



Metropolitan Transportation Authority

# Capital Program Oversight Committee Meeting

## February 2020

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### Committee Members

P. Foye, Chair  
N. Zuckerman, Vice Chair  
A. Albert  
N. Brown  
S. Feinberg  
D. Jones  
L. Lacewell  
R. Linn  
D. Mack  
S. Metzger  
J. Samuelsen  
V. Tessitore

# **Capital Program Oversight Committee Meeting**

**2 Broadway, 20th Floor Board Room**

**New York, NY 10004**

**Monday, 2/24/2020**

**3:30 - 4:30 PM ET**

## **1. PUBLIC COMMENTS PERIOD**

## **2. APPROVAL OF MINUTES JANUARY 21, 2020**

*- Minutes from January '20 - Page 3*

## **3. COMMITTEE WORK PLAN**

*- 2020-2021 CPOC Committee Work Plan - Page 6*

## **4. B&T CAPITAL PROGRAM UPDATE**

*- Update on B&T - Page 8*

*- IEC Project Review on Throgs Neck Bridge (TN-49) and TLR Review of B&T Core Projects - Page 33*

## **5. LIRR AND MNR UPDATE ON POSITIVE TRAIN CONTROL (PTC)**

*- Project Update on PTC - Page 38*

*- IEC Project Review on PTC - Page 60*

## **6. CAPITAL PROGRAM STATUS**

*- Commitments, Completions, and Funding Report - Page 66*

## **7. EXECUTIVE SESSION ON CAPITAL SECURITY PROJECTS**

**MINUTES OF MEETING**  
**MTA CAPITAL PROGRAM OVERSIGHT COMMITTEE**  
**January 21, 2020**  
**New York, New York**  
**2:30 P.M.**

CPOC members present:

Hon. Patrick Foye  
Hon. Andrew Albert  
Hon. Norman Brown  
Hon. Robert Linn  
Hon. Susan Metzger  
Hon. Neal Zuckerman

CPOC members not present:

Hon. Sarah Feinberg  
Hon. David Jones  
Hon. David Mack  
Hon. John Samuelson  
Hon. Vincent Tessitore, Jr.

MTA staff present:

Janno Lieber  
Anthony McCord  
Tim Mulligan  
Mario Peloquin  
Tom Savio  
Moe Soliman

NYCT staff present:

Frank Annicaro  
Mark Bienstock  
John Santamaria  
Pete Tomlin

Independent Engineering Consultant staff present:

Chris Adams  
Joe Devito  
Calvin Gordon  
Hassan Tavassoli  
Joe Torres

\* \* \*

Chairman Foye called the January 21, 2020 meeting of the Capital Program Oversight Committee to order at 3:17 P.M.

**Public Comments Period**

There were six public speakers in the public comments portion of the meeting: Jason Anthony; Omar Vera; Matt Kamper; Bruce Hain; Kevin Zeng; Charlton D'Souza

**Meeting Minutes**

The minutes to the meeting held on December 16, 2019 were approved.

## **Committee Work Plan**

Mr. Savio announced that the 42nd Street Connector Project was added to the Work Plan.

## **C&D Update on the 42<sup>nd</sup> Street Connection Project**

Mr. Lieber gave a brief introduction to the project, and noted that it is a strategic effort to combine eight separate projects into a single initiative, the centerpiece of which is the Times Square Shuttle project. A key advantage to this approach is that it will significantly reduce the duration of critical elements of the project, thus providing for customer benefit much sooner than would have been possible as originally conceived. Mr. Soliman then outlined the major project components – including those that are currently underway, as well as those slated for future development – citing key scope, schedule and budget issues, with an emphasis on benefits to the riding public. Further details of the presentation, and Committee Members' comments and questions with respect thereto, are included in the video recording of the meeting maintained in MTA's records.

## **NYCT Update on Signals & Train Control**

Mr. Tomlin provided an overview of the 2020-2024 CBTC Capital Plan, including detailed updates on the four CBTC projects in construction (i.e., 8<sup>th</sup> Avenue, Queens Boulevard Line, Culver Line, and third CBTC supplier) and the Ultra-Wideband Project, as well as a review of CBTC Lessons Learned, and a brief comment on the CBTC Flushing project. In its Project Review of the CBTC Queens Boulevard Line (QBL), the IEC stated that the project has expended the budget for TA Labor. Further, the IEC stated that it is in the process of identifying the reasons for the overruns, including repeat testing in the Intermediate Section having contributed to the need for additional TA Labor. The IEC recognized that the project team has taken several measures to reduce the impacts of early project delays, however, the compressed testing schedule from the baseline may present a risk to completing all in-service activities by March 2021. The IEC then stated that clearly defined performance metrics with thresholds are needed to allow testing to move from one section to the next, which the IEC sees as an important lesson learned from the CBTC Flushing project. In its Project Review of the CBTC Culver Line, the IEC stated that the program is in the early construction phase, and based on its analysis, confirmed that the project remains on budget and schedule. The IEC then stated that because the CBTC Culver Line uses the same hardware and software as the CBTC QBL project, there is risk with the Culver Line project's reliance on the timely commissioning of QBL system. In its Project Review of the third Interoperability supplier, the IEC stated that increasing the number of suppliers capable of meeting the NYCT I2S specification from 2 to 3 is a positive step and will increase the competition for the agency's Fast Track CBTC program work. Further details of the presentations, and Committee Members' comments and questions with respect thereto, are included in the video recording of the meeting maintained in MTA's records.

## **NYCT Update on Subway Car Program**

Mr. Santamaria provided an update on the Subway Car Capital Program, including program goals, as well as program metrics, e.g., Mean Distance Between Failures (MDBF), composition of the fleet by age, and composition of the fleet with respect to being CBTC equipped. Mr. Santamaria touched briefly on recent issues with respect to two vehicles in the R179 fleet having experienced door problems while in service, and he then outlined major elements of other car fleets that comprise the program, including R211, R262, and R142/R142A. In its Project Review of the R179 cars, the IEC found that after reviewing the project expenditures, change orders and program contingency, the Estimate at Completion remains within the budget of \$744M. With respect to schedule, the IEC verified that -- largely due to quality, production and technical issues, as well as parts shortages -- fleet delivery was completed in December 2019, 3 months later than last reported. The IEC concluded its remarks with the following observation: as stated by the agency, two vehicles experienced door problems while in service, for which a root cause analysis report is being finalized and which the IEC will review once it is made available. Further details of the presentations, and Committee Members' comments and questions with respect thereto, are included in the video recording of the meeting maintained in MTA's records.

### **NYCT Update on Bus Procurement**

Mr. Annicaro provided a summary of the Bus Procurement Program, citing its commitment to a state-of-the-art bus fleet that makes smart use of technology to improve service, safety, environmental sustainability, customer amenities and accessibility. Mr. Annicaro then stated that the program is fully committed to transitioning to a zero-emissions bus fleet by 2040. He then cited the success of transit and truck priority on 14<sup>th</sup> Street, as well as the on-board Automatic Bus Lane Enforcement (ABLE) system, which through 2019 legislation, allows for expanded use of camera enforcement of bus lane priority. He then outlined several program initiatives, including Transit Signal Priority (TSP), automatic passenger counting, and safety-related initiatives such as advanced camera systems, back-up cameras, pedestrian turn warning, and driver visibility improvements. Mr. Annicaro concluded his presentation with a review of accessibility enhancements, as well as an overview of Bus Program performance metrics. In its Project Review, the IEC found that based on its analysis of expenditures, change orders and contingency, the Program EAC remains within the \$1.6B budget. With respect to schedule, the IEC verified that all articulated and standard vehicles planned for 2019 were successfully delivered, and that the contract for fifteen 60 ft. articulated all-electric buses is currently forecasted for completion in March 2020, a two-month schedule delay attributable to commissioning challenges. The IEC then provided the following observation: the IEC finds the MTA's plan to invest \$1.1B in an all-electric bus procurement will require additional investments in later programs to accomplish this goal by the 2040 timeframe. The IEC concluded its remarks by recommending that a comprehensive performance and cost analysis be conducted to properly assess the program. Further details of the presentations, and Committee Members' comments and questions with respect thereto, are included in the video recording of the meeting maintained in MTA's records.

### **NYCT Update on Systems and Security Projects**

In the interest of time, the Chairman suggested that because the NYCT and IEC presentations are in the book – unless there are questions or comments from the Board – the meeting move to the next agenda item.

### **MTA Capital Program Commitments & Completions and Funding**

Mr. Mulligan reported that in 2019 the agencies achieved \$4.0 billion dollars or 72% of their overall \$5.6 billion commitment goal. The shortfall is primarily due to slips of twenty major commitments, including 12 projects in NYCT, one in LIRR, and two in MNR. One of those projects -- the nearly \$500 million signal modernization for the 8<sup>th</sup> Avenue Corridor -- was awarded in early January, which if included among the 2019 commitments would increase the figure to 79%. With respect to completions in 2019, agencies completed \$3.5 billion, or 101% of their overall \$3.43 billion goal, exceeding their 2019 annual goal because of several 2020 completions that were completed ahead of schedule.

### **Adjournment**

Upon motion duly made and seconded, Chairman Foye adjourned the January 21, 2020 meeting of the MTA Capital Program Oversight Committee at 4:30 PM.

