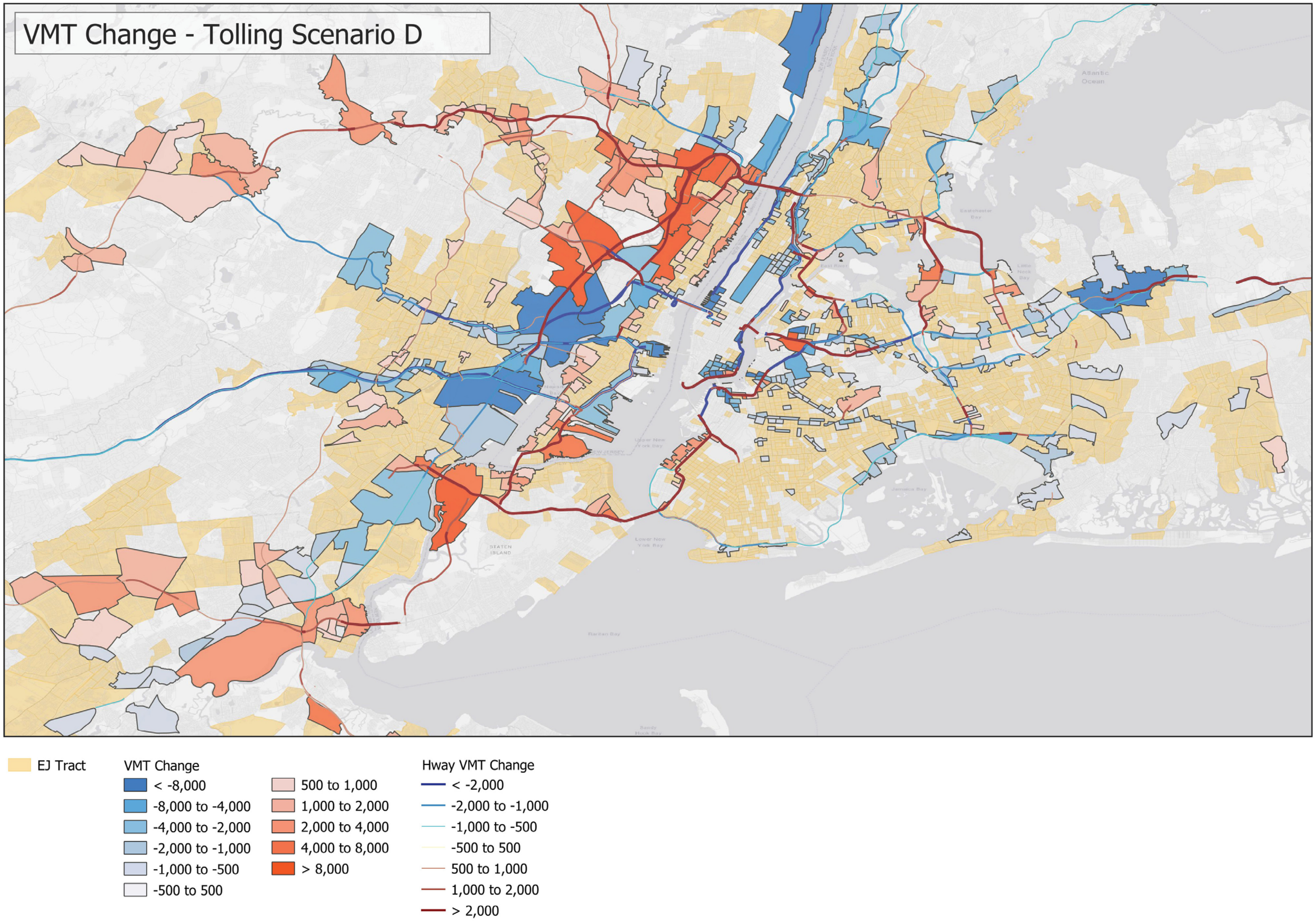
Figure 17-7, Figure 17-8, and Figure 17-9 illustrate the predicted changes in VMT for Tolling Scenarios A, D, and G relative to the location of environmental justice census tracts. Those three tolling scenarios represent the range of changes that would occur in all tolling scenarios evaluated.

Figure 17-7. Predicted Changes in Vehicle-Miles Traveled in Tolling Scenario A Relative to Environmental Justice Neighborhoods



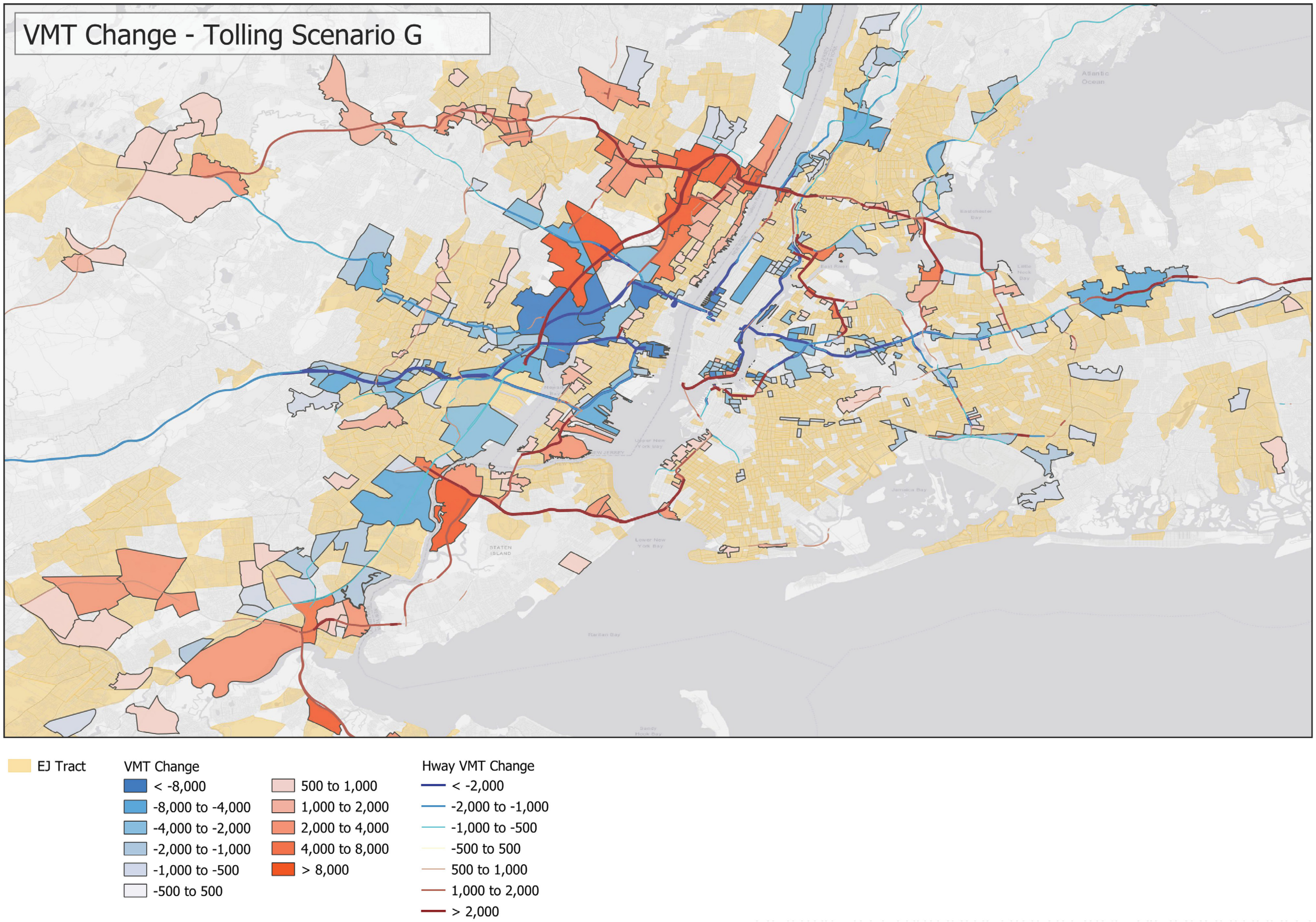
Source: WSP, Best Practice Model, 2021.

Figure 17-8. Predicted Changes in Vehicle-Miles Traveled in Tolling Scenario D Relative to Environmental Justice Neighborhoods



Source: WSP, Best Practice Model, 2021.

Figure 17-9. Predicted Changes in Vehicle-Miles Traveled in Tolling Scenario G Relative to Environmental Justice Neighborhoods



Source: WSP, Best Practice Model, 2021.

During the public outreach phase of the Project, several commenters raised questions about the type and location of diversions in the Bronx, and particularly on the Cross Bronx Expressway, the Bruckner Expressway, and the Major Deegan Expressway. Additional analysis was conducted to address these questions and is described in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling."** As described there, increases in VMT in the Bronx would be driven largely by increases in VMT on the Cross Bronx Expressway between the Alexander Hamilton Bridge and the two Long Island Sound crossings (Whitestone and Throgs Neck Bridges). Personal vehicle VMT would comprise most of the VMT increases on the Cross Bronx Expressway, with commercial truck VMT contributing roughly 25 percent of the overall VMT increase in all tolling scenarios. This increase in truck VMT would equate to up to 7 additional trucks during the 4-hour AM period, 40 additional trucks during the 6-hour midday period, and 10 additional trucks during the 4-hour PM period.

In addition, as noted earlier, following completion of preliminary analysis of Tolling Scenarios A through F, and in response to concerns raised during environmental justice outreach for the Project, the Project Sponsors identified a potential modification to the Base Plan (Tolling Scenario A) that would reduce the number of trucks that would divert around the Manhattan CBD, particularly those diverting to the South Bronx and Staten Island. This modification, Tolling Scenario G, would apply the same toll rates to all vehicle classes instead of charging higher rates small and large trucks and buses. As with Tolling Scenario A, there would be no crossing credits in Tolling Scenario G, and taxis, FHVs, buses, and small or large trucks would pay the Manhattan CBD toll each time they access the Manhattan CBD. Tolling Scenario G would substantially reduce the diversion of trucks from the Manhattan CBD, resulting in a total daily increase in truck traffic on the Cross Bronx Expressway at Macombs Dam Road of 50 trucks (as compared to 704 for Tolling Scenario B and 536 for Tolling Scenario F, the two tolling scenarios with the highest truck diversions).

MTA Actions to Improve Air Quality

As an independent action, MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. TBTA coordinated with MTA NYCT, which is committed to prioritizing service to traditionally underserved communities and particularly for areas with concerns related to air quality and climate change, and has developed a new an approach that actively incorporates these priorities in the deployment phasing process of the bus-fleet transition. Based on feedback and concerns raised during public outreach for the Project related to environmental justice, MTA NYCT will prioritize transitioning the fleet at two bus depots in Upper Manhattan and the Bronx: the Kingsbridge Depot and Gun Hill Depot when MTA NYCT receives its next major procurement of battery electric buses later in 2022. Both of these depots are in and provide service to environmental justice neighborhoods.

17.6.1.4 Traffic-Related Effects on Noise

Participants in the environmental justice outreach sessions in fall 2021 commented that changes in traffic conditions due to the CBD Tolling Alternative would adversely affect noise levels in nearby environmental justice neighborhoods. The EA includes an analysis of the potential for increased noise levels resulting from changes in traffic conditions with the CBD Tolling Alternative in **Chapter 12, "Noise."**

The noise assessment was conducted for locations where traffic analysis was performed, where the results of the traffic studies indicated the potential for changes in noise levels to occur as a result of the Project. The assessment was completed for AM, midday, PM, and late-night peak periods at the same 102 local intersections for which detailed traffic analyses were conducted (**Figure 17-6**). Those intersections are the locations most likely to have increases in traffic, based on the regional transportation modeling for the Project. Of these 102 intersections, approximately half are in environmental justice neighborhoods, reflecting the concerns that were expressed during public outreach.

As described in **Chapter 12, "Noise,"** the analysis found that projected noise-level changes versus the No Action Alternative on all roadways evaluated would be below 3 dB(A),[16] a level that is barely perceptible to most listeners. At locations near bridge and tunnel crossings, the maximum predicted noise level increase of 2.9 dB(A), which was predicted in Manhattan adjacent to the Queens-Midtown Tunnel in Tolling Scenario D, would not be perceptible. Similarly, the maximum predicted noise level on local streets where traffic would increase, an increase of 2.5 dB(A) at Trinity Place and Edgar Street in Lower Manhattan, would not be perceptible. Consequently, with the CBD Tolling Alternative, ambient noise levels would not be perceptibly different from those without the Project. Noise-level changes at approximately 90 percent of the evaluated roadways would range from -1 dB(A) to +1 dB(A), and less than 1 percent of the roadways evaluated would show an increase between 1 dB(A) and 2 dB(A).

As a result, the CBD Tolling Alternative would result in no adverse effects on ambient noise levels related to traffic changes with the CBD Tolling Alternative.

17.6.1.5 Increases to Transit Ridership

Some participants in the fall 2021 public outreach related to environmental justice raised concerns that the Project has the potential to overburden local bus service as people shift from automobile to transit to avoid the toll. The EA includes a detailed evaluation of the Project's effects on transit ridership in **Subchapter 4C, "Transportation: Transit."**

With all tolling scenarios for the CBD Tolling Alternative, some people who currently drive to and from the Manhattan CBD would shift to using transit instead. Overall, ridership on the extensive public transit system linking the Manhattan CBD with the surrounding region would increase by 1 to 2 percent relative to the No Action Alternative.

[16] The noise analysis considers noise levels in dB(A), or A-weighted decibels, a unit of sound that accounts for those frequencies most audible to the human hearing range. Generally, the average human is unable to perceive noise-level changes until the changes measure more than 3 dB(A) and can readily perceive changes of 5 dB(A) or more (for more information on noise levels and human perception, see **Chapter 12, "Noise"**).

The region's transit users, including environmental justice populations, would experience increases in ridership on transit vehicles and at transit stations. Analysis presented in **Subchapter 4C, "Transportation: Transit,"** shows that there is sufficient capacity throughout the system, including commuter rail, Port Authority Trans-Hudson (PATH) rail, subway, and bus, to accommodate this increase in passengers.

In early public outreach, some participants expressed concerns regarding increases in bus ridership that could result from Project implementation. Commenters asked if additional buses would be needed to account for ridership increases. Based on the line-haul capacity analysis results presented in **Subchapter 4C**, which examined bus ridership at the point where the route would be the most crowded, no buses would cross the threshold for requiring detailed line-haul analysis; therefore, no adverse effects on bus lines are projected. This means that no new buses would be required to support ridership increases as a result of implementation of the CBD Tolling Alternative.

17.6.1.6 Changes in Passenger Flows at Transit Stations

The analysis in **Subchapter 4C, "Transportation: Transit,"** concludes that most transit stations throughout the regional public transportation system have adequate capacity to accommodate the projected increase in passengers that would occur as a result of the CBD Tolling Alternative, as people switch from automobile to transit to avoid the new CBD toll. However, analysis of the tolling scenarios with the greatest predicted increase in passengers at transit stations reveals that vertical circulation elements within four MTA NYCT subway stations in New York City and the PATH/NJ TRANSIT rail terminal in Hoboken, NJ, could become overcrowded by the additional riders during peak periods. These stations are in or adjacent to neighborhoods with environmental justice census tracts. In addition, since the majority of people who travel in the region use public transit, including minority populations, some of the passengers using the affected stairways and escalators are environmental justice populations.

Subchapter 4C, "Transportation: Transit," identifies measures to mitigate the effects on these vertical circulation elements, and these measures would eliminate the adverse effects at these locations. These affected stations, the specific location within the station where the adverse effect would occur, and the proposed mitigation measures are as follows:

- 42nd Street-Times Square subway station (Manhattan), Stair ML6/ML8 connecting mezzanine to uptown Nos. 1/2/3 subway lines platform: Remove the center handrail and standardize the riser, so that the stair meets code without the hand rail. Mitigation likely needed for Tolling Scenario E, and possibly for Tolling Scenarios D and F. Requires future monitoring, which will be conducted for the selected tolling scenario.
- Flushing-Main Street subway station (Queens), Escalator E456 connecting street to mezzanine level: Increase speed from 100 feet per minute to 120 feet per minute. Mitigation likely needed for Tolling Scenarios A, C, D, E, F; and possibly for Scenario B. Requires future monitoring, which will be conducted for the selected tolling scenario.
- Union Square subway station (Manhattan), Escalator E219 connecting the L subway line platform to the Nos. 4/5/6 subway line mezzanine: Increase speed from 100 feet per minute to 120 feet per minute.

Mitigation likely needed for Tolling Scenarios A, C, D, E, F; and possibly for Scenario B. Requires future monitoring, will be conducted for the selected tolling scenario.

- PATH Hoboken Station (New Jersey), Stair 01/02: Monitor pedestrian volumes on Stair 01/02, then implement improved signage and wayfinding to divert some people from Stair 01/02 if agreed thresholds are met.

All passengers, including environmental justice populations, would benefit from the proposed mitigation measures and, consequently, the changes in transit ridership would not result in adverse effects on environmental justice populations.

17.6.1.7 Changes in Pedestrian Circulation on Sidewalks Near Transit Hubs

The CBD Tolling Alternative in all tolling scenarios would result in new pedestrian trips near transit hubs as a result of people who shift from driving to using transit as a result of the new toll. New pedestrian trips would occur at transit stations throughout the local study area, including areas that are in or adjacent to environmental justice census tracts. In addition, the sidewalks near transit stations throughout the local study area are already used by thousands of pedestrians each day, and some of these are minority and low-income populations.

Within the Manhattan CBD, walking and cycling are heavily used modes of travel because people often bike or walk between transit stations or parking lots and garages to reach their destination, and many others make their trips entirely by bicycle or on foot. Walking and cycling are also heavily used modes of travel in the local study area. Within the Manhattan CBD, and particularly the densely developed commercial and office corridors, and in the densely developed neighborhoods and communities in the local study area, pedestrian infrastructure elements (sidewalks, marked crosswalks, and pedestrian signals) are common.

Subchapter 4E, "Transportation: Pedestrians and Bicyclists," examines the potential for new pedestrian trips to result in crowding at crosswalks, corners, and sidewalks near transit stations. In most cases, there is adequate capacity at corners and crosswalks and on sidewalks to absorb the additional pedestrian trips without adversely affecting pedestrian conditions there.

The analysis identified the potential for adverse effects to pedestrian flows in the Herald Square/Penn Station area (in the Manhattan CBD) on one sidewalk and two crosswalks. By repainting the crosswalks to widen the area available to legally cross the street and removing a planter on the sidewalk, the Project Sponsors will mitigate the adverse effects on pedestrian circulation at these three locations.

One of the affected locations (Seventh Avenue and West 32nd Street) is within an environmental justice census tract and the other two (Eighth Avenue between West 34th and West 35th Streets, and Sixth Avenue at West 34th Street) are adjacent to both environmental justice census tracts and non-environmental justice tracts. The Herald Square/Penn Station New York area is a major hub for transit and accommodates high volumes of pedestrians in peak and off-peak hours, and the proposed mitigation would alleviate the effects of increased pedestrian activity at the analysis locations, including effects on environmental justice populations.

Therefore, the change in pedestrian trips associated with the CBD Tolling Alternative would not result in adverse effects on environmental justice populations.

17.6.1.8 Potential for Indirect Displacement

During public outreach for the Project related to environmental justice, the Environmental Justice Technical Advisory Group raised concerns about the potential involuntary displacement of environmental justice populations.

Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion," presents an analysis of this issue that concludes that involuntary displacement would be unlikely to occur as a result of the CBD Tolling Alternative. The analysis concludes that the CBD Tolling Alternative would not result in changes in market conditions that would increase real estate values, so as to result in increased rents; the CBD Tolling Alternative would not result in an increase in the cost of goods within the Manhattan CBD; and certain residents of the Manhattan CBD would be entitled to a New York State tax credit to offset their tolls.

In terms of increased real estate values, any changes in residential patterns related to residents moving closer to transit would be broadly distributed throughout the regional study area because of the wide variety of factors that influence a household's decision about where to live. In addition, in areas to which people might move to avoid the toll or be close to transit, the value of residential property and rents is already influenced by the existing proximity to transit. While there could be some additional value to living close to transit (i.e., the value of living near a commuter station) in the future with the CBD Tolling Alternative, there is value to such proximity under existing conditions. Within the Manhattan CBD in particular, residential property values are already well established and influenced by factors such as the area's central location in New York City and its proximity to transit. While a reduction in traffic congestion could increase residential sales prices and thus could exert upward pressure on rents, this factor would not be substantial enough to markedly influence rents or residential property market conditions given the other factors already influencing New York City's residential real estate market (i.e., its central location and proximity to transit, jobs, cultural amenities, etc.).

Moreover, the substantial number of apartments in the Manhattan CBD that have protected rents (e.g., apartments under the jurisdiction of the New York City Housing Authority and apartments that are protected by New York State's rent control and rent stabilization laws) would not be subject to market-driven price increases. Furthermore, the Manhattan CBD already has the highest cost of living and highest home prices and rents in the region, and it is unlikely that many individuals would seek to move to the Manhattan CBD specifically to avoid the toll or because of a reduction in congestion. Therefore, the CBD Tolling Alternative would not substantively affect population characteristics of the Manhattan CBD or other transit hubs by attracting new residents seeking to avoid the toll.

Furthermore, the cost of new tolls with the CBD Tolling Alternative would not be likely to result in an increase in the cost of goods within the Manhattan CBD, as discussed below in Section 17.6.1.9.

In addition, residents whose primary residence is inside the Manhattan CBD and whose New York adjusted gross income for the taxable year is less than $60,000 would be entitled to a New York State tax credit equal to the aggregate amount of Manhattan CBD tolls paid during the taxable year.

For these reasons, the CBD Tolling Alternative would not result in adverse effects on environmental justice populations related to indirect displacement.

17.6.1.9 Potential Effects on Cost of Goods

During public outreach for the Project related to environmental justice, the Environmental Justice Technical Advisory Group raised concerns about the potential for the introduction of a new CBD toll to affect the price of price of consumer goods in the Manhattan CBD.

Chapter 6, "Economic Conditions," presents an analysis of the CBD Tolling Alternative's potential to affect the price of goods in the Manhattan CBD, including the cost at smaller businesses such as local bodegas and delis. That analysis describes that the new CBD toll would increase the cost of shipping to the Manhattan CBD for some shippers (because of the price of the new toll) but reduce it for others (because of travel time savings and the potential for reduced parking fees). The specific change to costs would vary greatly depending on the toll rate, whether there is a cap on the number of tolls per day, and the number of times a truck is detected entering or remaining in the Manhattan CBD. Businesses in the Manhattan CBD that would be more likely to be affected by increased delivery costs associated by tolling increases are small businesses that have a high rate of deliveries, and most specifically small retail businesses such as grocery stores, restaurants, and small "bodega" market convenience stores, since they are dependent on frequent deliveries of smaller loads and delivery of goods represent a higher portion of their operating costs. There are approximately 600 such businesses within the Manhattan CBD, representing slightly less than 1 percent (0.7 percent) of all businesses within the Manhattan CBD.

The analysis in **Chapter 6** concludes that the incremental toll costs that are passed along to receiving businesses would be passed in a diluted fashion, because shippers would allocate the toll costs among the multiple receivers on a journey. Shippers to small retail stores like bodegas typically make many stops and consequently would share a toll cost would be shared among those multiple receivers. An incremental cost to any one retail store would be passed along as an incremental cost to consumers but would represent a very small component of the retail price charged to the consumer. Consequently, the CBD Tolling Alternative would be unlikely to result in an appreciable increase in the cost of goods in the Manhattan CBD.

17.6.2 Potential Adverse Effects in the Regional Study Area

The analysis considers the potential regional effects of the CBD Tolling Alternative on environmental justice populations for the topics identified in **Table 17-1** earlier in this chapter. It considers how implementation of the CBD Tolling Alternative would affect the regional population in terms of increased costs (tolls), changes in trip time, and changes in transit conditions. The discussion includes the following topics, based on the issues included in **Table 17-1**:

- Potential effects associated with the increased cost for drivers (Section 17.6.2.1)
- Potential effects on employment for taxi and FHV drivers (Section 17.6.2.2)

17.6.2.1 Increased Cost for Drivers

During early public outreach for the Project in fall 2021, members of the public raised concerns related to the increased cost of travel to the Manhattan CBD for low-income drivers, low- and middle-income families in the Manhattan CBD, and residents of the Manhattan CBD traveling regionally to visit family and friends outside the Manhattan CBD.

As discussed earlier, most people (76 percent) in the regional study area travel to and from the Manhattan CBD by public transportation using the region’s robust transit network and the transit share is higher for minority and low-income populations (82 and 79 percent, respectively). With the CBD Tolling Alternative, most people, including minority and low-income populations, would continue to use public transportation to travel to and from the Manhattan CBD and would not be adversely affected by the new toll. With the new toll, some people would switch from driving to transit to travel to and from the Manhattan CBD. This is consistent with the purpose of the Project, which is to reduce traffic congestion in the Manhattan CBD.

Subchapter 5A, “Social Conditions: Population Characteristics and Community Cohesion,” describes that all areas of New York City outside the Manhattan CBD have transit access to the Manhattan CBD and would not be isolated from community services or ties within the Manhattan CBD. It also discusses that while most community facilities and services within the Manhattan CBD serve a local clientele, some do serve people in a wider area. Most community facilities and services in the Manhattan CBD are close to transit services, making this a viable mode choice for access to those community facilities. The analysis in Subchapter 5A concludes that since the majority of trips to and from the Manhattan CBD are made by transit, community cohesion and access to employment would not be adversely affected.

Given the region’s robust transit network, most people, including minority and low-income populations, would have alternative travel options to avoid the CBD toll. However, for some people, switching to transit is not a viable option because they have poor access to transit, commuting by transit is inefficient with long travel times, they have work hours during times of limited transit service, or they need access to a private automobile for their work. For these individual drivers who do not have viable alternatives, the new toll would represent an adverse effect. Other people would choose to drive because it is more convenient for them and they would benefit from the reduced congestion within the Manhattan CBD.

The costs incurred by individuals driving to or through the Manhattan CBD would vary widely, depending on individual circumstances and the specific tolling scenario. The greatest cost would be incurred by those who make frequent driving journeys to the Manhattan CBD during peak hours. Driving to and from the Manhattan CBD is already expensive given the very limited availability of free or low-cost parking and the cost of off-street parking or taxi/FHV fares. Individuals who drive less frequently would incur lower costs because of the toll. Appendix 4A.3, “Transportation: Representative Commuting Costs by Auto and Transit,” presents information about the wide range of costs and travel times for people who travel to and through the Manhattan CBD today.

