Chapter 1: Project Purpose and Need

A. INTRODUCTION

The Federal Transit Administration (FTA) and the Metropolitan Transportation Authority (MTA), in cooperation with MTA New York City Transit (NYCT), propose to construct the Second Avenue Subway in Manhattan, to provide much-needed transit access to East Side residents, workers, and visitors and to improve mobility for all New Yorkers.

The proposed project analyzed in this Final Environmental Impact Statement (FEIS) is a full-length Second Avenue Subway from Harlem to Lower Manhattan, recommended after careful consideration of a full range of alternatives in the Major Investment Study (MIS) for Manhattan East Side Transit Alternatives Study (MESA) and public and agency response to the MESA MIS, Draft Environmental Impact Statement (DEIS) published in 1999. As described in detail in Chapter 2 ("Project Alternatives"), as well as Appendix B ("Development of Alternatives"), the design of the full-length Second Avenue Subway has been further refined since completion of the DEIS and Supplemental Draft Environmental Impact Statement (SDEIS) dated March 2003, resulting in the project alternative analyzed in this FEIS.

This chapter discusses the need for the proposed Second Avenue Subway. It identifies the project, defines the current and future travel problems on the East Side and in the city, describes the project's background and current planning context, and presents the project's goals and objectives.

B. IDENTIFICATION OF THE PROPOSED PROJECT

The Second Avenue Subway would be a new, two-track, approximately 8.5-mile rail line extending the length of Manhattan's East Side from 125th Street in East Harlem to Hanover Square in the Financial District. This new subway line would serve communities in East Harlem, the Upper East Side, Midtown, Gramercy Park/Union Square, the Lower East Side, Chinatown, and Lower Manhattan. The added capacity of the Second Avenue Subway would improve service for passengers traveling into and through the East Side corridor on the new service as well as on the existing Lexington Avenue Line.

The new line would make the neighborhoods of the East Side more accessible not only to those who live there, but to visitors and workers traveling from other parts of New York City as well. Not only would the Second Avenue Subway serve existing land uses on the densely developed East Side of Manhattan, it would also support emerging growth in several areas, including East Harlem, the Lower East Side, and Chinatown. In addition, by providing new service to Lower Manhattan, where the devastation wrought by the attacks on the World Trade Center is still being felt, the Second Avenue Subway would add important new capacity to the area. Indeed, the Lower Manhattan Development Corporation (LMDC), the city-state entity charged with rebuilding the former World Trade Center site, has identified the Second Avenue Subway project as a key long-term component in rebuilding downtown Manhattan.

The Second Avenue Subway would actually provide for two subway services in this corridor. The first would be a full-length Second Avenue route operating between 125th Street and Hanover Square; 16 new stations would serve this area. The second service would operate along Second Avenue from 125th Street to 63rd Street, where it would divert west along the existing 63rd Street Line and stop at the existing Lexington Avenue-63rd Street Station; it would then join the existing Broadway Line via an existing connection and serve existing express stations along Seventh Avenue and Broadway before crossing the Manhattan Bridge to Brooklyn. Passengers traveling to Lower Manhattan on this route could transfer for local service to destinations south of Canal Street. Accordingly, passengers traveling between East Harlem and the Upper East Side would be able to reach both the eastern and western sides of Lower Manhattan. Passengers traveling to and from Brooklyn would also be better served by the new service to the East Side provided both through the Broadway Line service and the anticipated free transfers to be provided at several stations, including the Grand Street Ⓑ Ⓓ Line and the Second Avenue Ⓕ. Passengers from the Bronx would benefit from free transfers at the Lexington Avenue ❹ ❺ ❻ 125th Street Station, among others.

The Second Avenue Subway would also provide more flexibility for passengers traveling along the eastern side of Manhattan, where subway service is currently limited to one line—the severely overcrowded Lexington Avenue Line—for much of the area. As such, the new Second Avenue service would provide a needed alternative to the Lexington Avenue Line in the event of shutdowns to that service due to emergencies or breakdowns. Finally, with a new connection at 125th Street, the project would also improve regional access to the various East Side neighborhoods from the existing Metro-North Railroad.

