



Metropolitan Transportation Authority

# Capital Program Oversight Committee Meeting

## July 2018

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### Committee Members

J. Lhota, Chair

F. Ferrer

A. Albert

N. Brown

I. Greenberg

S. Metzger

M. Pally

L. Schwartz

P. Trottenberg

J. Vitiello

P. Ward

C. Weisbrod

C. Wortendyke

N. Zuckerman

# **Capital Program Oversight Committee Meeting**

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

**New York, NY 10004**

**Monday, 7/23/2018**

**2:00 - 3:30 PM ET**

## **1. PUBLIC COMMENTS PERIOD**

## **2. APPROVAL OF MINUTES JUNE 18, 2018**

*- Minutes from June '18 - Page 3*

## **3. COMMITTEE WORK PLAN**

*- 2018 - 2019 CPOC Committee Work Plan - Page 6*

## **4. NYCT CAPITAL PROGRAM UPDATE**

*- Progress Report on Sandy Recovery and Resiliency Division - Page 8*

*- IEC'S Project Review on L Tunnel Reconstruction - Page 28*

*- IEC'S Project Review on Clifton Shop - Page 32*

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

*- Progress Report on PTC - Page 36*

*- IEC's Project Review on PTC - Page 64*

## **6. CAPITAL PROGRAM STATUS**

*- Commitments, Completions, and Funding Report - Page 71*

Date of next meeting: Monday, September 24, 2018 at 2:00 PM

**MINUTES OF MEETING**  
**MTA CAPITAL PROGRAM OVERSIGHT COMMITTEE**  
**June 18, 2018**  
**New York, New York**  
**1:30 P.M.**

MTA CPOC members present:

Hon. Joseph Lhota  
Hon. Fernando Ferrer  
Hon. Andrew Albert  
Hon. Norman Brown  
Hon. Mitchell Pally  
Hon. Carl Weisbrod

MTA CPOC members not present:

Hon. Ira Greenberg  
Hon. Susan Metzger  
Hon. Lawrence Schwartz  
Hon. Polly Trottenberg  
Hon. James Vitiello  
Hon. Peter Ward  
Hon. Carl Wortendyke  
Hon. Neal Zuckerman

MTA staff present:

Veronique Hakim  
Michael Jew-Geralds  
Al Putre  
Donald Spero

MTACC staff present:

Dan Creighton  
Tim Gianfrancesco  
Janno Lieber  
Eve Michel  
Mark Roche

Independent Engineering Consultant staff present:

Joe DeVito  
Kent Haggas  
Mohammad Mohammadinia  
Dianne Rinaldi  
Hassan Tavassoli

\* \* \*

Chairman Lhota called the June 18, 2018 meeting of the Capital Program Oversight Committee to order at 2:12 P.M.

**Public Comments Period**

There was one public speaker in the public comments portion of the meeting: Jason Pineiro;

**Meeting Minutes**

Upon motion duly made and seconded, the CPOC members approved the minutes to the previous meeting held on May 21, 2018.

### **Committee Work Plan**

Mr. Spero announced there was one change to the Work Plan: because the CPOC Committee was provided an extensive briefing on East Side Access just two months earlier (in April), ESA will next be reported to CPOC in September, along with the balance of MTACC's projects.

### **Penn Station Access Project Update**

Ms. Michel provided an update on second quarter accomplishments in the areas of Engineering, Stakeholders, and Environmental Assessment. She then highlighted the following activities slated for the next six months: execute Amtrak MOU; execute General Engineering Consultant Contract; submit Draft Environmental Assessment; activate Preliminary Design; and finalize alignments with CSX. In its oral remarks, the IEC echoed MTACC's presentation, specifically that the Project Team is focusing on completing a project implementation arrangement with Amtrak and an environmental assessment, both of which are important to defining the project for the start of preliminary design. 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.

### **MTACC Second Avenue Subway Phase 2 Update**

Mr. Gianfrancesco stated that the project remains on schedule to complete the extended preliminary design by the third quarter of 2018, as well as Design-Build packages for structural shell & tunneling and advanced works package by the first quarter of 2019. With respect to the Environmental Process, Mr. Gianfrancesco cited the goal of a NEPA finding by fall 2018; he concluded his presentation with an update on the extensive Public Outreach efforts currently underway. In its oral remarks, the IEC observed that the program is tracking toward completion of Project Development and the Environmental Assessment process by the end of 2018, and stated that it is looking forward to reviewing the baseline cost estimate and schedule, now being developed by the Project Team. 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.

### **LIRR Expansion Project Update**

Mr. Roche provided an overview of the project, including pre-construction activities, integrated schedule, design development and project risks (two of which he highlighted were "project management" and "external"). He then provided a progress chart indicating the extent to which the project is fulfilling its commitments, and finished his presentation with a construction look-ahead to winter 2019. In its oral remarks, the IEC stated that it had participated in the risk workshop and is satisfied with the risk assessment process, as conducted by the project. The IEC concluded its remarks by stating that the agency is making a significant effort to mitigate near-term project risks. 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.

### **Cortland Street #1 Line Update**

Mr. Creighton reported that the current Revenue Service Date is October 2018 while the Substantial Completion Date remains December 2018; the project budget stands at \$181.8 million. He then provided highlights of ongoing construction activities, and among the project's Critical Milestones and Issues, Mr. Creighton cited the installation of new elevator #3 (near Vesey Street) as being of paramount concern. In its oral remarks, and as had been reported by MTACC, the IEC underscored the completion of elevator #3 as the chief risk to achieving the stated Revenue Service Date. The other main risk, according to the IEC, is the completion of a large number of testing activities required ahead of Revenue Service. 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 Progress Report on New Fare Payment System**

Mr. Putre outlined the Phased Approach to project implementation from the present date to the May 2019 initial launch at select subway stations/buses, to project completion, which is scheduled for July 2023. He then reported that the project remains on budget at \$620 million. In its oral remarks, the IEC agreed that the project is on budget and that while there is currently a slight delay in some interim milestones, in the opinion of IEC, these can be recovered. The IEC then detailed the following risk among those listed in the written IEC Project Review: major credit card companies have not yet mandated that their U.S. member banks issue contactless credit/debit cards with the required features for contactless transit fare payment, and while it is believed that the credit card companies will eventually issue such cards, the project team will continue to discuss this issue with the major brands and other card issuers, and the IEC will closely monitor progress going forward. 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.

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

Ms. Hakim reported that in 2018 agencies plan to commit a total of \$7.3 billion dollars, including 43 major commitments. Through May, the agencies made 9 major commitments on time or early, 5 were delayed, but have now been achieved, and 3 are delayed, but are still expected to be achieved this year. Through May, the agencies have committed \$2.4 billion versus a \$2.9 billion year-to-date goal, but forecast meeting or exceeding these commitment goals by year end. In terms of completions, in 2018, agencies plan a total of \$6.3 billion, including 39 major completions. Through May, the MTA has achieved 3 major completions and while 5 others are delayed, they are expected to be achieved this year, as are the balance of the completion goals.

## **Capital Core Program Traffic Light Report**

Mr. Spero reported on the Traffic Light Report for the 1st Quarter 2018. A total of 302 projects were reviewed: 69 in design and 233 in the construction phase. Of the 302 projects reviewed, 63% (191) were designated green; 29% (86) were designated yellow; and 8% (25) were designated red. For each of the 25 Core projects designated red this quarter the agencies have prepared a one-page report stating the problem and corrective action. Mr. Spero then reported on the Sandy-related Traffic Light Report. A total of 88 active projects were reviewed: 10 in Design, 19 in Post-Design to Construction, and 59 in the construction phase. Of the 88 projects reviewed, 74% (65) were designated green; 18% (16) were designated yellow; and 8% (7) were designated red. For each of the 7 Sandy projects designated red this quarter the agencies have prepared a one-page report stating the problem and corrective action.

## **Quarterly Capital Change Order Report (for information only)**

Mr. Spero brought the Committee's attention to the Quarterly Capital Change Order Report for the 1<sup>st</sup> Quarter 2018.

## **Adjournment**

Upon motion duly made and seconded, Chairman Lhota adjourned the June 18, 2018 meeting of the MTA Capital Program Oversight Committee at 3:20 PM.

Respectfully submitted,  
Michael Jew-Geralds  
Office of Construction Oversight



## **2018-2019 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

**September**

Quarterly MTACC Capital Program Update

- Cortlandt Street Station
- East Side Access
- Second Avenue Subway
- Penn Station Access
- LIRR Expansion Project

Update on Minority, Women and Disadvantaged Business Participation

Update on Small Business Development Program

Quarterly Change Order Report

Quarterly Traffic Light Reports

**October**

LIRR Capital Program Update

- Jamaica Capacity Improvements
- Mid Suffolk Yard
- Morris Park Locomotive Shop and Employee Facility

MNR Capital Program Update

- Harmon Shop Replacement
- Hudson Line Sandy Restoration
- Customer Information System

LIRR and MNR Joint Update on Rolling Stock

LIRR and MNR Update on Positive Train Control (PTC)

Update on Capital Program Security Projects (in Executive Session)

**November**

NYCT Capital Program Update

NYCT, LIRR, MNR Update on New Fare Payment System

CPOC Committee Charter Review

**December**

Quarterly MTACC Capital Program Update  
Quarterly Change Order Report  
Quarterly Traffic Light Reports

**January**

NYCT Capital Program Update

**February**

B&T Capital Program Update  
Update on Minority, Women and Disadvantaged Business Participation

**March**

Quarterly MTACC Capital Program Update  
Quarterly Change Order Report  
Quarterly Traffic Light Reports

**April**

NYCT Capital Program Update  
Update on Capital Program Security Projects (in Executive Session)

**May**

LIRR Capital Program Update  
MNR Capital Program Update  
NYCT, LIRR, MNR Update on New Fare Payment System

**June**

Quarterly MTACC Capital Program Update  
Quarterly Change Order Report  
Quarterly Traffic Light Reports

**July**

NYCT Capital Program Update

# New York City Transit Sandy Recovery & Resiliency Division

Capital Program Oversight Committee

CPM

Branko Kleva, P.E.