This section considers the specific effects of that increased cost on minority and low-income drivers.

Minority Drivers

As presented earlier in this chapter, more than half (about 52 percent) of the population of the regional study area identifies as minority and close to half of the people who work in the Manhattan CBD identify as minority. Most minority workers who commute to the Manhattan CBD use transit (82 percent). Approximately 10 percent of the minority workers (close to 73,000 people) commute by vehicle to the Manhattan CBD, a similar proportion to that of the overall population. These minority workers come from locations throughout the regional study area, with higher numbers coming from New York City and the immediately surrounding areas with higher populations and higher proportions of minority population. These areas are well-served by the regional public transportation network. For individual minority drivers who do not have viable alternatives other than driving to reach the Manhattan CBD, the new toll would represent an adverse effect.

One group of minority drivers who would be adversely affected by the new CBD toll is taxi and FHV drivers, who would need to pay the CBD toll for entering or remaining in the Manhattan CBD, including at the start of their work day, in tolling scenarios that do not have caps or exemptions for taxis and FHV drivers (Tolling Scenarios A, D, and G).[17] According to the TLC's 2020 Fact Book, while about half of all FHV and taxi passenger pickups were in Manhattan, the majority of taxi and FHV drivers (80 percent) do not live in Manhattan. **Section 17.6.2.2** below provides more information on the potential effects of the CBD Tolling Alternative on taxi and FHV drivers.

Low-Income Drivers

An estimated 79 percent of low-income populations who work in the Manhattan CBD use transit to make their commute and approximately 9 percent) rely on automobiles for their commute to work in Manhattan. An estimated 16,100 low-income people (including people who live within the Manhattan CBD) use an automobile for their commute to work in the Manhattan CBD.

These low-income workers come from locations throughout the regional study area, with higher numbers coming from New York City and the immediately surrounding areas with larger populations and higher proportions of low-income population. These areas are well-served by the regional public transportation network. Considering the availability of alternative modes of transit, many low-income drivers would have other alternatives available for their trip to work.

However, as noted earlier, switching to transit is not a viable option for some people, because they have poor access to transit, commuting by transit is inefficient with long travel times, they have work hours during times of limited transit service, or they need access to a private automobile for their work. For individual low-income drivers who do not have viable alternative modes other than driving to reach the

17 As detailed in **Section 17.6.2.2**, the Project Sponsors also considered modifications to these three tolling scenarios that would include caps and/or exemptions for taxi and FHV drivers.

Manhattan CBD, the new toll would represent an adverse effect. The size of cost increase would depend on the tolling scenario and each driver's specific route and travel patterns.

17.6.2.2 Effects on Taxi and For-Hire Vehicle Drivers in New York City

The analysis in **Chapter 6, "Economic Conditions,"** concludes that some tolling scenarios could reduce VMT by taxis and FHVs, and particularly for yellow cabs operating in Manhattan. The predicted change in overall taxi/FHV travel characteristics indicates that there could be some shift in business practices within the industry, particularly for yellow cabs operating in Manhattan, where under some tolling scenarios the predicted reductions in VMT could exceed 10 percent. Under scenarios with predicted reductions in VMT, there could also be reductions in taxi and FHV employment, as described in this section.

According to TLC's 2020 Fact Book, there were 185,000 TLC-licensed drivers in New York City in 2019. In April 2022, 72,244 TLC-licensed drivers made at least one FHV trip in New York City, while 9,560 made at least one yellow taxi trip. A TLC-licensed driver can work for any sector of the industry (yellow cab, green cab, or FHV) at any time, if the license is active. In 2019 there were 13,587 yellow cabs, 2,895 green cabs, and 101,663 FHVs. In April 2022, there were 7,053 yellow cabs, 1,027 green cabs, and 70,281 FHVs that made at least one trip. The number of drivers was larger than the number of cabs and FHVs, because drivers typically share vehicles. Before the COVID-19 pandemic, the number of licensed yellow cabs was steady between 2015 and 2019, limited by the number of total medallions (permits for yellow cabs) available from the TLC. In contrast, the number of licensed green cabs decreased by 48 percent between 2016 and 2019 as the emerging FHV technology gained popularity and the number of licensed FHVs increased by 50 percent over that period.[18]

TLC-licensed vehicles completed more than 1,000,000 trips a day on average in 2019. Most trips in yellow cabs (97 percent) originated in Manhattan and most drop-offs occurred within the other four boroughs. According to the 2020 TLC Fact Book, 56 percent of the passenger pickups in Manhattan were by FHV and 45 percent were by taxi. Similarly, 54 percent of all passenger drop-offs in Manhattan were by FHV and 46 percent were by taxi. The 2020 TLC Fact Book notes that high-volume FHVs "are universally used both in and outside of Manhattan," but does not provide more specific statistics.

The number of active vehicles differs from the number of licensed vehicles, because not every licensed vehicle is actively in use during a given time period. In 2018, during

New York City's Commitment to Supporting Taxi and FHV Drivers

In 2019, New York City became the first city in the world to implement a trip-based, guaranteed minimum pay standard for high-volume FHV drivers, whether they drive their own vehicle or lease an FHV. The TLC also modified rules for yellow and green taxis to increase driver income protections, including reducing the daily maximum credit card surcharge and increasing accessible dispatch fees.

In 2021, the City implemented a medallion relief program and loan guaranty program to provide relief for owners with five or fewer medallions. Both programs provide financial assistance and free legal representation to help negotiate with lenders to reduce loan balances and lower monthly payments.

18 New York City TLC. 2018 Fact Book and 2020 Fact Book. https://www1.nyc.gov/assets/tlc/downloads/pdf/2018_tlc_factbook.pdf; https://www1.nyc.gov/assets/tlc/downloads/pdf/2020-tlc-factbook.pdf.

peak activity periods, as many as 12,610 active yellow cabs, 4,026 green cabs, and 90,284 active FHVs were providing trips in New York City.[19]

With the CBD Tolling Alternative, reductions in vehicle volumes and VMT in the Manhattan CBD and other locations within the regional study area would benefit taxi and FHV drivers. With less congestion and improved speeds, drivers can reach their customers more quickly and transport them to their destinations more quickly. By improving the trip times, the CBD Tolling Alternative could facilitate more fares during drivers' shifts and increase their receipts.

Under some tolling scenarios, there could be an increase in taxi and FHV fares that could reduce demand and industry revenues for taxis and/or FHVs. As detailed in **Chapter 2, "Project Alternatives,"** the tolling scenarios assess a variety of tolling policies for taxis and FHVs ranging from charging a toll each time a taxi or FHV enters the Manhattan CBD to a complete exemption from paying the Manhattan CBD toll. Tolling Scenarios A, D, and G would have no limit to the number of times taxis and FHVs would pay the CBD toll each day, Tolling Scenarios B and F would limit (cap) the number of times taxis and FHVs would pay the CBD toll to once each day, and Tolling Scenarios C and E would exempt taxis from the CBD toll and limit the number of times that FHVs would pay the toll to three times a day. In addition, in response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on taxi and FHV drivers, additional analyses were conducted of modified tolling scenarios with caps and exemptions for taxis and FHVs, as discussed later in this section.

Modified Tolling Scenarios Addressing Taxi/FHV Policies

- Tolling Scenario A with Tolls for Taxis/FHVs capped once per day
- Tolling Scenario D with Tolls for Taxis/FHVs capped once per day
- Tolling Scenario D with Taxi/FHV Tolling Exemption
- Tolling Scenario G with Tolls for Taxis/FHVs capped once per day

The TLC requires that passengers reimburse the taxi driver for any toll costs during the trip; when no passengers are in the vehicle, drivers pay the toll today as part of the cost of doing business. TLC's rules for high-volume FHVs (i.e., Uber and Lyft) require that these FHV services collect and remit to the TLC information on the itemized fare for the trips charged to the passengers, including the fare, toll, taxes and gratuities. Any charge implemented as a result of the CBD Tolling Alternative would likely follow the existing framework. Thus, when present, the customer would be responsible for paying the tolls and the receipt would be itemized to show this. If no customer is present, the vehicle would be charged unless exempted or capped.

Table 17-12 shows the projected reductions in daily taxi/FHV VMT in New York City relative to the No Action Alternative for each of the tolling scenarios without modifications.[20] The VMT estimates shown in the table

[19] The New York City TLC's 2018 Fact Book presents an annual number for licensed yellow cab, green cab, and FHVs, while data on the number of active vehicles is reported on a monthly basis. In the case of green cabs, the highest monthly statistic for active vehicles (4,026 in January 2018) was greater than the number of reported average annual licensed vehicles (3,579 vehicles in 2018); this is likely due to a downward trend in licensed green cab vehicles over 2018. For this reason, the numbers of licensed and active vehicles should not be used to estimate the percentage of licensed vehicles that are active. This level of data is not provided in the 2020 Fact Book.

[20] Taxis and FHVs are a single mode in the Best Practice Model and therefore cannot be presented separately.

do not include cruising miles without a customer, and only reflect daily VMT for travel when the taxi/FHV has a customer. As shown in the table, the effects of the tolling scenarios would include the following:

- **Under Tolling Scenarios A, D, and G**, which would have uncapped tolls for both taxis and FHVs, there would be reductions in overall daily VMT in New York City for taxis and FHVs (by 5.1 percent, 8.8 percent, and5.9 percent, respectively), and larger reductions in the Manhattan CBD, the core service area for yellow taxis, of 6.6 percent for Tolling Scenario A, 16.6 percent for Tolling Scenario D, and 8.6 percent for Tolling Scenario G. Reductions in Manhattan overall would be 10.9 percent for Tolling Scenario A, 16.7 percent for Tolling Scenario D, and 12.3 percent for Tolling Scenario G.
- **Under Tolling Scenarios B and F**, taxis and FHVs would be tolled a maximum once per day, There would be a nominal overall decrease in taxi/FHV VMT in New York City; under both these tolling scenarios there would be slight increases in taxi/FHV VMT within the Manhattan CBD (due to the relatively inelastic price sensitivity of auto commuters combined with the scenarios' easing congestion, which in turn would increase the utility of commuting by taxi/FHV within the Manhattan CBD). Reductions in Manhattan overall would be less than 3 percent.
- **Tolling Scenarios C and E, which would exempt taxis but would toll FHVs up to three times a day**, would result in 3.4 percent and 5.2 percent reductions in overall daily taxi/FHV VMT in New York City, respectively. In the Manhattan CBD, Tolling Scenario C would reduce VMT by 3.5 percent and Tolling Scenario E would reduce VMT by 7.9 percent; in Manhattan overall, VMT reductions would be larger. Given that taxis would not be tolled under Tolling Scenarios C and E, it is likely that taxis would experience increases in VMT while FHVs would experience greater VMT reductions. With Tolling Scenarios C and E, taxi drivers would not pay a toll, so there would be no additional toll cost for the driver or customer.

In addition, in response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on taxi and FHV drivers, the Project Sponsors considered modified Tolling Scenarios A and D with a cap on tolls of once per day for taxis and FHVs (like Tolling Scenarios B and F), a modified Tolling Scenario D with both taxis and FHVs exempt from the toll, and a variation of Tolling Scenario G (referred to as Tolling Scenario G1) with a cap on tolls of once per day for taxis and FHVs. The effects of the modifications would be as follows:

- **Tolling Scenario A with Tolls for Taxis/FHVs Capped at Once Per Day –** The cap would result in about 22 percent more taxis and FHVs entering the Manhattan CBD as compared to original Tolling Scenario A. To still meet the congestion and revenue objectives of the Project, tolls would need to be raised 10 percent to 15 percent on all vehicle classes in Tolling Scenario A to offset forgone taxi and FHV revenues. This would further reduce personal vehicles and trucks at the Manhattan CBD boundary by 2 percent to 3 percent compared to Tolling Scenario A. However, the decline in personal vehicles and trucks would be mostly offset by the increase in taxis and FHVs entering the Manhattan CBD. As a result, the volumes of all vehicles entering the Manhattan CBD would not change overall.

Table 17-12. Change in Taxi/For-Hire Vehicle Daily Vehicle-Miles Traveled in New York City vs. No Action Alternative, 2023

GEOGRAPHIC AREA	SCENARIO A	SCENARIO B	SCENARIO C	SCENARIO D	SCENARIO E	SCENARIO F	SCENARIO G
Taxi Toll Policy / FHV Toll Policy	All Entries	Once per Day	Exempt / Up to 3 Times Daily	All Entries	Exempt / Up to 3 Times Daily	Once per Day	All Entries
Bronx County	-8,392 (-3.1%)	-5,717 (-2.1%)	-6,426 (-2.4%)	-9,346 (-3.4%)	-3,991 (-1.5%)	-1,959 (-0.7%)	-7,831 (-2.9%)
Kings County (Brooklyn)	-33,855 (-9.1%)	-20,648 (-5.5%)	-10,247 (-2.7%)	-37,923 (-10.2%)	-27,854 (-7.5%)	-7,095 (-1.9%)	-39,183 (-10.5%)
New York County (Manhattan)	-77,843 (-10.9%)	-19,553 (-2.7%)	-51,989 (-7.3%)	-119,349 (-16.7%)	-73,223 (-10.2%)	-17,076 (-2.4%)	-87,944 (-12.3%)
Inside Manhattan CBD	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)
Outside Manhattan CBD	-56,345 (-14.4%)	-34,573 (-8.8%)	-40,618 (-10.4%)	-64,873 (-16.6%)	-47,602 (-12.2%)	-22,038 (-5.6%)	-60,187 (-15.4%)
Queens County	-3,873 (-0.4%)	+21,258 (+2.0%)	-10,804 (-1.0%)	-47,911 (-4.4%)	-19,342 (-1.8%)	+4,979 (+0.5%)	-7,812 (-0.7%)
Richmond County (Staten Island)	-4,884 (-8.6%)	-5,071 (-8.9%)	-4,940 (-8.7%)	-4,539 (-8.0%)	-6,002 (-10.5%)	-4,370 (-7.7%)	-4,917 (-8.6%)
NEW YORK CITY TOTAL	**-128,847 (-5.1%)**	**-29,731 (-1.2%)**	**-84,406 (-3.4%)**	**-219,068 (-8.8%)**	**-130,412 (-5.2%)**	**-25,521 (-1.0%)**	**-147,687 (-5.9%)**

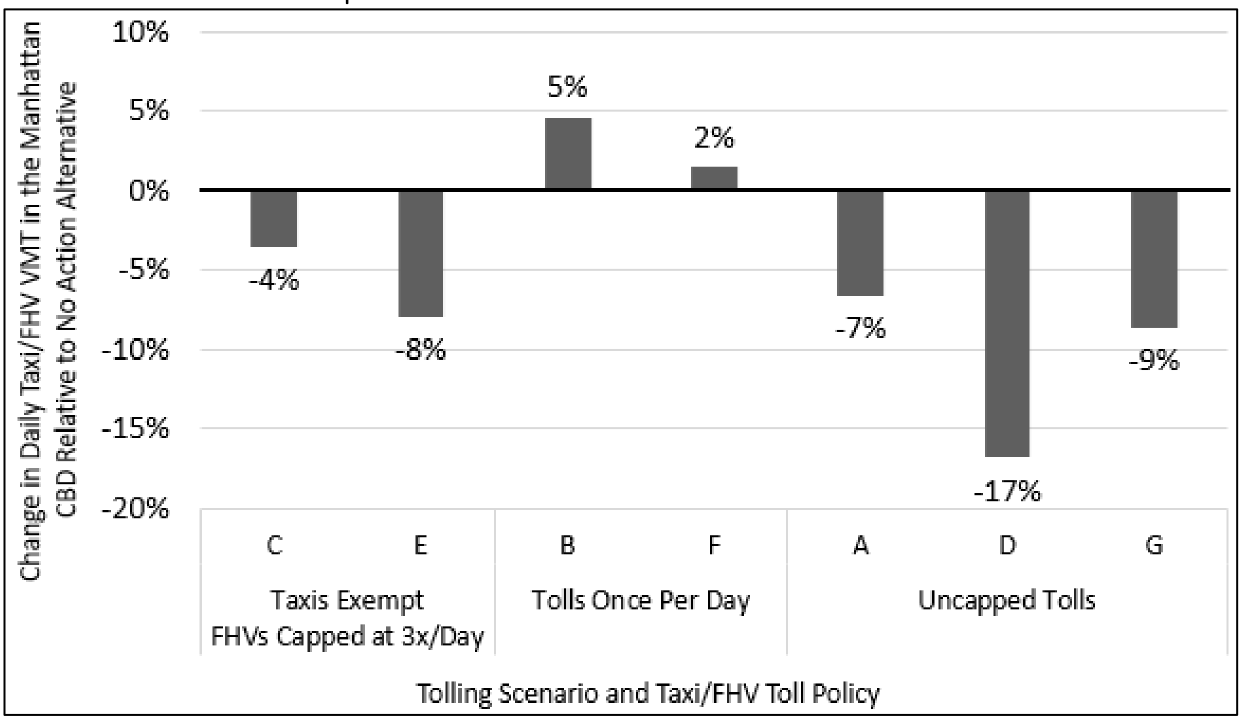
Source: Best Practice Model, WSP 2021.
Note: Projections include VMT only during fares and do not include cruising without passenger(s).

- **Tolling Scenario D with Tolls for Taxis/FHVs Capped at Once Per Day –** The cap would result in about 25 percent more taxis and FHVs entering the Manhattan CBD compared to the original Tolling Scenario D. Since original Tolling Scenario D (with uncapped tolling of taxis and FHVs) would have annual net revenue higher than the Project objectives by about $300 million, this modified Tolling Scenario D would continue to meet the revenue objective without needing to raise toll rates from those in original Tolling Scenario D.
- **Tolling Scenario D with Taxi/FHV Tolling Exemption –** Exempting taxis and FHVs from the Manhattan CBD toll would increase the number of additional taxis and FHVs entering the Manhattan CBD by up to 50 percent compared to original Tolling Scenario D. No change in the toll rate would be required for this modified tolling scenario.
- **Tolling Scenario G with Tolls for Taxis/FHVs Capped at Once Per Day –** Capping the tolls paid by taxis and FHVs would reduce the VMT for taxis and FHVs in New York City by 1.7 percent relative to the No Action Alternative. In the Manhattan CBD, VMT for taxis and FHVs would increase relative to the No Action Alternative by 3.1 percent. Given this cap, toll rates for other vehicles would be approximately 10 percent higher than in original Tolling Scenario G. This toll increase was low enough so as not to notably affect the results from Tolling Scenario G. More importantly, with this modification Tolling Scenario G would still address the concerns regarding commercial truck traffic in the South Bronx, although the daily number of trucks on the Cross Bronx Expressway at Macombs Road would increase

from 50 with original Tolling Scenario G to 251 in this modified scenario, which is still lower than every other tolling scenario except Tolling Scenario C.

Figure 17-10 illustrates how the different tolling policies would affect taxi and FHV VMT. Exemptions and caps decrease the toll burden on taxi/FHV drivers, while increasing the toll rate for other drivers to meet the Project's congestion and revenue objectives. If taxis and FHVs are charged for each trip, the demand for their service would decline, particularly in New York City, reducing trips and better meeting the Project objectives, but creating new direct costs and/or potential job insecurity.

Figure 17-10. Changes in Daily Taxi/FHV VMT in the Manhattan CBD, CBD Tolling Alternative Tolling Scenarios Compared to the No Action Alternative



Source: Best Practice Model, WSP 2021.

Under tolling scenarios that would toll taxis and/or FHVs more than once a day, customers could choose to avoid the toll by switching to transit, walking, or biking to their destination in the Manhattan CBD, thereby reducing the frequency of taxi/FHV utilization. The potential decrease in overall demand for taxis and/or FHVs in Manhattan, ranging from 7 percent to 17 percent in tolling scenarios without a once-a-day cap on taxi/FHV tolls, could reduce employment in the taxi and/or FHV industries. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers, it would also occur in Tolling Scenarios C and E. The projected reductions in VMT indicate potential economic costs within an industry in flux where journeys have already been shifting from taxis to FHVs and could correlate to lost revenues for both taxis and FHVs operating in New York City. Since driver income is directly related to the miles they travel with paying customers, these reductions could result in reductions in taxi and FHV employment. Thus, tolling scenarios that toll taxis and/or FHVs more than once a day would result in an adverse effect on the drivers of those vehicles in New York City, who largely identify as minority populations.

17.6.3 Conclusions: Potential Adverse Effects on Environmental Justice Populations

Based on the information presented in the previous subsections of Section 17.6, the CBD Tolling Alternative would not result in adverse effects on environmental justice populations in most of the topic areas reviewed. Table 17-13 summarizes the results of the analysis.

The Project would result in the following potential adverse effects on environmental justice populations:

- The increased cost to drivers with the new CBD toll in all tolling scenarios would adversely affect minority and low-income drivers who currently drive to the Manhattan CBD and do not have alternative transportation modes available.
- Tolling Scenarios that would toll taxis and/or FHVs once or more a day (unmodified Tolling Scenarios A, D, and G; and Tolling Scenarios C and E for FHV drivers) would adversely affect taxi and/or FHV drivers in New York City, who largely identify as minority populations, as follows:
  - The cost of the new toll would adversely affect taxi and FHV drivers, who would need to pay the Manhattan CBD toll, including at the start of their workday, in tolling scenarios that toll their vehicles more than once a day.
  - The new CBD toll would reduce VMT associated with taxis and/or FHVs in Manhattan. Since the income of taxi and FHV drivers is directly related to the miles they travel with paying customers, this would reduce the income of taxi and FHV drivers and this reduction would be large enough that job losses could occur in tolling scenarios that toll their vehicles more than once a day.

In Tolling Scenarios B and F, and the modified Tolling Scenarios A, D, and G, these adverse effects would not occur.

Table 17-13. Summary of Potential Adverse Effects on Environmental Justice Populations

EA CHAPTER/ ENVIRONMENTAL CATEGORY TOPIC	SUMMARY OF EFFECTS	LOCATION	ADVERSE EFFECT: GENERAL POPULATION?	ANALYSIS OF ADVERSE EFFECT ON ENVIRONMENTAL JUSTICE POPULATIONS?	ANALYSIS CONCLUSION
4A - Regional Transportation	Traffic Results: Some diversions to different crossings to Manhattan CBD or around the Manhattan CBD altogether, depending on tolling scenario. As traffic, including truck trips, increase on some circumferential highways, simultaneously there is a reduction in traffic on other highway segments to the CBD.	Roadways throughout the 28-county study area; greatest effect closest to Manhattan CBD	No	Based on public comments, required further evaluation; see Sections 17.6.1.1 and 17.6.1.2	No adverse effect on environmental justice populations
4B – Transportation: Highways and Local Intersections	The introduction of the CBD Tolling Program may produce increased congestion on highway segments approaching on circumferential roadways used to avoid Manhattan CBD tolls, resulting in increased delays and queues in midday and PM peak hours on certain segments in some tolling scenarios: Westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel (midday) Approaches to westbound George Washington Bridge on I-95 (midday) Southbound and northbound FDR Drive between East 10th Street and Brooklyn Bridge (PM) Other locations will see an associated decrease in congestion particularly on routes approaching the Manhattan CBD.	Three highway segments	Yes	Yes; see Section 17.6.1.1	No adverse effect on environmental justice populations
	Shifts in traffic patterns, with increases in traffic at some locations and decreases at other locations, would change conditions at some local intersections within and near the Manhattan CBD. Of the 102 intersections analyzed, most intersections would see reductions in delay.	**363 locations (All Day)** 102 locations (AM, Midday, and PM) 57 locations (Overnight)	Yes	Yes; see Section 17.6.1.2	No adverse effect on environmental justice populations
	Potential adverse effects on four local intersections in Manhattan: Trinity Place and Edgar Street (midday); East 36th Street and Second Avenue (midday); East 37th Street and Third Avenue (midday); East 125th Street and Second Avenue (AM, PM)	Four locations with potential adverse effects that would be addressed with signal timing adjustments	Yes	Yes; see Section 17.6.1.2	No adverse effect on environmental justice populations

Table 17-13. Summary of Potential Adverse Effects on Environmental Justice Populations

EA CHAPTER/ ENVIRONMENTAL CATEGORY TOPIC	SUMMARY OF EFFECTS	LOCATION	ADVERSE EFFECT: GENERAL POPULATION?	ANALYSIS OF ADVERSE EFFECT ON ENVIRONMENTAL JUSTICE POPULATIONS?	ANALYSIS CONCLUSION
4C – Transportation: Transit	The Project would generate a dedicated revenue source for investment in the transit system. Transit ridership would increase by 1 to 2 percent systemwide for travel to and from the Manhattan CBD, because some people would shift to transit rather than driving. Increases in transit ridership would not result in adverse effects on line-haul capacity on any transit routes.	Regional public transportation system	No	Based on public comments, required further evaluation; see Section 17.6.1.5	No adverse effect on environmental justice populations
4C – Transportation: Transit (Cont'd)	Transit Stations: Increased ridership would affect passenger flows at transit stations, with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations	Hoboken Terminal – PATH station	Yes	Yes; see Section 17.6.1.6	No adverse effect on environmental justice populations
		42 St-Times Square – subway station (Manhattan)	Yes		
		Flushing-Main St subway station (Queens)	Yes		
		Union Sq subway station (Manhattan)	Yes		
		Court Sq subway station (Queens)	Yes		
4E – Transportation: Pedestrians and Bicycles	Pedestrian Circulation: Increased pedestrian activity on sidewalks outside transit hubs because of increased transit use. At most locations, increases not large enough to result in adverse effects. At one location in the Manhattan CBD, the increase could adversely affect pedestrian circulation.	Herald Square/Penn Station NY	Yes	Yes; see Section 17.6.1.7	No adverse effect on environmental justice populations

Table 17-13. Summary of Potential Adverse Effects on Environmental Justice Populations

EA CHAPTER/ ENVIRONMENTAL CATEGORY TOPIC	SUMMARY OF EFFECTS	LOCATION	ADVERSE EFFECT: GENERAL POPULATION?	ANALYSIS OF ADVERSE EFFECT ON ENVIRONMENTAL JUSTICE POPULATIONS?	ANALYSIS CONCLUSION
5A – Social Conditions: Population	Community Cohesion: Changes to travel patterns, including increased use of transit, and increased cost for people who drive to the CBD	28-county study area	No	Based on public comments, required further evaluation see Sections 17.6.1.5, 17.6.1.6, and 17.6.2.1	Potential adverse effect on low-income drivers who do not have alternative transportation modes to reach the Manhattan CBD
	Indirect Displacement: No notable changes in socioeconomic conditions or cost of living so as to induce potential involuntary displacement of residents	Manhattan CBD	No	Based on public comments, required further evaluation; see Section 17.6.1.8	No adverse effect on environmental justice populations
	Access to Employment: Increased cost for people who drive to work in the Manhattan CBD	28-county study area	No	Based on public comments, required further evaluation; see Section 17.6.2.1	Potential adverse effect on low-income drivers who do not have alternative transportation modes to reach the Manhattan CBD (all tolling scenarios)

Table 17-13. Summary of Potential Adverse Effects on Environmental Justice Populations

EA CHAPTER/ ENVIRONMENTAL CATEGORY TOPIC	SUMMARY OF EFFECTS	LOCATION	ADVERSE EFFECT: GENERAL POPULATION?	ANALYSIS OF ADVERSE EFFECT ON ENVIRONMENTAL JUSTICE POPULATIONS?	ANALYSIS CONCLUSION
6 - Economic Conditions	Price of Goods: Cost of new toll would not result in changes in the cost of most consumer goods in the Manhattan CBD	Manhattan CBD	No	Based on public comments, required further evaluation; see Section 17.6.1.9	No adverse effect on environmental justice populations
	Taxi and FHV Drivers: Depending on the tolling scenario, the toll could reduce taxi and FHV revenues for New York City drivers due to a reduction in taxi/FHV VMT with passengers within the CBD. The industry would remain viable overall, but adverse effects, including job losses, could occur to taxi and FHV drivers.	New York City	No	Yes; see Section 17.6.2.2	Potential adverse effect on New York City taxi and/or FHV drivers, who largely identify as minority populations, due to the cost of the new toll and potential job losses related to reductions in VMT in tolling scenarios that toll their vehicles more than once a day (unmodified Tolling Scenarios A, D, and G; and Tolling Scenarios C and E for FHV drivers)

Table 17-13. Summary of Potential Adverse Effects on Environmental Justice Populations

EA CHAPTER/ ENVIRONMENTAL CATEGORY TOPIC	SUMMARY OF EFFECTS	LOCATION	ADVERSE EFFECT: GENERAL POPULATION?	ANALYSIS OF ADVERSE EFFECT ON ENVIRONMENTAL JUSTICE POPULATIONS?	ANALYSIS CONCLUSION
10 - Air Quality	Regional Air Quality Benefits: On a regional (mesoscale) level, reductions in VMT would reduce air pollutants and greenhouse gases	28-county study area	No	Based on public comments, required further evaluation; see Section 17.6.1.3	No adverse effect on environmental justice populations
	Local Intersections: Changes in air emissions at local intersections due to traffic volume changes	Local intersections	No		
	Highway Segments: Changes in air emissions on highway due to traffic volume changes	Selected highway segments	No		
	Truck Volume Changes: Changes in emissions related to truck traffic diversions	Circumferential roadways near the CBD	No		
12 – Noise	Traffic-Related Noise: Imperceptible increases or decreases in noise levels resulting from changes in traffic volumes	Bridge and tunnel crossings and local streets	No	Based on public comments, required further evaluation; see Section 17.6.1.4	No adverse effect on environmental justice populations

17.6.4 Offsetting Benefits

While the introduction of a new CBD toll would result in adverse effects to individuals who currently drive to the Manhattan CBD and do not have alternative transportation modes available, the CBD Tolling Alternative would also have substantial benefits associated with reduced vehicle congestion in the Manhattan CBD, a primary goal of the Project. The Project would address the demonstrated need to reduce vehicle congestion in the Manhattan CBD, which would benefit all drivers traveling to and near the Manhattan CBD, especially those who value their travel-time savings more than the toll cost. The reduced congestion would produce other related benefits in the Manhattan CBD, including travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety for vehicles, pedestrians, and bicyclists, and improved air quality in the Manhattan CBD and regionwide.