PROJECT AREA

The project area is defined as the portions of Manhattan that would be both served by the proposed new subway and affected by its construction, including those communities that would experience expanded service on the Broadway Line. As shown in Figure 1-1, the project area encompasses the entirety of East Harlem, the Upper East Side, East Midtown, the Lower East Side, and much of Greenwich Village, SoHo, Tribeca, and Lower Manhattan. It also includes the portions of Clinton and West Midtown east of Tenth Avenue and the portions of Chelsea east of Eighth Avenue. The project area encompasses such diverse land uses as:

- The central business districts (CBDs) of Midtown and Lower Manhattan, which are the nation's largest and third-largest office districts, respectively;
- The civic center, which includes City Hall and the federal complex, as well as the United Nations, and numerous foreign consulates;
- The major transit hubs at Grand Central Terminal, Penn Station, and the Port Authority Bus Terminal;
- The city's world-renowned Broadway theaters and other major international and domestic tourist destinations in Times Square, the Theater District, the Lower East Side, and Lower Manhattan;
- Concentrations of department stores and specialty retailers in Herald Square, Union Square, and SoHo and along Fifth and Madison Avenues;
- Cultural institutions such as the Metropolitan Museum of Art, the Guggenheim Museum, the Whitney Museum of American Art, and the Museum of Modern Art;

- The academic campuses of New York University, Hunter College and other colleges of the City University of New York (CUNY), Rockefeller University, The Cooper Union, and the Fashion Institute of Technology;
- The hospital campuses of Beekman, Beth Israel, New York Eye and Ear Infirmary, Bellevue, New York University, St. Luke's-Roosevelt; New York Presbyterian, Lenox Hill, Mount Sinai, Metropolitan, and North General, and others;
- Concentrations of financial institutions, such as the New York Stock Exchange, the American Stock Exchange, the Commodities Exchange, and Nasdaq; and such corporations as American Express, J.P. Morgan Chase, Bear Stearns, and Goldman Sachs; and
- The densely populated residential communities of East Harlem, Carnegie Hill, Yorkville, Sutton, Kips Bay, Murray Hill, Gramercy Park, East Village, and the Lower East Side, which include a mix of high-rise condominiums, apartment towers, brownstones, tenements, and publicly assisted housing projects.

TRANSIT SERVICE IN THE PROJECT AREA

Only the Lexington Avenue Line (4 5 6) provides full north-south rapid transit subway service on the East Side. South of 64th Street, several east-west subway routes (7 E F L N R S V W) cross the area and connect to or continue on as other north-south services. The N R W trains provide north-south subway service along Broadway from Lexington Avenue and 59th Street to Lower Manhattan.

Several subway lines serve the Lower East Side (B D F J M V Z), but they do not offer full north-south service up and down the East Side, and their stations are at some distance from residents in the easternmost portions of the neighborhood. Lower Manhattan is served by most of the city's through routes to Brooklyn. However, there is no north-south service east of Nassau Street/Broad Street, in the center of the island.

On the surface, most of the project area is characterized by a regular grid of north-south avenues and cross streets. Bus service is available north of Houston Street on all major north-south avenues (except Park Avenue north of Grand Central Terminal) and all major crosstown streets. South of Houston Street, the older, irregular street pattern necessitates a more limited and complicated organization of bus routes, all of which are at greater risk of schedule delays due to traffic conditions on the narrow streets.

C. PROBLEM IDENTIFICATION

HISTORIC OVERVIEW

Manhattan developed rapidly during the 19th century, its growth supported by expanding transit service. Elevated train lines, also known as "els," brought New Yorkers to Manhattan's center from northern Manhattan, the Bronx, and Brooklyn. By the 1890s, the Sixth and Ninth Avenue els (which joined to create one service north of 53rd Street) provided rapid transit to the West Side, and the Second and Third Avenue els served the East Side. All lines offered connections to the Bronx and were supported by trolleys riding along the streets. A separate network of elevated lines in Brooklyn served Lower Manhattan via the Brooklyn Bridge.