Respectfully submitted,  
Michael Jew-Geralds  
Office of Construction Oversight



## 2020 - 2021 CPOC Committee Work Plan

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I. Recurring Agenda Items

Approval of the Minutes  
Committee Work Plan  
Commitments/Completions and Funding Report

II. Specific Agenda Items

**March**

C&D Capital Program Update  
• Stations Projects  
Quarterly Traffic Light Reports

**April**

C&D Capital Program Update  
• Infrastructure Projects

**May**

C&D Capital Program Update  
• Signal and Communications Projects  
LIRR and MNR Update on Positive Train Control (PTC)

**June**

Update on OMNY Program  
Update on Minority, Women and Disadvantaged Business Participation  
Quarterly Traffic Light Reports

**July**

C&D Capital Program Update

**September**

C&D Capital Program Update  
Quarterly Traffic Light Reports

**October**

LIRR and MNR Update on Positive Train Control (PTC)  
Update on Capital Program Security Projects (in Executive Session)

**November**

Update on OMNY Program

Update on Minority, Women and Disadvantaged Business Participation

Update on Small Business Development Program

**December**

C&D Capital Program Update

LIRR and MNR Update on Positive Train Control (PTC)

Quarterly Traffic Light Reports

**January**

Rolling Stock Procurement Update

**February**

C&D Capital Program Update: B&T

# MTA Bridges and Tunnels Engineering & Construction

Annual CPOC Capital Program Update  
February 24, 2020



# Table of Contents

Program Status

Design-Build Update

Robert F. Kennedy Bridge HRD Ramp

Henry Hudson Bridge Program

Verrazzano–Narrows Bridge Program

Throgs Neck Bridge Program



# Status of Capital/Sandy Programs

PROGRAM	TOTAL PROGRAM BUDGET	PROGRAM BUDGET COMMITTED TO DATE \$ (%)	REMAINING PLANNED PROJECT COMMITMENTS	PLANNED PROJECTS COMPLETED TO DATE (%)	PROGRAM CONTINGENCIES/ RESERVES
SANDY RESTORATION & RESILIENCY	\$765M	\$711M (93%)	\$0	100%	\$54M
2010-2014 CAPITAL	\$2.02B	\$1.97B (98%)	\$0	100%	\$49.7M
2015-2019 CAPITAL	\$2.94B	\$2.69B (92%)	\$19.6M	20%	\$224.5M



# Successful Implementation Strategies

Facility Based Project CEO and Project Management Teams

Project Bundling

- 75% of Sandy Program
- 35% of the 2010-2014 Program
- 50% of the 2015-2019 Program

Use of Incentives to Minimize Customer Impacts

Leveraging Interagency Agreements

Long Term Master Planning



# 2019 Commitments and Completions

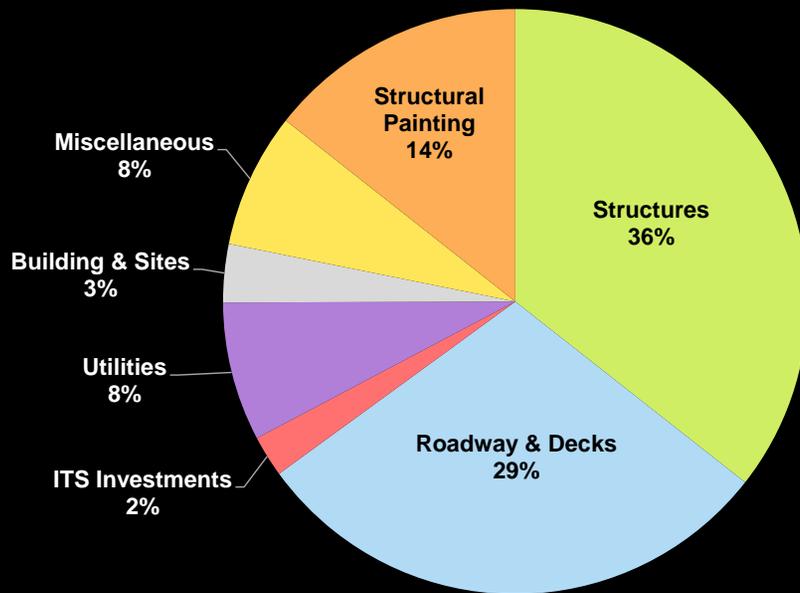


❖ Variance between Planned & Actual Commitments is largely attributable to Program Efficiencies/Savings



# 2020-2024 Capital Program

By Investment Category



**Total Program Value = \$2.8B**  
(Not Including Central Business District Tolling Program)

2020 Planned Commitments: \$241.7M

2020 Planned Completions: \$406M

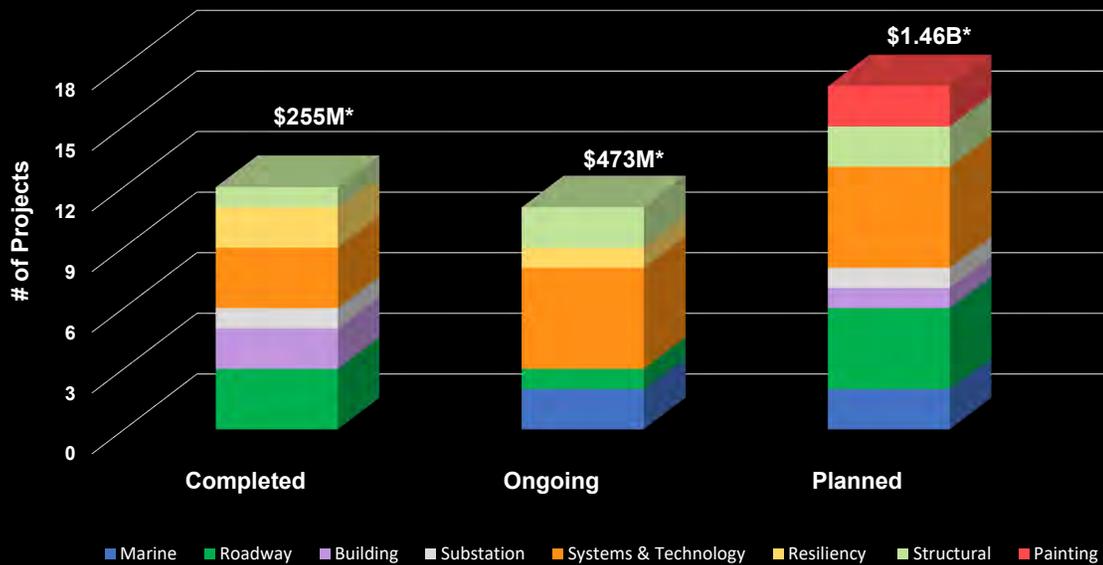


# 2020-2024 Capital Program Highlights

Facility	Project & Description	Project Budget
Verrazzano-Narrows Bridge	VN-84: Replacement of the Upper Level Elevated Approach – Phase 2	\$604M
Robert F. Kennedy Bridge	RK-19: Suspended Span Retrofit & Painting	\$174M
Throgs Neck Bridge	TN-87: Anchorage & Tower Protection	\$145M
Verrazzano-Narrows Bridge	VN-PT: Facility-Wide Painting Program	\$99M
Robert F. Kennedy Bridge	RK-93: Reconstruct / Relocate Randall’s Island Ramps to and from the Manhattan Plaza	\$92M
Verrazzano-Narrows Bridge	VN-86: Widening of the Belt Parkway at the VN Exit/Approach	\$82M



# Design-Build Projects



- Successful delivery on variety of project types
- Less than 1% Average Cost Growth on completed projects
- Design-Build project delivery saves an average of 6 months over conventional Design-Bid-Build

\* = D-B Contract Value



# Significant Completions



# Electrical / Mechanical Rehabilitation of the Harlem River Lift Span at the RFK

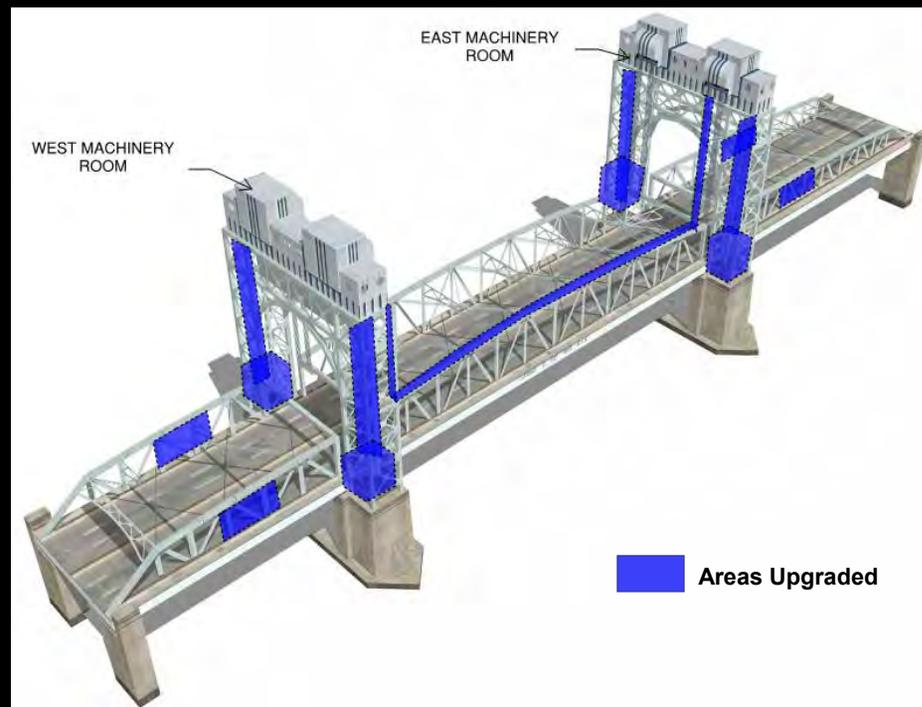
## Scope of Work:

Electrical & mechanical rehabilitation of the Harlem River Lift Span

## Project Benefits:

- Continued reliable operation
- Modernization
- Improved resiliency and safety

**\$36M design-build project completed within budget and 5 months ahead of schedule**



# Main Cable and Suspender Rope Investigation at the VNB

## Scope of Work:

- Unwrap, wedge, sample, and re-wrap 8 cable panels
- Remove and replace 6 suspender ropes for testing