These congestion-reduction benefits would result in economic benefits as well. Travel-time savings associated with both work and non-work journeys are an economic benefit because they increase a person's productivity and overall utility by reducing time spent on less productive activities (i.e., traveling to a destination). In addition, reductions in vehicle volumes and VMT in the Manhattan CBD and other locations within the regional study area would benefit those who continue to drive in the Manhattan CBD, including delivery vehicles and taxi and FHV drivers. With less congestion and improved speeds, drivers can reach their customers more quickly and transport them to their destinations more quickly. By improving the trip times, the CBD Tolling Alternative could facilitate more fares during taxi and FHV drivers' shifts and increase their receipts. Reduced congestion would also facilitate the more efficient and cost-effective distribution of goods and services by truck in the Manhattan CBD. Transit riders who use buses, including minority and low-income passengers, would benefit from the CBD Tolling Alternative through congestion reduction that would result in travel-time savings, improved travel-time reliability, and improved safety.

Reduced regional air pollution would provide an important benefit to all residents of the region, particularly for environmental justice populations who experience adverse health effects related to air pollution, such as asthma. Most environmental justice populations who live in the Manhattan CBD would experience lower localized pollutant emissions due to reduced traffic. Additional information on where traffic would decrease is provided in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** and described and illustrated earlier in this chapter in **Section 17.6.1.3**.

In addition, the CBD Tolling Alternative would establish a reliable, recurring local source of funding for MTA capital projects, which would allow MTA to reinvest in and improve its transportation network. As discussed earlier, approximately 76 percent of the people who travel to the Manhattan CBD for work use public transportation to make their trip and this percentage is higher for minority commuters (82 percent) and low-income commuters (79 percent). MTA's transportation network is critical for mobility in the region, and improvements to the network would allow it to absorb increasing transit ridership and further reduce vehicle congestion.

17.7 POTENTIAL DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

USDOT Order 5610.2C and FHWA Order 6640.23A require FHWA to identify whether its actions could have a disproportionately high and adverse effect on low-income and minority populations, after accounting for mitigation and offsetting benefits.

USDOT Order 5610.2C and FHWA Order 6640.23A both define a disproportionately high and adverse effect on an environmental justice population occurs when the following occurs:

- An adverse effect is predominantly borne by a minority population and/or a low-income population; or
- An adverse effect would occur to a minority population and/or low-income population that would be appreciably more severe or greater in magnitude than the adverse effect that would occur to the non-minority population and/or non-low-income population.

USDOT Order 5610.2C and FHWA Order 6640.23A both describe that in making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be implemented and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and the relevant number of similar existing system elements in non-minority and non-low-income areas.

Based on the previous steps in this analysis, the CBD Tolling Alternative would result in two potential adverse effects on environmental justice populations, after taking into account measures to avoid, minimize or otherwise mitigate adverse effects and taking into account offsetting benefits: 1) a potential adverse effect on minority and low-income drivers due to the increased cost associated with the new toll; and 2) a potential adverse effect on minority taxi and FHV drivers resulting from a decrease in employment.

17.7.1 Evaluation of Adverse Effect on Minority and Low-Income Drivers

The previous sections of this chapter describe that most people in the regional study area travel to and from the Manhattan CBD by public transportation using the region's robust transit network. With the CBD Tolling Alternative, most people, including minority and low-income populations, would continue to use public transportation to travel to and from the Manhattan CBD and would not be adversely affected by the new toll.

Most people who currently drive to the Manhattan CBD have alternative travel options to avoid the CBD toll. However, for some people, switching to transit is not a viable option because they have poor access to transit, commuting by transit is inefficient with long travel times, they have work hours during times of limited transit service, or they need access to a private automobile for their work. For these individual drivers who do not have viable alternatives, the increased cost of travel to the Manhattan CBD due to the new toll would represent an adverse effect. The size of cost increase would depend on the tolling scenario and each driver's specific route and travel patterns.

17.7.1.1 Minority Drivers

The effect of the cost associated with the new CBD toll on minority drivers who have no viable alternative mode for reaching the Manhattan CBD other than private vehicle would be the same effect as experienced by the general population. This effect would not be predominantly borne by a minority population. As discussed earlier, approximately 52 percent of the region's population identifies as minority, and slightly less than half of the people who travel to the Manhattan CBD for work identify as minority. About 10 percent of the minority commuters to the Manhattan CBD, or approximately 73,000 commuters, commute by private vehicles. This is approximately 5 percent of all commuters to the Manhattan CBD.

In addition, the adverse effect on minority drivers would not be more severe or greater in magnitude for the minority population than for the general population.

Consequently, the potential adverse effect on minority drivers associated with the cost of the new toll would not be a disproportionately high and adverse effect.

17.7.1.2 Low-Income Drivers

The cost of the new CBD toll would not be predominantly borne by low-income drivers. As described earlier, approximately 14 percent of the region's commuters to the Manhattan CBD are low-income and 9 percent of the people who drive to the Manhattan CBD are low-income.

However, for low-income drivers who have no viable alternative to reach the Manhattan CBD other than private vehicle, the effect of that cost would be appreciably more severe than the effect on the non-low-income population, because the cost of the toll would represent a larger proportion of each driver's available income. The specific cost associated with the new toll would vary for each driver, depending on the route, time of day, frequency of the trip, and the tolling scenario. In addition, while the lowest tolls would be available to drivers who use E-ZPass, some low-income drivers may have difficulty maintaining an E-ZPass account. There is no fee for setting up an E-ZPass account and TBTA already offers a Pay-Per-Trip option and a Reload Card for cash customers to replenish their E-ZPass. However, there is a $10 refundable deposit required for customers who do not have a credit card account linked to their account.

Overall, therefore, the adverse effect on low-income drivers associated with the cost of the new toll would constitute a disproportionately high and adverse effect.

17.7.2 Evaluation of Adverse Effect on Taxi and FHV Drivers

A potential adverse effect would occur to taxi and/or FHV drivers in New York City, who largely identify as minority populations, in tolling scenarios that toll their vehicles more than once a day. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers it would also occur in Tolling Scenarios C and E. The adverse effect would be related to the cost of the new CBD toll and the reduction of VMT for taxis and/or FHVs, which would result in a decrease in revenues that could lead to losses in employment. This adverse effect would occur predominantly to a minority population and therefore would be a disproportionately high and adverse effect.

17.8 FURTHER EVALUATION FOR POTENTIAL DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

USDOT Order 5610.2C and FHWA Order 6640.23A state that FHWA will ensure that any actions that have the potential for a disproportionately high and adverse effect on minority or low-income populations will only be carried out if:

1. "Further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable."
2. "A substantial need for the program, policy or activity exists, based on the overall public interest."
3. "Alternatives that would have less adverse effects on protected populations have either: (a) adverse social, economic, environmental, or human health impacts that are severe; or (b) would involve increased costs of extraordinary magnitude."

USDOT Order 5610.2C and FHWA Order 6640.23A further explain, "In determining whether a mitigation measure or an alternative is 'practicable,' the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects will be taken into account."

17.8.1 Substantial Need for CBD Tolling Program

As described in **Chapter 1, "Introduction,"** the purpose of the Project is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into FHWA's Value Pricing Pilot Program. **Chapter 1** also documents the compelling need for the Project, including the need to reduce vehicle congestion in the Manhattan CBD and the need to create a new, local recurring funding source for MTA's capital projects.

17.8.2 No Other Alternatives Available

In consideration of a range of potential strategies for reducing congestion, and in light of the purpose, need, and objectives for this Project, FHWA and the Project Sponsors evaluated 12 preliminary alternatives described in **Chapter 2, "Project Alternatives."** Based on that evaluation, FHWA and the Project Sponsors determined that only one alternative, the CBD Tolling Alternative, would meet the established purpose and need and all of the Project objectives. Therefore, the CBD Tolling Alternative is the only reasonable alternative for the Project.

17.8.3 Mitigation for Potential Disproportionately High and Adverse Effect on Low-Income Drivers

For low-income travelers, a wide variety of discounted and lower cost transportation options are currently available in the New York City metropolitan region, including:

- **Transit Fare Discount for Individuals in Low-Income Households.** Beyond the Manhattan CBD, New York City residents between the ages of 18 and 64 who reside in a household with an income below the Federal poverty threshold, and are not receiving full carfare from the Department of Social Services/Human Resources Administration or any other New York City agency, are eligible for the Fair

Fares program, which allows travel at half the full fare cost on MTA subway; local, limited, and SBS buses; and Access-A-Ride paratransit.

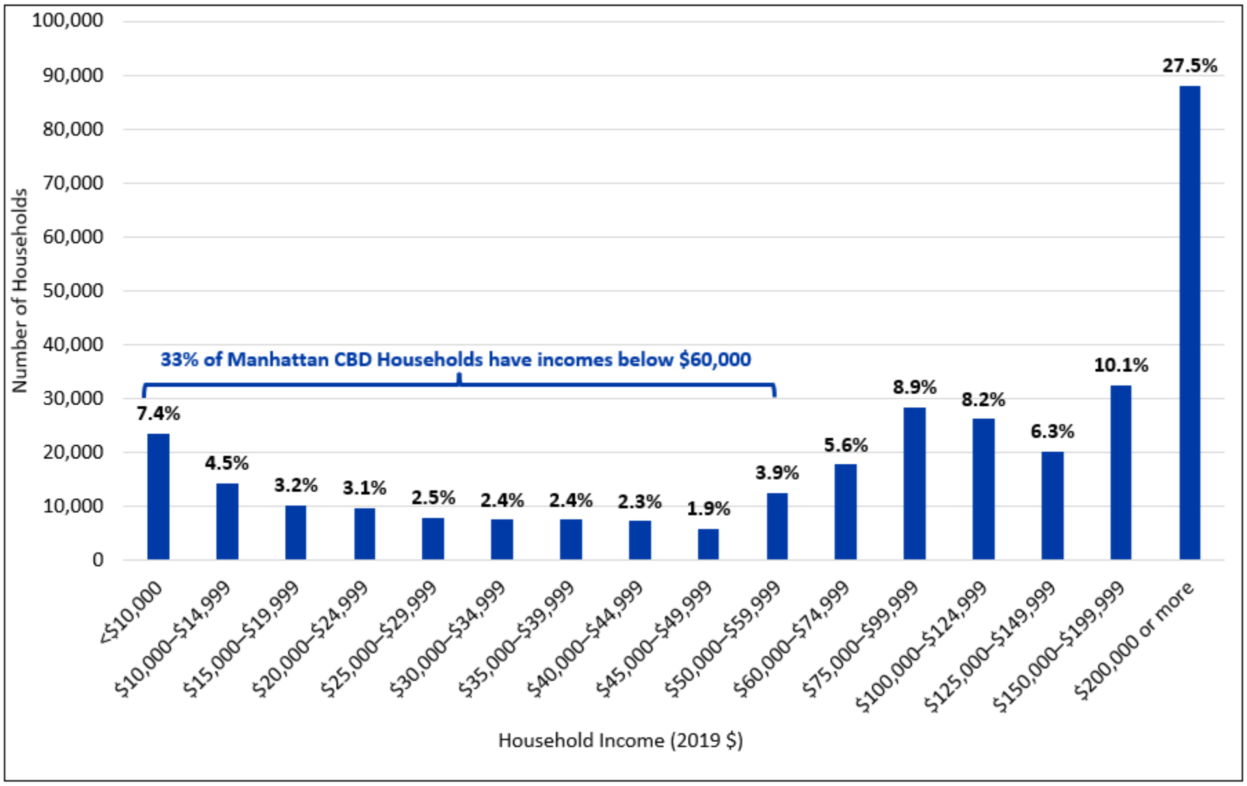
- **Transit Fare Discount for Persons with Disabilities and Those 65 Years of Age and Older.** Even broader geographically, MTA subway, bus, and rail riders who are 65 and older or are persons with disabilities are eligible for a Reduced Fare program, which allows travel on transit at half the full fare cost. This program is not restricted to New York City residents.
- **Student Transit Fare Discount.** MTA works with the New York City Department of Education so that students have access to education. Student MetroCards[21] are distributed by schools to students whose home is one-half mile or farther from their school. These MetroCards allow three free rides each school day between 5:30 a.m. and 8:30 p.m., including free transfers between buses or between the subway and local, limited, and SBS buses.
- **Free Ferry Service.** The Staten Island Ferry, which operates 24 hours a day, seven days a week, every day of the year, runs free ferry service from Staten Island to the Manhattan CBD.
- **Reduced-Fare Bike Share.** Citi Bike, in partnership with Healthfirst and NYCDOT, provides reduced cost membership of $5/month (roughly one-third the typical membership) for low-income individuals 16 years and older who are residents of New York City Housing Authority facilities or receive Supplemental Nutrition Assistance Program (SNAP) benefits.
- **24-Hour Public Transportation Widely Available.** As described in other chapters of this EA, New York City and the surrounding region has an extensive regional transportation network that operates seven days a week all year long. The services within New York City operate 24 hours a day.
- **E-ZPass Payment Options.** To make the convenience of E-ZPass available for as many customers as possible, TBTA offers a Pay-Per-Trip option and a Reload Card for customers without credit cards to replenish their E-ZPass.

Even with all of these programs offered or supported by the Project Sponsors, as discussed earlier, the cost of the new toll would result in a disproportionately high and adverse effect on low-income populations who need to drive into and out of the Manhattan CBD. To address this adverse effect on low-income drivers, the Project Sponsors will implement the following mitigation measures:

- **Tax Credit for Tolls Paid:** The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. (As shown in **Figure 17-11**, 33 percent of the households in the Manhattan CBD have household incomes below $60,000.) TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) so that documentation that may be needed for those eligible for the New York State tax credit is available.
- **Education/Outreach/Coordination on the Tax Credit:** TBTA will post information on the Project website related to the tax credit and a link to the appropriate location on the NYS DTF website that guides eligible drivers to information on filing their taxes.

[21] MetroCard is the primary payment method for the New York City subway and New York City and MTA buses.

Figure 17-11. Income Distribution for Households in the Manhattan CBD



Source: U.S. Census Bureau, ACS 2015-2019 5-Year Estimates.

- **Elimination of the E-ZPass Tag Deposit Fee:** For all drivers, the best way to reduce toll costs associated with the CBD Tolling Program would be to use E-ZPass, since toll rates would be lower for those who use E-ZPass than for those who do not. As noted, TBTA already offers a Pay-Per-Trip option and a Reload Card for cash customers to replenish their E-ZPass. However, there is a $10 refundable deposit required for customers who do not have a credit card account linked to their account. Recognizing that these tend to be low-income customers, TBTA, as one of the Project Sponsors, will eliminate the required refundable deposit for customers who want E-ZPass but do not have a credit card connected to their account. This will benefit all TBTA E-ZPass tag holders who do not have a credit card connected to their account, whether or not they drive to the Manhattan CBD.
- **Enhanced Promotion of Existing E-ZPass Payment and Plan Options:** TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-load balance) and refill their accounts with cash at participating retail partners.
- **Education/Outreach on Transit Discounts:** TBTA will coordinate with MTA to provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware.
- **Establishment of an Environmental Justice Community Group:** The Project Sponsors commit to establishing an Environmental Justice Community Group that would meet on a bi-annual basis, with

the first meeting six months after Project implementation, to share updated data and analysis and hear about potential concerns.

In addition, the Project Sponsors are committed to implementing the following enhancement:

- *Enhancement: Prioritizing Equity in Improving Bus Service in New York City*: New York City's buses serve a greater share of low-income and minority households compared to other modes of transportation, including subways. MTA developed an approach which combines considerations of equity and air quality to identify Equity Priority Areas for its bus network redesigns. Equity Priority Areas are used to target improvements and investments to promote equity and access to opportunities in these transit-dependent, historically marginalized and underserved areas to promote equitable transportation and access to opportunities. The recently implemented bus network redesigns in Staten Island and the Bronx have been well-received. Network redesigns in Queens and Brooklyn are progressing. TBTA commits to working with NYCT to address areas identified in the EA where bus service could be improved as the Brooklyn and Manhattan Bus Network Redesigns move forward.

17.8.4 Mitigation for Potential Disproportionately High and Adverse Effect on Taxi and FHV Drivers

To address the disproportionately high and adverse effects on taxi and/or FHV drivers, the Project Sponsors will implement the following mitigation for taxi and/or FHV drivers if a tolling scenario is implemented with tolls of more than once per day for their vehicles:

- **Mitigation Related to Toll Cost:** The Project Sponsors commit to working with the appropriate city and state agencies so that when passengers are present, they pay the toll, rather than the driver.
- **Mitigation Related to Potential Job Losses:**
  - TBTA will work with NYCT to institute an Employment Resource Coordination Program to connect drivers experiencing job insecurity with a direct pathway to licensing, training, and job placement with MTA or its affiliated vendors at no cost to the drivers (the $60-$70 fee for a bus operator's exam will be waived, and the $10 fee for a commercial driver's license test will be reimbursed). This program will include resources and information on how to become a driver with MTA's paratransit carriers or a bus or train operator.
  - For those who may not want a commercial driver's license, TBTA will coordinate with MTA to submit a request to the Federal Transit Administration (FTA) for a pilot program that will increase eligibility of taxi and FHV drivers to use their vehicles to provide paratransit trips and will implement this program if approved. This will increase work opportunities for roughly 140,000 TLC-licensed drivers and improve service quality for the nearly 170,000 paratransit customers eligible for paratransit service through MTA's Access-A-Ride program. Drivers wishing to be part of the Access-A-Ride broker program would still need to meet broker driving training requirements, including training to work with people with disabilities. If FTA approves the program, the six-month pilot program could begin ahead of implementation of the CBD Tolling Program and will include data collection to measure progress and test the pilot program against a set of key performance indicators. MTA will produce a report to summarize the pilot program performance after six months for evaluation by

MTA, FTA, and the TLC. Should the pilot program show progress toward success, MTA will propose that the pilot continue for a full year. If the pilot program shows success after one year, MTA, FTA, and the TLC may extend the pilot program, making the program permanent, or discontinue the pilot and return to existing policy.

17.9 CONCLUSION

Consistent with USDOT Order 5610.2C and FHWA Order 6640.23A, the environmental justice analysis included a review of Project effects to identify appropriate study areas, identification of existing minority and low-income populations in the study areas, identification of potential adverse effects of the Project on environmental justice populations, and consideration of whether the CBD Tolling Alternative would result in disproportionately high and adverse effects on environmental justice populations.

Public engagement is a critical component of USDOT's and FHWA's policies and practices related to environmental justice. FHWA and the Project Sponsors conducted an extensive early public outreach program for the Project during preparation of this EA with a specific focus on coordinating with and obtaining feedback environmental justice populations and representatives of environmental justice communities that could be affected by the Project.

The environmental justice analysis concluded that the CBD Tolling Alternative would not result in adverse effects on environmental justice populations in most of the topic areas reviewed. However, the Project would result in disproportionately high and adverse effects on environmental justice populations, as follows:

- The increased cost to drivers with the new CBD toll would have a potentially disproportionately high and adverse effect on low-income drivers who currently drive to the Manhattan CBD and do not have alternative transportation modes available.
- A potential disproportionately high and adverse effect would occur to taxi and FHV drivers in New York City, who largely identify as minority populations, in tolling scenarios that toll their vehicles more than once a day. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers, it would also occur in Tolling Scenarios C and E. The adverse effect would be related to the cost of the new Manhattan CBD toll and the reduction of VMT for taxis and FHVs, which would result in a decrease in revenues that could lead to losses in employment.

To address the potential disproportionately high and adverse effects on low-income drivers and taxi and FHV drivers, the Project Sponsors will implement the following mitigation measures, described in more detail earlier in this chapter:

- For low-income drivers:
  - Tax credit for tolls paid
  - Education/outreach/coordination on the tax credit
  - Elimination of the E-ZPass tag deposit fee

- Enhanced promotion of Existing E-ZPass Payment and Plan Options
- Education/outreach on Transit Discounts
- Establishment of an Environmental Justice Community Group
- **Enhancement:** Prioritizing equity in improving bus service in New York City

- For New York City taxi and/or FHV drivers if a tolling scenario is implemented with tolls of more than once a day for their vehicles:
  - Toll Cost: The Project Sponsors commit to working with the appropriate city and state agencies so that when passengers are present, they pay the toll, rather than the taxi/FHV driver.
  - Potential Job Losses:
    - Institute an Employment Resource Coordination Program.
    - Implement a pilot program, subject to FTA approval, to increase eligibility of taxi and FHV drivers to use their vehicles to provide paratransit trips.

The Project would address the demonstrated need to reduce vehicle congestion in the Manhattan CBD, which would benefit all drivers traveling to and near the Manhattan CBD, especially those who value their travel-time savings more than the toll cost. The reduced congestion would produce other related benefits, including travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety for vehicles, pedestrians, and bicyclists, and improved air quality in the Manhattan CBD and regionwide.

Reductions in vehicle volumes and VMT in the Manhattan CBD and other locations within the regional study area would benefit those who continue to drive in the Manhattan CBD, including delivery vehicles and taxi and FHV drivers. Transit riders who use buses, including minority and low-income passengers, would benefit from the CBD Tolling Alternative through congestion reduction that would result in travel-time savings, improved travel-time reliability, and improved safety.

Reduced regional air pollution would provide an important benefit to all residents of the region, particularly for environmental justice populations who experience adverse health effects related to air pollution, such as asthma. Most environmental justice populations who live in the Manhattan CBD would experience lower localized pollutant emissions due to reduced traffic.

In addition, the CBD Tolling Alternative would establish a reliable, recurring local source of funding for MTA capital projects, which would allow MTA to reinvest in and improve its transportation network. Most people throughout the region use public transportation to travel to and from the Manhattan CBD. As discussed earlier, approximately 76 percent of the people who travel to the Manhattan CBD for work use public transportation and this percentage is higher for minority commuters (82 percent) and low-income commuters (79 percent). MTA's transportation network is critical for mobility in the region, and improvements to the network would allow it to absorb increasing transit ridership and further reduce vehicle congestion.

Table 17-14 summarizes the effects of the environmental justice analysis presented in this chapter.