Sonia Jaising, R.A.

Program Executives



July 2018

# NYCT Sandy Recovery & Resiliency Program

## Agenda

- Program Overview
  
- Project Update
  - L Tunnel Reconstruction/ Myrtle Viaduct
  - Clifton Shop



# Program Overview

**Recovery Program**  
\$3.2 billion

\$2.19 Committed

## > Rehabilitate 9 under-river tubes

**7 Completed to date**

Montague **R**  
Greenpoint **G**  
Steinway **7**  
Cranberry **A C**  
53<sup>rd</sup> Street **E M**  
Joralemon **4 5**  
Clark Street **2 3**

**1 In Construction**

Canarsie **L**

**1 Remaining**

Rutgers **F**

## > Repair damage at 4 subway yards

**1 Completed**

Rockaway Yard

**2 In-Construction**

Coney Island Yard

148<sup>th</sup> Street Yard

**In-Procurement**

207<sup>th</sup> Street Yard

## > Reconstruct South Ferry Terminal

*Reopened June 2017*

## > Rehabilitate St. George Terminal (SIR)

*Completed March 2017*

**Most projects were completed on time and within budget.**



# Program Overview

**Resiliency Program**  
\$2.6 billion  
  
\$1.34 Committed

## > Seal approximately 3,500 street level openings

**15 contracts completed to date, 8 in construction**

- Street openings include station stairways, vent structures, hatches and manholes
- Solutions include marine doors, flex gates, flood logs and mechanical closure devices
- Most numerous are vent-bays – there are over 2200 of these receiving MCDs

## > Protect 3 major subway yards

### ***In Construction***

Coney Island Yard

148<sup>th</sup> Street Yard

### ***In Procurement***

207<sup>th</sup> Street Yard

## > Flood mitigation of Rockaway Line

### ***In Construction***

Hammels Wye

### ***In Pre-Design***

Rockaway Line

## > Construct new, resilient Clifton Shop (SIR)

*In Construction-Design Build Project*



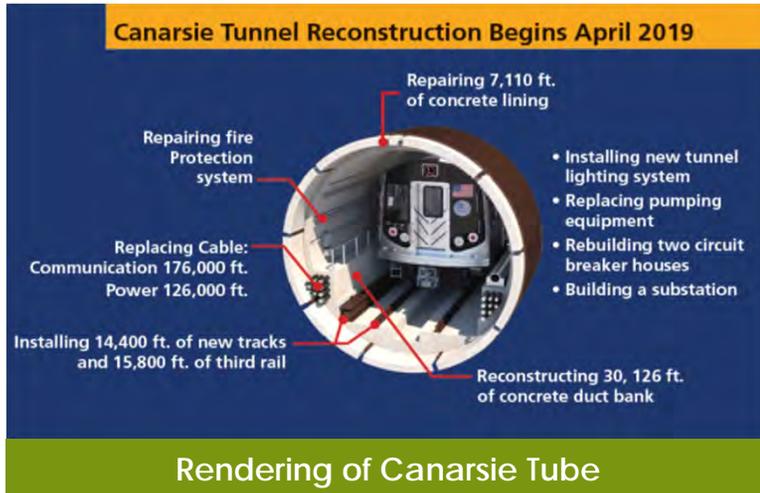
# L Tunnel Reconstruction

- ❑ Awarded: April 2017
- ❑ Contractor: Judlau – TC Electric JV
- ❑ Project Description:
  - Demolish and reconstruct duct banks and track
  - Replace all lighting, communications, signals and power cables
  - Construct new substation and circuit breaker house
  - Install new ADA elevators and station stairs
  - Rebuild pump room and 2 Circuit Breaker Houses



# L Tunnel Reconstruction

## Overall Status



Item	Comments
Schedule	<ul style="list-style-type: none"> <li>Substantial Completion forecast is November 2020</li> <li>Tunnel shutdown: 15 Months April 2019 – July 2020</li> <li>Alternate Service Plan Implementation</li> <li>Community outreach</li> </ul>
Cost	<ul style="list-style-type: none"> <li>Within Budget of \$926M (Includes contingency and risk reserves)</li> </ul>



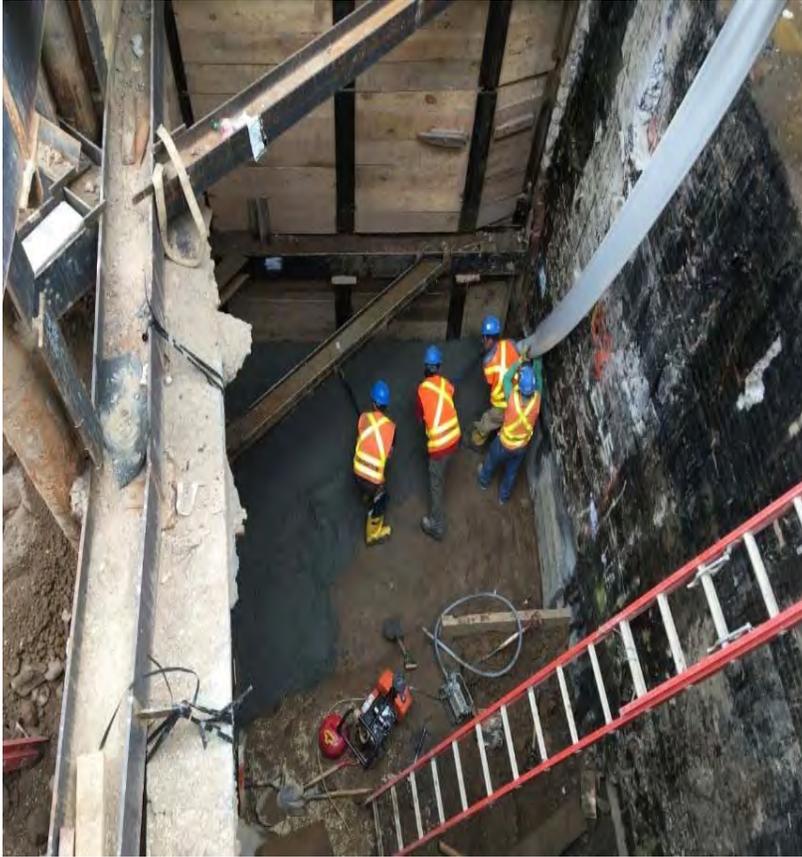
# L Tunnel Reconstruction

<p><b>Progress Manhattan 19%</b></p>	<p><b>New Entrances and Substation</b></p> <ul style="list-style-type: none"> <li>• Utility relocation work is 90% complete</li> <li>• Support of Excavation Sheeting is installed</li> <li>• Jet grouting work is in progress</li> </ul>
<p><b>Progress Brooklyn 19%</b></p>	<p><b>Bedford Ave Entrance:</b></p> <ul style="list-style-type: none"> <li>• South stair is constructed and opened to the public</li> <li>• Bedford Ave north stair and street to mezzanine elevator structure work is in progress</li> <li>• Mezzanine extension work started</li> </ul> <p><b>Driggs Ave Entrance:</b></p> <ul style="list-style-type: none"> <li>• Reconstruction of sewer is in progress</li> <li>• Reconfiguration of mezzanine is in progress</li> <li>• Electrical and Communications conduits being installed at platform and mezzanine</li> </ul>
<p><b>180 Day Look Ahead</b></p>	<ul style="list-style-type: none"> <li>• Continue Public Outreach – Alternate Service Plan</li> <li>• Pre-Closure Weekend GO's</li> <li>• Continue work for Ave A entrances and new sub-stations at Avenue B</li> <li>• Complete north stairs and ADA elevator shaft at Bedford Avenue Station</li> <li>• Continue Bedford Ave mezzanine extension</li> </ul>

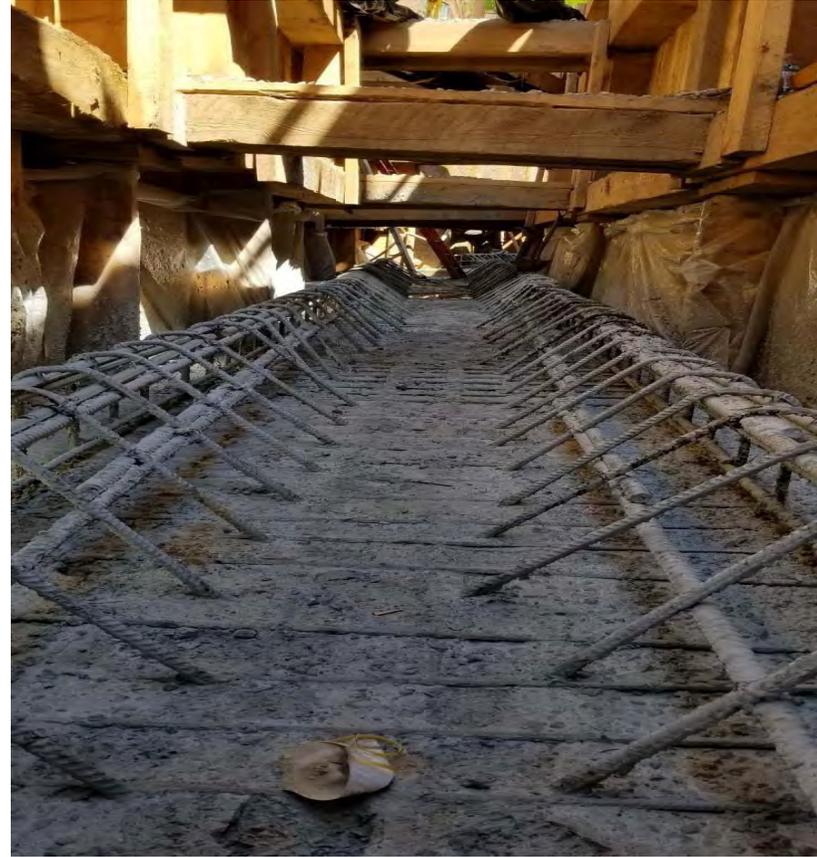


# L

# Tunnel Reconstruction



Concrete Placement for Elevator Shaft at Bedford Ave



Sewer Cradle between 1<sup>st</sup> Ave & Ave A on 14<sup>th</sup> St.