## Project Benefits:

- Determine the current condition of the main cable and suspender ropes
- Informs future capital investments to maximize service life of critical suspension components

**\$23.9M design-build project completed within budget and 1 month ahead of schedule**



# Repairs to the Manhattan Plaza at the RFK

## Scope of Work

- Replacement of structural deck
- Construction of new median roadway barrier, asphalt paving, and roadway striping

## Project Benefits

- Improved customer experience
- Improved traffic safety
- Maximize service life

**\$25M project completed within budget and on schedule**



Deck Reconstruction

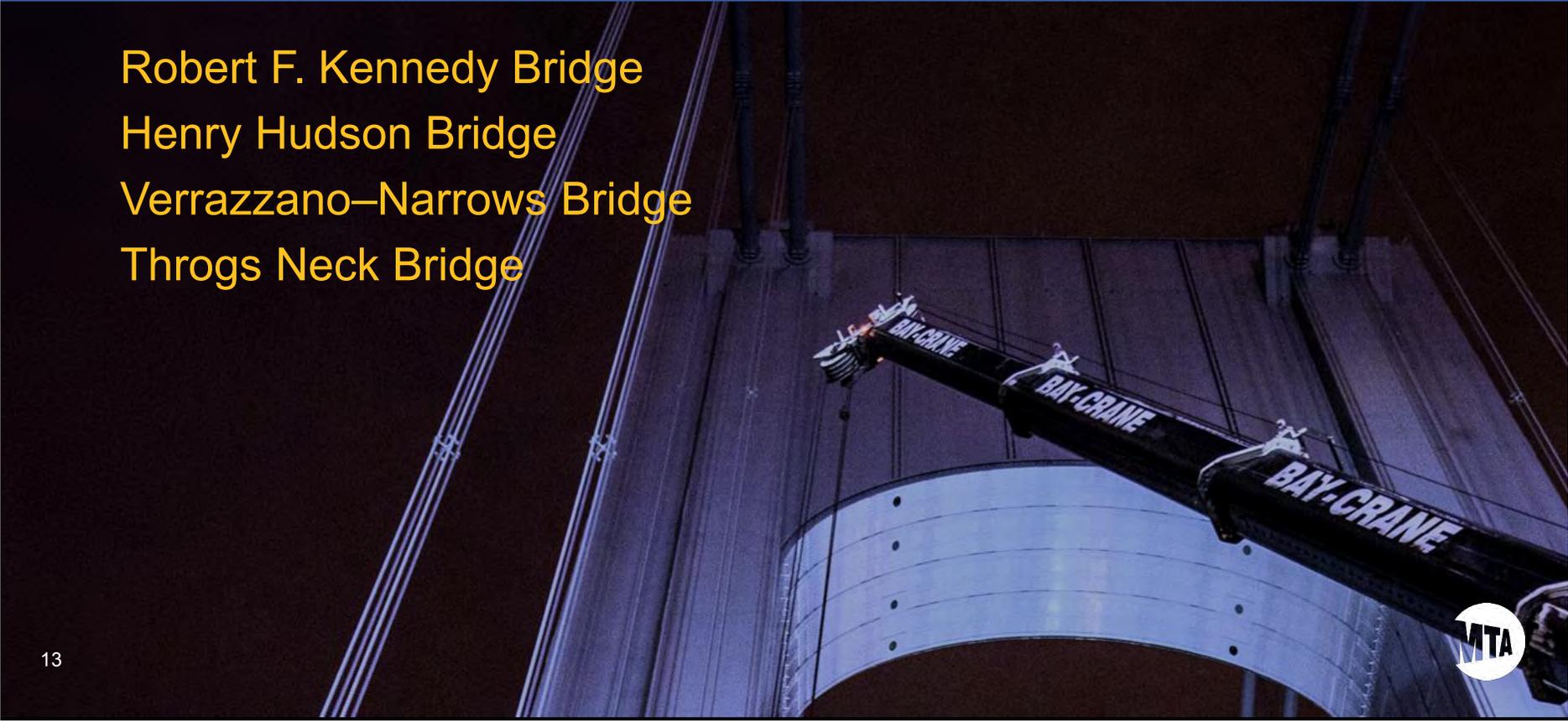


Temporary Shoring for Deck Reconstruction



# Program Updates

Robert F. Kennedy Bridge  
Henry Hudson Bridge  
Verrazzano–Narrows Bridge  
Throgs Neck Bridge



# Robert F. Kennedy (RFK) Bridge Program Update

**2019 – 2021**

**New HRD Direct  
Connector Ramp**

**Design-Build Project**

**Project Budget:  
\$72.6M**

**Ongoing**



# New Harlem River Drive (HRD) Direct Connector Ramp at the RFK

## Scope of Work:

- Construct new ramp connecting RFK HRLS to NB HRD

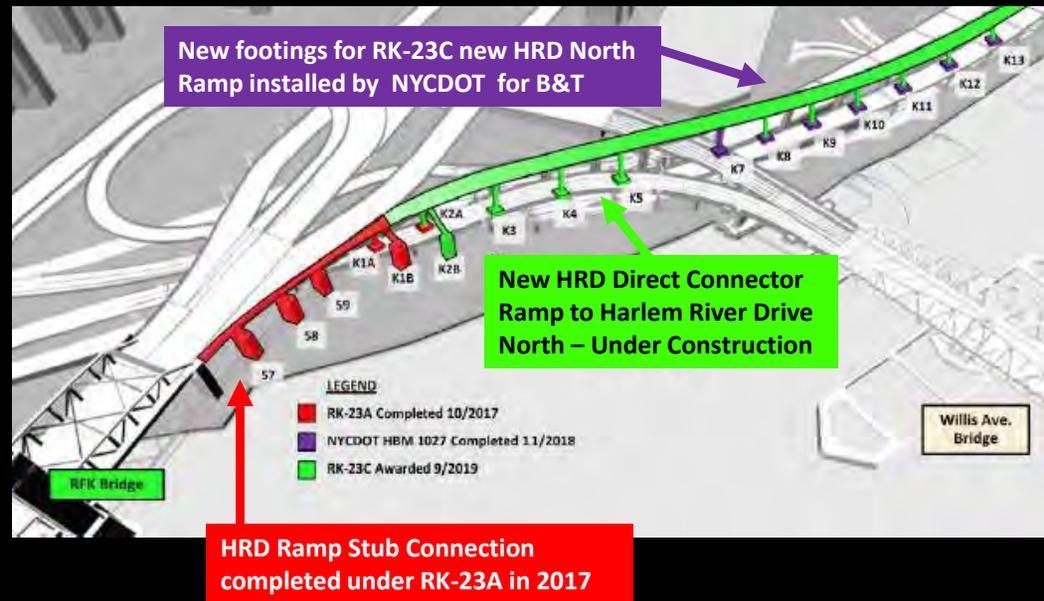
## Project Benefits:

- Improved regional mobility
- Improved air quality
- Reduced local traffic

**Project Budget:** \$72.6M

**Roadway Impacts:** Minimal

**Project is 20% complete and is on budget and on schedule for completion by December 2020**



# New Harlem River Drive (HRD) Direct Connector Ramp at the RFK



Rebar Installation



Micropile Drilling



Pier Construction



# Henry Hudson Bridge (HHB) Program Update



## Design-Build Rehabilitation of the Skewbacks, Tower Piers, & Pedestals at the HHB

### Scope of Work:

- Rehabilitation of (4) Concrete Skewbacks on both ends of Arch Span
- Replacement of (16) Concrete Bent Pedestals along the North and South Viaducts
- Reconstruction of Lower Level North Abutment

### Project Benefits:

- Improved structural resiliency
- Maximize service life of the bridge
- Improved seismic performance

**Project Budget:** \$100.4M

**Roadway Impacts:** Minimal



**Project is 73% complete and anticipated to be completed within budget with a projected August 2020 completion**

# Design-Build Rehabilitation of the Skewbacks, Tower Piers, & Pedestals



Guide Pipes for Skewback Micro Piles



Replacement of Main Piers Foundations – looking North

# South Approach Roadway Reconstruction on the HHB

## Scope of Work:

- Staged reconstruction of the south approach (2 major roadway stages)
- New structural support system
- Roadway Lighting replacement

## Project Benefits:

- Improved customer safety and experience
- New energy efficient LED roadway lighting
- Improved seismic performance

**Project Budget:** \$109.6M

## Roadway Impacts:

- Lower Level: three lanes of traffic to be restored this summer
- All roadway work to be completed in the fall of 2020