Table 17-14. Summary of Effects of the CBD Tolling Alternative Related to Environmental Justice

TOPIC	SUMMARY OF EFFECTS	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
			A	B	C	D	E	F	G		
Potential disproportionately high and adverse effects on low-income drivers	The increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD who do not have an alternative transportation mode for reaching the Manhattan CBD.	Narrative	The increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD in all tolling scenarios.							Yes	**Mitigation needed.** The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) to ensure availability of documentation needed for drivers eligible for the New York State tax credit. TBTA will post information related to the tax credit on the Project website, with a link to the appropriate location on the NYS DTF website to guide eligible drivers to information on claiming the credit. TBTA will eliminate the $10 refundable deposit currently required for E-ZPass customers who do not have a credit card linked to their account, and which is sometimes a barrier to access. TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-load balance) and refill their accounts with cash at participating retail locations, and discount plans already in place, about which they may not be aware. TBTA will coordinate with MTA to provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware. The Project Sponsors commit to establishing an Environmental Justice Community Group that would meet on a bi-annual basis, with the first meeting six months after Project implementation, to share updated data and analysis and hear about potential concerns.
Potential disproportionately high and adverse effects on taxi and FHV drivers	A potential disproportionately high and adverse effect would occur to taxi and FHV drivers in New York City, who largely identify as minority populations, in tolling scenarios that toll their vehicles more than once a day. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers, it would also occur in Tolling Scenarios C and E. The adverse effect would be related to the cost of the new Manhattan CBD toll and the reduction of VMT for taxis and FHVs, which would result in a decrease in revenues that could lead to losses in employment.	Narrative	Potential adverse effect would occur in Tolling Scenarios A, D, and G, which would not have caps or exemptions for taxis and FHV drivers.							Yes	**Mitigation needed for New York City taxi and/or FHV drivers if a tolling scenario is implemented with tolls of more than once per day for their vehicles.** The Project Sponsors will work with the appropriate city and state agencies so that passengers pay the toll, rather than the driver. TBTA will work with MTA NYCT to institute an Employment Resource Coordination Program to connect drivers experiencing job insecurity with a direct pathway to licensing, training and job placement with MTA or its affiliated vendors at no cost to the drivers. For those who may not want a commercial driver's license, TBTA will coordinate with MTA NYCT to submit a request to the Federal Transit Administration for a pilot program that will help increase eligibility of taxi and FHV drivers to use their vehicles to provide paratransit trips.
		Change in daily taxi/FHV VMT with passengers in the CBD relative to No Action Alternative: Scenarios included in EA	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)		
		Net change in daily taxi/FHV trips to CBD relative to scenarios included in EA: Additional analysis to assess effects of caps or exemptions	Tolls capped at 1x / Day: +2%	—	—	Tolls capped at 1x / Day: +3% Exempt: +50%	—	—	Tolls capped at 1x / Day: +2%		

17.10 ENVIRONMENTAL JUSTICE PUBLIC ENGAGEMENT

Public engagement is a critical component of USDOT's and FHWA's policies and practices related to environmental justice. FHWA and the Project Sponsors conducted an extensive early public outreach program for the Project during preparation of this EA with a specific focus on coordinating with and obtaining feedback from environmental justice populations and representatives of environmental justice communities that could be affected by the Project. This section describes the extensive environmental justice public outreach program that FHWA and the Project Sponsors developed for the Project. See **Chapter 18, "Agency Coordination and Public Participation"** for additional details on outreach methods and general public involvement efforts for the Project.

FHWA and the Project Sponsors used comments and feedback provided during this early public outreach to inform the environmental justice analysis and overall preparation of this EA as described throughout this chapter. A summary of issues raised and how they were addressed in the environmental justice analysis is provided in **Section 17.4** of this chapter.

FHWA and the Project Sponsors began outreach for the Project to environmental justice populations in August 2021. Using preliminary data and analyses collected during development of this EA, the Project Sponsors identified social media and traditional media outlets that would reach a wide audience of minority and low-income populations in the 28-county regional study area. The Project Sponsors relied on contact information from MTA's Office of Diversity, NYCDOT, and Metropolitan Planning Organizations and Councils of Government that represent counties within the study area to begin a contact list and have updated that list as members of the public have expressed interest in the Project. The Project Sponsors used the contact list to circulate information about the Project and public meeting opportunities. In addition, FHWA and the Project Sponsors corresponded with Federally recognized and state recognized Native American tribes with current or historical presence within the regional study area to inform them about the Project and to offer an opportunity to meet with them to provide further information and discuss any concerns.

17.10.1 Environmental Justice Webinars

The Project Sponsors held webinars to engage with environmental justice populations throughout the regional study area. Promotional materials and the Project website (https://new.mta.info/project/CBDTP) described that the purpose of these meetings was to provide information to and get input from environmental justice populations. The Project Sponsors targeted sessions to the three states in the study area, Connecticut, New Jersey, and New York, but people were welcome to attend any session. Although advertised as environmental justice webinars, any member of the public could attend and speak at the sessions.

The Project Sponsors advertised the environmental justice webinars through social media, traditional media, signs and posters on public transportation and at stations, and announcements on the Project Sponsors' websites. As described in **Chapter 18, "Agency Coordination and Public Participation,"** the Project Sponsors advertised meetings on 33 media outlets including English and foreign language publications throughout the 28-county region. The meetings were also advertised on radio stations, and the Project

Sponsors conducted digital advertising through Geo Fencing, Twitter, and World Journal. Advertisements for the webinars were translated to Spanish, Chinese, Haitian Creole, Bengali, Korean, Italian, Portuguese, and Russian, which are the most prominent non-English languages used by residents of the regional study area.

The Project Sponsors hosted six environmental justice webinars in October 2021 (October 7, 12, 13, 26, 27, and 28) and three environmental justice webinars in December 2021 (December 7, 8, and 9, 2021). The meetings began at 6:00 p.m. **Table 17-15** lists the dates and times of each webinar and provides an overview of the participation at each webinar.

Table 17-15. Environmental Justice Webinars

MEETING	LOCATION	DATE	MEETING START TIME	MEETING END TIME	TOTAL UNIQUE ZOOM WEBINAR VIEWERS	TOTAL YOUTUBE LIVE VIEWERS	TOTAL ORAL COMMENTS	TOTAL Q&A
Webinar 1	New York	10/7/2021	6:00 p.m.	6:54 p.m.	31	14	11	20
Webinar 2	New Jersey	10/12/2021	6:00 p.m.	6:37 p.m.	10	13	4	27
Webinar 3	Connecticut	10/13/2021	6:00 p.m.	8:07 p.m.	12	12	3	17
Webinar 4	New York	10/26/2021	6:00 p.m.	8:09 p.m.	23	25	4	18
Webinar 5	New Jersey	10/27/2021	6:00 p.m.	8:08 p.m.	9	10	4	18
Webinar 6	Connecticut	10/28/2021	6:00 p.m.	8:11 p.m.	18	9	10	55
Webinar 7	New York	12/7/2021	6:00 p.m.	8:02 p.m.	32	15	6	20
Webinar 8	New Jersey	12/8/2021	6:00 p.m.	8:01 p.m.	7	10	1	13
Webinar 9	Connecticut	12/9/2021	6:00 p.m.	8:00 p.m.	3	8	0	9
				TOTALS	**145**	**116**	**43**	**197**

The webinars were targeted to different geographic areas; however, the webinars were open to anyone who wished to participate regardless of where they lived or worked. Meeting attendees were able to participate via computer or telephone. Meeting attendees could sign up to speak for two minutes either in advance of or during the meeting. Attendees also had the opportunity to communicate via the Question-and-Answer function of the web platform. The webinars continued beyond the two-hour duration as necessary to accommodate all speakers.

American Sign Language interpretation and closed captioning were available at each webinar. Additional language interpretation in any language were made available upon advance request. Individuals who are hearing impaired could dial 711 to be connected free of charge with a communications assistant. To provide additional accessibility, the Project Sponsors live-streamed public webinars and posted recordings of all public presentations for on-demand viewing in multiple languages via YouTube.

The participation in the environmental justice webinars is shown in **Table 17-15** and described below. It should be noted that environmental justice populations also participated in the 10 public webinars held in September and October 2021. There were approximately 1,150 participants in these public webinars. As part of these webinars, attendees could take an optional survey, which included questions about their demographic characteristics. Based on the results received, approximately one-third of meeting attendees identified as environmental justice populations. (Refer to **Chapter 18, "Agency Coordination and Public Participation,"** for more information about the public webinars.)

17.10.1.1 Environmental Justice Webinars 1 through 6

The Project Sponsors held Environmental Justice Webinars 1 through 6 in October 2021. The webinars introduced the participants to the Project, using the same presentation at each webinar. The webinars began with a live introduction and overview of attendees from the Project Sponsors. This was followed by a recorded presentation. The first half of the presentation was the same as for the early outreach public webinars (see **Chapter 18, "Agency Coordination and Public Participation"**). It provided an overview of the Project's purpose, needs, and objectives; identified the two alternatives studied in detail in this EA (No Action Alternative and CBD Tolling Alternative); described the tolling scenarios and range of potential tolls; and identified the topics to be studied in the EA. The second half of the presentation focused specifically on the environmental justice analysis for this EA. It described the regulatory framework for this environmental justice analysis, the methodology for preparing the analysis, an overview of identified environmental justice populations in the regional study area; and a preliminary list of the Project's potential benefits to and effects on environmental justice populations. The presentation also described the Environmental Justice Technical Advisory Group and the Environmental Justice Stakeholder Working Group, and the Project Sponsors explained how participants could sign up to participate in the Environmental Justice Stakeholder Working Group. The presentation concluded with the Project schedule, a description of future public engagement opportunities, and information on the Project website.

Following the presentation, the Project Sponsors moderated the oral testimony. Although the Project Sponsors gave speakers an opportunity to sign up in advance, anyone in attendance could speak. Comments and questions could be submitted via the Question-and-Answer function of the webinar as well. The Project Sponsors responded to questions sent via the Question-and-Answer function, providing factual and technical responses, along with logistical information. There were 36 speakers and 155 Question- and-Answer submissions during the October webinars. Each webinar was recorded, and the public could view the YouTube recording on the Project's website at any time following the meeting. The oral and written comments were logged in the Project's record.

17.10.1.2 Environmental Justice Webinars 7 through 9

The Project Sponsors hosted Environmental Justice Webinars 7 through 9 in December 2021. These webinars followed the same format as Environmental Justice Webinars 1 through 6 and included a live introduction followed by a recorded presentation. The presentation reviewed the purpose, need, and objectives for the Project and the approach to the environmental justice analysis. Then, the presentation identified the demographic characteristics of the regional study area and identified environmental justice populations. The presentation continued with a description of travel characteristics of environmental justice populations with a focus on travel to and from the Manhattan CBD. It followed with an overview of the tolling scenarios and travel demand forecasting, including preliminary results for changes in automobile trips, transit ridership, and taxi/FHV trips. The presentation concluded with an overview of the MTA 2020–2024 Capital Program.

Following the presentation, the Project Sponsors moderated the oral testimony. Although the Project Sponsors gave speakers an opportunity to sign up in advance, anyone in attendance could speak. Comments and questions could also be submitted via the Question-and-Answer function of the webinar. The Project Sponsors responded to questions sent via the Question-and-Answer function, providing factual and technical responses, along with logistical information. There were 7 speakers and 42 Question-and-Answer function submissions during the December webinars. Each meeting was recorded, and the public could view the YouTube recording through the Project's website at any time following the meeting. The oral and written comments were logged in the Project's record.

17.10.2 Environmental Justice Technical Advisory Group

The Project Sponsors invited community leaders, advocacy groups, industry groups, and community members from the regional study area with expertise in environmental justice considerations to participate in an Environmental Justice Technical Advisory Group. The Project Sponsors invited 37 groups to participate in the Environmental Justice Technical Advisory Group. The following 16 groups accepted the invitation to participate:

- ALIGN
- Chhaya
- Community Voices Heard
- Connecticut Coalition for Environmental Justice
- El Puente
- Good Old Lower East Side (GOLES)
- Hispanic Federation
- NAACP Metropolitan Council Region
- National Action Network
- New Jersey Environmental Justice Alliance
- New York City Environmental Justice Alliance
- South Bronx Unite
- UPROSE
- Urban League of Greater Hartford
- WE ACT for Environmental Justice
- Youth Ministries for Peace and Justice (YMPJ)

Representatives of 14 groups participated in the first meeting of the Environmental Justice Technical Advisory Group, which was held on October 13, 2021, from 1:00 p.m. to 3:00 p.m. Following introductions by the Project Sponsors and the participants, the Project Sponsors presented Project information. Meeting participants were invited to interject with questions or comments during the presentation. The presentation included a Project overview (purpose and need, alternatives studied in this EA, the environmental topics covered in this EA, and schedule), identification of the potential benefits and effects of the Project on environmental justice populations, the process to assess potential effects on environmental justice populations, an overview of the race and income characteristics of the regional study area, the initial identification of environmental justice populations in the regional study area, and an overview of public engagement activities, including targeted outreach to environmental justice populations. A summary was prepared to document the meeting, including questions and comments raised by the participants and the responses provided by the Project Sponsors.

Following the meeting, the Project Sponsors prepared a summary of the topics raised by the meeting participants and topics for which additional information was requested. The Project Sponsors circulated the list of topics with the members of the Environmental Justice Technical Advisory Group and requested their input on the list as well as any additional topics or concerns that would like to discuss further. The Project Sponsors developed the materials for the second meeting of the Environmental Justice Technical Advisory Group based on these requests.

A second meeting of the Environmental Justice Technical Advisory Group was held on November 3, 2021, from 10:00 a.m. to 12:00 p.m., and representatives of 11 groups participated. The presentation provided more information on topics raised at the first meeting using the list of topics and input from members described above. The topics included modes of travel to the Manhattan CBD by environmental justice populations, demographic characteristics of Manhattan CBD residents, access to transit within the regional study area, an overview of the tolling scenarios, the process for travel demand forecasting, preliminary traffic analysis results, preliminary findings on indirect displacement and changes in air quality emissions, and an overview of the MTA 2020–2024 Capital Program. A summary was prepared to document the meeting, including questions and comments raised by the participants and the responses provided by the Project Sponsors.

The Project Sponsors held a third meeting of the Environmental Justice Technical Advisory Group on February 9, 2022, from 6:00 p.m. to 8:00 p.m. Representatives of seven groups attended. The presentation included additional information to respond to previous questions and concerns raised in the second meeting, including how the Project would change traffic volumes in environmental justice areas, changes in traffic at local intersections, potential effects on air quality, effects of the Project on bus ridership levels, and concerns related to the potential for indirect displacement because of the Project. A summary was prepared to document the meeting, including questions and comments raised by the participants and the responses provided by the Project Sponsors.

17.10.3 Environmental Justice Stakeholder Working Group

The Project Sponsors established an Environmental Justice Stakeholder Working Group. This group comprises interested members of the public with a focus on environmental justice concerns. The Project Sponsors provided information about the Environmental Justice Stakeholder Working Group during the initial, broad public outreach any person or group could request to join. People could suggest themselves or others as participants in this group. Members requested participation in the Environmental Justice Stakeholder Working Group using a form on the Project website or by contacting the Project Sponsors using the telephone hotline.

When expressing interest in the Environmental Justice Stakeholder Working Group, interested members of the public provided information about the purpose of their participation and their expertise or interest in environmental justice considerations. Some people expressed an interest in the study itself or on topics that are more general than or not germane to environmental justice considerations. Twenty-seven people expressed interest in participating in the Environmental Justice Stakeholder Working Group, and the Project Sponsors invited these 27 people to each meeting. Some of these people represented particular interest groups or industries, including people representing bus advocacy groups or bus companies and people representing motorcycle riders.

The first meeting of the Environmental Justice Stakeholder Working Group was held on November 9, 2021, from 6:00 p.m. to 8:05 p.m. Nineteen of the 27 members participated in the meeting. Following introductions by the Project Sponsors and the participants, the Project Sponsors presented Project information. Participants were invited to interject with questions or comments during the presentation. The presentation included the Project overview (purpose and need, alternatives studied in detail in this EA, the environmental topics covered in this EA, and schedule), the regulatory framework on environmental justice and the process to assess potential effects on environmental justice populations, the definitions of minority and low-income populations and charts and maps showing the identification of environmental justice populations in the regional study area, preliminary results on the Project's potential effects on traffic and the taxi/FHV industry, an overview of comments received during the early public outreach for this EA, and potential topics of discussion for the group. A summary was prepared to document the meeting, including questions and comments raised by the participants and the responses provided by the Project Sponsors.

Following the meeting, the Project Sponsors prepared a summary of the topics raised by the meeting participants and topics for which additional information was requested. The Project Sponsors circulated the list of topics with the members of the Environmental Justice Stakeholder Working Group and requested their input on the list as well as any additional topics or concerns that they would like to discuss further. The Project Sponsors developed the materials for the second meeting of the Environmental Justice Stakeholder Working Group based on these requests.

A second meeting was held on November 30, 2021, from 6:00 p.m. to 8:15 p.m., and 19 of the 27 members participated. The presentation provided more information on topics raised at the first meeting based on the list of topics and member input described above. The topics included information on the race of residents of the regional study area, a more detailed description of the travel demand modeling process, predicted changes in vehicular and transit trips with the CBD Tolling Alternative (including patterns of travel by low-income individuals), preliminary results of the traffic analysis (including potential effects in the South Bronx and the Lower East Side), and changes in transit ridership by mode and at regional transit hubs. A summary was prepared to document the meeting, including questions and comments raised by the participants and the responses provided by the Project Sponsors.

17.10.4 Future Outreach to Environmental Justice Populations

During the public review of this EA, FHWA and the Project Sponsors will hold additional meetings with the Environmental Justice Technical Advisory Group and Environmental Justice Stakeholder Working Group. They will also hold additional environmental justice webinars.

In addition, the Project Sponsors will conduct outreach targeted to taxi and FHV drivers. Working with the TLC, the Project Sponsors will distribute information to TLC's industry-wide email distribution list of nearly 200,000 industry contacts. This list includes nearly 175,000 drivers and thousands of other industry contacts working for yellow taxi, green cab, livery, and black car owners; FHV companies; luxury limousine companies; commuter van companies; paratransit drivers; medallion brokers; leasing agents; and base owners.

FHWA and the Project Sponsors will consider comments raised about environmental justice considerations and will address the comments as part of FHWA's NEPA decision document.

Following completion of the NEPA process, so that ongoing concerns related to environmental justice can be addressed, the Project Sponsors will establish an Environmental Justice Community Group that will meet on a bi-annual basis, with the first meeting six months after implementation of the Project, to share updated data and analysis and hear about potential concerns.

18. Agency Coordination and Public Participation

18.1 INTRODUCTION

The FHWA and the Project Sponsors have and continue to provide meaningful opportunities for public participation throughout the environmental review process for the CBD Tolling Program (the Project). This chapter describes agency coordination and public participation activities for the Project. In recognition of the social distancing requirements resulting from the unprecedented COVID-19 pandemic, the Project Sponsors are carrying out a program that incorporates virtual public meetings and other tools that do not require in-person or on-site participation, in addition to traditional public involvement methods.

18.2 COORDINATION WITH COOPERATING AND PARTICIPATING AGENCIES

18.2.1 Agencies Invited to Participate in the Process

Agencies have been invited to participate in the NEPA process and advise on the scope of this EA, the potential effects of the Project and any measures to avoid, minimize or otherwise mitigate potential adverse effects, and issues and concerns identified by the interested public. FHWA and the Project Sponsors have also engaged with tribal nations in the study area.

In consideration of the resources that the Project could affect, the analyses conducted for this EA, and other important issues for this Project, FHWA and the Project Sponsors developed a list of agencies to invite to participate in the NEPA process. FHWA consulted with agencies on particular topics (i.e., Section 106 of the National Historic Preservation Act (NHPA), coastal zone consistency), sought agency expertise in the analysis of resources (i.e., transportation, environmental justice), and sought input from the agencies on the conclusions of this EA. **Table 18-1** lists the agencies that FHWA invited to participate along with their role in or expertise about the Project.

Table 18-1. Agencies Invited to Participate in the National Environmental Policy Act Process and Their Role or Expertise

ROLE	AGENCY	INVOLVEMENT/EXPERTISE
Federal Agencies	Federal Transit Administration	Funds transit capital projects that may also be funded with revenue generated through the Project
	U.S. National Park Service	Consultation on National Historic Landmarks
	U.S. Environmental Protection Agency	Section 309 Clean Air Act (CAA), NEPA, environmental justice

ROLE	AGENCY	INVOLVEMENT/EXPERTISE
State Transportation Agencies	Connecticut Department of Transportation	Agency with transportation expertise in a portion of the regional study area
	New Jersey Department of Transportation	Agency with transportation expertise in a portion of the regional study area
	New Jersey Transit	Agency with transportation expertise in a portion of the regional study area
	New Jersey Turnpike Authority	Agency with transportation expertise in a portion of the regional study area
New York State Resource Agencies	New York State Department of Environmental Conservation	Air quality conformity (Section 309 of the CAA), threatened and endangered species coordination
	New York State Department of State	Coastal zone consistency
	New York State Office of Parks, Recreation and Historic Preservation	▪ Section 106, NHPA ▪ Cultural resource review/coordination
Other New York State Agencies	New York State Division of Homeland Security	For informational purposes given their role in emergency management
Regional Transportation Agencies	Connecticut Metropolitan Council of Governments	Agency with transportation expertise in a portion of the regional study area
	Delaware Valley Regional Planning Commission	Agency with transportation expertise in a portion of the regional study area
	Dutchess County Transportation Council	Agency with transportation expertise in a portion of the regional study area
	New York Metropolitan Transportation Council	▪ Air quality conformity ▪ Inclusion in fiscally constrained Transportation Improvement Plan ▪ Agency with transportation expertise in a portion of the regional study area
	North Jersey Transportation Planning Authority	Agency with transportation expertise in a portion of the regional study area
	Orange County Transportation Council	Agency with transportation expertise in a portion of the regional study area
	Port Authority of New York and New Jersey	Has jurisdiction over several sites upon which it is preferable to locate tolling system infrastructure and tolling equipment
	South Central Regional Council of Governments	Agency with transportation expertise in a portion of the regional study area
	Western Connecticut Council of Governments	Agency with transportation expertise in a portion of the regional study area
New York City Resource Agencies	Mayor's Office of Environmental Coordination	Agency with expertise in environmental considerations in New York City
	New York City Department of City Planning	▪ Local Waterfront Revitalization Plan consistency ▪ Agency with expertise in social, economic, and environmental considerations in New York City
	New York City Department of Environmental Protection	▪ Agency with expertise in environmental considerations in New York City ▪ Coordination during construction
	New York City Department of Parks and Recreation	Agency with jurisdiction over parkland where tolling system infrastructure and tolling equipment might be located

18.2.2 Agency Coordination

FHWA and the Project Sponsors held the following agency meetings during the course of the preparation of this EA:

- August 29, 2019, with MTA, New York Metropolitan Transportation Council (NYMTC) staff, and Interagency Consultation Group regarding Transportation Conformity
- April 15, 2021, Project presentation to NYMTC's Program, Finance and Administration Committee (PFAC) as a prelude to the Project's inclusion in the Federal Fiscal Years 2022–2050 Regional Transportation Plan, adopted by NYMTC's principal members on September 9, 2021, and accompanying Transportation Conformity Determination adopted by PFAC on August 19, 2021
- September 9, 2021, for Federal agencies and New York State resource agencies listed in **Table 18-1** to introduce the EA process
- September 10, 2021, for regional transportation agencies and New York City resource agencies listed in **Table 18-1** to introduce the EA process
- April 19, 2022, follow-up meeting with the Interagency Coordination Group to discuss Project-level conformity with regard to conducting particulate matter hot-spot analyses on highway segments
- Planned for August 4, 2022, a second meeting with the Federal agencies and New York State resource agencies prior to the EA Notice of Availability
- Planned for August 8, 2022, a second meeting with the regional transportation agencies and New York City resource agencies prior to the EA Notice of Availability

18.3 PUBLIC INVOLVEMENT ACTIVITIES

FHWA and the Project Sponsors are committed to providing meaningful opportunities for public involvement during the environmental review process for the Project to inform the public, encourage open discussion of Project details and issues, and provide opportunities for commenting. Meaningful opportunities for public input, as described in this section, are occurring during the environmental review process and will continue through construction of the Project.

The public involvement strategy for the Project focuses on outreach to the 28-county regional study area where travel patterns could change because of the Project (described in **Chapter 3, "Environmental Analysis Framework"**).

18.3.1 Public Outreach Tools and Efforts

The Project Sponsors have used and continue to use the following outreach tools to communicate with the public throughout the NEPA environmental review process:

- **Project Website:** The Project Sponsors maintain a Project website hosted by MTA (mta.info/CBDTP), which is the primary platform to share Project information, download published documents, and advertise virtual public information webinars. The website provides links to recordings of public meetings. The website provides an opportunity to sign up for the Project's email list and to provide comments. The website address appears on Project information material, including meeting notices and media releases.
- **Project Fact Sheet:** The Project Sponsors have developed a Fact Sheet that includes: an overview of the Project, its location, its purpose, expected benefits, information about how tolls would be set, how people would pay the tolls, how the money would be used, public meeting opportunities, environmental justice opportunities for participation, and contact information. The Fact Sheet is available in nine languages: English, Spanish, Chinese, Haitian Creole, Bengali, Korean, Russian, Italian, and Portuguese. These Fact Sheets have been made available through the following means: via the Project website; emailed to the mailing list; and shared with Federal, State, and local agencies, officials, and community organizations to post and disseminate.
- **Social Media:** The Project Sponsors use social media to provide information about both public engagement activities and general Project information. Appropriate existing MTA channels on Facebook, Twitter, and Instagram are used to direct members of the public to the various engagement opportunities. The social-media posts also provide a link to the comment form on the Project website. The MTA social-media effort encompasses the entire 28-county regional study area. In addition, TBTA was able to target zip codes with higher percentages of low-income and minority populations in the study area to provide information related to environmental justice webinars described in **Section 18.3.2**, and the Stakeholder Working Group described in **Section 18.3.3**. Information about virtual public meetings and opportunities to comment on social-media channels can be translated by users into multiple languages using in-app language settings.
- **Database and Email List:** The Project Sponsors maintain a master contact list of approximately 2,300 entries. Interested stakeholders may sign up for the list on the Project website, or directly by email. The Project Sponsors use the contact list to send email updates and official notifications of Project milestones and public meetings.
- **Media:** The Project Sponsors use online and print advertising in English and non-English outlets throughout the 28-county regional study area, as well as radio announcements to publicize the Project and public participation opportunities. In recognition of Executive Order 12898 described in **Chapter 17, "Environmental Justice,"** the Project Sponsors developed this list to emphasize communication to environmental justice populations in the 28-county study area. Below is a list of media outlets used by MTA for the Project:

- Print
  - New Haven Register
  - Connecticut Post
  - Stamford Advocate
  - Middletown Times Herald Record
  - Poughkeepsie Journal
  - Bergen Record
  - Courier News
  - Daily Record
  - New Jersey Herald
  - Jersey Journal/NJ.com
  - Newark Star-Ledger/NJ.com
  - Times of Trenton
  - Warren Reporter
  - AM New York Metro
  - Daily News
  - Journal News/Lohud
  - Newsday
  - Staten Island Advance
  - El Sol
  - Haiti Liberte
  - Haitian Times
  - Haitian Voice
  - Korea Daily
  - La Voz Hispana CT
  - Luso Americano
  - Russkaya Reklama
  - Weekley Bengalee
  - 24Horas Newspaper
  - El Diario (New York)
  - El Especialito (Essex, Hudson, Union)
  - El Hispano (bilingual)
  - Korean Bergen News
  - World Journal/Chinese Daily News
  - Americano Newspaper
- Digital
  - Twitter (sponsored ads)
  - World Journal (sponsored ads)

18.3.2 Early Outreach Webinars

The Project Sponsors conducted a series of early outreach webinars to obtain public input for consideration in the development of this EA. (See **Section 18.5.2** for information regarding public webinars during the EA comment period.) **Table 18-2** provides details about the 19 meetings (10 were advertised as general webinars and 9 for environmental justice community members throughout the regional study area). The Project Sponsors used all the public outreach tools described in **Section 18.3.1** to publicize the early outreach webinars. In addition, MTA posted digital ads and posters in nine languages in all subway stations and commuter rail stations, and posters in nine languages on all its bus routes. This effort along with the far reaching print and digital media ads, addressed both the environmental justice populations identified in **Chapter 17, "Environmental Justice,"** as well as the Title VI of the Civil Rights Act of 1964 (Title VI) census tracts identified in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion."**

The webinars were assigned to different geographic areas; however, the webinars were open to anyone who wished to participate regardless of where they lived or worked. 1,066 people signed up to participate in these webinars. The agenda for each webinar included introductions by the Project Sponsors, a recorded presentation, and a public comment session.