# L

# Tunnel Reconstruction



Concrete being placed for the roof of the New Bedford South Stair



# L Tunnel Reconstruction



New South Stairs at Bedford Ave Station



# L Tunnel Reconstruction



Jet Grout Installation for South Entrance at  
Ave A - 1<sup>st</sup> Ave Station



Installation of Steel Supports for North Sewer at  
Ave A & 14<sup>th</sup> Street

# L Tunnel Reconstruction



Rebar Installation for North Sewer Cradle between  
1<sup>st</sup> Ave & Ave A



Delivery of 42" Ductile Iron Pipe for North Sewer at  
14<sup>th</sup> Street

# L

# Tunnel Reconstruction

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
● Green	Dust Collection Mock Up Approval	January 2018	Dust Collector Mockup Completed on January 2018
● Green	Approvals, delivery and storage of all materials and equipment	September 2018	None
● Green	All signal work required for tunnel shutdown incl. Bedford Ave Dispatch office	December 2018	None
● Green	Hi-rail equipment approved and ready for delivery	December 2018	None
● Green	Procurement of specialized equipment required for tunnel work	December 2018	None
● Green	Temporary cabling for vent plants, pump room and CBTC systems for the tunnel shutdown	February 2019	None
● Red	Red	Significant impacts with potential impacts on Revenue Service Date, Cost, or Customer Benefit Milestones	
● Yellow	Yellow	Impacts which can lead to cost increases or schedule delays on individual milestones or contracts.	
● Green	Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.	



# L

# Tunnel Reconstruction

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Green	First Avenue Station north and south debris removal shafts	April 2019	None
 Green	Tunnel Shutdown	April 2019	None
 Yellow	Avenue B substation and CBH-61 ready for power	April 2020	Completion of Substation is projected to be delayed due to obstruction encountered in jet grouting operation. It does not affect shut down/opening of tunnel.
 Green	CBH 62 ready for power	April 2020	None
 Green	All Bedford Avenue Station work complete	July 2020	None
 Green	All First Avenue North and South Station work complete	July 2020	None
 Green	Tunnel Reopening	July 2020	None



	Red	Significant impacts with potential impacts on Revenue Service Date, Cost, or Customer Benefit Milestones
	Yellow	Impacts which can lead to cost increases or schedule delays on individual milestones or contracts.
	Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.

# Myrtle Line Viaduct and Bridge



## Overall Status

Item	Comments
Schedule	<ul style="list-style-type: none"> <li>• Project is 95% Complete</li> <li>• Substantial Completion forecast is December 2018</li> <li>• Contract Duration: 24 Months</li> <li>• 10 month closure – Started July 1, 2017 and concluded April 29, 2018</li> <li>• M Line reopened on schedule</li> </ul>
Cost	<ul style="list-style-type: none"> <li>• Within Budget of \$163M</li> </ul>



# Myrtle Line Viaduct and Bridge



Myrtle Line Viaduct  
(Before)



Myrtle Line Viaduct  
(After)



# Clifton Shop (Design/Build)

- ❑ Awarded: December 2016
- ❑ Contractor: Prismatic Development Corp.
- ❑ Project Description:
  - Reconstruct the Sandy-damaged Clifton Maintenance Shop to be resilient to Category 2 hurricane.
  - Project includes demolition of existing shop facilities and construction of new shop with offices and support facilities and all associated work.
  - Phased construction to maintain existing facility in-service.



# Clifton Shop (Design/Build)

## Overall Status



Building Demolition

Item	Comments
Schedule	<ul style="list-style-type: none"> <li>• Demo 1 area has been completed.</li> <li>• Construction Work started</li> <li>• Recent project schedule indicates a delay of 58 workdays</li> <li>• NYCT and contractor working on mitigation strategy.</li> <li>• Substantial Completion forecast is October 2020</li> </ul>
Cost	<ul style="list-style-type: none"> <li>• Within Budget of \$211.7M</li> </ul>



# Clifton Shop (Design/Build)

## Highlights

<p><b>Progress</b> 17%</p>	<ul style="list-style-type: none"><li>• All final design packages have been submitted.</li><li>• Construction Permit for 3 packages were issued; 4 permits are pending.</li><li>• Paint and diesel shops are demolished. Grading completed to pile cap elevation.</li><li>• Detailed CPM Baseline schedule conditionally accepted.</li><li>• Completed all temporary utility work.</li><li>• Pile load test program and Geotechnical Investigation Report completed</li></ul>
<p><b>180 Day Look Ahead</b></p>	<ul style="list-style-type: none"><li>• Remove contaminated and hazardous soil.</li><li>• Install building foundation: piles, pile caps, grade beam, footings.</li><li>• Install underground utilities.</li><li>• Start installation of structural steel for the building.</li></ul>



# Clifton Shop (Design Build)

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
● Green	Initial Removals, Relocation, Staging	November 2017 (A)	Completed
● Yellow	Start Production Piles	July 2018	Demolition of paint and diesel shops was delayed by approximately 3 months due to environmental permitting issues. This may lead to the subsequent milestone being delayed.
● Yellow	Complete Foundations	December 2018	Potential cascading delay from the previous milestone.
● Yellow	Complete Superstructure	March 2019	Potential cascading delay from the previous milestone
● Yellow	Complete Clifton Shop	April 2020	Potential cascading delay from the previous milestone
● Yellow	Demolition of Store Room, MUE Shop, Remaining Structures	July 2020	Potential cascading delay from the previous milestone
● Yellow	Final Site Work and Finishes	October 2020	Potential cascading delay from the previous milestone.
● Yellow	Substantial Completion	October 2020	Potential cascading delay from the previous milestone

● Red	Significant impacts with potential impacts on Revenue Service Date, Cost, or Customer Benefit Milestones
● Yellow	Impacts which can lead to cost increases or schedule delays on individual milestones or contracts.
● Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.



# July 2018 CPOC IEC Project Review

## Tunnel Reconstruction

July 23, 2018



# Budget Review

## ■ Budget

- Recently approved Plan Revision added \$12M to the project budget for additional station improvements at 1<sup>st</sup> Ave. and Bedford Ave. stations. The new budget is \$926M.



# Schedule Review

## □ Schedule Review

- The IEC finds that work is progressing well and is on track to meeting the following near-term milestones:
  - Tunnel Shutdown April 2019.
  - Approvals, delivery and storage of all materials and equipment by September 2018.
  - Shop drawing submissions to be completed by September 2018.
  - Hi-rail equipment approved and ready for delivery by December 2018.
- The IEC is concerned the Ave. B Substation has slipped due to the jet grouting for the substation foundation, however, a mitigation plan has been developed and is being implemented.



# IEC Observations

- The IEC is also tracking the construction of two new substations at Maspeth and Harrison Place that will provide additional power requirements. Both these projects are currently tracking on schedule.



# July 2018 CPOC IEC Project Review

NYCT/SIR - Clifton Shop

July 23, 2018



# NYCT/SIR Clifton Shop

## Budget

- The project is currently on budget.
- Pending change orders will likely impact the contingency level.