The first two decades of the 20th century saw construction of subway lines in Manhattan, and by 1920 those traveling to, through, or from the East Side could choose one of three north-south rapid transit lines: the Lexington Avenue subway or the Second or Third Avenue els. The el lines were of major importance to the City of New York; in 1921 alone, they carried 384 million passengers. As the subway network expanded, however, and lines were added to and from Queens, Manhattan's els became less and less popular with New Yorkers. They began to shut down in the 1930s, and by 1942 the Second Avenue el was discontinued with the promise of a new subway line on that route. The Third Avenue el closed in 1955. Although the Sixth and Ninth Avenue els were replaced by the Sixth and Eighth Avenue subway lines on the West Side, no such improvement occurred on the East Side. For nearly 50 years, only the Lexington Avenue Line (❹❺❻) has provided north-south rapid transit service through the East Side.

The closing of the els took place during a time of great growth in the city. The city's economy was strong through the late 1940s, the 1950s, and the early 1960s. The removal of the noise, shadows, and barriers created by the els helped to fuel a development boom on the Upper East Side (high-rise residences) and in East Midtown (primarily office buildings). This growth coincided with a sharp reduction in industrial uses in the "far" East Side along the waterfront and construction of a number of public and publicly assisted housing projects on the Lower East Side and Upper East Side, and in East Harlem. By the mid-1960s, it was clear that rapid transit service on the East Side of Manhattan was deficient. As the then-chairman of MTA, William Ronan, noted, "You can't go on building office buildings, apartment buildings, without planning for adequate transit." MTA proposed a new Second Avenue subway line and began its construction in 1972. But the project became a casualty of the city's fiscal crisis in the early 1970s and construction stopped in 1975. Construction of office and apartment buildings has not stopped, however; despite a hiatus in the 1970s and another in the early 1990s, the study area has seen substantial commercial and residential development in the past two decades and is expected to see considerably more through 2020, the project's analysis year.

The purpose of the Second Avenue Subway is to address the problems and deficiencies in access and mobility associated with an overburdened transit infrastructure that is struggling to accommodate existing customers and the continuing growth on Manhattan's East Side. Issues of transportation service, congestion, and environmental and socioeconomic needs are discussed below.

STUDY AREA PROBLEMS AND NEEDS

TRAVEL DEMAND

Manhattan's East Side is densely developed with residential, retail, and commercial office uses. With more than 850,000 residents—more than in the entire city of San Francisco—and 1.9 million jobs in 2000[1] at the core of the greater metropolitan area, the project area (see Figure 1-1) plays a key role in the region's overall travel patterns. Each day, more than 2 million people travel in the project area as they commute to and from work. Most of these trips begin outside the area, but area residents' trips within the project area also account for a large number of trips (about 18 percent). Those who work in the project area overwhelmingly make their "journey-to-work" on public transit: as reported in the 1990 U.S. Census (the most recent data available), 78.5 percent use the subway, bus, rail, or ferry to get to and from their jobs during the morning and evening rush hours. The overall numbers are large enough so that even the relatively small

[1] Population from 2000 *U.S. Census of Population and Housing*.

percentage of trips by car (13.5 percent) translates to an estimated 60,000 autos during the AM peak hour.[1]

Most (77 percent) of the journey-to-work trips to Manhattan in 1990 came from the five boroughs; with Manhattan accounting for 30 percent; Brooklyn 18 percent; Queens 18 percent; the Bronx 8 percent; and Staten Island 3 percent. Other areas of origin are New Jersey (10 percent), Nassau County (5 percent), Westchester County (4 percent), Suffolk County (2 percent), Connecticut (1 percent), and Rockland County (less than 1 percent). In addition to work journeys are trips made for other purposes, including shopping, entertainment, and tourism.

The total number of daily trips in the project area, like the trips to work, illustrate the same travel patterns (see Figure 1-2). The largest number of trips (39 percent) made into the area of Manhattan south of 60th Street each day come from the north; of these, the great majority (723,000, or 48 percent) are by subway. Almost half the trips enter the area from the east, from Queens (21 percent) and Brooklyn (26 percent). Some 439,000 daily trips from Queens and 637,000 daily trips from Brooklyn (together, 61 percent of the total daily trips from Queens and Brooklyn) are made by subway. The proportion of trips crossing to Manhattan from the west (New Jersey) and south (Staten Island) is smaller but by no means insignificant. A total of 1.8 million people travel into the area of Manhattan south of 60th Street each day by subway (for a total of 3.6 million round trips each day). In contrast, a total of 614,000 trips are made by subway on an average weekday in the Washington, D.C. metropolitan area, which has the second largest transit system in the United States, and only 500,000 trips are made by subway each day in Chicago.