Meeting attendees were asked to fill out an optional survey, which included demographic questions. The survey received 309 responses, approximately one-third of which were from individuals who identified themselves as minority.

Table 18-2. Early Outreach Virtual Webinars

MEETING	LOCATION	DATE	MEETING START TIME	MEETING END TIME	TOTAL UNIQUE ZOOM WEBINAR VIEWERS	TOTAL YOUTUBE LIVE VIEWERS	TOTAL ORAL COMMENTS	TOTAL Q&A
Public Webinar – 1	Outer Boroughs	9/23/2021	10:00 a.m.	12:40 p.m.	194	119	55	89
Public Webinar – 2	Manhattan CBD	9/23/2021	6:00 p.m.	9:40 p.m.	257	73	83	179
Public Webinar – 3	New Jersey	9/24/2021	10:00 a.m.	11:04 a.m.	54	45	16	19
Public Webinar – 4	Northern NY Suburbs	9/29/2021	10:00 a.m.	10:51 a.m.	26	34	9	21
Public Webinar – 5	Long Island	9/29/2021	6:00 p.m.	6:53 p.m.	31	26	11	16
Public Webinar – 6	Outer Boroughs	9/30/2021	6:00 p.m.	8:55 p.m.	98	28	65	96
Public Webinar – 7	Connecticut	10/1/2021	1:00 p.m.	1:41 p.m.	17	23	7	17
Public Webinar – 8	New Jersey	10/4/2021	6:00 p.m.	7:29 p.m.	42	31	26	46
Public Webinar – 9	Northern NY Suburbs	10/5/2021	6:00 p.m.	7:08 p.m.	31	18	17	25
Public Webinar – 10	Manhattan Outside CBD	10/6/2021	6:00 p.m.	8:52 p.m.	127	36	66	94
EJ Webinar – 1	New York	10/7/2021	6:00 p.m.	6:54 p.m.	31	14	11	20
EJ Webinar – 2	New Jersey	10/12/2021	6:00 p.m.	6:37 p.m.	10	13	4	27
EJ Webinar – 3	Connecticut	10/13/2021	6:00 p.m.	8:07 p.m.	12	12	3	17
EJ Webinar – 4	New York	10/26/2021	6:00 p.m.	8:09 p.m.	23	25	4	18
EJ Webinar – 5	New Jersey	10/27/2021	6:00 p.m.	8:08 p.m.	9	10	4	18
EJ Webinar – 6	Connecticut	10/28/2021	6:00 p.m.	8:11 p.m.	18	9	10	55
EJ Webinar – 7	New York	12/7/2021	6:00 p.m.	8:02 p.m.	32	15	6	20
EJ Webinar – 8	New Jersey	12/8/2021	6:00 p.m.	8:01 p.m.	7	10	1	13
EJ Webinar – 9	Connecticut	12/9/2021	6:00 p.m.	8:00 p.m.	3	8	0	9
TOTALS					**1,022**	**549**	**398**	**799**

Meeting attendees could sign up to speak for two minutes either in advance of or during the meeting. 398 people spoke at these webinars. Attendees also had the opportunity to communicate via the Question & Answer function in real time with Project Sponsors. The Project Sponsors did not respond to Project comments via the Question & Answer function but used this to address factual, technical, and logistical questions.

Meeting attendees were able to participate via computer or telephone. Meeting information and the opportunity to sign up was accessed through the Project website and via the Project telephone hotline. Most webinars were two hours long and took place at different times of day over multiple days. Some webinars continued beyond the two-hour duration as necessary to accommodate all speakers.

American Sign Language and closed captioning were available at each webinar. Additional language interpretation services were made available upon advance request. Individuals who are hearing impaired could dial 711 to be connected free of charge with a communications assistant. The webinars were streamed live on YouTube, and recordings were subsequently posted on YouTube for on-demand viewing. As of February 2022, there were over 14,000 views of these recordings, combined.

18.3.3 Environmental Justice Advisory and Working Groups

FHWA and the Project Sponsors have and continue to follow Executive Order 12898 regarding environmental justice, as described in **Chapter 17, "Environmental Justice."** In addition to the nine webinars specific to environmental justice populations, two environmental justice groups have been established to allow for more in-depth discussion and engagement by FHWA and Project Sponsors with environmental justice populations: an Environmental Justice Technical Advisory Group and Environmental Justice Stakeholder Working Group. See **Section 17.10** for more details on environmental justice public engagement activities.

18.3.4 Coordination with Stakeholder Groups

The Project Sponsors have and will continue to respond to requests for meetings with stakeholder groups during the preparation and public review of this EA for the Project. The following list includes the meetings held to date:

- October 13, 2021, Environmental Justice Technical Advisory Group
- November 3, 2021, Environmental Justice Technical Advisory Group
- November 9, 2021, Environmental Justice Stakeholder Working Group
- November 29, 2021, South Bronx Unite
- November 30, 2021, Environmental Justice Stakeholder Working Group
- December 14, 2021, Federal Law Enforcement Agencies (Drug Enforcement Administration, Department of Homeland Security/Immigration and Customs Enforcement, Department of Justice/ Bureau of Alcohol, Tobacco, Firearms and Explosives, and Federal Bureau of Investigation)

- January 12, 2022, Connecticut, New Jersey, and New York Trucking Associations
- January 25, 2022, Environmental Defense Fund
- February 9, 2022, Environmental Justice Technical Advisory Group
- March 9, 2022, Taxi and Limousine Commission
- Planned for August 19, 2022, Environmental Justice Stakeholder Working Group
- Planned for August 22, 2022, Environmental Justice Technical Advisory Group Meeting

18.3.5 Outreach During Construction

The Project Sponsors will develop a specific construction communications plan and implement it to inform affected road users, area residences and businesses, appropriate agencies, and the public about anticipated construction activities, including their schedule and duration, and any potential roadway or lane closures, sidewalk closures or other impacts to pedestrians, commuter alternatives, and any potential temporary impacts on traffic during construction.

18.4 OVERVIEW OF COMMENTS RECEIVED DURING EARLY OUTREACH ACTIVITIES

During the early outreach activities from August 26, 2021, through publication of this EA described in **Section 18.3,** the Project Sponsors received 7,338 comments through the following means:

- 5,936 via online form submitted through the Project website
- 179 emails
- 534 during the public webinars, both oral and submitted via the Question & Answer function
- 610 via U.S. Postal Service
- 79 via voicemail messages on the Project's telephone hotline

Each of these comments has been collected, archived, and categorized by method of submission, identification of submitter, and content of submission. These comments have been considered during the development of this EA.

The following is a summary of comments received via all means listed above, organized by the major themes where these topics are discussed and analyzed in the EA. Comments received during early outreach are based on limited publicly available information as analyses had not yet been completed and published. The sections below follow the order of this EA's Table of Contents.

18.4.1 Purpose and Need

Commenters stated that the Project is a method to improve the regional transportation network, citing that it is an integral step to making urban transportation more efficient, sustainable, and equitable. Others stated that roads and highways in the region are clogged with cars and increasing the financial cost of driving into the Manhattan CBD is a method to reduce traffic congestion both in the Manhattan CBD and across the region. Others stated that excess traffic in the Manhattan CBD and the region contributes to negative economic, public health, and environmental impacts that would be reduced as part of the Project.

Commenters stated that residents of New York City, most of whom depend on public transportation, would benefit directly from the revenue the Project would generate and infuse into the subway, bus, and rail systems. Others stated that there is need for transit investment to enhance accessibility for those with disabilities, and to address resiliency, considering extreme weather and climate change. Others stated that transit investments would benefit the entire region.

Other commenters questioned the purpose of the Project and suggested that congestion in the Manhattan CBD is caused by a lack of enforcement, resulting in illegally parked cars, as well as inappropriate use of government-issued parking placards.

Commenters stated that the Project would result in increased costs passed on to consumers and would discriminate against areas with poor transit access and against persons with disabilities and the elderly.

Other commenters stated that this is not the right time to impose a toll while the region is still recovering from the COVID-19 pandemic.

Refer to **Chapter 1, "Introduction,"** for more information on the Project's Purpose and Need.

18.4.2 Transportation – Highways and Local Intersections

Commenters stated that the Project would reduce traffic within the Manhattan CBD as well as on streets and highways that connect to the CBD.

Other commenters stated that the Project would not alleviate traffic congestion within the Manhattan CBD or along highways that intersect and provide access to Lower Manhattan. Commenters stated that tolling would cause an increase in traffic to areas outside of the Manhattan CBD, and that tunnels and highways in other areas of the city (including low-income and minority populations) would bear the brunt of increased congestion due to shifting driving patterns.

Commenters stated that roadways that have been narrowed to accommodate bicycle infrastructure or the increase in FHV licenses have caused traffic congestion.

Commenters stated support for increased use of motorcycles as a means to reduce traffic congestion in the Manhattan CBD.

Refer to **Subchapter 4B, "Transportation: Highways and Local Intersections"** for more information on the traffic analysis and potential notable changes in traffic as a result of the CBD Tolling Alternative. **Chapter 17, "Environmental Justice,"** presents additional assessment.

18.4.3 Transportation – Parking

Commenters stated that implementation of tolling would result in an increase in traffic in neighborhoods just outside the Manhattan CBD as drivers search for parking there.

Subchapter 4D, "Transportation: Parking," and Subchapter 5B, "Social Conditions: Neighborhood Character," examine the potential effects on parking supply and demand in neighborhoods near the Manhattan CBD boundary.

18.4.4 Transportation – Pedestrians and Bicycles

Commenters stated that the Project would be a method to increase bicycle and pedestrian safety in the Manhattan CBD, potentially encouraging drivers to reconsider nonessential trips or switch to transit. Others stated that congestion often leads to angry and frustrated drivers who block intersections and bike lanes. Commenters stated that by discouraging driving through tolling, congestion would decrease. It was noted that reducing private-vehicle traffic would free up space to create additional bike lanes and pedestrian friendly spaces.

Other commenters stated that bike lanes take up roadway space and cause congestion. Citi Bike stands located in the street were also noted to cause congestion. Cyclists not following traffic rules and delivery people on fast-moving motorized bicycles and riding on the sidewalks were also concerns.

Subchapter 4E, "Transportation: Pedestrians and Bicycles," examines the potential safety effects of the CBD Tolling Alternative. It also describes bicycle infrastructure in the Manhattan CBD.

18.4.5 Social Conditions – Population Characteristics and Community Cohesion

Commenters focused on the following specific populations or organizations who live or operate in the Manhattan CBD boundary or must cross the boundary and would therefore be affected:

- Persons with disabilities
- Nonprofit social service providers
- FHV drivers
- Older adults who live in the zone
- Low- and middle-income families who live in the zone

Commenters stated that that low- and middle-income residents would leave New York City.

Commenters stated that those with disabilities would be affected and should be exempted from the tolling. Others stated that funds generated by the Project should be spent on making transit more accessible for persons with disabilities. Commenters asked that persons with disabilities who have parking permits be exempt from the toll (this would include private vehicles).

Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion," describes the potential effects of the CBD Tolling Alternative on disabled populations. The subchapter also examines the potential for the CBD Tolling Alternative to inhibit travel for certain social groups or between certain neighborhoods.

18.4.6 Social Conditions – Neighborhood Character

Commenters stated that tolls would improve public streetscapes for residents and visitors of the Manhattan CBD by freeing up space for playgrounds, plazas, and outdoor restaurants. Others stated that safer streets and sidewalks would improve throughout the Manhattan CBD for everyone. Commenters stated that decreasing the number of vehicles would benefit everyone who lives, works, and visits the Manhattan CBD.

Commenters discussed the Manhattan CBD boundary proximity to Lincoln Square flagging the many cultural institutions found there as traffic is already a significant problem for drivers, delivery vehicles, and pedestrians around Lincoln Square.

Commenters questioned the term "Central Business District," stating that the area is residential, not just commercial in nature. Others stated the Project would punish residents and small businesses in the Manhattan CBD.

Commenters stated concerns about traveling regionally to visit family and friends outside of the Manhattan CBD, noting that tolling may make it cost prohibitive. Commenters who are patients from regional locations and outer boroughs expressed concerns about having to pay tolls for attending medical appointments at hospitals within the Manhattan CBD.

Refer to **Subchapter 5B, "Social Conditions: Neighborhood Character,"** for more information on the EA analysis of neighborhood character.

18.4.7 Social Conditions – Public Policy

Commenters noted that the Project is consistent with various plans, policies, or laws:

- Climate Leadership and Community Protection Act
- Americans with Disabilities Act
- New York City's Open Streets program

Other commenters stated that the Project would be inconsistent with the Americans with Disabilities Act as it could result in an economic burden for persons with disabilities who rely on FHVs.

Refer to **Subchapter 5C, "Social Conditions: Public Policy,"** for more information regarding the EA analysis of public policy.

18.4.8 Economic Conditions

Commenters stated that the Project would “price out” residents and visitors of the Manhattan CBD. Others stated that tolling would economically penalize residents with small children, elderly with limited mobility, persons with disabilities, and those workers who work during off hours who are less well served by the transit system. Others stated that the Project would decrease property values in the Manhattan CBD and potentially cause long-term consequences such as abandonment of residential areas below 60th Street.

Commenters stated that New Yorkers are overtaxed already and that low-income residents, many on fixed incomes, would be unable to afford costs associated with the tolls. Commenters also stated that the Project is discriminatory based on geographic location, and the Project would increase the cost of living for residents living below 60th Street. Others stated that tolling would cause an increase in fees for other services in the Manhattan CBD such as deliveries. They stated that businesses would not absorb the added cost but would immediately hand it off to the consumer.

Other commenters stated that businesses may choose to move to other locations outside of the Manhattan CBD if tolls are enacted, or that businesses may be forced to close, causing empty storefronts. Commenters stated that the Project would hurt tourist areas like Chinatown and Broadway. They stated that people drive in from outside the city to visit those areas and may be fearful to take public transportation home late at night. Commenters stated that tolls may make it so that fewer people would be able to attend concerts, sporting events, and other cultural events in Manhattan. Taxi/FHV drivers who commented stated that there could be economic hardship specific to their industry if the Project were implemented and they were not exempted.

Commenters stated that tolls would make it easier for goods and products to be delivered throughout the Manhattan CBD because fewer vehicles would be on the roadways. Others stated that with less traffic, more streets can be converted to bus-only lanes, therefore speeding up travel times for bus riders. Other commenters stated that the tolls could stimulate the economy and create jobs. They stated that the Project is expected to raise more than $1 billion annually, which will be used to make needed improvements to the transit system.

Chapter 6, “Economic Conditions,” provides an economic profile and regional context of the Manhattan CBD boundary and assesses the potential effects of the Project on a regional and more localized neighborhood or specific industry basis.

18.4.9 Parks and Recreational Resources

Commenters stated that the Project would have positive benefits for parks or recreational space, green space, or open space. Others noted that reducing the volume of public space dedicated to cars would free up space for additional green space or opportunities for green infrastructure. Examples cited included converting street space to playgrounds, pocket parks, and pedestrian plazas. Commenters also noted that existing parks would benefit from reduced traffic noise.

Commenters stated that the Project would likely have negligible impacts in or immediately around Central Park.

Chapter 7, "Parks and Recreational Resources," examines the potential effects of the CBD Tolling Alternative on Central Park. The CBD Tolling Alternative does not include closing any streets to create green spaces.

18.4.10 Visual Resources

Commenters stated concern about the physical design of tolling infrastructure as well as any associated signage or visual clutter. Others stated concern that the system would feature strobe lights. They stated that those lights would affect adjacent neighbors.

Commenters stated that truck and car traffic cause visual blight and that reducing their numbers would improve the visual environment.

Chapter 9, "Visual Resources," describes the visual environment within the Manhattan CBD, including key features of the area, and it describes the potential visual effects of tolling system infrastructure and tolling equipment within the Manhattan CBD.

18.4.11 Air Quality

Commenters stated support for the Project for air quality improvements. Commenters mentioned vehicular exhaust and soot as being detrimental to air quality. Others stated concerns about asthma levels and overall health impacts from poor air quality. Others commented on the contribution of vehicles to overall greenhouse gas emissions, and the negative impacts of climate change on the study area. Others stated their concern about potential impacts of emissions on environmental justice populations due to diminished air quality conditions that could result from increases in traffic levels and congestion on local streets and highways.

During early public outreach for the Project, participants in the environmental justice outreach sessions raised concerns that the CBD Tolling Alternative would divert traffic to circumferential highways around the Manhattan CBD and that these additional vehicles would adversely affect the nearby neighborhoods by degrading air quality. Other participants were concerned that changes in traffic at local intersections, including on the Lower East Side in the Manhattan CBD and in the South Bronx outside the Manhattan CBD, would adversely affect air quality nearby.

Chapter 10, "Air Quality," includes an assessment of regional and local (intersection-level) changes in air quality as a result of the Project. The chapter concludes that the Project would not result in any adverse localized effects on air quality and would reduce regional emissions. The Project Sponsors screened all Scenarios (including G) and analyzed the areas with the highest truck traffic, highest increases in trucks, and a site in the south Bronx due to community concerns.

18.4.12 Energy

Commenters stated that the Project would be an important way to reduce fuel consumption and the use of combustion engines.

For more information regarding the EA analysis of energy, refer to **Chapter 11, "Energy."**

18.4.13 Noise

Commenters noted noise benefits associated with the Project stating that traffic in the Manhattan CBD generates noise. Commenters cited car horns and general traffic noise as a nuisance. They also noted that emergency vehicles stuck in traffic are a source of noise and that the Project would help reduce those sounds. Other commenters illustrated the impacts of current noise by explaining that they have trouble putting children to sleep or getting work done. Others noted that environmental justice populations bear the brunt of noise pollution. Commenters noted health benefits from a less noisy environment. Others commented whether the Project could reduce the use of loud dirt bikes and motorcycles.

Commenters noted a potential for increased noise in areas just outside the Manhattan CBD boundary from people looking for parking. Others stated that there would be a decrease in noise pollution and that areas like Jersey City and Hoboken—where congestion is also bad—would also benefit from the Project. Commenters stated that the Project may redistribute traffic throughout the day, resulting in an increase in the amount of traffic noise at night.

Chapter 12, "Noise," examines potential increases in traffic noise at locations that may realize an increase in traffic because of the CBD Tolling Alternative. The chapter concludes that the CBD Tolling Alternative would not result in perceptible increases in noise.

18.4.14 Environmental Justice

Commenters stated that the Project would benefit low-income and minority populations who depend on the transit system. Commenters stated that low-income populations represent the largest share of public transit riders in New York City and would benefit from public transit improvements. Commenters stated that the Project would not only decrease the number of traffic-causing vehicles on the road but would generate a ripple effect of positive health and environmental benefits due to the reduced emissions associated with fewer road-miles being driven.

Commenters noted the potential for displacement of environmental justice community members should improvements to the public transit system contribute to neighborhood gentrification. Others stated that the Project would increase traffic in some environmental justice populations outside the Manhattan CBD, which would diminish air quality. Commenters stated that CBD tolling could reinforce segregation or other racial disparities for environmental justice populations outside the zone.

As described in **Section 18.4** and **Chapter 17, "Environmental Justice,"** FHWA and the Project Sponsors have provided meaningful opportunities to engage with environmental justice populations to address their concerns. **Chapter 17** examines the potential effects of the Project on identified environmental justice populations in the 28-county regional study area and describes how concerns raised during public outreach related to environmental justice have been addressed.

As an independent action, MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing service to traditionally underserved communities and particularly for areas with concerns related to air quality and climate change, and has developed a new Environmental Justice Scoring framework to actively incorporate these priorities in the deployment phasing process of the bus fleet transition. Based on feedback and concerns raised during public outreach for the Project related to environmental justice, MTA will prioritize transitioning the fleet at two bus depots in Upper Manhattan and the Bronx—the Kingsbridge Depot and Gun Hill Depot—when MTA receives its next major procurement of battery electric buses later in 2022. Both of these depots are in and provide service to environmental justice neighborhoods.

18.4.15 Comments Outside the Scope of this Environmental Assessment

Certain comments received were outside the scope of this Project, which is specific to the Value Pricing Pilot Program (VPPP) application and the CBD Tolling Alternative as established by the MTA Reform and Traffic Mobility Act.

Commenters offered specific suggestions about aspects of the toll rate that will not be determined in this EA. Project toll rates will ultimately be set by a vote of the TBTA Board after the environmental review process and after the Traffic Mobility Review Board makes its recommendations.

18.5 AVAILABILITY OF THIS EA, EA PUBLIC HEARINGS, AND WAYS TO PROVIDE COMMENTS ON THIS EA

This EA is available for public viewing at the Project’s website.

For further information about viewing this EA, virtual public hearings, or providing comments on the Project during the public comment period, please contact:

CBD Tolling Program
c/o Triborough Bridge and Tunnel Authority
2 Broadway, 23rd Floor
New York, NY 10004
Telephone: 646-252-7440
Fax: 212-504-3148
Email: CBDTP@mtabt.org

Individuals may offer comments on this EA in the following ways:

- Via the Project website: mta.info/CBDTP
- Via U.S. Postal Service to the address listed above
- Via email to the email address listed above
- Via fax
- Via telephone

The comment period begins on Wednesday, August 10, 2022, and ends on Friday, September 9, 2022.

18.5.1 Repositories for Reviewing the Environmental Assessment

Table 18-3 lists the locations where this EA is available for public viewing.