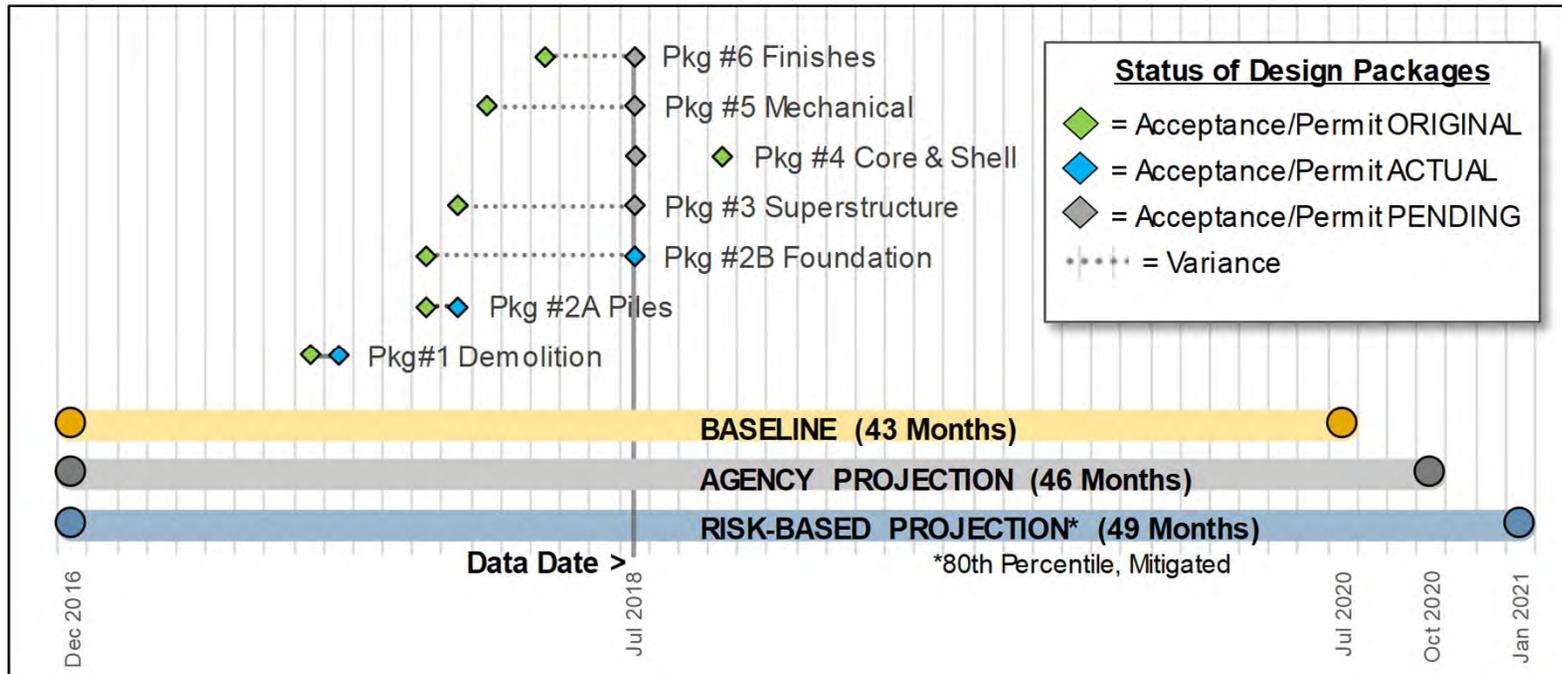
## Schedule

- Update #1 reflects progress through April 2018, and indicates substantial completion in October 2020, a delay of approximately 3 months.



# NYCT/SIR Clifton Shop

The current projected completion date of October 2020 includes the impact of delays incurred through April 2018.



# NYCT/SIR Clifton Shop

## IEC Recommendations:

- The IEC recommends the project team actively implement the Risk Response Strategies developed in the September 2016 Risk Workshop. Some of the identified risks have emerged as issues.
- The project management team must enact additional controls to ensure the Design-Build contractor performs the remaining work in accordance to the terms of the contract.



# July 2018 CPOC MNR/LIRR PTC Project Update

July 23, 2018



# LIRR/MNR Overall PTC Project Status

Item	Comments
Schedule	<ul style="list-style-type: none"> <li data-bbox="464 440 1591 483">❑ On target to meet all federal compliance requirements.</li> <li data-bbox="464 553 1829 711">❑ Integrated System Factory Acceptance Testing (FAT) is in progress. Several core variances required for Revenue Service Demonstration (RSD) are still in development and will not be available until August.</li> <li data-bbox="464 781 1745 824">❑ RSD applications expected to be submitted in September 2018.</li> <li data-bbox="464 894 1703 938">❑ Start of RSD on the pilot lines expected in mid-October 2018.</li> </ul>
% Complete	<p data-bbox="464 1008 667 1052">LIRR - 78%</p> <p data-bbox="464 1073 682 1117">MNR - 76%</p>
Budget	<p data-bbox="464 1219 625 1263">\$1.037B</p> <p data-bbox="464 1284 1732 1328">LIRR's \$40M and MNR's \$15.9M budget increases were approved.</p>



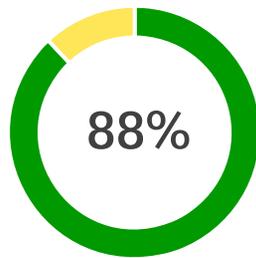
# LIRR/MNR PTC Project Progress Dashboard

## Long Island Rail Road

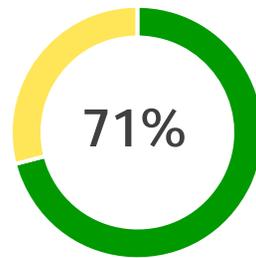
Radio Spectrum



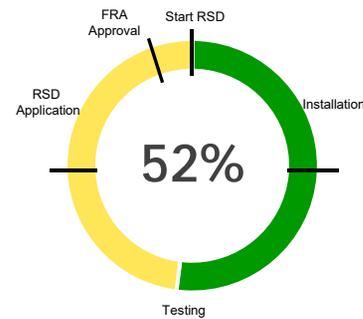
Installation of Hardware



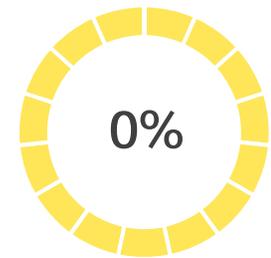
Employees Trained



PTC Operations (RSD) Pilot Lines



Extended RSD (ERSD) 15 Non-Pilot Segments

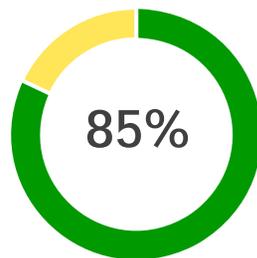


## Metro-North Railroad

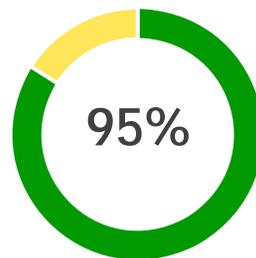
Radio Spectrum



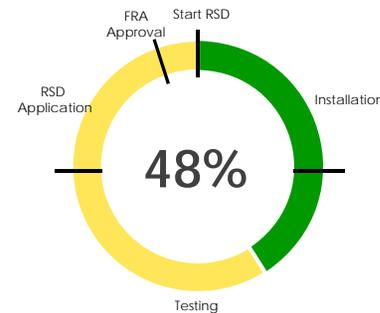
Installation of Hardware



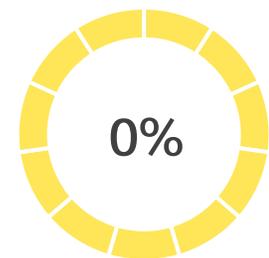
Employees Trained



PTC Operations (RSD) Pilot Lines



Extended RSD (ERSD) 11 Non-Pilot Segments



# LIRR PTC – 2018 Hardware Installation Projections

PTC Subsystem	System Requirements	FRA Goals	Installs through June 2018	% Complete FRA Goal	Remaining to meet FRA Goals	18-Jun		18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec
						Forecast	Actual	Forecast	Forecast	Forecast	Forecast	Forecast	
Transponders	3367	3367	2683	80%	684	68	78	97	293	294	0	0	0
WIUs	151	146	120	83%	25	2	2	3	11	12	0	0	5*
C-Cases	111	108	107	99%	1	0	0	0	1	0	0	3*	0
M7	418	240	414 **	100%	0	0	0	0	0	0	0	0	0
DE/DM	45	30	31	100%	0	10	5	7	7	0	0	0	0
C3	23	17	11	65%	6	7	2	6	6	0	0	0	0
E15	16	5	3	60%	2	1	2	3	3	3	3	1	0
***NYAR	10	6	0	0	6	0	0	3	3	2	2	0	0
M3	44	N/A	0	N/A	N/A	0	0	0	0	0	12	24	8

Data date June 30, 2018

\* For future PTC in ESA tunnels

\*\* Four M7 pairs are out of service and installs will be completed prior to return to service.

\*\*\* NYAR numbers will be included in next PTC Implementation Plan (PTCIP) Request for Amendment (RFA) per FRA clarification.

 Month when FRA goal is met



# MNR East of Hudson PTC – 2018 Hardware Installation Projections

PTC Subsystem	System Requirements	FRA Goals	Installs through June 2018	% Complete FRA Goal	Remaining to meet FRA Goals	18-June		18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec
						Forecast	Actual	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Transponders	2931	2931	2502	85%	429	0	0	0	143	143	143	0	0
WIUs	84	84	83	98%	1	0	0	0	0	1	0	0	0
Radio Cases	104	104	85	81%	19	8	9	8	6	4	1	0	0
M7	167	167	167	100%	0	0	0	0	0	0	0	0	0
M3	69	32	23	72%	9	6	5	8	12	12	12	2	0
P32	31	23	13 complete	56%/100%	10	3	3	3	3	3	3	3	3
			31 Partial (OBC)										
Cab Cars	52	35	15 complete	42%/100%	20	6	6	6	6	6	8	8	3
			40 Partial (OBC)										
M8	190	106	70 Complete	66%/100%	36	24	21	24	24	24	24	24	24
			190 Partial (OBC)										
BL20	12	9	12 Partial	22%	9	0	0	2	2	2	2	2	2
GP35	8	4	7 Partial	0%	4	0	0	1	2	1	1	2	1

 Month when FRA goal is met



# MNR Port Jervis Line Hardware Installation Projections

PTC Subsystem	System Requirements	FRA Goals	Installs through June 2018	% Complete FRA Goal	Remaining to meet FRA Goals	18-June		18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec
						Forecast	Actual	Forecast	Forecast	Forecast	Forecast	Forecast	
Transponders	250	250	0	0%	250	0	0	80	80	90	0	0	0
WIUs	10	10	0	0%	10	0	0	3	3	3	1	0	0
Radio Cases	11	11	0	0%	11	0	0	3	3	3	2	0	0

Note : Port Jervis Line Wayside Hardware Installation Schedule is dependent on NJ Transit PTC Contractor design and deliveries.