Employment and population in the study area are expected to increase in the future, with 327,000 new workers and 60,000 new residents by 2025. The remainder of Manhattan, which influences travel throughout the project area, will also see population and employment increases. Problems presented by the continuing growth in the study area are detailed below.

EAST SIDE TRANSIT RIDERSHIP

Following a period of marked declined in the 1970s, subway and bus ridership has rebounded significantly in recent years. In 2001, annual subway ridership was at its highest point since 1953, despite the impacts of the recession and the events of September 11, and bus ridership was at its highest point since 1975. Subway and bus ridership are expected to continue to increase in future years.

Table 1-1 shows transit ridership entering the Manhattan CBD below 60th Street via NYCT subways, NYCT buses, and the Metro-North Railroad. Many of these modes terminate in or traverse the east side. These modes carry nearly 2 million passengers into and out of the CBD each business day.

[1] The number of vehicles was estimated assuming an average auto occupancy for each car of 1.64, the average auto occupancy rate for vehicles entering Manhattan between 7 AM and 10 AM in 1995, as reported in the New York City Department of Transportation's 1995 *Manhattan River Crossings*, published in 1997.

Table 1-1
Weekday and Peak Hour Transit Ridership Entering and Exiting Manhattan South of 60th Street

Mode	Weekday		AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
NYCT Subway	1,866,694	1,791,359	415,321	78,168	95,099	296,240
NYCT Bus	67,830	72,204	14,930	2,240	3,235	12,184
Metro-North Rail Road	94,787	90,228	25,456	1,508	2,369	24,165
Lexington Avenue Line 4 5 6						
60th Street Cordon	305,082	323,926	59,105	25,120	20,908	44,762
Brooklyn Cordon	94,812	81,003	22,897	3,515	4,001	16,568

Notes: Metro-North Railroad ridership numbers does not include commuters entering the Manhattan CBD via Amtrak service on the New Haven Line.
The AM peak hour is 8AM to 9AM, and the PM peak hour is 5PM to 6PM.

Sources: MTA New York City Transit, *Year 2000 Weekday Cordon Count* (June 2001).
MTA Metro-North Railroad, *Suburban and Intercity Rail Transit by Line* (2001).

The Lexington Avenue Line alone carries approximately 1.3 million riders daily—more than the combined ridership of San Francisco, Chicago, and Boston's *entire* transit systems. The Lexington Avenue Line also carries more riders than any of the subway lines serving the CBD, with approximately 400,000 daily riders. It is the busiest of the three lines entering the Manhattan CBD from Upper Manhattan, and it is the third busiest of the eight lines crossing the East River from Brooklyn. As the only north-south route serving the East Side, the Lexington Avenue subway must support a significant volume of transfers from other north-south and crosstown subway lines.

The stations along the Lexington Avenue Line are among the system's busiest. In 2000, NYCT operated a total of 468 subway stations. Considering entering passengers only (and not transfers, which contribute substantially to station activity), 20 of the 22 stations on the Lexington Avenue Line in Manhattan ranked in the top 100 for annual paid patronage, and more than a third of these were in top 20.

NYCT local bus routes on Manhattan's East Side served more than 65 million riders in 2000. The M15 line, which operates along First and Second Avenues, ranked as the busiest of NYCT's 193 local routes, serving more than 19 million passengers annually. In fact, all of the East Side's north-south routes ranked in the top third of the city's local buses for annual patronage.

CROWDING

Subways

In 2000, on an average weekday, a total of approximately 817,000 passengers entered the Lexington Avenue Line stations between Bowling Green and 125th Street. This was the highest patronage of any segment of the city's subway system.