Table 18-3. Repositories for Reviewing the Environmental Assessment

REPOSITORY	CITY OR COUNTY/STATE	FACILITY	ADDRESS
FHWA	New York (Albany)	FHWA New York Division Office	O'Brien Federal Building, Room 719 Albany, NY 12207 (518) 431-4127
	New Jersey (Trenton)	FHWA New Jersey Division Office	840 Bear Tavern Road, Suite 202 West Trenton, NJ 08628 (609) 637-4200
	Connecticut (Hartford)	FHWA Connecticut Division Office	450 Main Street, Suite 612 Hartford, CT 06103 (860) 659-6703
TBTA	New York (New York City)		2 Broadway New York, NY 10004 (212) 878-7000
NYSDOT	New York (New York City)	Region 11	Hunter's Point Plaza 47-40 21st St. Long Island City, NY 11101 (718) 482-4526
NYCDOT	New York (New York City)		55 Water Street New York, NY 10041 (212) 639-9675

REPOSITORY	CITY OR COUNTY/STATE	FACILITY	ADDRESS
LIBRARIES (New York City Counties)	Bronx County	The Bronx Library Center*	310 East Kingsbridge Road Bronx, NY 10458 (718) 579-4244
	Kings County (Brooklyn)	Brooklyn Central Library	10 Grand Army Plaza Brooklyn, NY 11238 (718) 230-2100
	New York County (Manhattan)	New York Public Library - Schwarzman Building	476 5th Avenue New York, NY 10018 (917) 275-6975
	Queens County	Queens Public Library - Central Library	89-11 Merrick Boulevard Jamaica, NY 11432 (718) 990-0700
	Richmond County (Staten Island)	New Dorp Library	309 New Dorp Lane Staten Island, NY 10306 (718) 351-2977
LIBRARIES (Long Island Counties)	Nassau County, NY	Hempstead Public Library	115 James A. Garner Way Hempstead, NY 11550 (516) 481-6990
	Suffolk County, NY	Middle Country Public Library	575 Middle Country Road Selden, NY 11784 (631) 585-9393
LIBRARIES (New York Counties North of New York City)	Dutchess County, NY	Poughkeepsie Public Library	93 Market Street Poughkeepsie NY 12601 (845) 485-3445
	Orange County, NY	Middletown Thrall Library	11-19 Depot Street Middletown, New York 10940 (845) 341-5454
	Putnam County, NY	Mahopac Public Library	668 Route Six Mahopac, NY 10541 (845) 628-2009
	Rockland County, NY	Finkelstein Memorial Library	24 Chestnut Street Spring Valley, NY 10977 (845) 352-5700
	Westchester County, NY	White Plains Public Library	100 Martine Avenue White Plains, NY 10601 (914) 422-1400
LIBRARIES (New Jersey Counties)	Bergen County, NJ	North Bergen Free Public Library	8411 Bergenline Avenue North Bergen, NJ 07047 (201) 869-4715
	Essex County, NJ	Montclair Public Library	50 S. Fullerton Avenue Montclair, NJ 07042 (973) 744-0500
	Hudson County, NJ	Jersey City Free Library	472 Jersey Avenue Jersey City, NJ 07302 (201) 547-4526
	Hunterdon County, NJ	Hunterdon County Library	314 State Route 12 #3 Flemington, NJ 08822 (908) 788-1444

REPOSITORY	CITY OR COUNTY/STATE	FACILITY	ADDRESS
LIBRARIES (New Jersey Counties) (continued)	Mercer County, NJ	Hickory Corner Branch	2751 Brunswick Pike Lawrence Township, NJ 08648 (609) 448-1330
	Middlesex County, NJ	Middlesex County Library	1300 Mountain Avenue Middlesex, NJ 08846 (732) 356-6602
	Monmouth County, NJ	Monmouth County Library	125 Symmes Road Manalapan, NJ 07726 (732) 431-7220
	Morris County, NJ	Morris County Library Main	30 Hanover Avenue Whippany, NJ 07981 (973) 285-6930
	Ocean County, NJ	Ocean County Library	101 Washington Street Toms River, NJ 08753 (732) 349-6200
	Passaic County, NJ	Passaic Public Library	195 Gregory Avenue Passaic, NJ 07055 (973) 779-0474
	Somerset County, NJ	Somerset County Library System	1 Vogt Drive Bridgewater, NJ 08807 (908) 458-8415
	Sussex County, NJ	Sussex County Main Library	125 Morris Turnpike Newton, NJ 07860 (973) 948-3660
	Union County, NJ	Union Public Library	1980 Morris Avenue Union, NJ 07083 (908) 851-5450
	Warren County, NJ	Richard D. Gardner Branch	2 Shotwell Drive Belvidere, NJ 07823 (908) 818-1280
LIBRARIES (Connecticut Counties)	Fairfield County, CT	Fairfield Public Library	1080 Old Post Road Fairfield, CT 06824 (203) 256-3155
	New Haven County, CT	New Haven Free Public Library	133 Elm Street New Haven, CT 06510 (203) 946-8130

REPOSITORY	CITY OR COUNTY/STATE	FACILITY	ADDRESS
GOVERNMENT OFFICES (New York City Counties)	Bronx County	Bronx County Clerk's Office	851 Grand Concourse, Room 118 Bronx, NY 10451 (718) 618-3300
	Kings County (Brooklyn)	Brooklyn Borough Hall	209 Joralemon St. Brooklyn, NY 11201 (718) 802-3808
	New York County (Manhattan)	New York County Clerk's Office	60 Centre Street, Room 161 New York, NY 10007 (646) 386-3600
	Queens County	Queens County Clerk's Office	88-11 Sutphin Boulevard, #106 Jamaica, NY 11435 (718) 298-0600
	Richmond County (Staten Island)	Staten Island Community Board 1 Office	1 Edgewater Plaza, Room 217 Staten Island, NY 10305 (718) 981-6900
GOVERNMENT OFFICES (Long Island Counties)	Nassau County, NY	Nassau County Clerk's Office	240 Old Country Road Mineola, NY 11501 (516) 571-2660
	Suffolk County, NY	Suffolk County Department of Public Works, Transportation Office	335 Yaphank Avenue Riverhead, NY 11901 (631) 852-4010
GOVERNMENT OFFICES (New York Counties North of New York City)	Dutchess County, NY	Dutchess County Executive Record Room	22 Market Street Poughkeepsie, NY 12601 (845) 486-2000
	Orange County, NY	Orange County Clerk's Office	255 Main Street Goshen, NY 10924 (845) 291-2690
	Putnam County, NY	Putnam County Clerk's Office	40 Gleneida Avenue, Room 100 Carmel, NY 10512 (845) 808-1142
	Rockland County, NY	Rockland County Clerk's Office	1 South Main Street, Suite 100 New City, NY 10956 (845) 638-5070
	Westchester County, NY	Westchester County Clerk's Office	110 Dr. Martin Luther King Jr. Blvd, Room 330 White Plains, NY 10601 (914) 995-4218

REPOSITORY	CITY OR COUNTY/STATE	FACILITY	ADDRESS
GOVERNMENT OFFICES (New Jersey Counties)	Bergen County, NJ	Bergen County Clerk's Office	1 Bergen County Plaza Hackensack, NJ 07601 (201) 336-7000
	Essex County, NJ	Essex County Clerk's Office	495 Martin Luther King Jr. Blvd Newark, NJ 07102 (973) 621-4920
	Hudson County, NJ	Hudson County Register Office	257 Cornelison Avenue, 4th Floor Jersey City, NJ 07302 (201) 395-4760
	Hunterdon County, NJ	Hunterdon County Clerk's Office	71 Main Street Flemington, NJ 08822 (908) 788-1214
	Mercer County, NJ	Mercer County Planning Department	640 S. Broad Street Trenton, NJ 08650 (609) 989-6545
	Middlesex County, NJ	Middlesex County Clerk's Office	75 Bayard Street, 4th Floor New Brunswick, NJ 08901 (732) 745-3365
	Monmouth County, NJ	Monmouth County Clerk of the Board's Office	1 East Main Street Freehold, NJ 07728 (732) 431-7387
	Morris County, NJ	Morris County Clerk's Office	10 Court Street Morristown, NJ 07963 (973) 285-6120
	Ocean County, NJ	Ocean County Planning Board's Office	129 Hooper Avenue Toms River, NJ 08754 (732) 929-2054
	Passaic County, NJ	Passaic County Clerk's Office	401 Grant Street, Room 130 Paterson, NJ 07505 (973) 881-4127
	Somerset County, NJ	Somerset County Office of Planning, Policy and Econ. Dev. Office	20 Grove Street Somerville, NJ 08876 (908) 231-7021
	Sussex County, NJ	Sussex County Clerk's Office	1 Spring Street Newton, NJ 07860 (973) 579-0250
	Union County, NJ	Union County Bureau of Transportation Planning Office	10 Elizabethtown Plaza Elizabeth, NJ 07207 (908) 558-2273
	Warren County, NJ	Warren County Clerk's Office	413 2nd Street Belvidere, NJ 07823 (908) 475-6211
GOVERNMENT OFFICES (Connecticut Counties)	Fairfield County, CT	Western Connecticut Council of Governments	1 Riverside Road Sandy Hook, CT 06482 (475) 323-2060
	New Haven County, CT	Connecticut Metro Council of Governments	1000 Lafayette Blvd Bridgeport, CT 06604 (203) 366-5405

* Digital access only

18.5.2 Virtual Public Hearings During Environmental Assessment Comment Period

FHWA and the Project Sponsors are hosting virtual public hearings to solicit public comments on this EA. Similar to the webinars described in **Section 18.3.2**, these virtual hearings are being conducted using the Zoom Webinar platform and will be posted to YouTube. They will include a presentation and the opportunity to comment orally. The presentation will include information on how to submit comments via other means, such as via the Project website, email, fax, telephone, and U.S. Postal Service during the public comment period.

The Project Sponsors are using all the public outreach tools described in **Section 18.3.1** to publicize the public hearings during the EA comment period. In addition, MTA is posting digital ads and posters in nine languages in all subway stations and commuter rail stations, and posters in nine languages on all its bus routes. This effort along with the far-reaching print and digital media ads, address both the environmental justice populations identified in **Chapter 17, "Environmental Justice,"** as well as the Title VI census tracts identified in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion**."

Hearing attendees can participate via computer or telephone. Hearing information is available through the Project website and via the Project telephone hotline. Publicly accessible computers can be reserved at the library repositories listed in **Table 18-3** to participate in these hearing.

Table 18-4 provides information on these hearings scheduled in August 2022.

Table 18-4. Public Hearing Dates and Times

PUBLIC HEARING SESSION NO.	DATE	TIME
1	Thursday, August 25, 2022	5:00 p.m. to 8:00 p.m. (EDT)
2	Saturday, August 27, 2022	10:00 a.m. to 1:00 p.m. (EDT)
3	Sunday, August 28, 2022	1:00 p.m. to 4:00 p.m. (EDT)
4	Monday, August 29, 2022	1:00 p.m. to 4:00 p.m. (EDT)
5	Tuesday, August 30, 2022	5:00 p.m. to 8:00 p.m. (EDT)
6	Wednesday, August 31, 2022	10:00 a.m. to 1:00 p.m. (EDT)

19. Section 4(f) Evaluation

19.1 INTRODUCTION

Section 4(f) of the Department of Transportation Act of 1966 (now 49 United States Code [USC] Section 303 and 23 USC Section 138; U.S. Department of Transportation [USDOT] Act) applies to the use of publicly or privately owned historic sites determined eligible for or listed on the National Register of Historic Places (NRHP); and publicly owned parks[1], recreation areas, and wildlife and waterfowl refuges (collectively, Section 4(f) properties). The requirements of Section 4(f) apply to FHWA and other agencies of USDOT.

19.2 REGULATORY FRAMEWORK

Section 4(f) of the USDOT Act stipulates that FHWA and other USDOT operating administrations may not approve the use of Section 4(f) properties unless they have determined that the following conditions apply:

- There is no feasible and prudent alternative that would avoid the use of the Section 4(f) property; and
- The Project includes all possible planning to minimize harm to that property resulting from such use (23 Code of Federal Regulations [CFR] Section 774.3(a)); or
- The use of the Section 4(f) property, including any measures(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures) will have a *de minimis* impact, as defined in 23 CFR Section 774.17, on the property.

Pursuant to 23 CFR Section 774.17, a project uses a Section 4(f) property when:

- Land from the Section 4(f) property is permanently incorporated into a transportation facility;
- There is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, as determined by the criteria in 23 CFR Section 774.13(d) (e.g., when all or part of the Section 4(f) property is required for a project's construction-related activities); or
- There is a "constructive" use of a Section 4(f) property, as determined by the criteria defined in 23 CFR Section 774.15(a).

The permanent incorporation of land in a transportation facility occurs when land from a Section 4(f) property is purchased outright as transportation right-of-way, or when a project acquires a property interest that allows permanent access onto a property, such as a permanent easement for maintenance.

Temporary occupancy results when a Section 4(f) property is required for a project's construction activities and the land is not permanently incorporated into a transportation facility upon the completion of

[1] There are plazas adjacent to commercial and residential buildings in the local study area that are privately owned but are designated as publicly accessible open space. These plazas are considered Section 4(f) properties for this analysis.

construction, but the activities are considered adverse in terms of the protected features of the property. As outlined in 23 CFR Section 774.13(d), when the following five conditions are met, a temporary occupancy is not considered a "use" for the purposes of Section 4(f):

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal; When there is a constructive use of a Section 4(f) property as determined by the criteria in 23 CFR § 774.15;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

Constructive use occurs when there is no permanent incorporation or temporary occupancy of land, but the proximity impacts (e.g., visual and noise) of a project are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired.

A *de minimis* impact involves the use of Section 4(f) property that is generally minor in nature. A *de minimis* impact is one that—after considering avoidance, minimization, mitigation, and enhancement measures that are committed to by the applicant—results in no adverse effect to a historic site and no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). As set forth in the Section 4(f) regulations (23 CFR Part 774), once FHWA determines that a transportation use of Section 4(f) property results in a *de minimis* impact, an analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete.

As defined in the Section 4(f) regulations, FHWA may make a finding of *de minimis* impact on a historic site when the following have occurred:

1. FHWA has considered the views of any consulting parties participating in the Section 106 consultation process, as established by the National Historic Preservation Act and its implementing regulation (36 CFR Part 800).
2. The Section 106 process results in a determination of no adverse effect with the written concurrence of the State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) if that agency is participating in the Section 106 consultation.[2]

[2] NPS has oversight of National Historic Landmarks, and therefore, it is an official with jurisdiction over Central Park. The Advisory Council on Historic Preservation did not participate in the Section 106 consultation process for the CBD Tolling Program.

3. The SHPO, and the ACHP if participating in the Section 106 consultation, are informed of FHWA's intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination of no adverse effect.

FHWA may determine that the impacts of a transportation project on a publicly owned park, recreation area, and wildlife or waterfowl refuge that qualifies for Section 4(f) protection may be *de minimis* if:

1. The transportation use of the Section 4(f) property, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, or attributes that qualify the resource for protection under Section 4(f);
2. The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, or attributes of the Section 4(f) property; and
3. The official(s) with jurisdiction over the property are informed of FHWA's intent to make the *de minimis* impact finding and concur in writing that the project will not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f).

Section 4(f) regulations identify exceptions to the requirement of Section 4(f) approval. The exception to the requirement of Section 4(f) approval for the use of historic transportation facilities identified in 23 CFR Section 774.13(a)(3) is relevant to the potential effects of the CBD Tolling Alternative, and states:

> Maintenance, preservation, rehabilitation, operation, modernization, reconstruction, or replacement of historic transportation facilities, if the Administration concludes, as a result of the consultation under 36 CFR 800.5, that:
>
> (i) Such work will not adversely affect the historic qualities of the facility that caused it to be on or eligible for the National Register, or this work achieves compliance with Section 106 through a program alternative under 36 CFR 800.14; and
>
> (ii) The official(s) with jurisdiction over the Section 4(f) resource have not objected to the Administration conclusion that the proposed work does not adversely affect the historic qualities of the facility that caused it to be on or eligible for the National Register, or the Administration concludes this work achieves compliance with 54 U.S.C. 306108 (Section 106) through a program alternative under 36 CFR 800.14.

The following sections identify the CBD Tolling Alternative's potential to use Section 4(f) properties in accordance with Section 4(f) regulations.

19.3 DESCRIPTION OF THE PROPOSED ACTION

The purpose of the Project is to reduce traffic congestion in the Manhattan CBD in a manner that will generate revenue for future transportation improvements, pursuant to acceptance into the FHWA's Value Pricing Pilot Program.

The Project would address the following needs:

- Reduce vehicle congestion in the Manhattan CBD.
- Create a new local, recurring funding source for MTA capital projects.

FHWA in cooperation with TBTA—an affiliate of MTA—NYSDOT, and NYCDOT (collectively the Project Sponsors) have established the following objectives to further refine the Project purpose:

- Reduce daily vehicle-miles traveled within the Manhattan CBD.
- Reduce the number of vehicles entering the Manhattan CBD daily.
- Create a funding source for capital improvements and generate sufficient annual net revenues to fund $15 billion for capital projects for the MTA Capital Program.
- Establish a tolling program consistent with the purposes underlying the New York State legislation entitled the MTA Reform and Traffic Mobility Act.

19.4 PROJECT ALTERNATIVES

FHWA and the Project Sponsors are evaluating two alternatives for the Project:

- The No Action Alternative, in which a vehicular tolling program to reduce traffic congestion in the Manhattan CBD would not be implemented. With the No Action Alternative, existing tolls at bridges and tunnels connecting to Manhattan–which are managed and collected by TBTA and the Port Authority of New York and New Jersey (PANYNJ)–would remain in effect, and the other East River and Harlem River bridges connecting to Manhattan would remain untolled. With the No Action Alternative, MTA will implement its 2020–2024 Capital Program and subsequent capital programs, to the extent practical, using available sources to fund projects. However, without a new stream of revenue, MTA would have to delay or forgo important transit and commuter railroad projects and improvements in its capital plan.
- The CBD Tolling Alternative would implement a vehicular tolling program to reduce traffic congestion in the Manhattan CBD consistent with the Traffic Mobility Act. The CBD Tolling Alternative would place tolling system equipment (including signage) on existing infrastructure or new infrastructure with a similar appearance to existing streetlight poles, signal poles, sign poles, mast arms, or overhead structures on city streets and sidewalks. **Chapter 2, "Project Alternatives,"** provides more information on the proposed tolling infrastructure and tolling system equipment.

19.5 HISTORIC SITES

As set forth in the Section 4(f) regulations (23 CFR Section 774.11(e)), Section 4(f) applies to the use of historic sites (i.e., any prehistoric or historic district, site, building, structure, or object) that are listed on or eligible for listing on the NRHP, unless one of the exceptions defined in the regulations (23 CFR Section 774.13) applies. Section 4(f) historic sites are identified through the consultation process established under Section 106 of the National Historic Preservation Act and its implementing regulation (36 CFR Part 800). **Chapter 8, "Historic and Cultural Resources,"** documents the Section 106 consultation process for the Project. **Table 19-1** lists the Section 4(f) historic sites that have been identified in the Section 106 Area of Potential Effects (APE). These sites are mapped in **Figure 19-1 through Figure 19-7**. The historic sites qualify as Section 4(f) resources because they are either listed on the NRHP or have been determined eligible for listing on the NRHP.

There are 41 historic sites that are listed on or eligible for listing on the NRHP in the Area of Potential Effects (APE) for historic resources. The CBD Tolling Alternative would not result in the use of 40 of these Section 4(f) properties for the following reasons:

- At 30 sites, the Project would have no effect on the historic site pursuant to Section 106 of the National Historic Preservation Act. Therefore, in accordance with Section 4(f) regulations, there would be no use of these Section 4(f) properties, and no further review of these properties under Section 4(f) is required.
- Four sites are historic transportation facilities, and the exception to the requirement of Section 4(f) approval for use of these properties to install tolling infrastructure and tolling system equipment applies in accordance with 23 CFR Section 774.13(a)(3).
- At six sites, the Project Sponsors would install new tolling infrastructure and tolling system equipment within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors. Therefore, there would be no Section 4(f) use of these properties.

The Project Sponsors would replace four poles at three locations in Central Park, which is listed on the NRHP and is also a National Historic Landmark. FHWA intends on finding that the CBD Tolling Alternative would have a *de minimis* impact on Central Park in accordance with the criteria described in **Section 19.2.**

- Through the Section 106 process, FHWA and the Project Sponsors consulted with National Park Service (NPS), SHPO, New York City Department of Parks and Recreation (NYC Parks), and other consulting parties regarding the potential effects of the CBD Tolling Alternative, including the replacement of four poles in Central Park, on the historic attributes and features of Central Park. The new tolling infrastructure and tolling system equipment would be of a design similar to existing streetlights, signs, and other equipment within Central Park, and to the extent feasible, equipment would match the color of other infrastructure within the park.
- With the above measures incorporated into the Project, FHWA found that the CBD Tolling Alternative would not have an adverse effect on Central Park. SHPO concurred with FHWA's finding. (Refer to **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation."**)
- NPS, SHPO, and NYC Parks are the agencies with jurisdiction over Central Park with respect to its historic designation. FHWA informed NPS, SHPO, and NYC Parks of its intent to make a *de minimis* effect finding for the CBD Tolling Alternative. These agencies concurred with the Section 106 determination and the proposed *de minimis* impact finding. (Refer to **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"** and **Appendix 19, "Section 4(f) Correspondence."**)

Table 19-1. Section 4(f) Historic Sites

FIGURES 19-2 TO 19-7 MAP NO.	ADDRESS/NAME	PROJECT CHANGE	SECTION 106 EFFECT FINDING	SECTION 4(f) USE
1	Ed Koch Queensboro Bridge	Minor changes – installation of tolling equipment on bridge structure	No adverse effect	Exception from Section 4(f) approval in accordance with 23 CFR Section 774.13
2	Manhattan Bridge	Minor changes – installation of steel girder with tolling equipment	No adverse effect	Exception from Section 4(f) approval in accordance with 23 CFR Section 774.13
3	South Street Seaport Historic District and Extension	▪ Minor changes – installation of a pole with equipment cabinet in a parking lot within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ Minor change to setting	No adverse effect	No use
4	Holland Tunnel	▪ No physical changes to tunnel structure ▪ Minor change to setting	No effect	No use
5	Tribeca North Historic District	▪ Minor changes – installation of one new pole with mast arm with tolling equipment in location of existing sidewalk light pole within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ Minor change to setting	No adverse effect	No use
6	Tribeca West Historic District	No physical changes or changes to immediate setting	No effect	No use
7	American Thread Building	No physical changes or changes to immediate setting	No effect	No use
8	Gansevoort Market Historic District	▪ Minor changes – installation of one new pole with equipment cabinet on sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ Minor change to setting	No adverse effect	No Use
9	Whitehall Building	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect	No use
10	Public Baths	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect	No use
11	21 West Street	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect	No use

FIGURES 19-2 TO 19-7 MAP NO.	ADDRESS/NAME	PROJECT CHANGE	SECTION 106 EFFECT FINDING	SECTION 4(f) USE
12	U.S. Post Office – Morgan General Mail Facility	▪ No physical changes ▪ Minor change in setting – new pole with mast arm with tolling equipment on adjacent sidewalks	No effect	No use
13	406-426 West 31st Street[3]	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on adjacent sidewalk	No effect	No use
14	U.S. General Post Office	No physical changes or changes to immediate setting	No effect	No use
15	Pennsylvania Railroad North River Tunnel (used by Amtrak and NJ TRANSIT)	No physical changes or changes to immediate setting	No effect	No use
16	St. Michael's Roman Catholic Church Complex[3]	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect	No use
17	Master Printers Building[3]	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block	No effect	No use
18	Webster Apartments[3]	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect	No use
19	Harding Building/Garment Center Historic District[1]	No physical changes or changes to immediate setting	No effect	No use
20	Paddy's Market Historic District	▪ Minor changes – installation of two new poles with mast arms with tolling equipment on sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ Minor change to setting	No adverse effect	No Use
21	Former Pinehill Crystal Water Company[3]	No physical changes or changes to immediate setting	No effect	No use
22	Hill Building[3]	No physical changes or changes to immediate setting	No effect	No use
23	500 West 37th Street[3]	No physical changes or changes to immediate setting	No effect	No use
24	Underhill Building[3]	No physical changes or changes to immediate setting	No effect	No use

FIGURES 19-2 TO 19-7 MAP NO.	ADDRESS/NAME	PROJECT CHANGE	SECTION 106 EFFECT FINDING	SECTION 4(f) USE
25	408 West 39th Street	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
26	523-539 Ninth Avenue	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on same block within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
27	Lincoln Tunnel	Minor changes – installation of tolling equipment at the three portals of the tunnel within right-of-way controlled by the PANYNJ	No adverse effect	Exception from Section 4(f) approval in accordance with 23 CFR Section 774.13
28	St. Raphael Roman Catholic Church and Rectory	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
29	500-506 West 42nd Street[3]	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
30	McGraw-Hill Publishing Company Building	No physical changes or changes to immediate setting	No effect	No use
31	The High Line	Minor changes – installation of tolling equipment on underside of viaduct structure within the public right-of-way without the need for an easement or transfer of property, but requires an access agreement for future maintenance	No adverse effect	Exception from Section 4(f) approval in accordance with 23 CFR Section 774.13
32	Former French Hospital	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use

FIGURES 19-2 TO 19-7 MAP NO.	ADDRESS/NAME	PROJECT CHANGE	SECTION 106 EFFECT FINDING	SECTION 4(f) USE
33	Lithuanian Alliance of America	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
34	Hotel Irwin	▪ No physical changes. ▪ Minor change to setting – new pole with mast arm with tolling equipment on sidewalk on same block within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
35	Engine Co. 34 Firehouse	No physical changes or changes to immediate setting	No effect	No use
36	P.S. 191 Hudson Honors School	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
37	Cova Building	▪ No physical changes ▪ Minor change to setting – 2 new poles with mast arm with tolling equipment on sidewalks on same block within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors	No effect	No use
38	59th Street-Columbus Circle Subway Station	No physical changes or changes to setting	No effect	No use
39	Central Park[2]	▪ Minor changes ○ Replacement of four existing poles at three detection locations with new poles with tolling equipment along the interior park roads ○ Replacement of existing light pole with new pole with tolling equipment on Fifth Avenue sidewalk ○ Installation of a new pole with mast arm on Central Park West sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ No easement or transfer of property, but requires access agreement for future maintenance ▪ Minor changes to setting	No adverse effect	*De minimis* impact

FIGURES 19-2 TO 19-7 MAP NO.	ADDRESS/NAME	PROJECT CHANGE	SECTION 106 EFFECT FINDING	SECTION 4(f) USE
40	Upper East Side Historic District	▪ Minor changes – installation of one new pole with mast arm with tolling equipment on sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ Minor changes to setting	No adverse effect	No use
41	Upper East Side Historic District Boundary Increase and Additional Documentation	▪ Minor changes – installation of one new pole with mast arm with tolling equipment on sidewalk within the public right-of-way without the need for an easement, access agreement, or other transfer of property to the Project Sponsors ▪ Minor changes to setting	No adverse effect	No use

Source: Cultural Resource Information System at https://cris.parks.ny.gov
NYC Landmarks Preservation Commission "Discover NYC Landmarks" at https://www1.nyc.gov/site/lpc/index.page

Notes: Refer to the Section 106 Finding Documentation in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation,"** for more information about the potential changes associated with the CBD Tolling Alternative.

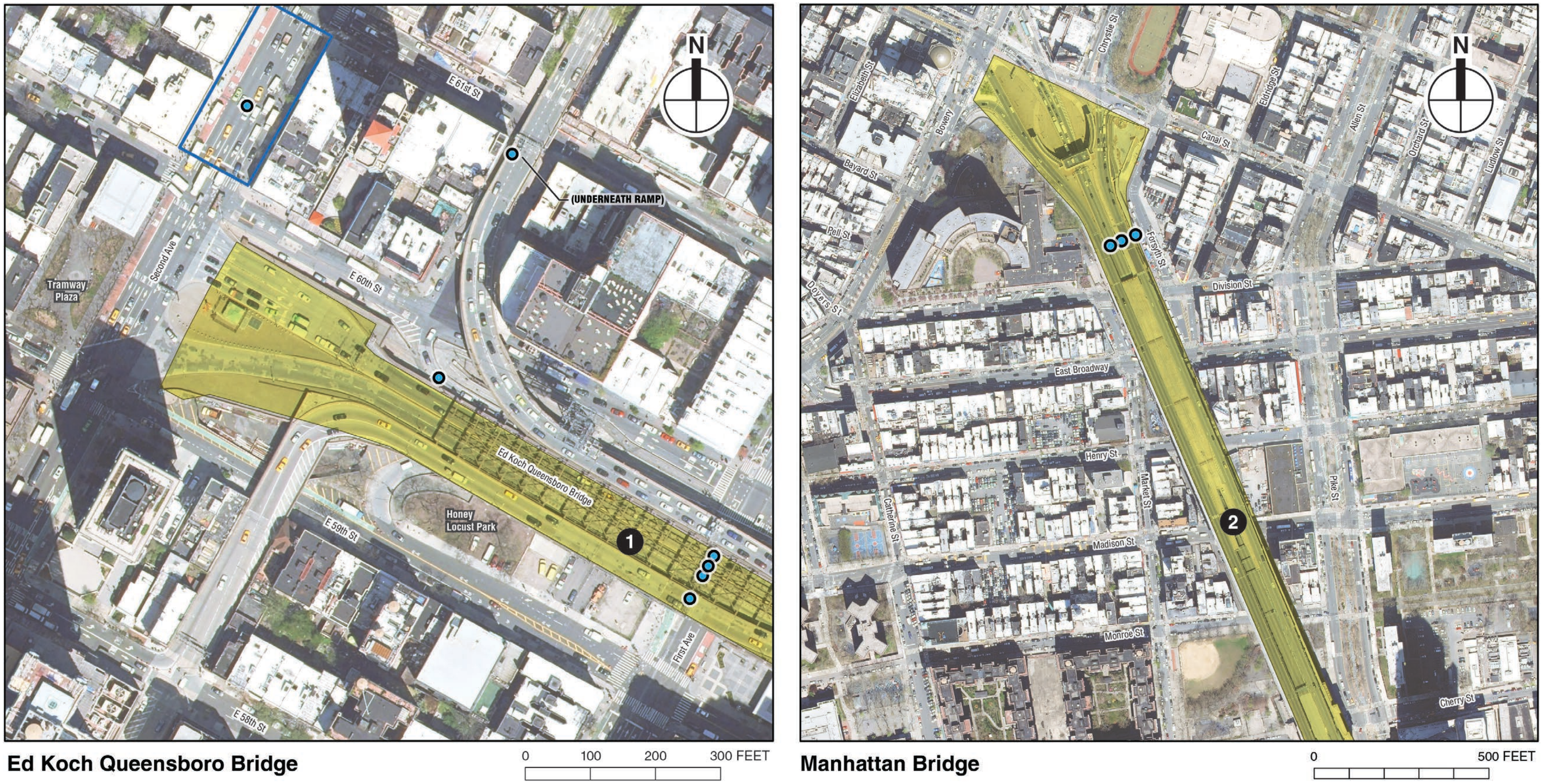
[1] The Harding Building is the only building in the Garment Center Historic District (NRHP-Listed) that is in the Area of Potential Effect.