Month when FRA goal is met



## MNR/LIRR Project Update (February to June 2018)

- Final Design Review (FDR) milestone achieved in May 2018 (2 month delay)
  - No major system design or hardware changes anticipated.
- Completed 1<sup>st</sup> and 2<sup>nd</sup> iterations of Office FAT in March and May.
- Completed Integrated System FAT (Baseline 2.3) in June.
  - Joint decision to proceed with FAT in March with open variances.
  - Discovered several safety critical variances which resulted in the suspension of FAT for several weeks.
  - The safety critical variances were fixed and re-tested in May/June.
- Completed Communications subsystem FAT in June.
- Commenced Office FAT 3.0 with security functionality and RWPS (LIRR only).
  - Pre-FAT – 95% success rate
- Integrated System FAT (Baseline 3.0) required for RSD is expected to be complete in August.
- Continued Database Verification & Validation of non-pilot lines (previously forecast for May completion).



## LIRR Project Update (February to June 2018)

- Commenced formal SPT (Site Performance Testing) on pilot lines to demonstrate PTC functionality (previously March)
- Continued onboard installations for C3, DE/DM, E15, and NYAR fleet.
- Continued to program and install WIUs and transponders on non-pilot segments.
- Continued to conduct PTC training for locomotive engineers on West Hempstead.
- Continued to finalize the RSD application with supporting documents.
- Exercised contract option for 44 M3 kits to be delivered by the end of the year.



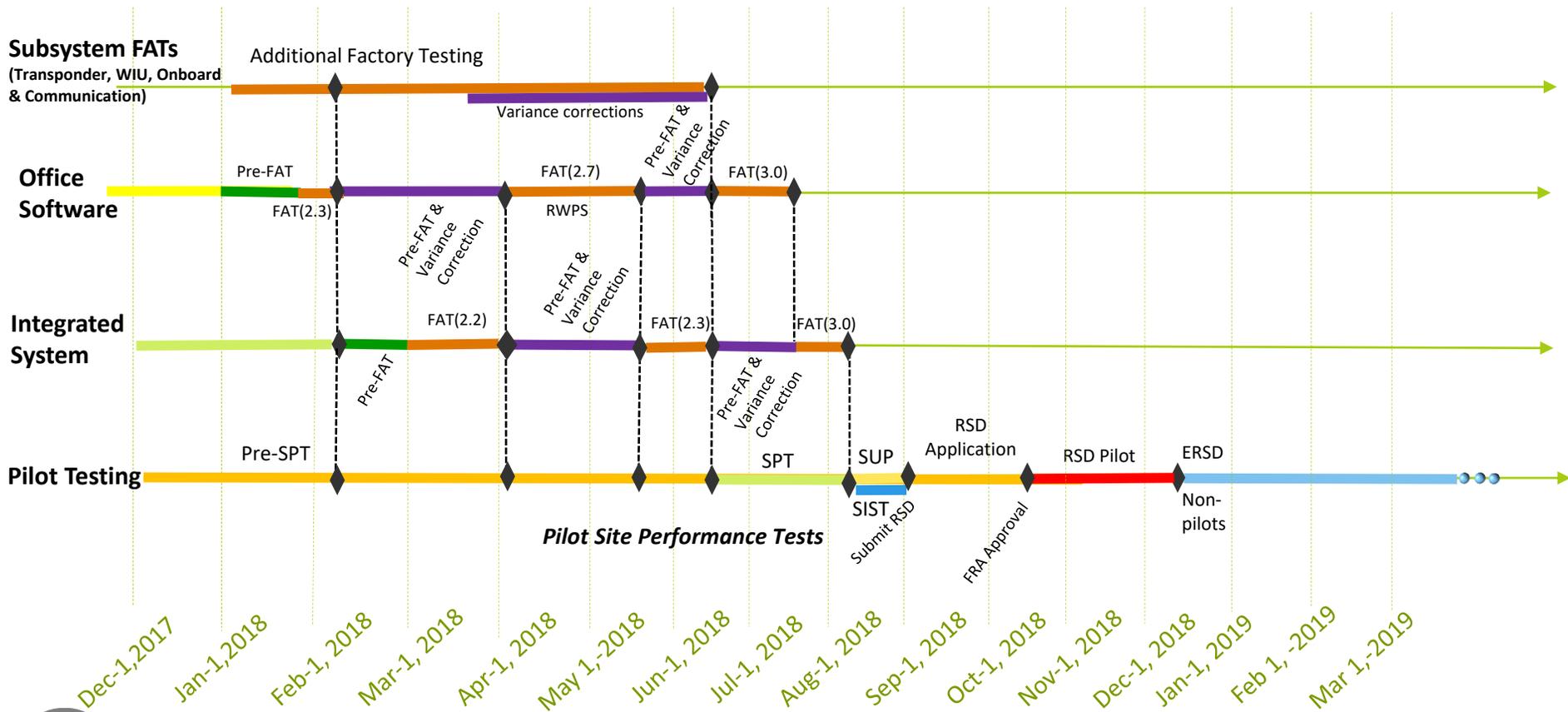
## MNR Project Update (February to June 2018)

- Started Civil Speed Enforcement (CSE) operation using M7s, M8s, Locos, Cab Cars and M3s.
- Completed Site Installation Testing (SIT) (Radio Cases, Wayside Interface Units and full PTC functionally transponders) on the RSD segment.
- Performed preliminary SPT on RSD segment to demonstrate PTC functionality.
- Continued onboard installations on M3s, P32s, Cab Cars and BL 20s.
- Commenced installation of Mobile Communications Package (MCP) on the M8 fleet.
- Continued installation of Radio Cases and Poles on all non-pilot segments.
- Started configuration and testing of Radio Cases on non-pilot segments



# LIRR Schedule Software/System Development & Test

- RSD Application - September 2018 (previously July)
- Start of Pilot RSD – October 2018 (previously July)



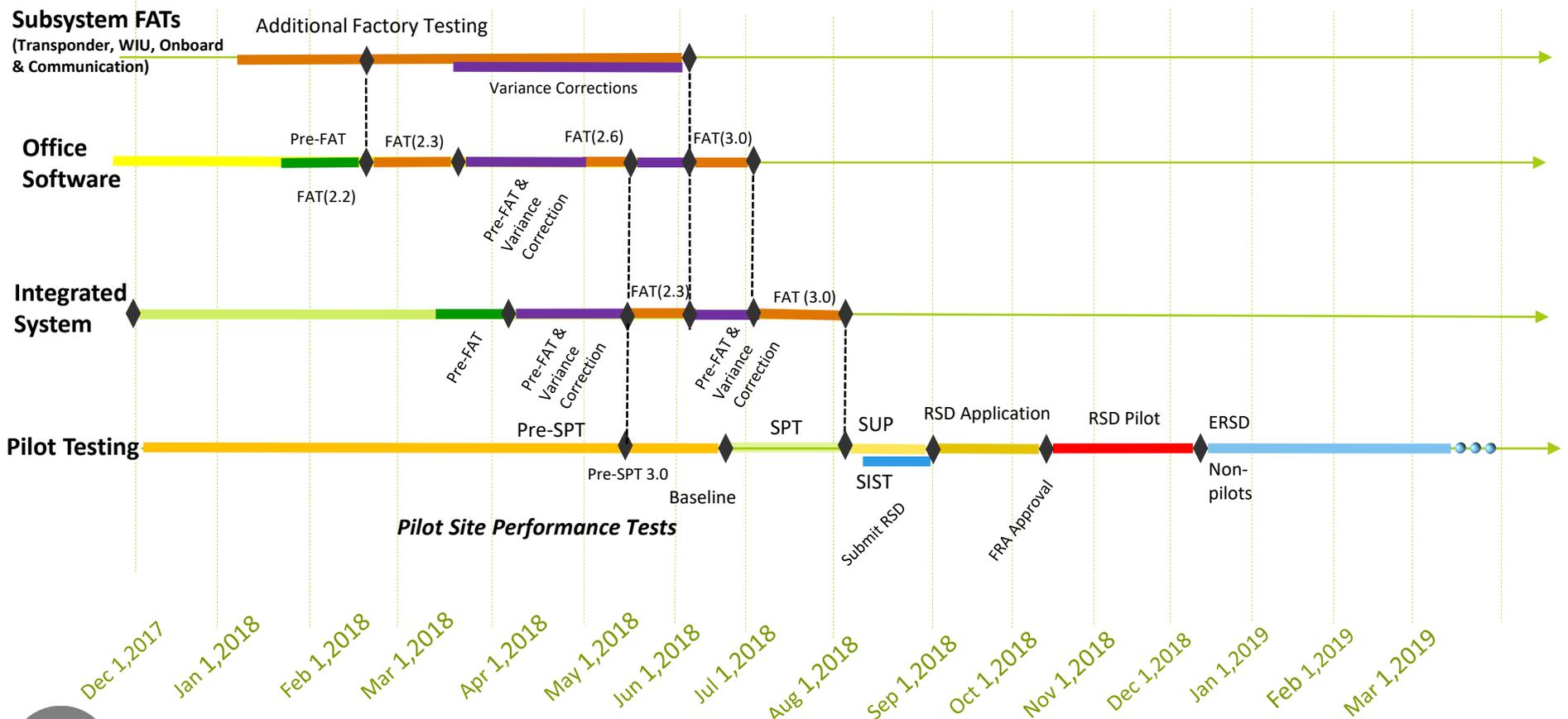
SPT = Site Performance Tests  
SIST = Site Integrated System Test

SUP = Site Update Period  
RSD = Revenue Service Demonstration

ERSD = Extended Revenue Service Demonstration

# MNR Schedule Software/System Development & Test

- RSD Application – September 2018 (previously July)
- Start of Pilot RSD – October 2018 (previously July)



SPT = Site Performance Tests  
SIST = Site Integrated System Test

SUP = Site Update Period  
RSD = Revenue Service Demonstration

ERSD = Extended Revenue Service Demonstration

# LIRR/MNR Project Risks and Railroad Mitigations

- **Risk:** The risk to compliance continues to be the discovery of critical software variances during testing.
- **Mitigations**
  - LIRR and MNR will continue to test the system both in the factory and in the field to capture as many variances as possible.
  - The Systems Integrator has added additional resources and believes they are at full staffing. They will also increase test time by working multiple shifts and during weekends. The Railroads will closely monitor the SI's progress.
  - The Systems Integrator will augment the Siemens Test Lab to expedite subsystem regression testing of OBC release version RG to be ready for Integrated System Baseline 3.0. The Railroads have agreed to allow the SI to utilize their test lab server(s). The SI needs to provide a schedule.
  - The Systems Integrator is providing a cloud based solution to allow the joint Railroad/Contractor team access to the Requirements Traceability Matrix (RTM) tool to support real-time Verification & Validation activities – Both MNR and LIRR have access to the tool, however implementation of the cloud solution is still in progress. The SI needs to provide a schedule.