**Project is 66% complete and anticipated to be completed within budget and on schedule for completion by January 2021**



# South Approach Roadway Reconstruction on the HHB



Deck Rebar in Place



Lower Level Supporting Steel

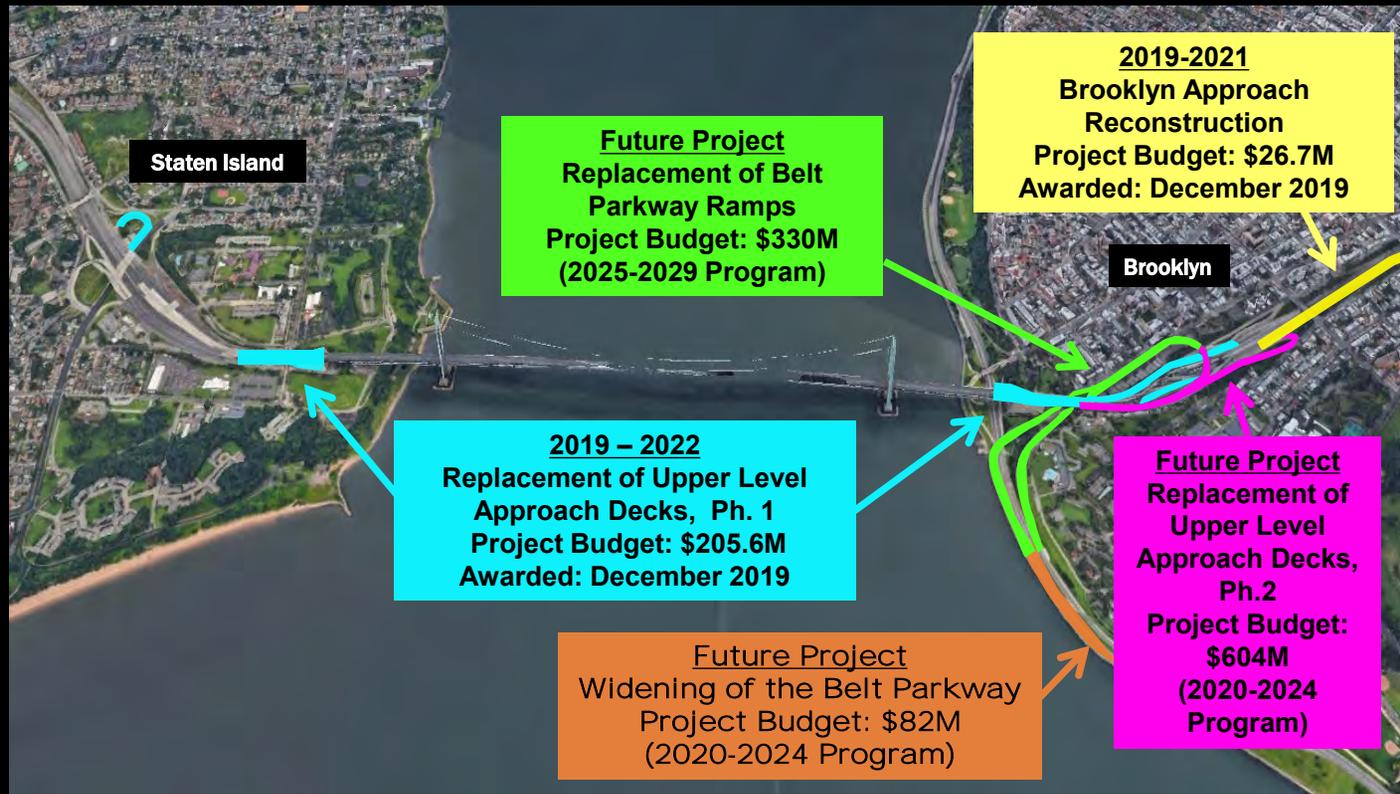


Temporary Support Columns

Erection of New Steel



# Verrazzano-Narrows Bridge (VNB) Program Update



# Throgs Neck Bridge (TNB) Program Update

**2019-2023**  
**Approach Viaducts**  
**Structural Rehabilitation**  
**Project Budget: \$212.2M**  
**Awarded December 2019**

Bronx

**2018-2022**  
**Replacement of Suspended**  
**Span Deck and Painting of**  
**Suspended Span Steel**  
**Project Budget: \$336M**  
**Awarded November 2018**

Queens



# Replacement of the Suspended Span Deck of the TNB

## Scope of Work

- Staged replacement of the suspended span concrete deck with a new steel deck
- Painting
- Replacement of Lighting System
- Installation of Fire Standpipe System

## Project Benefits

- Improve wind and seismic performance of the bridge
- Maximize service life
- Energy efficient LED lighting
- Improved customer experience and safety

**Project Budget:** \$336M

## Roadway Impacts:

- 5 months of staged deck work to begin this fall

**Project is 15% complete and on budget and schedule for completion by late fall of 2022**

**Contractor on schedule to complete milestone standpipe and lighting work by May 2020**



# Questions & Discussion



# February 2020 CPOC Independent Engineering Consultant Project Review

Throgs Neck Bridge (TN-49)  
TLR Review of B&T Core Projects



MTA Independent Engineering Consultant

# TN -49 Schedule and Budget Review

- Schedule
  - The IEC has reviewed the latest schedule update for logic, including planned adjustments, and activity durations and compared this to actual field progress and finds the project remains on schedule.
- Budget
  - The IEC has reviewed the project expenditures, contingency, soft costs and change orders and has determined the Estimate at Completion remains at \$322 million which is within budget.
  - The contractor is on pace to earn incentives for using fewer than the total number of allotted days for permanent lane closures, fire standpipe installation, and luminaire replacement at the approaches.



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MTA Independent Engineering Consultant

# TN-49 Risk Management

- Fabrication and timely delivery of orthotropic panels is still the top project risk.
  - With the mockup deck panel fabricated, tested, and approved, full panel production has commenced, which reduces the potential of this top schedule risk occurring.
  - Based on lessons learned from previous orthotropic deck projects, the agency is mitigating this risk by placing a quality inspection team at the fabricator's facility during production.



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# Status of Bridges & Tunnels Projects on the Core Traffic Light Report (TLR)



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MTA Independent Engineering Consultant

# B&T's Projects on Core TLR

Bridge	Project	Phase	EAC (M)	Current Budget (M)	Status
RFK RK-07	Electical/Mechanical Rehab of HR Lift Span	Construction	\$34.4	\$36.5	GREEN
Verrazano Narrows VN-34	Main Cable & Suspender Rope Testing - Phase 1	Construction	\$22.5	\$23.9	GREEN
RFK RK-23	Construction of New Harlem River Drive Ramp (D/B)	Construction	\$71.0	\$72.7	GREEN
Henry Hudson HH-89	Skewback Retrofit (D/B)	Construction	\$98.2	\$100.4	YELLOW
Henry Hudson HH-88	Toll Plazas & Southbound Approach Reconstruction	Construction	\$95.9	\$96.8	YELLOW
Verrazano Narrows VN-11	Brooklyn Approach Reconstruction	Construction	\$24.7	\$26.7	GREEN
Verrazano Narrows VN-84	Reconstruction of VN Approach Ramps - Phase1	Construction	\$188.6	\$205.6	GREEN
Throgs Neck TN-53	Approach Viaduct Seismic Retrofit/Structural Rehab	Construction	\$201.7	\$212.2	GREEN

## Traffic Light Report Project Terms and Definitions

-  Green: Indices less than 110% and index movement of less than 10%. Other indices not exceeding those criteria specified in index formulas and criteria.
-  Red: Cost & Contingency Index: An index movement of 10% or more since last Traffic Light Report. Schedule Variance: An increase of 3 months or more to substantial completion since last Traffic Light Report.
-  Yellow: Previously indicated as red with no new substantial change since last Traffic Light Report.



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# Joint MNR/LIRR Committee and CPOC PTC Project Update

February 24, 2020



# LIRR/MNR Overall PTC Project Status

## Schedule

Both LIRR and MNR remain on target to implement PTC across their respective territories by December 31, 2020.

MNR in Extended RSD (ERSD) on Danbury, Hudson CP 10 to CP 75 and Harlem CP 113 to CP 182

LIRR in RSD/ERSD on Port Washington, Babylon to Patchogue, Hempstead, Far Rockaway, West Hempstead, Oyster Bay, Long Beach, Port Jefferson, Central, and Montauk 1BW (west of Babylon to Jamaica) segments.

## Budget

\$1.086B

LIRR and MNR are currently reviewing tasks to complete work and anticipate additional funding needs.



# LIRR Monthly Project Update

## ERSD

- Currently running PTC on 37% of 305 total route miles.
- As of Jan 31<sup>st</sup> running 303 trains with PTC cut-in.

## Software Testing

- Integrated System Baseline 3.7 FAT completed in February
  - 96% success rate with 69/72 test cases run.
- Conducted field testing with the on-board 3.7 software in parallel to identify safety critical variances prior to finalization of baseline.

## Safety Plan

- Received FRA comments to the July PTC Safety Plan submission and updating the document to resubmit in March for FRA approval.

## Status of Siemens scanner recall

- Deliveries from Siemens to be completed in February; 91% of retrofits completed.

# LIRR Monthly Project Update (continued)

## Jamaica Design

- Changes to the SI's initial design were required to meet LIRR's operational requirements; ERSD re-scheduled to September.