Information on car and train capacity in the subway system—including on the Lexington Avenue Line—is provided in Chapter 5, "Transportation." NYCT schedules 29 express trains on the southbound Lexington Avenue Line during peak hours. Given the merge between the 4 and 5 routes north of 125th Street and the constraints of the platform lengths and signal system, this

is currently the maximum capacity of the line. Because of frequent congestion south of 125th Street, only 24 to 26 of the 29 scheduled express trains depart Grand Central station during the peak hour. Congestion is most directly attributed to excessive dwell times (the time a train is stopped within a station to load and unload passengers). Dwell times are notably long at many of the Lexington Avenue Line stations due to the large number of passengers entering and exiting the extremely crowded trains. Excessive dwell times create train delays, which reduce the system's throughput, thereby exacerbating crowding. Because the Lexington Avenue Line operates over capacity during peak hours, an extended dwell time on one train often results in unpredictable dwell times for other trains up and down the line.

As described in the MESA DEIS, through most of its Manhattan run, the Lexington Avenue Line carries both northbound and southbound commuters, and additional riders transfer to 4 5 6 trains from other north-south or crosstown subways and Metro-North. Thus, even at maximum throughput, most trains on this line exceed their guideline passenger capacities before entering the CBD, and they often remain crowded for the length of Manhattan. Surveys conducted by Vollmer Associates showed that in the AM peak hour in 2000, southbound 4 5 trains on the Lexington Avenue Line exceeded their guideline passenger capacity throughout their run from 125th Street to 14th Street. At the line's busiest stations, such as at 86th Street and Grand Central, 4 5 trains exceed their guideline passenger capacities by as much as 16 percent. In the northbound direction in the AM peak hour, 4 5 trains exceeded capacity in Lower Manhattan with a progressive decline in ridership as they traveled through Midtown Manhattan. Southbound 6 trains operated above their guideline capacities by as much as 10 percent on exiting 59th Street Station, with a decline in ridership as they continued south to Brooklyn Bridge-City Hall Station. (Since these percentages are based on averaging train loads over an hour individual trains are significantly more crowded.) In 2003, with the arrival of new train cars, NYCT will be able to increase the number of trains in 6 service.

In addition to train crowding, Lexington Avenue stations experience severe congestion during parts of the day. Despite the high volumes of passengers and large transfer movements, stations on the Lexington Avenue Line, which is among the first elements of the city's subway system, generally have lower passenger capacity than newer stations. The stations have narrower platforms and stairwells, which are used by great numbers of passengers entering, exiting, and transferring in the stations. This has led to station overcrowding and congestion, particularly during peak periods. It is not feasible to widen the platforms in the Lexington Avenue Line stations because of the presence of buildings' foundations and basements immediately adjacent to the subway.

Buses

The three busiest bus corridors in the United States serve the communities east of Fifth Avenue (the M15 on First and Second Avenues; M101, M102, and M103 on Third and Lexington Avenues, and the M1, M2, M3, M4 on Fifth and Madison Avenues). All of these routes are heavily used, with many standees. In addition, north-south buses are scheduled as often as every 100 seconds during the peak hours to meet the considerable demand. For example, NYCT operates 36 buses per hour (including limited- and local-stop service) in each direction during the peak period on the M15 route. This frequent service, combined with high ridership (which increases the dwell time at stops), heavy street congestion, double-parked cars and other blockages in bus lanes and at bus stops, and the timing of traffic lights, can alter the orderly flow of buses, so that later buses catch up to delayed buses, and they all arrive in a bunch at the next bus stop ("bus bunching"). This creates gaps in service, thereby increasing travel times, and contributes to surface traffic congestion.

Traffic

The city's streets and highways are ill-equipped to take on any extra demand. Indeed, traffic flow, which has doubled since the 1940s, is a major contributor to the region's air quality problems. High levels of crosstown traffic, heavy pedestrian volumes, goods deliveries, double-parking, and the large number of buses needed to accommodate excessive demand have all combined to create chronic, severe congestion throughout the city's busy streets. Each day, some 830,000 vehicles enter the area of Manhattan south of 60th Street, as well as 11,500 buses (these numbers are for 1999). Congestion is particularly severe in East Midtown, which has two of the major portals to Manhattan—the Queensboro Bridge and the Queens-Midtown Tunnel—and is the center of commercial activity in the city. Approaches to the Williamsburg, Manhattan, and Brooklyn Bridges are also regularly overcrowded. Streets south of Delancey Street on the Lower East Side and in Lower Manhattan are often crowded because of relatively high vehicular volumes, irregular street patterns, and narrow streets.