## LIRR/MNR Project Risks and Railroad Mitigations (cont'd.)

- The Systems Integrator will perform shadow mode testing for LIRR to provide input to and accelerate the completion of the SIST testing period and provide an initial view of system performance – The Systems Integrator is scheduled to submit the SIST test plans in late July. The Railroads are closely monitoring this activity.
- Risk: Systems Integration issues due to the application of ACSES in our high density operations will be discovered too late in the process and jeopardize PTC compliance
  - Mitigation
    - LIRR and MNR will perform regression testing of all corrected variances in the integration lab and conduct parallel tests in the field.
    - LIRR and MNR will procure additional radio spectrum to minimize potential interference issues – Selection process underway and anticipate September Board approval.
    - The Systems Integrator has assembled and is utilizing portable test equipment that mimics train communications with the wayside in a compact package (trunk train) to speed up discovery of wayside communications issues without utilizing a real train.
    - LIRR plans to utilize the TC-82 to support additional wayside communications testing.



## LIRR/MNR Project Risks and Railroad Mitigations (cont'd.)

- **Risk:** System Integrator's (SI) difficulty in the acquisition and retention of PTC knowledgeable resources to support the project to meet the deadline.
  - **Mitigation**
    - LIRR and MNR are adding Subject Matter Experts from the consultants to bridge technical and operational gaps in the SI's PTC team.
    - The Systems Integrator is partnering with third party entities to expand their resources, and instituting an employee retention program to ensure continuity of resources on project.
- **Risk:** Finalization of agreement with Amtrak for interoperability design and implementation.
  - **Mitigation**
    - LIRR and MNR are holding weekly meetings to finalize technical agreements with Amtrak
      - MNR/Amtrak Letter of Understanding was signed in May.
      - Agreements for network connectivity and equipment placement in progress.



## LIRR/MNR Project Risks and Railroad Mitigations (cont'd.)

- LIRR is finalizing operational agreements with Amtrak at Penn Station Control Center (PSCC) for Harold Interlocking area for the placement and management of Temporary Speed Restrictions.
- MNR held a meeting with Amtrak Engineers to finalize line boundary communication link; however Amtrak does not anticipate resolving boundary issues in 2018.
- FRA has taken the position that unresolved boundary issues are a key interoperability issue that will require submission of an “alternative schedule”; most if not all railroads in country will likely be required to submit an alternative schedule as a result.
- Risk: Completion of the project requires simultaneous commissioning of multiple line segments making it challenging with constraints of resources.
  - Mitigation
    - LIRR and MNR are in the process of increasing their field test teams and are requesting track access/outages as required in advance.



## LIRR/MNR Project Risks and Railroad Mitigations (cont'd.)

- Risk: Port Jervis Line PTC installation dependent upon receipt of wayside equipment from NJT
  - Mitigation
    - MNR agreed to accept Wayside/Communication material at 50% design to commence installation.
- Risk: Timely approvals of RSD applications by FRA due to a significant number of applications requiring FRA review at the same time.
  - Mitigation
    - LIRR/MNR worked with APTA to compile the schedules from all Commuter Railroads of when they plan to submit their RSD applications so that the FRA can plan ahead.
    - LIRR/MNR are concurrently considering the “alternative criteria” or “substitute criteria” option from the FRA to be in PTC compliance sooner.



# LIRR/MNR PTC Timeline

## **Feb 2018**

- ✓ LIRR/MNR completed Office FAT with open variances.
- ✓ MNR completed wayside CSE implementation East of Hudson.

## **Mar 2018**

- ✓ LIRR/MNR completed Integrated System Pre-FAT.
- ✓ LIRR commenced Integrated System FAT (System Baseline 2.3).
- ✓ MNR started operating diesel & M7 trains with ACSES CSE.

## **May 2018**

- ✓ LIRR/MNR achieved the Final Design Review milestone (2 month delay).
- ✓ MNR commenced Integrated System FAT with System Baseline 2.3 (1 month delay).

## **June 2018**

- ✓ LIRR/MNR completed Integrated System FAT (Baseline 2.3)
- ✓ LIRR/MNR started formal Site Performance Testing on Pilot Lines with System Baseline 2.3 (3 month delay).
- ✓ MNR started operating M3 trains with ACSES CSE (2 month delay).



## LIRR/MNR Look Ahead (July to October 2018)

- Complete FAT for Office 3.0
- Complete Integrated System FAT using System 3.0 Baseline software.
- Complete formal SPT (Site Performance Testing) on pilot lines to demonstrate PTC functionality.
- Complete reliability testing of PTC functions on pilot lines to provide data to submit RSD application in September.
- Complete all onboard and wayside installations.
- Complete all required PTC training to support RSD.
- Submit RSD application to the FRA for approval.
- Finalize the FRA request for an Alternative Schedule
  - Revise and update PTC Implementation Plan
  - Prepare the Written Notification to FRA to demonstrate meeting statutory criteria to qualify for an Alternative Schedule for submission before the deadline.



# LIRR/MNR PTC Timeline and Look-ahead

## **July 2018**

- ❑ MNR to complete all required training to employees (previously Sept).
- ❑ LIRR to complete all on-board installations (previously June).
- ❑ LIRR/MNR to start Integrated System FAT (Baseline 3.0)

## **August 2018**

- ❑ System Integrator (SI) to complete delivery of Train-the-Trainer courses to LIRR (previously July)
- ❑ LIRR/MNR to complete Integrated System FAT (Baseline 3.0) for RSD
- ❑ LIRR to start Site Performance Testing on non-pilot segments (previously June).

## **September 2018**

- ❑ LIRR/MNR to submit RSD application for pilot lines (previously June).
- ❑ MNR to complete the installation of transponders on the Port Jervis line.
- ❑ MNR to continue to perform interoperability testing with MNR tenants.
- ❑ LIRR to complete all wayside installations (with the exception of ESA tunnels).



# LIRR/MNR PTC Timeline and Look-ahead

## **October 2018**

- ❑ LIRR to begin RSD on pilot lines.
- ❑ MNR to begin RSD on Tarrytown to Croton-Harmon pilot segment (Hudson Line).
- ❑ MNR to complete all wayside installations including Port Jervis Line.
- ❑ MNR to complete all onboard installations of PTC hardware (previously Nov.)
- ❑ LIRR to complete all required training to employees (previously Sept).

## **November 2018**

- ❑ MNR to expand service using additional fleet in RSD segment.
- ❑ LIRR/MNR to submit Written Notification to FRA to stating that LIRR/MNR have met all statutory criteria for an Alternative Schedule.

## **December 2018**

- ❑ MNR to start Site Performance Testing on non-pilot segments.
- ❑ LIRR/MNR start to request approval and expansion of RSD to non-pilot track segments (previously Sept).

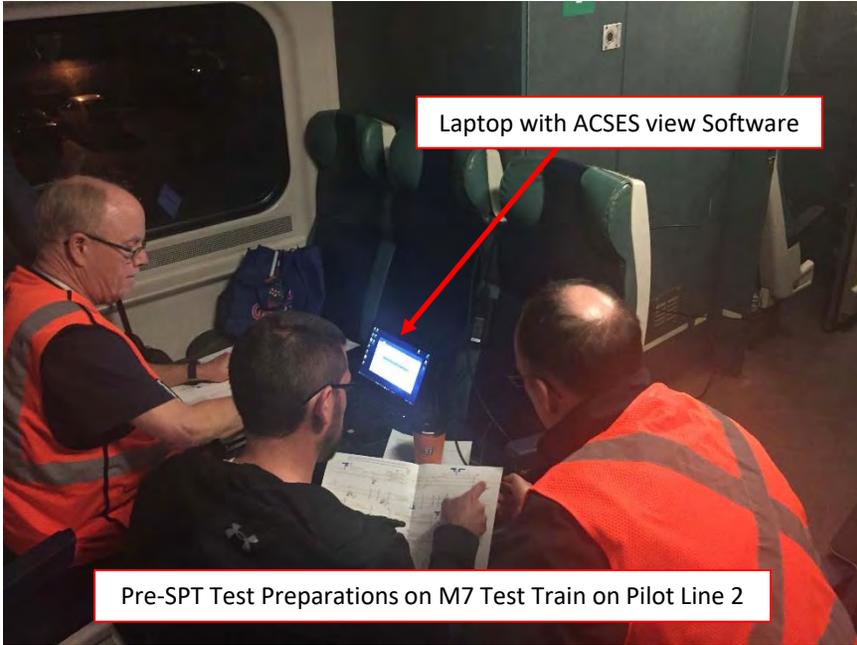
## **After January 2019**

- ❑ LIRR/MNR to submit PTC Safety Plan to FRA for approval (previously Dec.)
- ❑ LIRR/MNR to complete placing non-pilot segments in PTC Operations (ERSD).