## LIRR interoperability with Amtrak

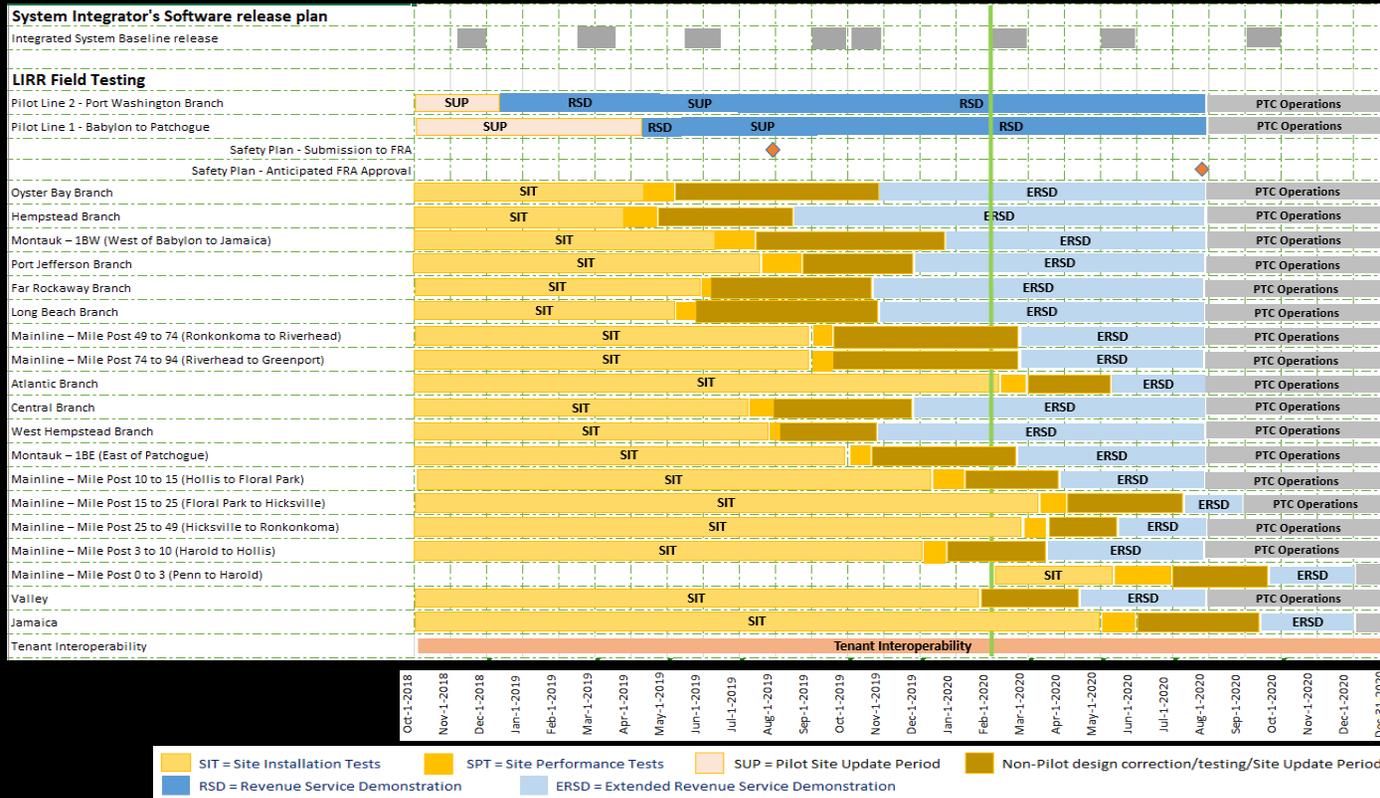
- Commenced PTC operations on Amtrak territory through East River Tunnels into Penn Station.
- Wayside designs and testing are progressing to meet the PTC deadline.
- Database for the joint PSCC territory is in development according to schedule.

## Amtrak interoperability with LIRR

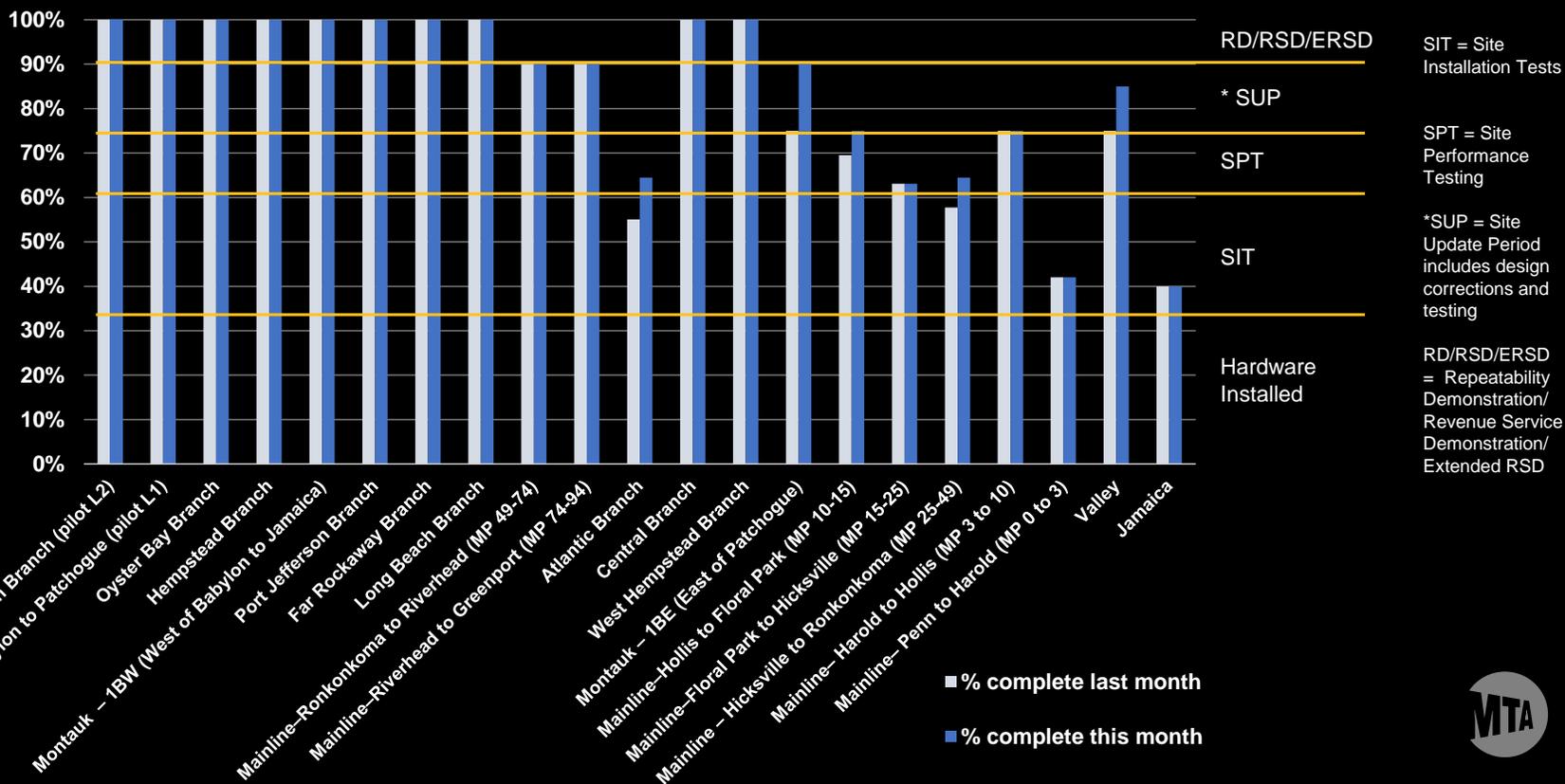
- Amtrak previously committed to deliver b2b on-board software by the end of 2020.
  - Amtrak informed LIRR that this software will not be available until May 2021.
  - Amtrak proposed an alternative b2b solution during the interim
  - LIRR is working with Amtrak to ensure the alternative solution has no impacts or safety concerns to LIRR.
  - LIRR requesting Amtrak to do everything possible to keep their original end of the year commitment to implement b2b.



# LIRR Working Schedule and Sequence



# LIRR Segment RSD Readiness (Previous vs Current Month)



# Key Milestones and Issues (LIRR Only)

Status	Activity	Issues
<p>● Green (Current)</p> <p>● Yellow (Previous)</p> <p>● Red Significant impact to Project Schedule and ability to meet PTC deadline.</p> <p>● Yellow Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline.</p> <p>● Green No Near Term Impact to Project Schedule and on target to meet PTC deadline.</p>	<p>Delivery and implementation of System Software Release 3.7 for b2b interlockings (Valley and Harold)</p> <p><b>Date Needed</b></p> <p>Feb 2020</p>	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>Timely delivery of System Software Release 3.7 which Includes b2b interlockings for Harold and Valley is critical to meeting the PTC deadline.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>Integrated System 3.7 FAT was completed in February</li> <li>69/72 test cases passed - 96% success rate</li> <li>This is the software release to get the remaining LIRR territory into PTC Operations to meet the deadline.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>The timely delivery of this release must provide sufficient time to deploy software across the entire LIRR fleet.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>The development of additional test cases for site specific b2b scenarios for more robust testing.</li> <li>Conducted field testing in parallel to identify safety critical issues in advance of deployment.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>If variances found are safety critical and cannot be mitigated this will delay ERSD and, this may delay the test data needed for FRA approval of the LIRR PTC safety plan.</li> </ul>



# Key Milestones and Issues (LIRR Only)

Status	Activity	Issues
 <b>Green</b>	Delivery and implementation of System Software for PTC Security for Interoperability  Baseline 3.8	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>Timely delivery of System Software Release 3.8 (PTC security requirements and cryptographic keys) is required for FRA compliance and interoperability with Amtrak.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>Office 3.7 software development with HMAC feature on target for Baseline 3.8 integrated system testing.</li> <li>Change order is targeted for March Board approval; SI progressing work and no anticipated impact to deadline.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Changes to LIRR’s design for PTC security was required to meet Amtrak’s standard for interoperability on NEC.</li> <li>Deployment is dependent upon SIM card installations and activations for remote deployment of the security keys to all trains.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>Regular progress meetings to track intermediate milestones.</li> <li>More extensive testing of HMAC prior to system integration.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>Without remote deployment will take more time to update trains.</li> </ul>
	<b>Date Needed</b>  May 2020	

 Significant impact to Project Schedule and ability to meet PTC deadline.  
 Red

 Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline.  
 Yellow

 No Near Term Impact to Project Schedule and on target to meet PTC deadline.  
 Green



# Key Milestones and Issues (LIRR Only)

Status	Activity	Issues
 <b>Green</b>	Delivery and implementation of System Software for STS-STIS interface  Baseline 3.9	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>Timely delivery of System Software Release 3.9 for the LIRR and Amtrak STS-STIS safety server interface for interoperability is required for FRA compliance.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>Bombardier safety server interface testing did not start in January due to configuration issues; Date to have simulator software installed in the BT Pittsburgh lab pending Amtrak.</li> <li>Amtrak still committed to provide final safety server solution no later than March 2020.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Amtrak's change to their safety server solution/supplier required modifications to LIRR's safety server design.</li> <li>Any alternative to the safety server solution requires FRA approval.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>Regular STS to STS workshops between Amtrak and LIRR to review work tasks and timeline.</li> <li>LIRR developed an operational workaround for FRA review/approval to should interface fail to be operational at end of 2020.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>No impacts anticipated to meet PTC deadline.</li> </ul>
	<b>Date Needed</b>	
	Sept 2020	