POOR ACCESSIBILITY AND MOBILITY

With only one line serving most of the East Side and because of the bulging shape of Manhattan's eastern shore, many neighborhoods in the study area have poor access to rapid rail transit. Residents and workers in many parts of the area have long walks between points of origin or destination and existing subway stations. On most of the East Side, people who live east of Second Avenue have a 10- to 15-minute walk (½- to ¾-mile) to the nearest subway stop; for those who live on streets midway between station locations, those east of Third Avenue have walks of that distance. The greatest concentrations of residential population denied easy rapid transit accessibility are in the Upper and Lower East Side neighborhoods, but some residents of East Harlem and East Midtown face the same problem. Portions of the Lower East Side and East Midtown are accessible to east-west subways, but, particularly on the Lower East Side, connections to north-south lines are not convenient. In all, on the East Side, an estimated 324,000 residents and 226,000 workers are not within a 10-minute walk of a subway station.

Other factors affect accessibility and mobility in the project area. The Lexington Avenue Line is the only direct subway route between Grand Central Terminal and Lower Manhattan. It serves as a major travel route for Metro-North commuters headed to and from destinations in Lower Manhattan. In addition, because there is no four-track configuration south of the City Hall Station, passengers on the local (6) trains wishing to access Lower Manhattan from the Bronx, East Harlem, the Upper East Side, and Midtown must transfer to the express routes (4 5) to reach their final destination, which further affects accessibility for those riders.

Without subway service east of Lexington Avenue, many residents and commuters rely on surface transit modes such as buses, vans, or taxis. Because these vehicles share the road with automobiles and trucks, there is often severe congestion on East Side avenues and cross streets.

INCREASED TRAVEL TIMES

Transit and vehicle congestion in the project area creates a host of operational constraints that increase travel times for subway and bus passengers.

Extended Dwell Times

Excessive dwell times decrease a train's ability to maintain its schedule, causing slow-downs and back-ups all along the line during peak periods. This decreases speeds, increases travel time

on all trains (in addition to the ones with excessive dwell times), and reduces the system's hourly capacity (trains per hour).

Slow Train Speeds During Peak Periods

Due largely to excessive dwell times, train speeds are markedly slower during peak times than at other times, a condition that runs counter to the service goals of the system. For example, the maximum scheduled peak-hour travel time on the Lexington Avenue express service between Bowling Green and 125th Street is 32 minutes, compared with 23 minutes at other times.

Slow Bus Speeds

Because of traffic congestion, bus speeds are often very slow, with unpredictable delays occurring throughout the day, particularly during peak travel times. For example, the average north-south bus speeds during the weekday midday peak on most routes are between 5 and 7 miles per hour (mph); during a Saturday afternoon, the speeds range from 7 to 9 mph.

Slow Vehicular Speeds

High traffic volumes and frequent congestion lead to slow speeds for all vehicles traveling on study area streets. As noted above, bus bunching, which often results when the bus system is operating beyond its practical capacity, also contributes to overall traffic congestion. The slow speeds make any travel through Manhattan during peak periods time-consuming and inefficient. High traffic volumes moving at very slow speeds contribute to a deterioration of air quality (cars and trucks are less efficient at slow speeds and thus produce greater amounts of air pollutants). More about environmental concerns is presented below.

RELIABILITY

With the Lexington Avenue Line and most East Side bus routes operating at or above system capacity, there is very little flexibility to absorb unexpected service interruptions such as passenger illness or mechanical failures. These ordinarily short stoppages can exacerbate an already overburdened system, resulting in lengthy delays. The slowing of train speeds and lengthening of dwell times from overcrowding can result in unpredictable delays on the Lexington Avenue Line. In addition, traffic congestion reduces NYCT's ability to adhere to bus schedules, increases travel times, and often results in bus bunching, which may create a longer wait time for passengers at bus stops. In short, passengers often cannot count on the schedule reliability of transit service on Manhattan's East Side.