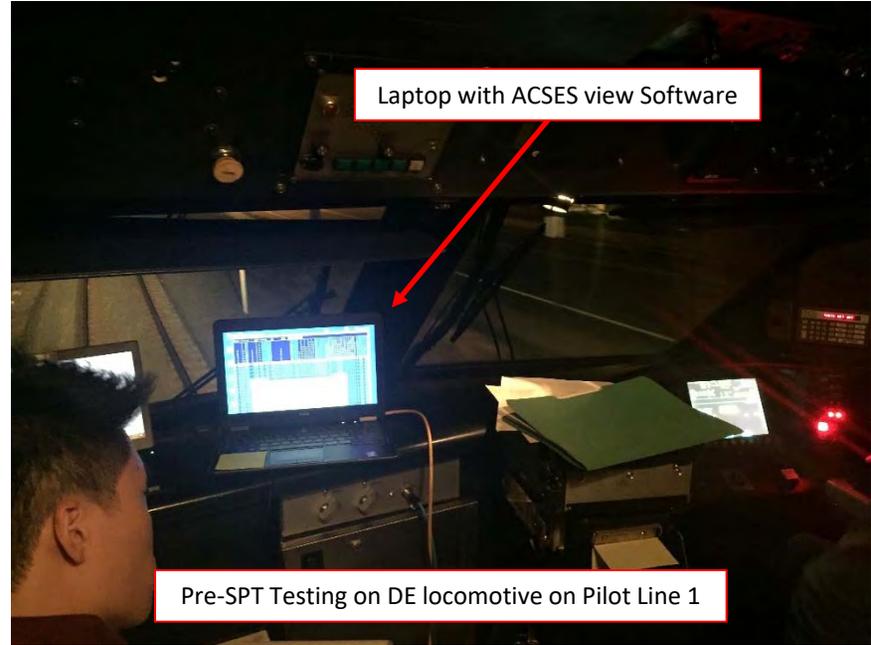
# PTC Testing Photos

## Pre-Site Performance Testing



Laptop with ACSES view Software

Pre-SPT Test Preparations on M7 Test Train on Pilot Line 2



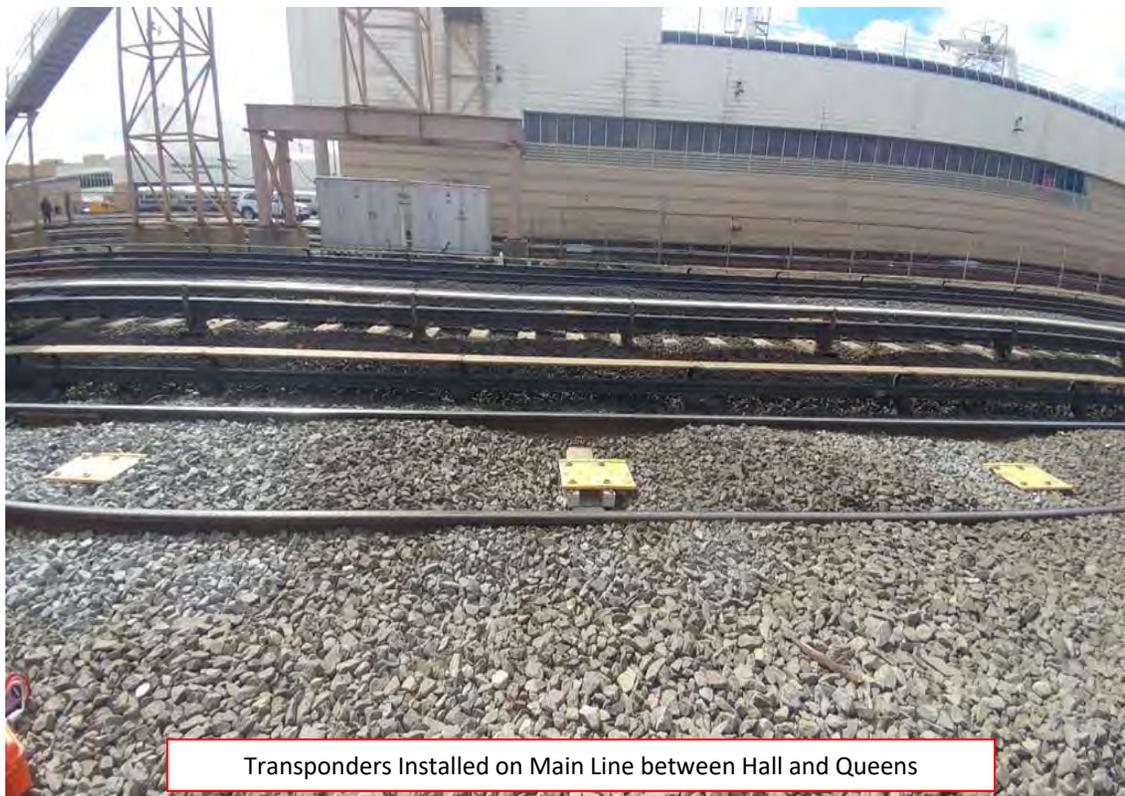
Laptop with ACSES view Software

Pre-SPT Testing on DE locomotive on Pilot Line 1

# PTC Installation Photos LIRR Transponder Installations



Transponder Installations on Montauk 1BW



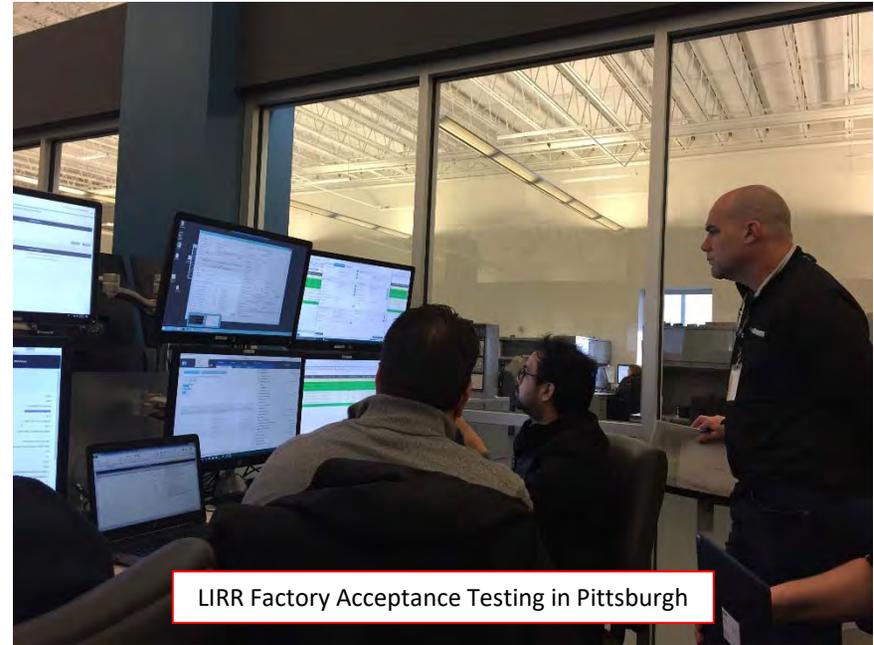
Transponders Installed on Main Line between Hall and Queens

# PTC Installation Photos

## LIRR Factory Acceptance Testing



LIRR Factory Acceptance Testing in Pittsburgh



LIRR Factory Acceptance Testing in Pittsburgh

# PTC Installation Photos

## LIRR TC-82 PTC Antenna Installation



TC-82 Engineering Track Car



PTC Antenna Array Cable Connections



TC-82 PTC Antenna Array

# PTC Installation Photos

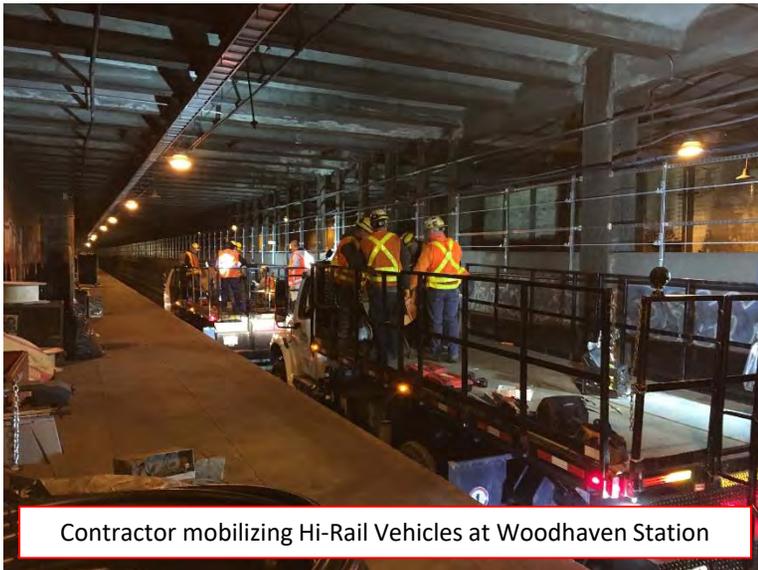
## LIRR Atlantic Tunnel Cable Installation