 Significant impact to Project Schedule and ability to meet PTC deadline.  
 Red

 Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline.  
 Yellow

 No Near Term Impact to Project Schedule and on target to meet PTC deadline.  
 Green



# Key Milestones and Issues (LIRR Only)

Status	Activity	Issues
 Yellow	AMTRAK interoperability with LIRR  (Amtrak's b2b solution)	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>To operate on LIRR territory Amtrak is required to update their on-board software for b2b functionality.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>Amtrak proposed an alternative b2b wayside solution for LIRR's consideration until their onboard solution becomes available in May 2021.</li> <li>Amtrak's proposal or any other alternative solution agreed to by LIRR is subject to FRA approval.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>An acceptable solution for b2b routes through Harold must be safe, FRA compliant and not impact LIRR operations.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>Schedule a high-level meeting with Amtrak, LIRR and FRA to ensure a mutually agreeable b2b solution is expeditiously agreed upon which will meet the PTC regulations.</li> <li>LIRR regularly share their b2b technical requirements/design with Amtrak to help expedite the development of Amtrak's b2b solution.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>If an alternative solution is not found to be acceptable to either LIRR or FRA, Amtrak service on LIRR may be impacted and PTC</li> </ul>
	<b>Date Needed</b>	
	Dec 2020	

 Significant impact to Project Schedule and ability to meet PTC deadline.  
 Red

 Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline.  
 Yellow

 No Near Term Impact to Project Schedule and on target to meet PTC deadline.  
 Green



# Key Milestones and Issues (LIRR Only)

Status	Activity	Issues
 <b>Green</b>	Deployment of on-board software across the fleet multiple times  Baseline 3.7	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>The SI's software release plan requires the deployment of multiple iterations of on-board software across the entire fleet.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>LIRR and the PTC SI have developed a roll-out plan to deploy 3.7 to the ERSD trains with 3.6 software; must be in place before Valley is placed into ERSD in April.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>LIRR requires System Baseline 3.7 on-board software for deployment across the fleet no later than May 2020 to support ERSD schedule.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>In addition to the routine 92-day periodic inspection cycle, LIRR will make trains and resources available to accelerate the software upload process as necessary.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>If the SI has unexpected technical issues (system performance or equipment reliability) and on-board software deliveries are pushed beyond mid-2020, this has a potential impact to the PTC deadline.</li> </ul>
	<b>Date Needed</b>	
	May 2020	

-  Significant impact to Project Schedule and ability to meet PTC deadline.  
Red
-  Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline.  
Yellow
-  No Near Term Impact to Project Schedule and on target to meet PTC deadline.  
Green



# Key Milestones and Issues (LIRR Only)

Status	Activity	Issues
<p> Green</p> <p> Significant impact to Project Schedule and ability to meet PTC deadline. Red</p> <p> Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline. Yellow</p> <p> No Near Term Impact to Project Schedule and on target to meet PTC deadline. Green</p>	Change in Leadership and Additional Resources	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>The SI needs to continue supporting the contract with the necessary skilled resources, and retaining key staff on the LIRR project to meet their schedule commitments and keep the project on track to meet the PTC deadline.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>Since October 2019, key leadership changes have improved the working relationship within the Consortium.</li> <li>New Systems Integrator approved for LIRR.</li> <li>To date, the current staffing levels are supporting the work efforts to meet the December 2020 deadline, but the both the SI and LIRR are closely monitoring.</li> <li>Transponder designs are still a concern but to date this activity remains on schedule.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Retention of staff as the SI has a limited number of Subject Matter Experts.</li> <li>Steep learning curve prevents new staff from quickly coming up to speed.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>LIRR continues to fill gaps in expertise in areas of Signaling, Equipment Engineering and Railroad operations to support factory and field testing.</li> <li>Higher level vacated positions are being filled with existing project team members with new hires placed at lower levels to minimize potential learning curve.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>Without appropriate leadership and proper management of project priorities the SI will fail to meet their schedule commitments and impact PTC deadline.</li> </ul>
	Date Needed	
	Ongoing	



# LIRR PTC ERSD Timeline and Look-ahead

## October 2019

- ✓ West Hempstead Branch
- ✓ Long Beach Branch
- ✓ Far Rockaway
- ✓ Oyster Bay

## November 2019

- ✓ Port Jefferson
- ✓ Central Branch

## December 2019

- ✓ Montauk – 1BW  
(West of Babylon to Jamaica)

## February 2020

- Mainline – Mile Post 49 to 74 (Ronkonkoma to Riverhead)
- Mainline – Mile Post 74 to 94 (Riverhead to Greenport)
- Montauk – 1BE (East of Patchogue)
- Delivery of System Software Baseline 3.7

## March 2020

- Mainline – Mile Post 3 to 10 (Harold to Hollis)
- Mainline – Mile Post 10 to 15 (Hollis to Floral Park)
- Resubmit PTC Safety for FRA Approval



# LIRR PTC ERSD Timeline and Look-ahead

## April 2020

Valley

## May 2020

Atlantic Branch

Mainline – Mile Post 25 to 49 (Hicksville to Ronkonkoma)

Delivery of System Software Baseline 3.8

## July 2020

Mainline – Mile Post 15 to 25 (Floral Park to Hicksville)

## September 2020

Mainline – Mile Post 0 to 3 (Grand Central Tunnels to Harold)

Jamaica

Delivery of System Software Baseline 3.9



# MNR Project Update

## ERSD Segment Status:

- Hudson Line: Marble Hill (CP10) – Poughkeepsie (CP75) 66 miles.
- Danbury Branch 24 miles
- Harlem Line: Mount Vernon West (CP113) – Wassaic (CP182) – 69 miles

## PTC implementation Summary

- Total route miles in full PTC - 159 miles (65%)
- Approximately 480 Revenue trains/day, operating at full PTC operations (67%)
- 25,410 Revenue Trains ran in full PTC mode from August 2019 – January 2020
- Approximately 30 Amtrak Revenue trains and several CSX and P&W freight trains/day are interoperable.



# MNR Project Update (continued)

## Field Installation & Testing Activity:

- Completed Transponder SIT GCT (CP1) to Marble Hill (CP10)
- Harlem line CP106 to CP 112 CSE to PTC transponder migration in process
- Started New Canaan CSE to PTC transponder migration
- Continuing commissioning Radio Cases
- Continue mitigate technical and operational issues

## Amtrak Boundary design/Commissioning Schedule

- Poughkeepsie – Completed and commissioned December 5, 2019
- Spuyten Duyvil - Commissioning target – 1st quarter 2020
- New Haven - Design completion target – 2nd quarter 2020
- New Rochelle - Design completion target – 2nd quarter 2020
- STS-STs interface – 3rd quarter of 2020



# MNR M8 Project Update

## Current Project Status

- Alstom on target to begin production of M8 OBC hardware upgrade components in March 2020
- Current target to start M8 OBC SW (Amtrak Rev. 11D) testing on MNR wayside in March 2020
- Continue bi-weekly 5 Party meetings between MNR, Kawasaki, Alstom, Bombardier, and Siemens to execute plan bringing M8 OBC into PTC revenue service operation in July 2020
- Next 5-party meetings: 25-27-Feb at Alstom in Rochester
- Provision of lab environment equipment on track to be delivered to Alstom by 21-Feb and set up the week of 24-Feb
- Change Order to the SI for M8 PTC has been executed.

## Upcoming Milestones

- M8 Safety Cert expected July 2020



# MNR Working Schedule and Sequence



SIT - Site Integration Testing/SUP -Site Update Period/RSD - Revenue Service Demonstration/SPT – Site Performance Test  
 ERSD - Extended Revenue Service Demonstration

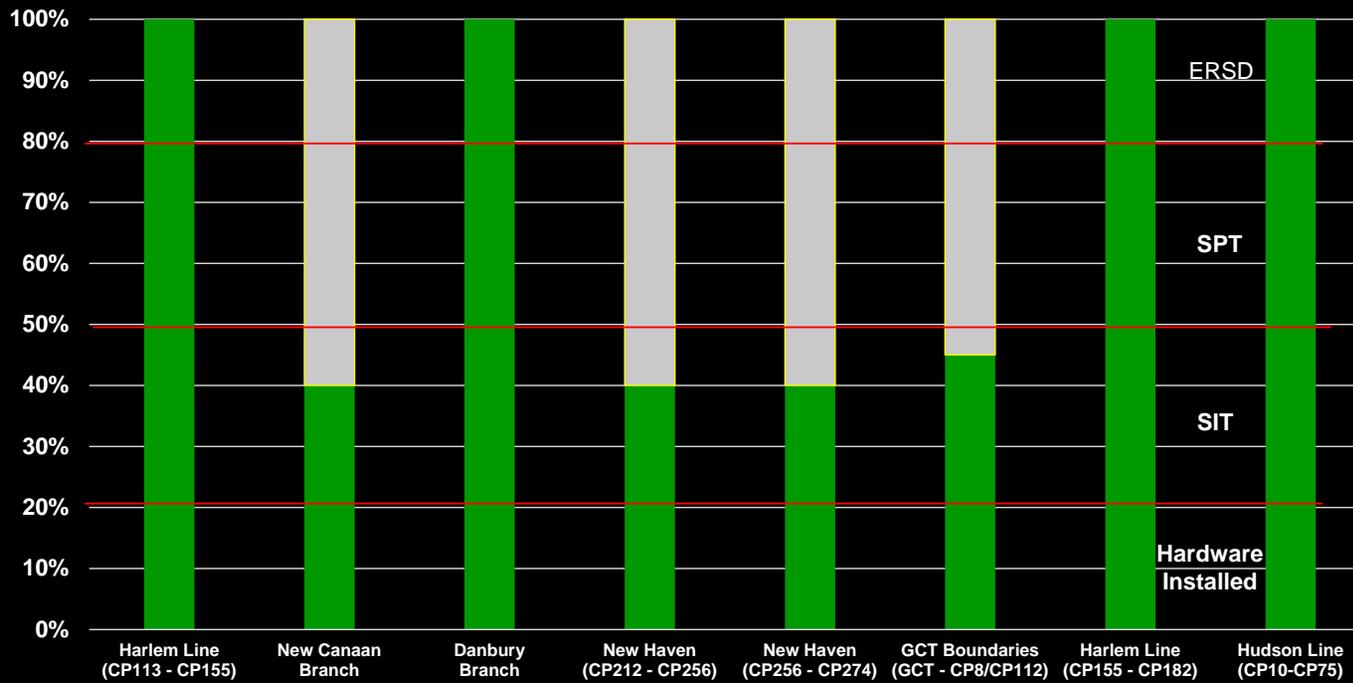
Started ERSD on the Danbury Branch August 2019  
 Started ERSD on Hudson CP10-CP75 November 2, 2019