INABILITY TO MEET FUTURE DEMANDS

The Lexington Avenue Line and East Side bus routes are already congested from high travel demand that they cannot fully accommodate. Population and employment are predicted to continue to increase in the project area, so that in the future, travel demands will only increase. Further, as other transit projects—such as LIRR East Side Access—and future developments along the corridor are built, they will add to ridership on East Side subways and buses. Without improvements to the existing capacity of the system, it will be difficult for NYCT to meet future ridership demand.

RESULTING ENVIRONMENTAL AND SOCIOECONOMIC CONCERNS

The lack of capacity and resulting congestion on the city's transportation system contribute to the deterioration of a range of environmental and socioeconomic conditions. These include air quality, neighborhood character, and the economic vitality of the city's regional and local commercial areas, as described briefly below:

- New York City was recently designated by the U.S. Environmental Protection Agency (EPA) as an area in attainment (i.e., National Ambient Air Quality Standards are being met) for carbon monoxide. However, New York City is not yet in attainment for ozone, which is associated with internal combustion sources, such as vehicular traffic. Manhattan is also designated as a non-attainment area for particulates (PM_{10}). In addition, EPA recently promulgated new standards for smaller particulate matter ($PM_{2.5}$). New York State has begun to monitor $PM_{2.5}$ levels, but data are not yet available to determine attainment status. Without good public transit access, people tend to use taxis and automobiles, and other travel modes. These trends, if allowed to continue, would result in increased emissions of air pollutants. The proposed project would help prevent further deterioration of New York City's air quality by reducing the number of vehicle trips per day on an average weekday by over 8,300.
- The congestion and inconvenience associated with the increasing lack of capacity in the area's transportation system, its inaccessibility to many residents, its unreliability and slow speeds, and its inability to cope with change and growth have led to certain problems affecting neighborhood character and socioeconomic conditions. Specifically, lack of access to transit, due to the considerable distance from stations or because the transit system is overcrowded, uncomfortable, and unreliable in schedule, makes a community less attractive for development or reinvestment and discourages access to local businesses as well as regional commercial centers. High volumes of vehicular traffic have a similar negative influence on socioeconomic conditions, making access difficult for travel and for the delivery of goods and services, and adding noise and congestion to a neighborhood.

D. PLANNING CONTEXT

The Second Avenue Subway is one of a number of projects now under construction or in the planning stage for Manhattan. In addition, the City and State each have overall environmental, transportation, and development policies in place. These efforts each respond to a variety of purposes and needs, but many of the objectives overlap with those of the Second Avenue Subway, and coordination with these plans and policies is essential to project planning. Thus, these projects form a context in which to frame the goals and objectives for the Second Avenue Subway and to refine the full-length Second Avenue Subway alternative for evaluation in the SDEIS. Projects underway or in the planning stages include a number of major transportation projectsmany involving mass transit initiatives—that would improve access to and from Manhattan. In addition, the Second Avenue Subway is being planned in conjunction with MTA's Long-Range Planning Framework, an internal working group of project managers leading MTA's major long-range transportation projects. This group was formed to create a unified program of improvements to its subway and commuter rail systems. More detailed information on future plans and the Long-Range Planning Framework are described further in Appendix A, "Planning Context."

Finally, a number of large scale land use developments are also either underway or in the planning stages. Many of these undertakings would be located east of Lexington Avenue and in Lower Manhattan, resulting in increased demand for transit service to these areas. A list of these projects is also provided in Appendix A. Highlights include:

EAST HARLEM REZONING

In the coming years, East Harlem is projected to see a large increase in retail space, including several large commercial developments that are expected to attract regional users as well as local residents. The City of New York is an actively encouraging such growth. For example, the New York City Council recently adopted a new East Harlem zoning policy for 57 blocks between 122nd Street and 99th Street, east of Lexington Avenue, in the area that would be served by the Second Avenue Subway. Chapter 6, "Social Conditions," provides more information on this policy, and on other projects proposed for East Harlem.