[2] The NRHP and New York City Landmark boundaries differ for Central Park at the location of the corner of the park at Central Park South (59th Street) and Fifth Avenue; this corner is included as part of the Grand Army Plaza Scenic Landmark (Resource No. 43) but excluded from the New York City Scenic Landmark boundaries (Resource No. 39a on **Figure 19-6**). Grand Army Plaza is included within the Central Park NRHP and National Historic Landmark boundaries (Resource No. 39b on **Figure 19-6**).

Figure 19-1. Key Map of Section 4(f) Historic Sites

Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; New York City Department of City Planning (NYCDCP), BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Figure 19-2. Section 4(f) Historic Sites – Ed Koch Queensboro Bridge and Manhattan Bridge



Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)

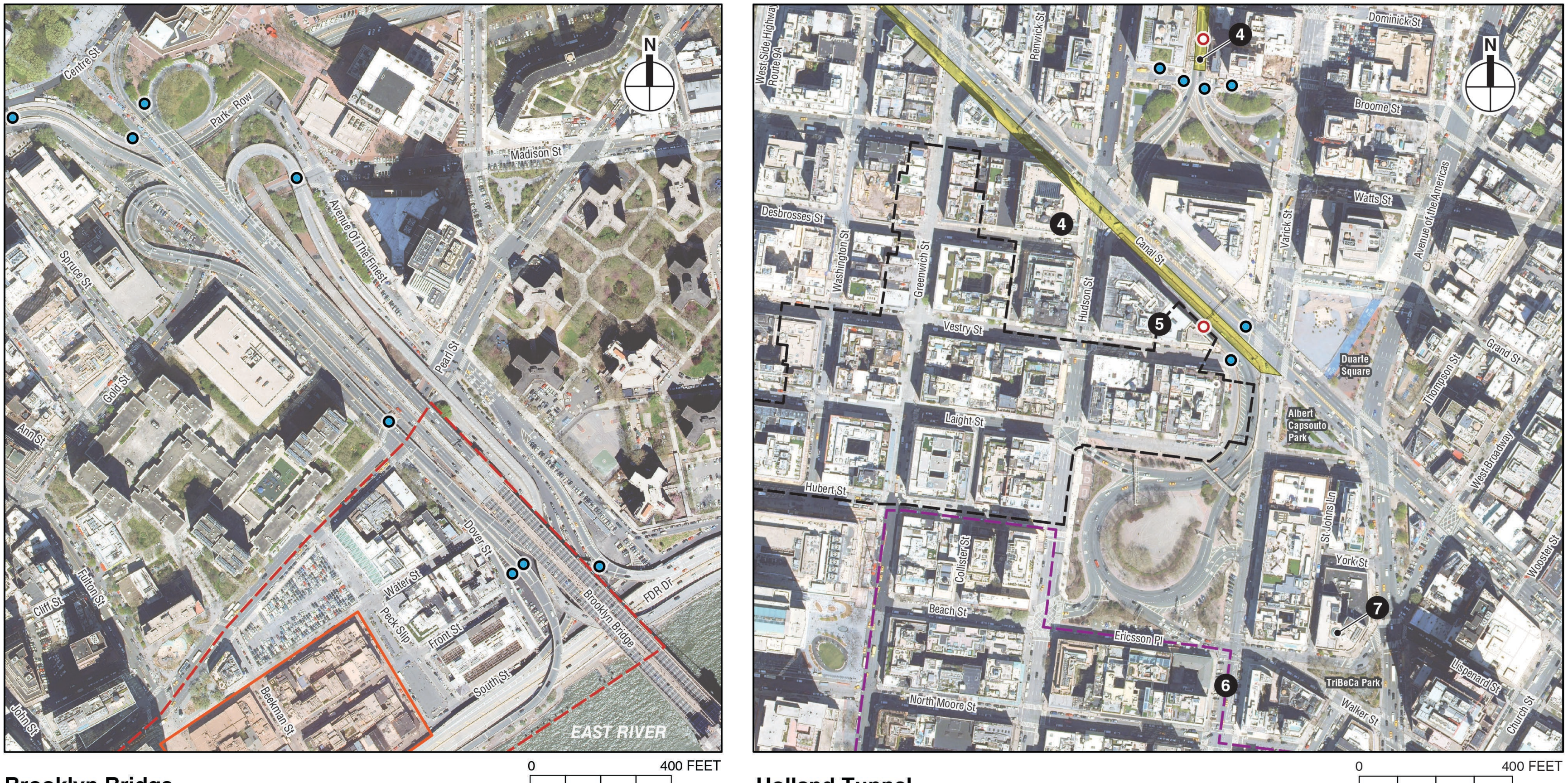
Historic Resource (corresponds to Table 19-1)

NR-listed/NR-eligible Tunnel and Bridge Boundaries (approximate)

Note: NYCL Boundary for the Ed Koch Queensboro Bridge Includes Queensboro Bridge Plaza as shown

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: New York Statewide Digital Orthoimagery Program (NYSDOP) High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 19-3. Section 4(f) Historic Sites – Brooklyn Bridge and Holland Tunnel



Brooklyn Bridge **Holland Tunnel**

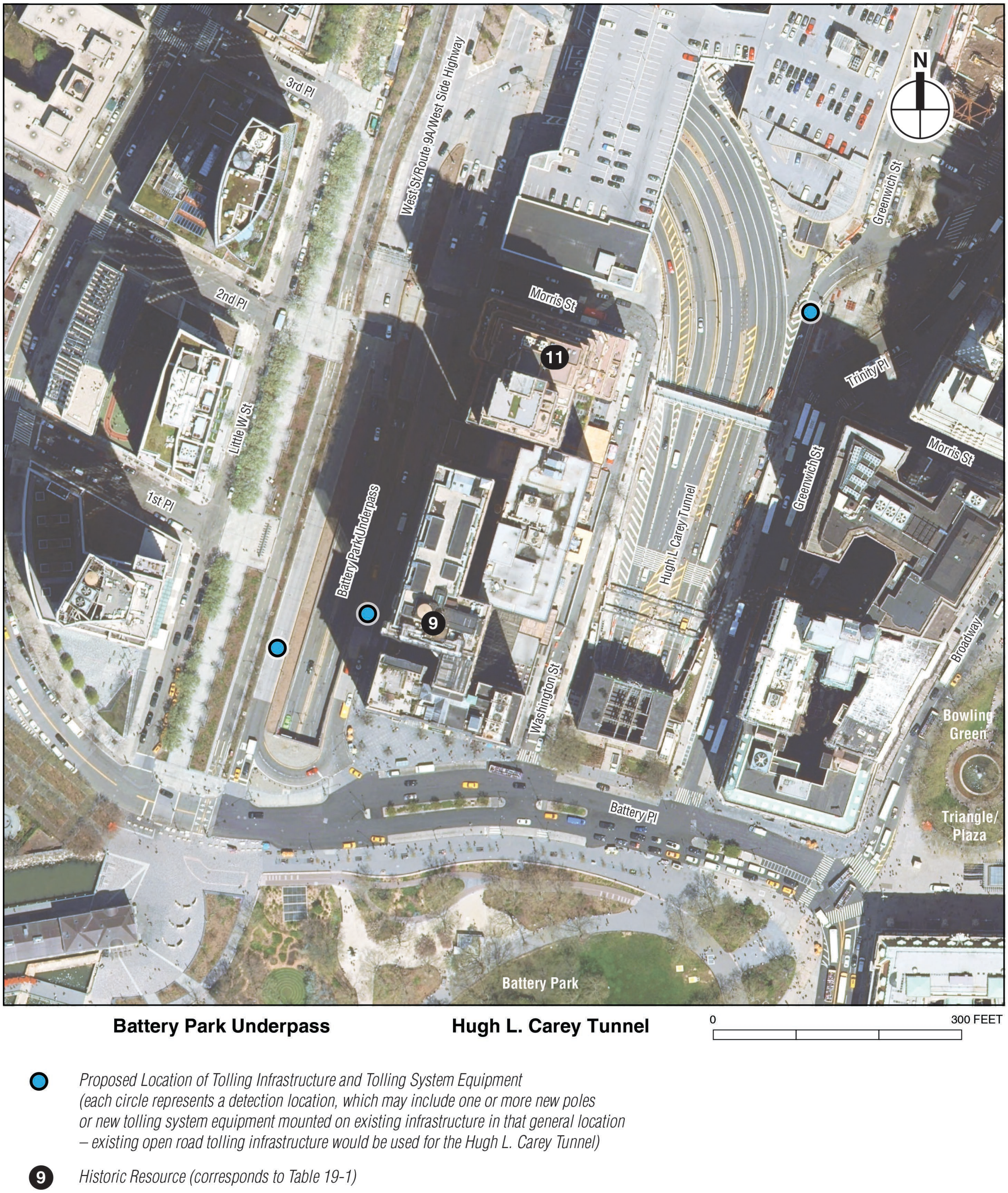
- (blue circle) *Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location*
- (red circle) *Potential Location of Tolling Infrastructure and Tolling System Equipment on PANYNJ Property In Place of All Other Detection Points at and Near the Holland Tunnel*
- 3 *Historic Resource (corresponds to Table 19-1)*
- *Historic Resource Tax Lot (as applicable)*
- *NR-listed/NR-eligible Tunnel and Bridge Boundaries (approximate)*

Historic Districts

- *South Street Seaport Historic District (NR-listed)*
- *South Street Seaport Historic District Extention (NR-listed)*
- *Tribeca North Historic District (NR-eligible)*
- *Tribeca West Historic District (NYCHD, NR-eligible)*

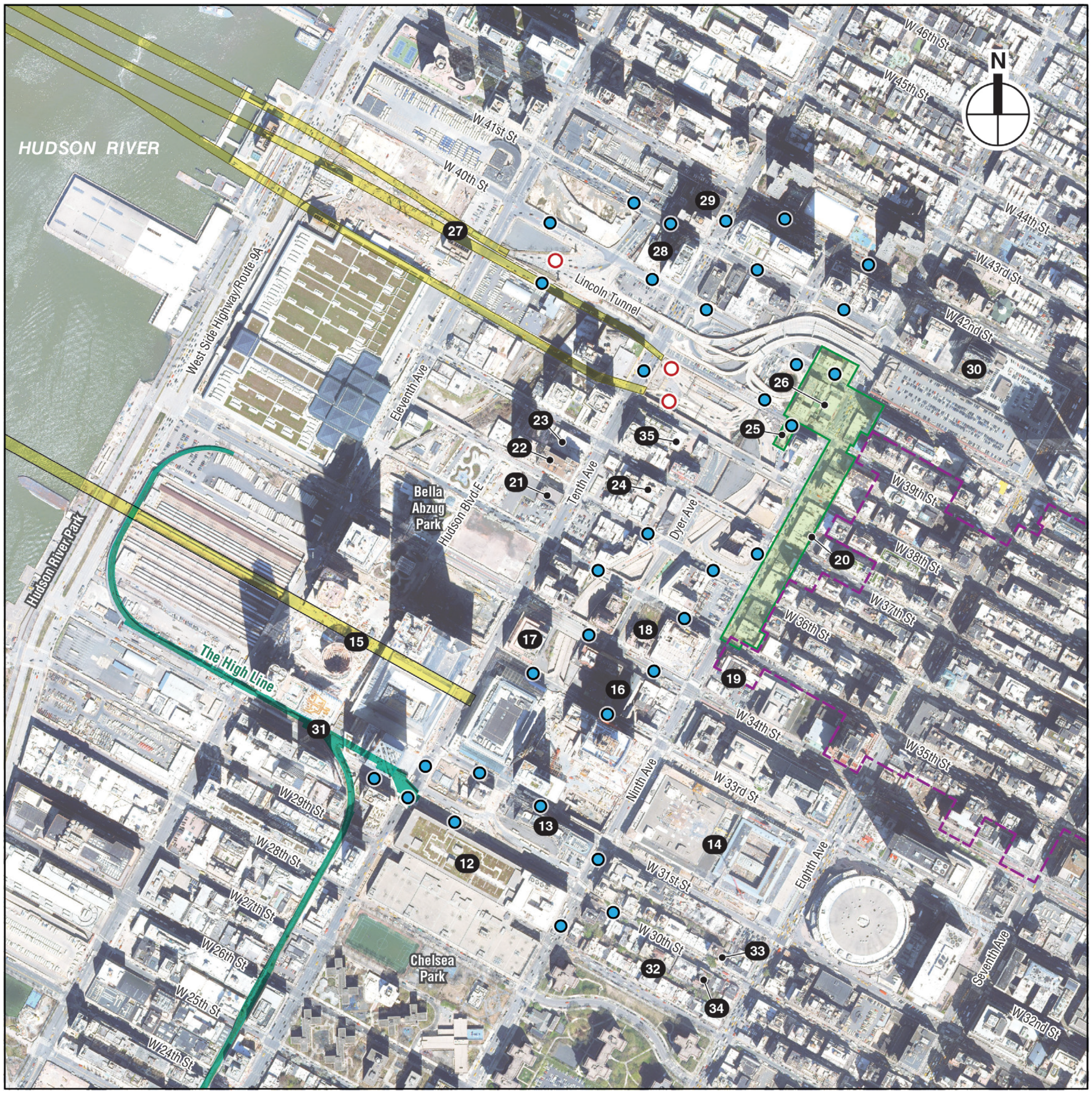
Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 19-4. Section 4(f) Historic Sites – Battery Park Underpass and Hugh L. Carey Tunnel



Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 19-5. Section 4(f) Historic Sites – Lincoln Tunnel



0 400 800 FEET

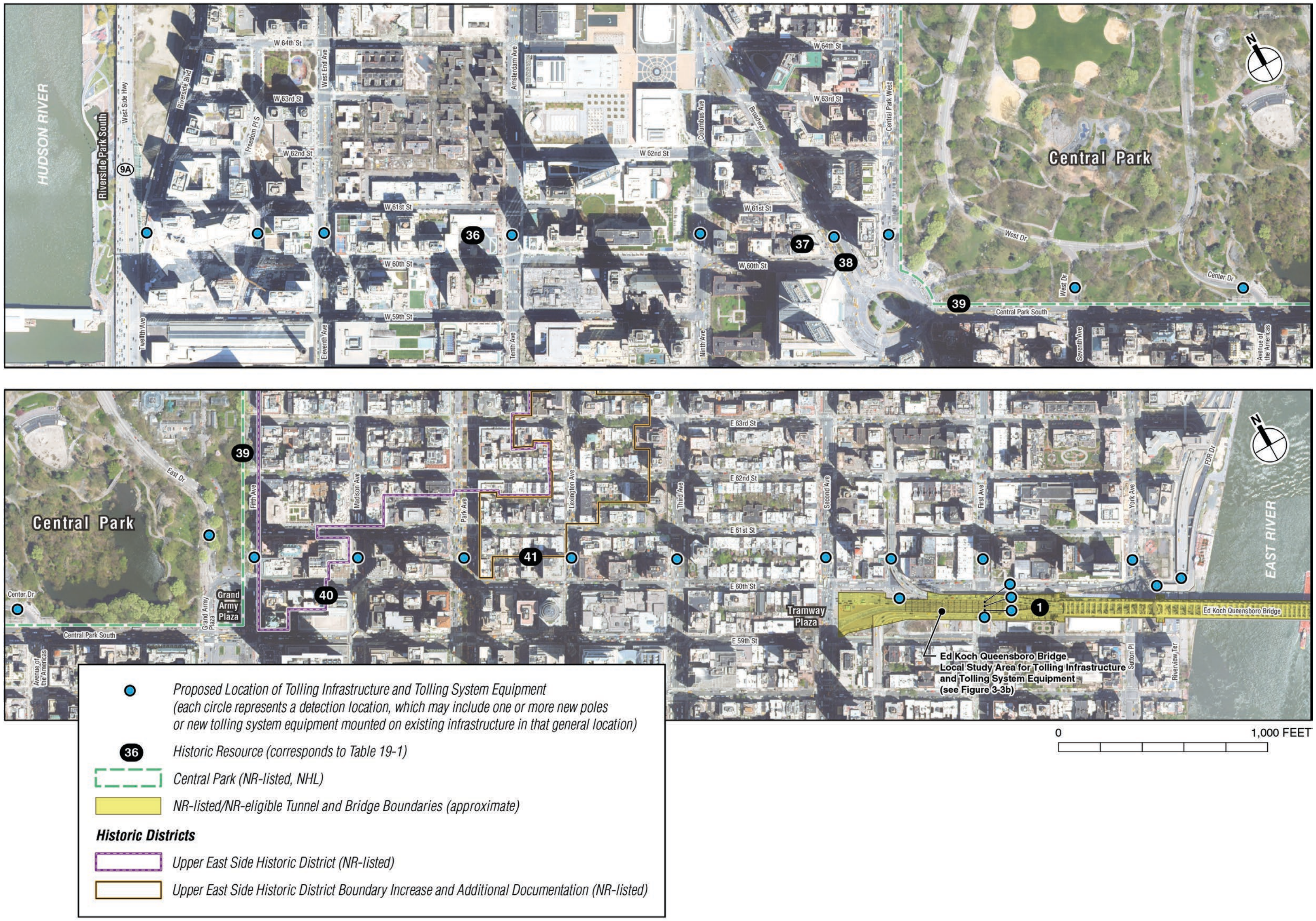
- Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location)
- Potential Location of Tolling Infrastructure and Tolling System Equipment on PANYNJ Property In Place of All Other Detection Points at and Near the Lincoln Tunnel
- 12 Historic Resource (corresponds to Table 19-1)
- NR-listed/NR-eligible Tunnel and Bridge Boundaries (approximate)
- High Line

Historic Districts

- Garment Center Historic District
- Paddy's Market Historic District

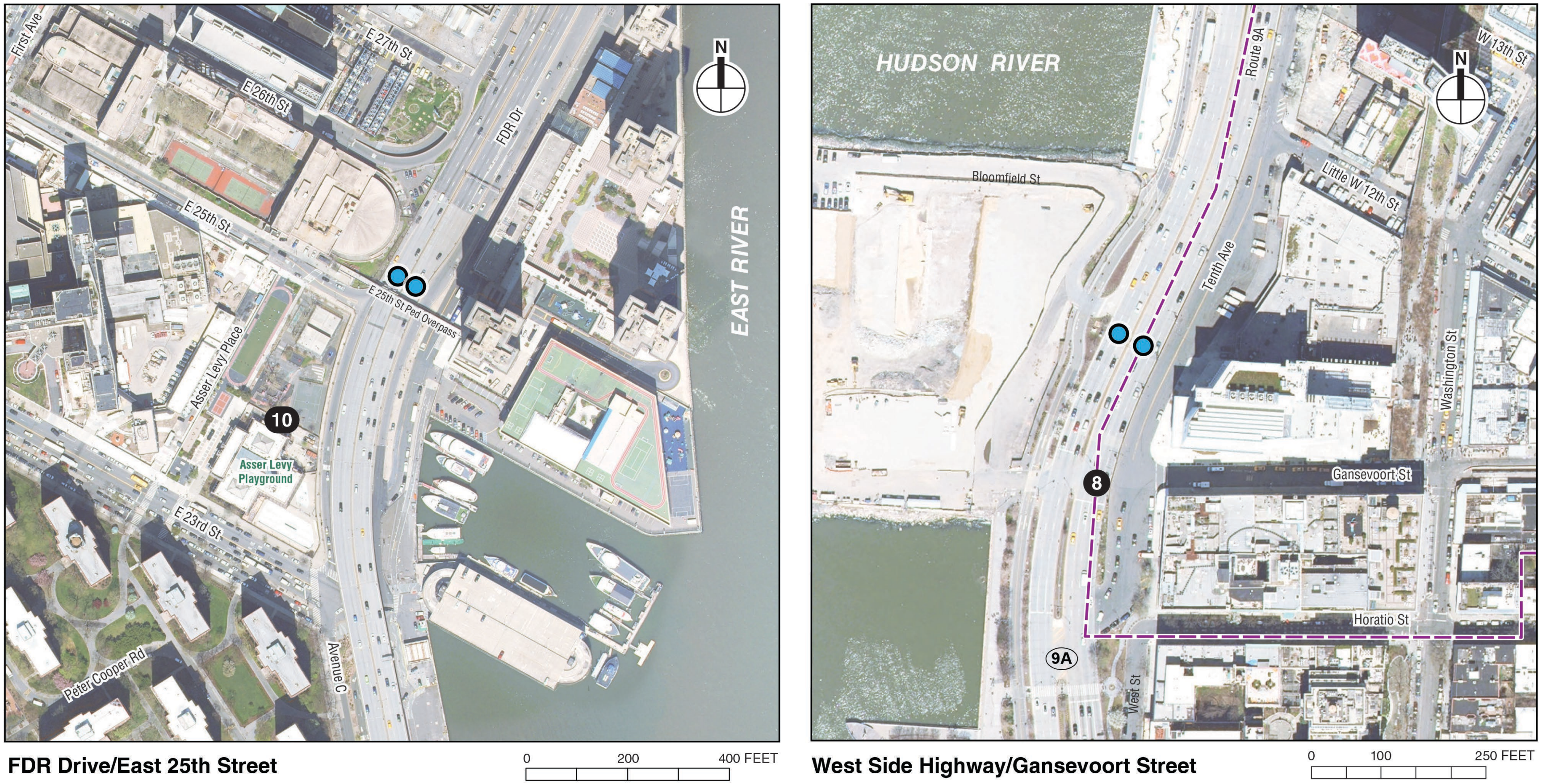
Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 19-6. Section 4(f) Historic Sites – 60th Street and Central Park



Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

Figure 19-7. Section 4(f) Historic Sites – FDR Drive at East 25th Street and West Side Highway/Route 9A at Gansevoort Street



Proposed Location of Tolling Infrastructure and Tolling System Equipment (each circle represents a detection location, which may include one or more new poles or new tolling system equipment mounted on existing infrastructure in that general location – existing open road tolling infrastructure would be used for the Hugh L. Carey Tunnel)

8 *Historic Resource (corresponds to Table 19-1)*

Gansevoort Market Historic District (NR-listed)

Sources: TBTA. October 2021. New York State, NYS Interactive Mapping Gateway: NYSDOP High Resolution Imagery 2000 – 2018. http://gis.ny.gov/gateway/mg/index.html.

19.6 USE OF PUBLICLY OWNED PARKS, RECREATION AREAS, AND WILDLIFE AND WATERFOWL REFUGES

19.6.1 Recreation Areas and Wildlife and Waterfowl Refuges

No designated recreation areas or wildlife and waterfowl refuges are within or adjacent to the Manhattan CBD, which is the area where tolling infrastructure and tolling system equipment, including new signage, would be located. Therefore, the CBD Tolling Alternative would not result in the use of any such resources.

19.6.2 Publicly Owned Parks

There are 82 parks (defined here as including publicly accessible plazas) adjacent to or near locations where tolling infrastructure and tolling system equipment would be located. **Figure 19-8** provides a map of these parks and plazas, and **Table 19-2** provides information on each park or plaza, the potential change resulting from implementation of the CBD Tolling Alternative, and the proposed conclusion regarding the Section 4(f) use of the property. **Table 19-2** includes parks and plazas owned by NYC Parks, the New York City Economic Development Corporation, New York City Department of Education, Hudson River Park Trust, and private property owners. All these parks and plazas are publicly accessible, and therefore, they are considered Section 4(f) properties.

Except for the installation of tolling infrastructure and tolling system equipment on the underside of the High Line and within and adjacent to Central Park, the CBD Tolling Alternative would not place tolling infrastructure or tolling system equipment within parks and plazas in the local study area. Tolling infrastructure and tolling system equipment would be within the street, sidewalk, or immediately adjacent areas of these other parks, and would not require a change in ownership or restrict the access to or use of the property. The presence of the tolling infrastructure and tolling system equipment—which would be similar in nature and character to existing infrastructure already present along streets and sidewalks throughout New York City—would not substantially impair the protected activities, features, or attributes that qualify these resources for protection under Section 4(f) (i.e., constructive use).[3]

[3] **Chapter 7, "Parks and Recreational Resources,"** provides information on why the CBD Tolling Alternative would not adversely affect activities in parks near proposed tolling infrastructure and tolling system equipment.