Last Non-Pilot in ERSD June 2020

Waterbury - Installing Signal System along with PTC (MTEA)



# MNR Segment RSD Readiness



SIT = Site Integration Testing, SPT = Site Performance Testing, ERSD = Extended Revenue Service Demonstration.

■ % complete   ■ Remaining



# Key Milestones and Issues (MNR Only)

Status	Activity	Issues
 <b>Green</b>	Complete Design for Interoperability and Delivery of System Software 3.7	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>This software release includes the design for a safety server interface for interoperability with Amtrak for New Haven, New Rochelle, Spuyten Duyvil, and Poughkeepsie for MNR.</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>All activities to support this work remain on schedule.</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>3<sup>rd</sup> party design.</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>Modified STS-STX safety server interface design with Amtrak to align with the rest of the NEC Corridor so as not to have a one-off design.</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>Risk to full PTC deployment by the PTC deadline on December 31, 2020.</li> </ul>
	<b>Date Needed</b>	
	3rd Quarter 2020	

 Significant impact to Project Schedule and ability to meet PTC deadline.  
 Red

 Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline.  
 Yellow

 No Near Term Impact to Project Schedule and on target to meet PTC deadline.  
 Green



# Key Milestones and Issues (MNR Only)

Status	Activity	Issues
<p style="text-align: center;">● Green (Current)</p> <p style="text-align: center;">● Yellow (Previous)</p> <p>● Significant impact to Project Schedule and ability to meet PTC deadline. Red</p> <p>● Impact to Project Schedule or interim project milestone and may impact ability to meet PTC deadline. Yellow</p> <p>● No Near Term Impact to Project Schedule and on target to meet PTC deadline. Green</p>	<p>Integration for the M8 OBC into the MNR Wayside</p> <hr/> <p><b>Date Needed</b></p> <p>June 2020</p>	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>• Commence M8 Fleet Hardware and Software Upgrade for full PTC Operability</li> <li>• Complete Gap analysis, design and implement mitigating measures</li> <li>• Define locations and Support for M8 OBC Qualification Testing on the MNR wayside for Rev. 11 D</li> </ul> <p><b>Monthly Update:</b></p> <ul style="list-style-type: none"> <li>• Continued Weekly Executive-Level Progress Meetings between MNR/Kawasaki/Alstom</li> <li>• Final-negotiated Change Order with SI to fully support qualification of the Alstom OBC to the MNR wayside to include Bombardier Safety Certification</li> <li>• 5 Party Meeting held December 9 to December 11, 2019 at MNR – Graybar with significant progress made on Gap Definition, Qualification test and SLR reviews</li> </ul> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>• Hardware Component production/availability for upgrade of OBC</li> <li>• Continued focus of Gap Mitigation resolution through 5 Party meetings every two weeks</li> <li>• Complete and provide MNR wayside PTC design information for use in definition of M8 OBC testing</li> </ul> <p><b>Mitigations:</b></p> <ul style="list-style-type: none"> <li>• Complete design for mitigations defined in the Gap analysis and implement into wayside environment</li> <li>• Define most effective means for PTC hardware and software upgrade of the 190 M8 pairs to include upgrade of the additional 33 M8 pairs being delivered in 2020</li> </ul> <p><b>Potential Impacts:</b></p> <ul style="list-style-type: none"> <li>• Potential risk of not completing entire M8 fleet with both hardware and software PTC upgrades</li> </ul>



# MNR PTC ERSD Timeline

## December 2019

- ✓ Harlem Line: Southeast (CP155)  
– Wassaic (CP182) - 27 miles

## January 2020

- ✓ Harlem Line: Mount Vernon  
(CP113) – Southeast (CP155)  
– 69 miles

## March 2020

- Hudson Line: Marble Hill (CP10) – GCT (CP1) – 10 miles
- Harlem Line: Mount Vernon West (CP113) – Melrose  
(CP106) – 7 miles
- New Canaan Branch – 6 miles

## April 2020

Re-submit PTC Safety Plan

## May 2020

- New Haven Line: Mount Vernon East (CP212) –  
New Haven (CP271) – 59 miles

## June 2020

- New Haven Interlocking – 3 miles



# February 2020 CPOC Independent Engineering Consultant Project Review

## Positive Train Control



**MCKIBACK**

*MTA Independent Engineering Consultant*

# Budget Review

- The current budget is \$1,086M.
- Based on independent review by the IEC, and as cited by the project team, additional funds are required to support project needs until completion.



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# Schedule Review

- Both LIRR and MNR made good progress in placing line segments and branches into ERSD.
- Both Harold and Jamaica ERSD's are now on the critical path (September 2020).
- Schedule to integrate M8 fleet into PTC operation is highly dependent on performance by Alstom.
  - MNR plans to conduct ERSD on the New Haven Line and the New Canaan Branch during the period from April-June 2020, using P-32 diesel trains.
- Interoperability testing of the safety server is now scheduled for September 2020 due to a delay in receiving software from Amtrak (both LIRR & MNR).



**McKIBACK**

*MTA Independent Engineering Consultant*

# Schedule Review

- Full interoperability between Amtrak and LIRR at Harold is delayed to May 2021 due to Amtrak's delay in developing interoperable on-board software (Rev12). A workaround to mitigate this issue is under consideration by LIRR.



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MTA Independent Engineering Consultant

# IEC Observations

- The quality of SI software development and testing continues to improve.
  - Early results of back-to-back functionality included in software release 3.7 (LIRR) are encouraging, reducing the risk to PTC implementation at Harold.
- The SI completed the corrective actions to the Scanner Antennas and CTV Units.
- MNR and other stake holders agreed on a viable plan to integrate the M8 Fleet into PTC operation.
  - Good cooperation between all parties, including Alstom, to implement the M8 PTC integration plan.
- A second submittal of the safety plans (by both LIRR & MNR) is required to address FRA's comments.



**McKIBACK**

*MTA Independent Engineering Consultant*

# Project Risks

- Amtrak's recent decision to delay the development and deployment of its on-board software (that reflects agreed upon Harold functionalities) until May 2021 adds significant risk to achieving full PTC interoperability at Harold by December 2020.
  - Amtrak provided LIRR with a proposed workaround to mitigate this risk.
  - LIRR and the SI are currently assessing the viability of the proposed workaround.
  - FRA approval of proposed mitigation is required to ensure compliance by December 2020.
- Integrating the M8 fleet into PTC operation continues to present high risk to MNR project completion schedule.
  - Highly dependent on receiving upgraded hardware and fully functioning software from Alstom by March 2020.



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# **MTA Capital Program Commitments & Completions**

## **through January 31, 2020**

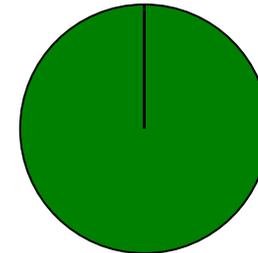
### Capital Projects – Major Commitments – January 2020

In 2020, agencies have a goal of \$13.5 billion in overall commitments. 49 major commitments are included; 28 for NYCT, ten for LIRR, four for MNR, two for MTA Bus, four for MTACC, and one for B&T.

Through January, agencies have committed \$1.1 billion versus a \$817 million YTD goal. The MTA exceeded its January 2020 commitments because of MTACC's LIRR Mainline Expansion option (\$284M) awarded ahead of its March 2020 goal.

By year-end, the MTA forecasts meeting its \$13.5 billion goal.