CONSOLIDATED EDISON FIRST AVENUE PROPERTIES

Consolidated Edison is preparing an SDEIS for the disposition of 9.8 acres of property along First Avenue between 35th and 41st Streets. It has entered into an agreement with a developer for high-density redevelopment on the sites. To be completed by 2011, this development could result in an additional 5 million square feet of uses including residential, commercial and medical offices, local and destination retail, and public open space.

RECONSTRUCTION OF THE FORMER WORLD TRADE CENTER SITE AND OTHER PROJECTS IN LOWER MANHATTAN

While much of the LMDC's attention is rightly focused on the rebuilding of the World Trade Center site and restoring it as a functioning part of Lower Manhattan, many of the new developments currently in the planning stage or under construction are occurring in other parts of the downtown area, such as the Financial District and the South Street Seaport area. Among the initiatives contemplated are the continuing conversion of outmoded office space to residential use, the creation of new housing units, and the construction of schools, retail stores and open spaces to accommodate the growing residential population of the area. The Mayor's vision also focuses on creating Fulton Market Square along Fulton Street, which it imagines as a retail, arts, culture and entertainment destination.

NYCT and other agencies are also involved in the efforts to rebuild and improve parts of Lower Manhattan. MTA/NYCT is developing the Fulton Street Transit Center, a planned transit hub for the center of Lower Manhattan that would renovate and improve the Fulton Street-Broadway Nassau Station serving the 2 3 4 5 A C J M and Z lines. The new station would make access to the station platforms more direct and convenient, and simplify transfers among the lines. Below-ground links would provide a direct connection from the station to the new World Trade Center site and the World Financial Center.

E. PROJECT GOALS AND OBJECTIVES

The project's goals, and the objectives to support them, address the problems and needs presented earlier in this chapter. These goals and objectives were constructed with input from a Technical Advisory Committee that included a broad range of governmental agencies and a Public Advisory Committee, which were both convened for the MESA MIS/DEIS study; the

MTA's internal working group, the Long-Range Planning Framework; and various civic and community groups. These goals and objectives were used to develop and evaluate the alternatives presented and analyzed in the MIS/DEIS and have aided in this study of the full-length Second Avenue Subway. The project's three goals and their supporting objectives are presented below.

GOAL 1: IMPROVE MOBILITY ON THE EAST SIDE OF MANHATTAN

- Reduce overcrowding and congestion of current transit lines, particularly the Lexington Avenue Line.
- Improve accessibility to East Harlem, the Upper East Side, East Midtown, the Lower East Side, and Lower Manhattan, focusing on the easternmost areas that are of considerable distance from existing north-south subway service.
- Extend existing transit routes where appropriate to accommodate transit demands.
- Accommodate projected future ridership.
- Improve reliability of existing transit services.
- Improve integration with other metropolitan-area system programs.
- Minimize transit delays.
- Maximize transit safety.
- Maximize use of transit.
- Reduce travel time.
- Reduce traffic congestion.
- Improve pedestrian conditions.
- Improve intermodal (bicycle, pedestrian, bus, subway, express bus, limited-stop buses) connections.

GOAL 2: ACHIEVE ECONOMIC FEASIBILITY AND COST-EFFECTIVENESS

- Maximize operating and capital cost-effectiveness.
- Stimulate appropriate economic development and jobs.
- Maximize off-peak ridership.
- Support staging and upgrade initiatives.
- Choose alternatives that can be implemented with available resources.

GOAL 3: MAINTAIN OR IMPROVE ENVIRONMENTAL CONDITIONS

- Reduce air pollution—Reduce non-transit vehicle-miles traveled.
- Reduce energy consumption—Reduce non-transit vehicle-miles traveled.
- Minimize noise impacts.
- Minimize property takings and other displacements.
- Maintain character, and compatibility with land use.
- Maintain character, and compatibility with neighborhood.
- Support existing and planned economic activities.
- Minimize community disruption during construction.
- Create aesthetically pleasing transit alternatives.
- Protect historic and archaeological resources, parklands, and environmentally sensitive areas.
- Develop and monitor sustainable or environmental-friendly design solutions.

- Minimize impacts on water quality and flooding.
- Maximize rider security and comfort.
- Minimize community disruption during construction.

As demonstrated in this FEIS, the Second Avenue Subway would achieve these goals. ✷