Figure 19-8. Section 4(f) Parks

Manhattan CBD
(as defined by the MTA Reform and Traffic Mobility Act)

Local Study Area for Tolling Infrastructure and Tolling System Equipment

1 Park or Recreational Resource in Vicinity of Local Study Area
(see Table 19-2 for reference)

Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

Table 19-2. Section 4(f) Parks

FIGURE 19-8, MAP NO.	OPEN SPACE	LOCATION	PROJECT CHANGE	SECTION 4(f) USE
1	Riverside Park South	Riverside Boulevard between West 59th Street and West 72nd Street	New tolling infrastructure and tolling system equipment on the adjacent block at the southern portion of the park and outside the park boundary	No use
2	Waterline Square	West 60th Street between Freedom Place South and Riverside Boulevard	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
3	P.S. 452 playground	210 West 61st Street	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
4	The Regent Plaza	45 West 60th Street	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
5	Broadway Malls	Broadway from West 59th Street to West 168th Street	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
6	Trump International Hotel Plaza	1 Central Park West	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
7	Columbus Circle	Broadway and Central Park South	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
8	Central Park	Fifth Avenue to Eighth Avenue, 59th Street to 110th Street	▪ Four existing poles replaced with new poles with tolling equipment at three detection locations on the interior park roads ▪ Existing light pole replaced with new pole with tolling equipment on Fifth Avenue sidewalk ▪ New pole installed with mast arm on Central Park West sidewalk ▪ No easement or transfer of property, but requires access agreement for future maintenance	*De minimis* impact
9	Grand Army Plaza	Fifth Avenue and Central Park South	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
10	Savoy Plaza	200 East 61st Street	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
11	Tramway Plaza	Second Avenue between East 59th Street and East 60th Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
12	Evansview Plaza	303 East 60th Street	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use

FIGURE 19-8, MAP NO.	OPEN SPACE	LOCATION	PROJECT CHANGE	SECTION 4(f) USE
13	Landmark Plaza	300 East 59th Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
14	Honey Locust Park	1130 Second Avenue	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
15	Bridge Tower Place Plaza	First Avenue and East 60th Street	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
16	Bridgemarket Public Plaza	East 59th Street between First and York Avenues	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
17	Queensboro Oval	York Avenue between East 59th and East 60th Streets	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
18	Twenty-Four Sycamores Park	501 East 60th Street	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
19	Andrew Haswell Green Park	FDR Drive and East 60th Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
20	Sutton Place Park	East 57th Street and Sutton Place	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
21	Sutton Parks	25 Sutton Place South	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
22	Peter Detmold Park	454 East 51st Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
23	MacArthur Playground	436 East 49th Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
24	Robert Moses Playground	East 42nd Street and First Avenue	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
25	East River Esplanade-Midtown Section	East River and East 37th Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
26	The Corinthian Plaza	330 East 38th Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
27	St. Vartan Park	613 First Avenue	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
28	Manhattan Place plaza	630 First Avenue	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
29	American Copper Buildings plaza	626 First Avenue	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use

FIGURE 19-8, MAP NO.	OPEN SPACE	LOCATION	PROJECT CHANGE	SECTION 4(f) USE
30	Alexandria Science Center plaza	450 East 29th Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
31	Bellevue Sobriety Garden	East 26th Street and FDR Drive	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
32	Asser Levy Playground	501 East 23rd Street	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
33	Stuyvesant Cove Park	East River waterfront, from East 18th Street to East 23rd Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
34	Murphy Brothers Playground	292 Avenue C	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
35	Captain Patrick J. Brown Walk	East River waterfront, from East 13th Street to East 18th Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
36	John V. Lindsay East River Park	East River waterfront, from Jackson Street to East 13th Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
37	P.S. 142 playground	100 Attorney Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
38	Luther Gulick Park	21 Columbia Street	None	No use
39	Corlears Hook Park	397 FDR Drive	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
40	Pier 42	East River waterfront at Jackson Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
41	P.S. 184m playground	327 Cherry Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
42	East River Esplanade-Lower Manhattan Section	East River waterfront between Broad and Jefferson Streets	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
43	Forsyth Plaza	Forsyth Street and Canal Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
44	Sophie Irene Loeb Playground	10 Market Street	None	No use
45	Coleman Playground	Intersection of Cherry Street, Pike Street, and Monroe Street	None	No use
46	Murray Bergtraum softball field	Market Slip between Cherry and South Streets	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use

FIGURE 19-8, MAP NO.	OPEN SPACE	LOCATION	PROJECT CHANGE	SECTION 4(f) USE
47	Catherine Slip Malls	Catherine Slip between Cherry and South Streets	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
48	City Hall Park	Broadway, Chambers Street, Centre Street, and Park Row	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
49	Drumgoole Plaza	Frankfort Street and Gold Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
50	Verizon Building plaza	375 Pearl Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
51	Fishbridge Park Garden and Dog Run	Pearl Street and Dover Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
52	Peck Slip Plaza	Peck Slip and FDR Drive	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
53	Imagination Playground	89 South Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
54	Mannahatta Park	Wall Street between Front and South Streets	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
55	Financial Square plaza	South Street between Old Slip and Gouverneur Lane	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
56	55 Water Street plaza	55 Water Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
57	Vietnam Veterans Plaza	24 South Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
58	125 Broad Street plaza	125 Broad Street	New tolling system equipment on the adjacent FDR Drive outside of the park boundary	No use
59	Battery Park (also known as "Battery" or "The Battery")	State Street and Battery Place	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
60	17 Battery Place Plaza	17 Battery Place	New tolling infrastructure and tolling system equipment on the same and adjacent blocks outside of the park boundary	No use
61	Elizabeth H. Berger Plaza	Edgar Street, Greenwich Street and Trinity Place	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
62	Battery Park City parks	Throughout Battery Park City neighborhood	New tolling system equipment on the adjacent block and the adjacent West Side Highway/Route 9A outside of the park boundary	No use

FIGURE 19-8, MAP NO.	OPEN SPACE	LOCATION	PROJECT CHANGE	SECTION 4(f) USE
63	50 West Street plaza	50 West Street	New tolling system equipment on the adjacent block and the adjacent West Side Highway/Route 9A outside of the park boundary	No use
64	Liberty Park	Liberty, West, Cedar, and Greenwich Streets	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
65	9/11 Memorial	West, Liberty, Greenwich, and Fulton Streets	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
66	101 Barclay Street plaza	101 Barclay Street	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
67	One Eleven Murray plaza	111 Murray Street	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
68	Washington Market Park	199 Chambers Street	New tolling infrastructure and tolling system equipment on the same block outside of the park boundary	No use
69	Salomon Smith Barney plaza	388 Greenwich Street	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
70	Tribeca Park	8 Beach Street	None	No use
71	Albert Capsouto Park	68 Varick Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary, depending on whether tolling system equipment would be located on PANYNJ property	No use
72	Freeman Plaza	Hudson Street, Broome Street, Varick Street, Watts Street, Holland Tunnel Entrance Ramps	New tolling infrastructure and tolling system equipment on the same or adjacent block outside of the park boundary, depending on whether tolling system equipment would be located on PANYNJ property	No use
73	Canal Park	Canal Street between West Street and Washington Street	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
74	Hudson River Park	Areas of waterfront and Hudson River west of West Side Highway/Route 9A from Battery Place to West 59th Street	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
75	14th Street Park	Eleventh and Twelfth Avenues, West 22nd to West 24th Streets	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use
76	Chelsea Waterside Park	Tenth and Eleventh Avenues, West 14th and West 15th Streets	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No use

FIGURE 19-8, MAP NO.	OPEN SPACE	LOCATION	PROJECT CHANGE	SECTION 4(f) USE
77	The High Line	Elevated linear alignment from Gansevoort Street to West 34th Street, paralleling Washington Street, Tenth Avenue, West 30th Street, Twelfth Avenue/Route 9A, and West 34th Street	▪ Installation of tolling system equipment on the underside of the viaduct structure ▪ No tolling infrastructure or tolling system equipment within the publicly accessible park ▪ No easement or transfer of property, but requires access agreement for future maintenance	*De minimis* impact
78	500 West 30th Street plaza	500 West 30th Street	New tolling infrastructure and tolling system equipment on the same and adjacent block outside of the park boundary	No use
79	Hudson Yards Eastern Railyard plaza	Hudson Boulevard between Eleventh Avenue and 33rd Street	New tolling infrastructure and tolling system equipment on the adjacent block outside of the park boundary	No use
80	450 West 33rd Street plaza	450 West 33rd Street	New tolling infrastructure and tolling system equipment on the same and adjacent block outside of the park boundary	No use
81	Manhattan West plaza	Ninth and Dyer Avenues, West 31st and West 33rd Streets	New tolling infrastructure and tolling system equipment on the same and adjacent block outside of the park boundary	No use
82	DeWitt Clinton Park	Between West Side Highway/Route 9A and Eleventh Avenue from West 52nd Street to West 54th Street	New tolling system equipment on the adjacent West Side Highway/Route 9A outside of the park boundary	No Use

The following sections describe the proposed installation of tolling infrastructure and tolling system equipment on the underside of the High Line and within and adjacent to Central Park.

19.6.2.1 High Line

The CBD Tolling Alternative would attach tolling system equipment to the High Line, a publicly owned park under the jurisdiction of NYC Parks. The High Line is a former railroad viaduct, and the top of the structure was converted to a park. The Project Sponsors would attach tolling system equipment on the underside of the High Line structure. It would be mounted to a metal pipe that would be bolted to the existing girders of the viaduct. The construction of this equipment would take place outside the publicly accessible parkland. Therefore, there would be no temporary occupancy of the Section 4(f) property.

Because the Project Sponsors require permanent access to the tolling equipment attached to the underside of the High Line, there would be use of this Section 4(f) property for the CBD Tolling Alternative. However, FHWA intends to make a finding that the CBD Tolling Alternative would result in a *de minimis* impact on the High Line in accordance with criteria described in **Section 19.2:**

- Access to the tolling infrastructure or tolling system equipment would not require access to the parkland that is atop the High Line. The tolling system equipment attached to the High Line structure would not be visible from the park nor would it alter any characteristics of the park or activities of park users; therefore, the CBD Tolling Alternative would not impair the protected activities, features, or attributes of the publicly accessible parkland that qualify It for protection under Section 4(f).
- FHWA will consider the views of the public regarding its intention to find a *de minimis* impact on the High Line. The public will be afforded the opportunity to comment on the proposed finding concurrent with the public review period for this EA. Refer to **Chapter 18, "Public Participation,"** for more information about how the public may provide comments during the public review period.
- NYC Parks is the official with jurisdiction over the High Line. FHWA and NYSDOT notified NYC Parks that FHWA intends on a making a finding that the CBD Tolling Program would have a *de minimis* impact on the High Line. NYC Parks concurred in writing with this proposed finding, stating that the CBD Tolling Alternative would not affect the activities, features, or attributes that qualify the property for protection under Section 4(f). (Refer to **Appendix 19, "Section 4(f) Correspondence"** for copies of these letters.)

19.6.2.2 Central Park

Central Park is at the northern boundary of the Manhattan CBD where the CBD Tolling Alternative would be implemented. Central Park is protected under Section 4(f) as a publicly owned park and a historic site. Central Park is listed on the NRHP and is a National Historic Landmark, and as described in **Section 19.5**, FHWA intends to find that the CBD Tolling Alternative would have a *de minimis* impact on the historic attributes of Central Park. This section describes the potential use of Central Park as a publicly owned park and considers the permanent use, constructive use, and temporary occupancy of Central Park.

Potential for Permanent Use

Tolling system equipment is proposed on four replacement poles at three detection locations just inside Central Park near 59th Street. The equipment would prevent authorized vehicles from using the park to enter the Manhattan CBD without paying the CBD toll. Pole-mounted tolling system equipment is also proposed at two locations on sidewalks outside the park's wall to detect vehicles entering the Manhattan CBD on Central Park West and Fifth Avenue. **Figure 19-9** shows the proposed location of tolling infrastructure and tolling system equipment within and adjacent to Central Park.

Equipment that is similar in appearance is already mounted on other poles in Central Park, and the proposed equipment would be visually consistent with the existing streetlight poles found throughout Central Park, including matching the existing color scheme (refer to **Figures 7-3a through Figure 7-3d** and **Figure 7-4 through Figure 7-6** in **Chapter 7, "Parks and Recreational Resources"**). Because the equipment would be mounted on replacement poles in the same locations as existing poles, the amount of park space would not be reduced. However, the Project Sponsors must have continued access to the poles for maintenance.

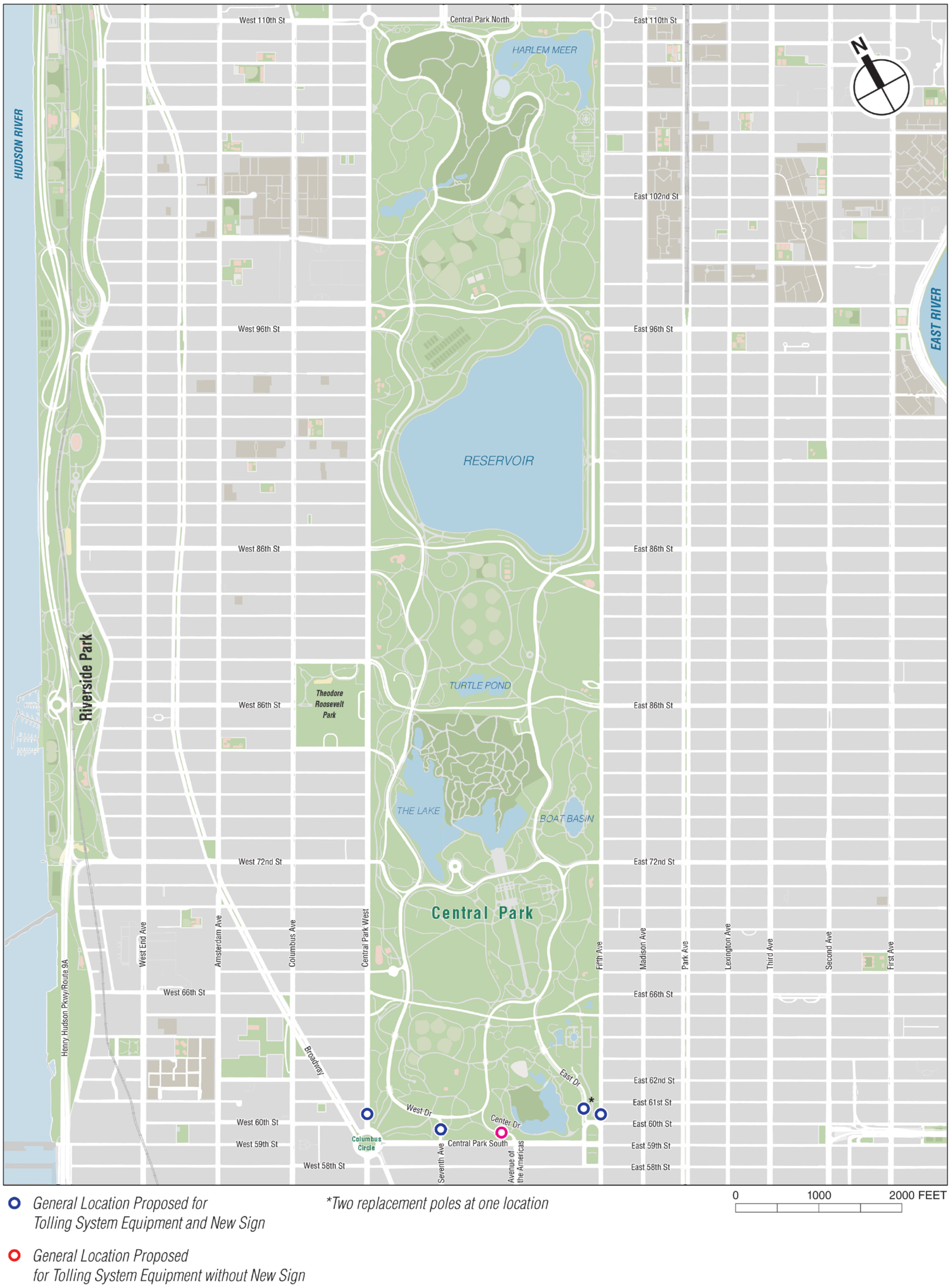
In addition, the CBD Tolling Alternative would place signs on the replacement streetlight poles in Central Park to warn authorized drivers using the park roadway system that exiting to Central Park South/59th Street via West Drive (at Seventh Avenue) or East Drive (at Grand Army Plaza) would incur a toll. Signs would be attached to the replacement pole on West Drive and to one of the poles on East Drive. The new signs would be similar to other signs in the park and would not affect any recreational areas of the park. Signs would also be attached to existing poles at locations along Central Park West and Fifth Avenue.

The Project Sponsors have coordinated with NYC Parks and the Central Park Conservancy regarding the installation of tolling infrastructure and tolling system equipment within and adjacent to Central Park. The Project Sponsors would continue to coordinate with NYC Parks and the Central Park Conservancy in the final design of the tolling infrastructure and tolling system equipment in Central Park.

Because the Project Sponsors would require permanent access to the tolling infrastructure and tolling system equipment proposed on four replacement poles at three locations within Central Park, there would be use of this Section 4(f) property for the CBD Tolling Alternative. However, FHWA intends to make a finding that the CBD Tolling Alternative would result in a *de minimis* impact on Central Park in accordance with criteria described in **Section 19.2**.

- The installation of tolling infrastructure and tolling system equipment on four replacement poles within Central Park would not alter the recreational features of the park, reduce the amount of usable parkland, or change access to the park. The tolling infrastructure and tolling system equipment would not alter any characteristics of the park's amenities and features. Therefore, the CBD Tolling Alternative would not impair the protected activities, features, or attributes of the publicly accessible parkland that qualify It for protection under Section 4(f).

Figure 19-9. General Locations of Proposed Tolling Equipment and New Signs in Central Park



Sources: NYC Open Data, NYC Planimetrics, https://data.cityofnewyork.us/Transportation/NYC-Planimetrics/wt4d-p43d; NYCDCP, BYTES of the BIG APPLE, https://www1.nyc.gov/site/planning/data-maps/open-data.page; ArcGIS Online, https://www.arcgis.com/index.html.

- FHWA will consider the views of the public regarding its intention to find a *de minimis* impact on Central Park. The public will be afforded the opportunity to comment on the proposed finding concurrent with the public review period for this EA. Refer to **Chapter 18, "Public Participation,"** for more information about how the public may provide comments during the public review period.
- NYC Parks is the official with jurisdiction over the Central Park. FHWA and NYSDOT notified NYC Parks that FHWA intends on a making a finding that the CBD Tolling Program would have a *de minimis* impact on the Central Park. NYC Parks concurred in writing with this proposed finding, stating that the CBD Tolling Alternative would not affect the activities, features, or attributes that qualify the property for protection under Section 4(f). (Refer to **Appendix 19, "Section 4(f) Correspondence"** for copies of these letters.)

Potential for Constructive Use

The installation of tolling infrastructure and tolling system equipment within and adjacent to Central Park would not alter the recreational features of the park, reduce the amount of usable parkland, or change access to the park. As described in **Chapter 4B, "Transportation: Highways and Local Intersections,"** based on the results of the traffic modeling conducted for the Project, the CBD Tolling Alternative under all tolling scenarios analyzed in this EA would reduce the traffic volumes adjacent to Central Park on Fifth Avenue and Central Park West as well as the traffic volumes crossing the park using the park's sunken transverse roads.[4] Therefore, changes in traffic resulting from the CBD Tolling Alternative would not adversely affect the character of Central Park. The CBD Tolling Alternative would also not result in adverse air quality or noise effects (see **Chapter 10, "Air Quality"** and **Chapter 12, "Noise"**). Overall, the CBD Tolling Alternative would not impair the protected activities, features, or attributes that qualify Central Park for protection under Section 4(f); therefore, it would not result in constructive use of Central Park.

Potential for Temporary Occupancy

The construction of tolling system infrastructure and tolling system equipment within Central Park would result in temporary occupancy of the park. However, consistent with criteria set forth in 23 CFR Section 774.13(d), the temporary occupancy of Central Park would not be a use of this Section 4(f) property for the following reasons:

- In each location, the total amount of time required for construction for the CBD Tolling Program would be less than a month, which is less than the one-year duration for construction of the entire Project, and there would be no change in the ownership of the land.
- The Project involves only minor construction activities, including limited excavation to replace the poles and connect with existing utilities, installation of new poles, and restoration of the ground surface within very limited areas of the 840-acre park (see **Figure 19-9**).
- Once complete, the permanent infrastructure would be similar in appearance to existing streetlight poles and signs within the park, and there would be no permanent effect on park uses.

[4] See **Chapter 2, "Project Alternatives,"** for more information on the tolling scenarios evaluated in this EA.

- The utility trenches would be covered and restored to their current condition (i.e., fill or pavement). If landscaping is removed, it would be restored or replaced.
- TBTA will coordinate work with NYC Parks and will require the contractor to implement measures to avoid, minimize, or mitigate construction effects on the park and park users to the extent feasible (refer to **Chapter 15, "Construction Effects"** for a listing of these measures). The Project Sponsors have and will continue to coordinate with NYC Parks and the Central Park Conservancy regarding the construction of tolling infrastructure and tolling system equipment within Central Park.

NYC Parks, the official with jurisdiction over Central Park, has concurred that the temporary occupancy of Central Park for the construction of the CBD Tolling Alternative would not impair the protected activities, features, or attributes that qualify Central Park for protection under Section 4(f); therefore, the temporary occupancy of Central Park is not a use of this Section 4(f) property. (Refer to **Appendix 19, "Section 4(f) Correspondence"** for a copy of the NYC Parks letter.)

19.7 PUBLIC INVOLVEMENT AND SECTION 4(f) COORDINATION

Before FHWA can make a *de minimis* impact finding for a park protected by Section 4(f), in addition to the coordination with officials with jurisdiction for the park, public notice and an opportunity for public review and comment concerning the effects on the protected activities, features, or attributes of the property must be provided. This requirement can be satisfied in conjunction with other public involvement procedures, such as a comment period provided on a National Environmental Policy Act document. For this Project, an opportunity for public review and comment on FHWA's proposed *de minimis* impact finding for the potential use of the High Line and Central Park will occur concurrent with public review and comment period for this EA (see **Chapter 18, "Public Participation"**).

19.8 CONCLUSION

There are 41 historic sites and 82 parks and plazas in the local study area. The CBD Tolling Alternative would not use these Section 4(f) properties except for the High Line and Central Park. FHWA intends on finding that the CBD Tolling Alternative would result in a *de minimis* impact on Central Park and the High Line, and the officials with jurisdiction over these resources have concurred with this finding. FHWA will consider any public input on its proposed finding during the public review period for this EA. FHWA also intends on finding that the temporary occupancy of Central Park for construction of the CBD Tolling Alternative would not impair the protected activities, features, or attributes that qualify Central Park for protection under Section 4(f); therefore, the temporary occupancy of Central Park is not a use of this Section 4(f) property.

20. Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the environment associated with implementation of the CBD Tolling Alternative would include temporary effects during construction, such as short-term traffic lane closures, visual effects, construction noise, and potential dust-related effects. As described in **Chapter 15, "Construction Effects,"** the overall duration of construction for the CBD Tolling Alternative is expected to be less than one year. At each location, the total construction duration would generally be approximately one to two weeks, although inclement weather or other unforeseen conditions could extend the duration of construction at individual locations. Concurrent construction at multiple sites would likely occur to allow efficient construction management. During that time, the TBTA will ensure that the Project contractors minimize construction-related disruptions, using, for example, maintenance and protection of traffic plans and dust suppression measures.

The long-term productivity, or benefits, associated with the Project would include reduced vehicular congestion in the Manhattan CBD through the implementation of a vehicular tolling program. Because the Project would reduce congestion in the Manhattan CBD, it would improve regional air quality. The vehicular tolling program would create a new local, recurring funding source for the MTA capital projects. Funding for transit would allow for more fleet, would improve the efficiency of the system, and would generally enhance transit use, thereby allowing MTA's transportation network to absorb increasing transit ridership and further reduce vehicle congestion.

21. Irreversible and Irretrievable Commitment of Resources

The implementation of the CBD Tolling Alternative would result in the permanent commitment of natural, physical, and human resources that cannot be recovered after completing the Project.

The overall duration of construction for the CBD Tolling Alternative is expected to be less than one year. At each location, the total construction duration would generally be approximately one to two weeks, although inclement weather or other unforeseen conditions could extend the duration of construction at individual locations. Concurrent construction at multiple sites would likely occur to allow efficient construction management. During construction and equipment installation, activities would require the irretrievable use of fuel for construction vehicles, equipment, and construction workers' personal vehicles. Electrical energy would be irretrievably used during construction and operation to power equipment and to transmit and process data. The physical infrastructure installed for the CBD Tolling Alternative would be made of raw materials such as iron ore, aggregate, and silicon. These resources are not retrievable, but they are not in short supply, and their use would not have an adverse effect on their continued availability.

Overall, the commitment of fuel and electricity for construction equipment, raw materials to construct Project infrastructure, and the public funds spent during construction would ensure long-term gains in regional mobility through establishing a vehicular tolling program that would reduce vehicle congestion in the Manhattan CBD, thereby improving overall traffic flow and regional air quality. The vehicular tolling program would create a new local, recurring funding source for the MTA capital projects. Funding for transit would allow increased fleet size, would improve the efficiency of the system, and would generally enhance transit use, thereby allowing MTA's transportation network to absorb increasing transit ridership and further reduce vehicle congestion.

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Robert Donnelly	Regional Transportation and Modeling Results; Transit	M.S., Transportation Studies B.A., Political Science	44
Victoria Hallas, AICP	Deputy Project Manager	M.S., City and Regional Planning B.A., Environmental Studies and Fine Arts	9

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Aryeh Lemberger, AICP	Transit; Highways and Local Intersections	M.S., Engineering	21
Peter Liebowitz, AICP	Project Manager	M.S., Urban Planning B.A., Urban Studies	37
Alice Lovegrove	Air Quality; Energy	M.S., Environmental and Waste Management B.E., Engineering Science	32
Michael Lucia	Assistant Deputy Project Manager	M.C.R.P., City and Regional Planning B.A., Geography	5
Ian McNamara	Project Manager	M.EngSc B.Eng Hons, Civil Engineering	25
Arthur Morrone	Noise	B.S., Meteorology	42
Seth Myers	Project Manager	M.S., Urban Planning B.A., Political Science	17
David Ory, Ph.D.	Regional Transportation and Modeling Results; Transit	Ph.D., Civil Engineering M.S., Civil Engineering B.S., Civil Engineering	21
Lawrence Pesesky, AICP	Indirect and Cumulative Effects Environmental Justice	M.S., Geography B.S., Agricultural Economics	43
Katie Shepard, AICP	Deputy Project Manager	M.C.R.P., City and Regional Planning B.A., Geography B.A., Psychology	6
Yue Shuai	Regional Transportation and Modeling Results	M.S., Urban Planning	5
Ethan Smolinsky, EIT, ENV SP	Highways and Local Intersections	M.S., Transportation Systems B.S., Civil Engineering	6
Matt Stratton	Regional Transportation and Modeling Results; Transit	M.S. Urban Planning and Policy B.S., Geography	14
Edward Tadross	Energy	B.A., Earth Sciences B.A., Environmental Studies	23
Victor Teglasi	Highways and Local Intersections	M.S., Urban Planning B.S., Civil Engineering	42
Mark Walker, AICP	Transit	M.Phil., Urban Planning M.S., Urban Planning B.S., Geography	38