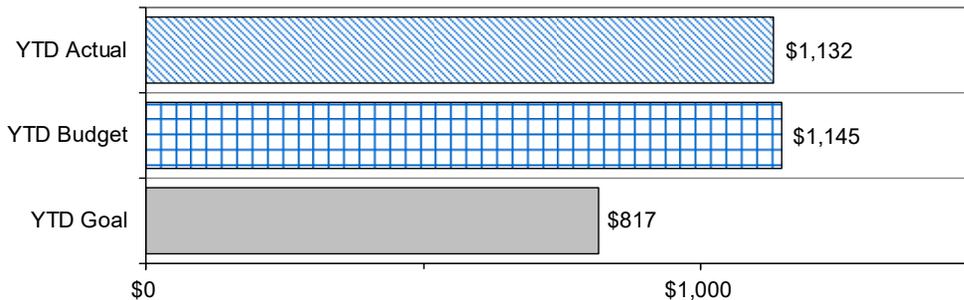
### Year-to-Date Major Commitments



	Count	Percent	Change from Prior Month
<b>GREEN</b> = Commitments made/forecast w ithin Goal	2	100%	↑ 2
<b>YELLOW</b> = Commitments delayed beyond Goal (already achieved)	0	-	-
<b>RED</b> = Commitments delayed beyond Goal (not yet achieved)	0	-	-
	<b>2</b>	<b>100%</b>	<b>↑ 2</b>

### Budget Analysis

2020 Annual Goal	\$13,497	(\$ in millions)
2020 Forecast	100%	of Annual Goal
Forecast Left to commit	92%	(\$12,397)



### Year-to-Date Agency Breakdown

2020 Goals	Prior month variance		
	GREEN	YELLOW	RED
<b>New York City Transit</b>			
1	+1 GREEN	----	----
<b>Long Island Rail Road</b>			
	----	----	----
<b>Metro-North Railroad</b>			
	----	----	----
<b>Bridges and Tunnels</b>			
	----	----	----
<b>Capital Construction Company</b>			
1	+1 GREEN	----	----
<b>MTA Bus Company</b>			
	----	----	----
<b>MTA Police Department</b>			
	----	----	----

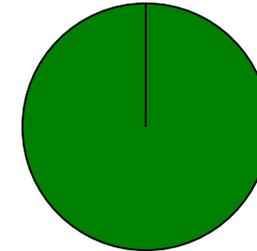
### Capital Projects – Major Completions – January 2020

In 2020, agencies have a goal of \$5.4 billion in overall completions. 40 major completions are included, including 19 for NYCT, eight for the LIRR, seven for MNR, one for MTA PD, one for MTACC, and four for B&T.

Through January, agencies have completed \$143 million versus a \$259 million YTD goal. The shortfall is mainly due to delays of non-major completions, including NYCT's Mainline Track Replacement program expected to be achieved by February 2020.

By year-end the MTA forecasts meeting its \$5.4 billion goal.

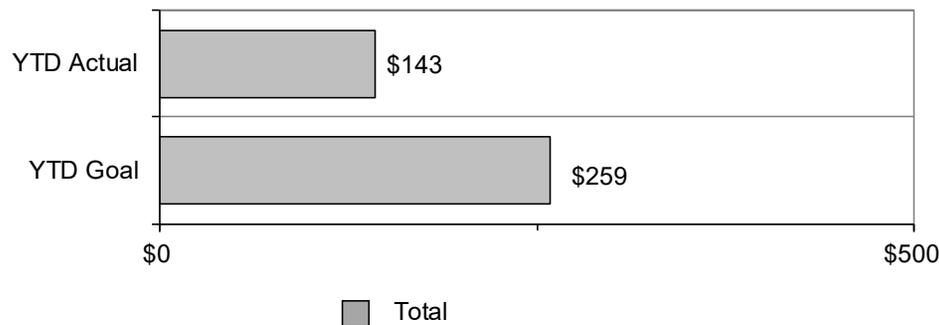
### Year-to-Date Major Completions



	Count	Percent	Change from Prior Month
<b>GREEN</b> = Completions made/forecast within Goal	3	100%	↑ 3
<b>YELLOW</b> = Completions delayed beyond Goal (already achieved)	0	-	-
<b>RED</b> = Completions delayed beyond Goal (not yet achieved)	0	-	-
	<b>3</b>	<b>100%</b>	<b>↑ 3</b>

### Budget Analysis

2020 Annual Goal	\$5,390	(\$ in millions)
2020 Forecast	101%	of Annual Goal
Forecast left to Complete	97%	(\$5,294)



### Year-to-Date Agency Breakdown

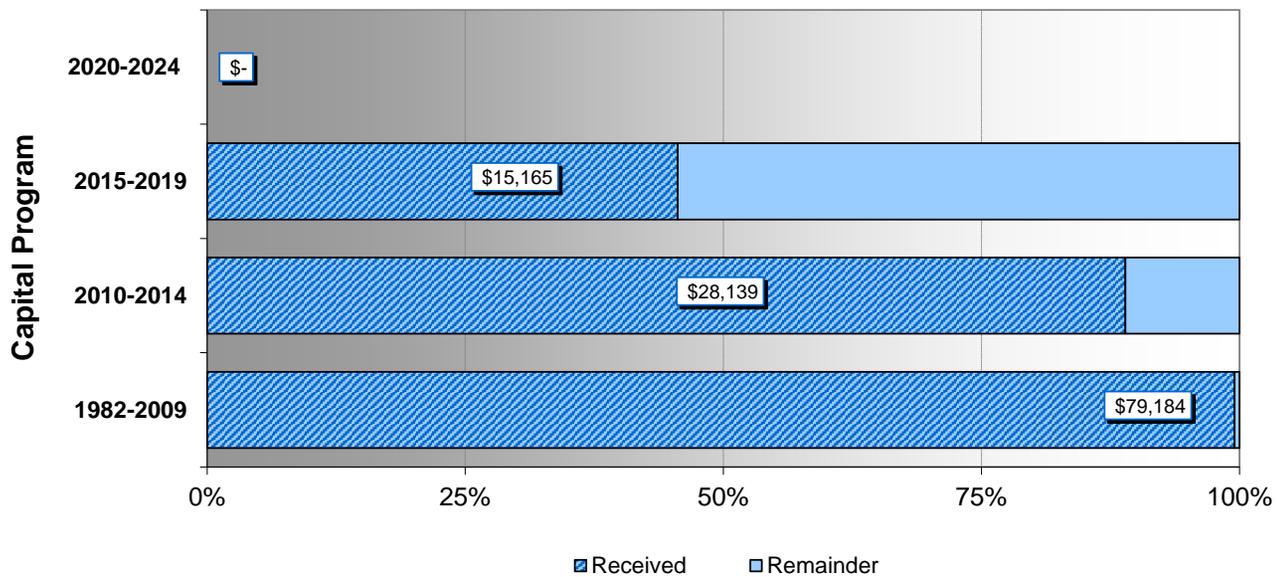
2020 Goals	Prior month variance		
	GREEN	YELLOW	RED
<b>New York City Transit</b>			
3	+3 GREEN	----	----
<b>Long Island Rail Road</b>			
	----	----	----
<b>Metro-North Railroad</b>			
	----	----	----
<b>Bridges and Tunnels</b>			
	----	----	----
<b>Capital Construction Company</b>			
	----	----	----
<b>MTA Bus Company</b>			
	----	----	----
<b>MTA Police Department</b>			
	----	----	----

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## Status of MTA Capital Program Funding

### Capital Funding (January 2020)

\$ in millions



**Capital Funding Detail (January 31, 2020)**

\$ in millions

	Funding Plan		Receipts	
	Current	December	This month	Received to date
<b>1992-1999 Program</b>	18,095	18,095	1	18,095
<b>2000-2004 Program</b>	21,668	21,667	1	21,668
<b>2005-2009 Program</b>	24,409	24,016	14	24,030

	Funding Plan		Receipts	
	Current	December	This month	Received to date
<b>2010-2014 Program</b>				
Federal Formula, Flexible, Misc	\$5,853	\$5,839	\$ -	\$5,839
Federal High Speed Rail	295	295	-	295
Federal New Start	1,257	1,257	-	1,257
Federal Security	189	101	-	101
Federal RRIF Loan	-	-	-	-
City Capital Funds	719	608	-	608
State Assistance	770	770	-	770
MTA Bus Federal and City Match	132	112	-	112
MTA Bonds (Payroll Mobility Tax)	11,483	9,808	202	10,009
Other (Including Operating to Capital)**	1,519	1,268	-	1,268
B&T Bonds	2,026	1,986	-	1,986
Hurricane Sandy Recovery				
<i>Insurance Proceeds/Federal Reimbursement</i>	6,329	5,613	-	5,613
<i>PAYGO</i>	81	81	-	81
<i>Sandy Recovery MTA Bonds</i>	758	118	64	182
<i>Sandy Recovery B&amp;T Bonds</i>	229	18	-	18
<b>Total</b>	<b>31,639</b>	<b>27,874</b>	<b>266</b>	<b>28,139</b>

	Funding Plan		Receipts	
	Current	December	This month	Received to date
<b>2015-2019 Program</b>				
Federal Formula, Flexible, Misc	\$6,704	\$4,456	\$ -	\$4,456
Federal Core Capacity	100	-	-	-
Federal New Start	500	-	-	-
Federal Security	3	3	-	3
State Assistance	8,640	979	-	979
City Capital Funds	2,667	790	-	790
MTA Bonds	7,968	5,459	666	6,125
Asset Sales/Leases	1,017	306	-	306
Pay-as-you-go (PAYGO)**	2,156	1,572	-	1,572
Other	592	36	-	36
B&T Bonds & PAYGO/Asset Sale	2,925	898	-	898
<b>Total</b>	<b>33,273</b>	<b>14,499</b>	<b>666</b>	<b>15,165</b>

	Funding Plan		Receipts	
	Current	December	This month	Received to date
<b>2020-2024 Program</b>				
Capital from Central Business District Tolling	\$15,000	\$ -	\$ -	\$ -
Capital from New Revenue Sources	10,000	-	-	-
MTA Bonds and PAYGO	9,792	-	-	-
Federal Formula	7,500	-	-	-
State of New York	3,000	-	-	-
City of New York	3,000	-	-	-
Federal New Start (SAS Ph2)	2,905	-	-	-
Federal Flexible	275	-	-	-
B&T Bonds (Self-Funded)	3,327	-	-	-
<b>Total</b>	<b>54,799</b>	<b>-</b>	<b>-</b>	<b>-</b>