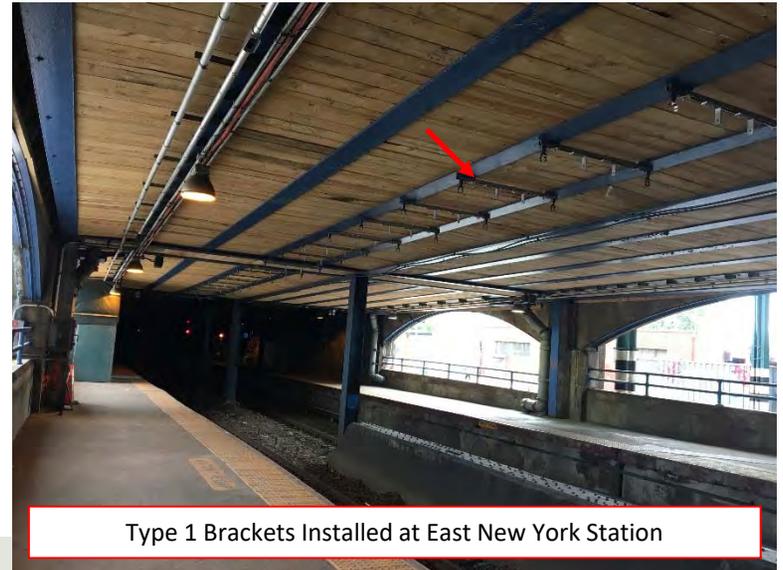
Inspector Testing PTC Radio Cable



Contractor Pulling PTC Radio Cable

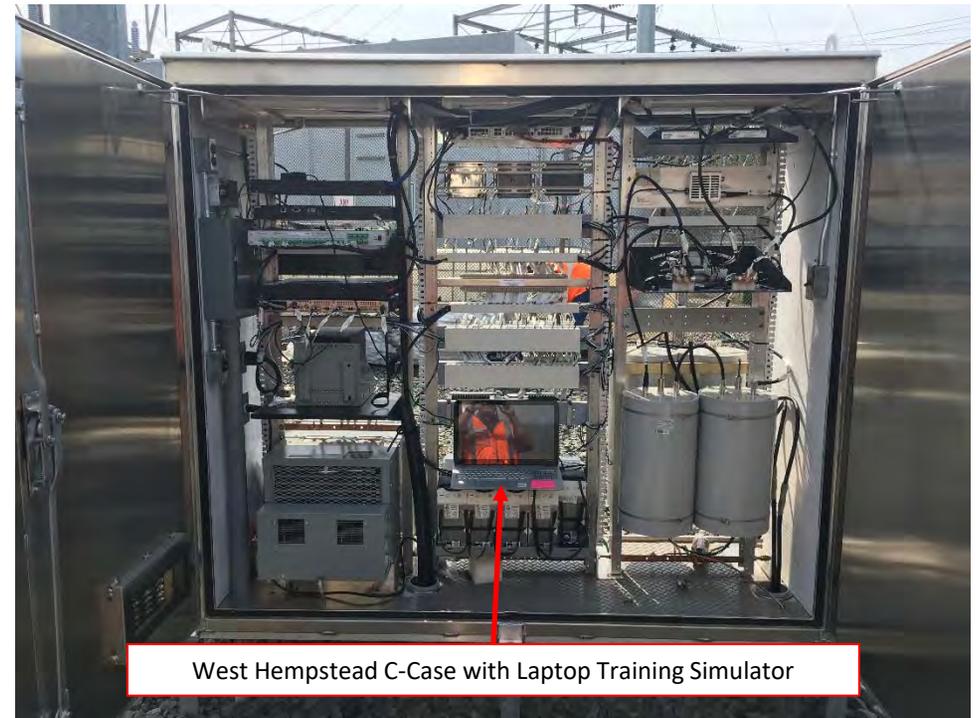
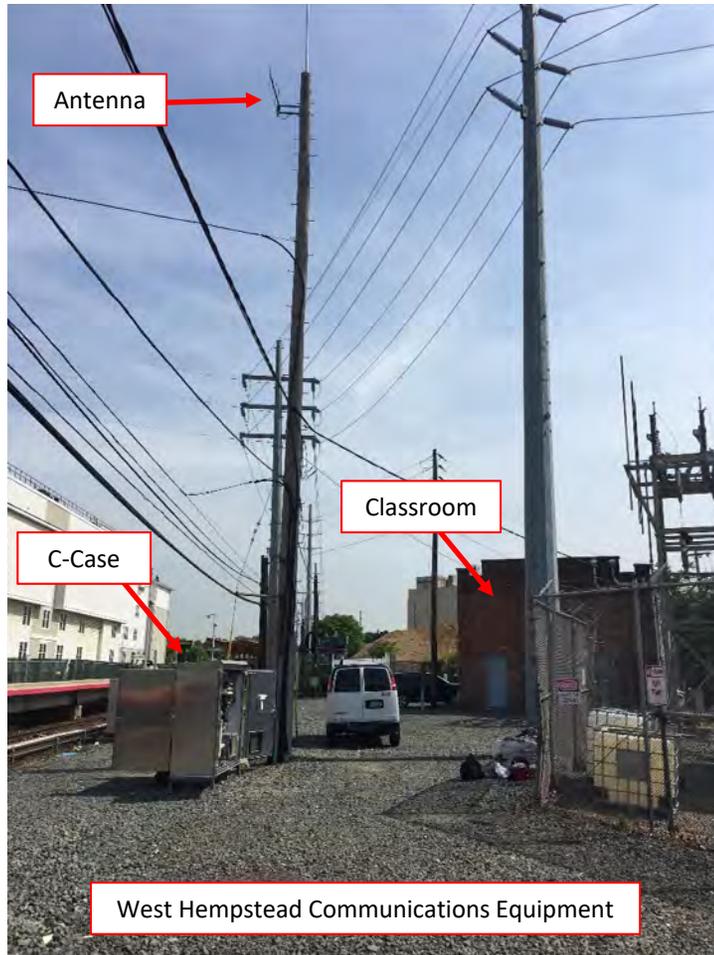


Contractor mobilizing Hi-Rail Vehicles at Woodhaven Station



Type 1 Brackets Installed at East New York Station

# PTC Training Photos LIRR West Hempstead Training Track



# MNR Employees and System Integrator performing Field Modifications on the Radio Cases



# MNR Employees and System Integrator performing Field Modifications on the Radio Cases



# July 2018 CPOC IEC Project Review

## Positive Train Control

July 23, 2018



# Budget Review

- The current project budget is \$1,037M:
  - The current budget reflects an increase of \$55.9M.
  - As reported, \$40M for LIRR and \$15.9M for MNR were added to the budget to support additional force account resources and Third Party Services.



# Schedule Review

- The Railroads are forecasting achieving all compliance requirements by December 2018.
- Application to FRA for Extended Revenue Service Demonstration (ERSD) for non-pilot lines cannot start before December 2018.
- FDR was achieved in May 2018:
  - No impact on software development due to initial delays.
  - Provides assurance that all critical design features have been captured.
- System Integrator (SI) has progressed FAT activities concurrently with resolving variances.



# IEC Observations

- Achieving compliance by December 2018 date remains challenging:
  - Addressing variances
  - Successful completion of Integrated System FAT 3.0
- Three months delay to the start of Site Performance Testing since last reported in February:
  - Software development and test variances were major causes of the delay.
  - Since May the software testing has shown signs of improvement.
  - Results of Site Integration System Testing (V 3.0) will be the key indicator to assess the viability of current RSD schedule.



# IEC Observations

- ❑ Equipment installation and employees training are progressing as planned.
- ❑ Additional work is required to verify field data for non-pilot segments, and resolve technical issues.
- ❑ Revenue Service Demonstrations on non-pilot lines (E-RSD) will likely extend beyond December 2018:
  - ❑ Extensive work required on multiple lines, including simultaneous commissioning of line segments.
  - ❑ Potential constraints on resources and track access.
  - ❑ Need FRA approval of RSD activities on Pilot Lines.
- ❑ Railroads are likely to submit an alternative schedule to FRA to resolve interoperability issues with Amtrak.



# Project Risks

- With a three months delay in start of Site Performance Testing, limited time is available for remaining activities:
  - FRA approval of RSD application may take longer than scheduled.
- The current schedule is highly dependent on successful completion and integration testing of version 3.0 of the software.
- Although technical resources were added to both the Railroads and the System Integrator, there remain shortage of experienced personnel:
  - Need to progress multiple system development activities and testing in parallel to support both Railroads.



# Project Risks

- Railroads are conducting Site Performance, Reliability and Shadow Mode testing using an older version of the software:
  - Risk that new software version may negate results.
- Additional test coverage is necessary in areas related to human factors, RAM, stress performance, and failover management.
- Limitations of the integrated system factory testing environment will force dependence on field testing:
  - Could delay detection and mitigation of potential variances.



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# **MTA Capital Program Commitments & Completions**

## **through June 30, 2018**

### Capital Projects – Major Commitments – June 2018

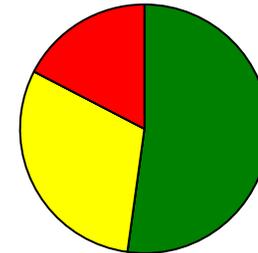
In 2018, agencies plan for a goal of \$7.3 billion in overall commitments with 43 major commitments planned.

Through June, agencies have committed \$2.8 billion versus a \$4.0 billion YTD goal. The shortfall was partly due to delays the awards of NYCT's Time Square Reconstruction & ADA Phase 3 (\$259M), ADA: Eastern Parkway Brooklyn Museum (\$39M), and Low-Resistance Contact Rail & Supplemental Negative Cables (\$26M) projects. Delays with other non-major commitments, such as \$166M in LIRR Expansion Project support costs, \$102M in East Side Access support costs and \$315M of Sandy-related commitments contributed to the balance of the shortfall. Nearly all will be achieved by year-end.

Twelve major commitments were made on time or early, seven were delayed but have now been committed, and four other major commitments remain delayed. The delays are explained on the following pages.

By year end, the MTA forecasts meeting or exceeding its overall \$7.3 billion goal.

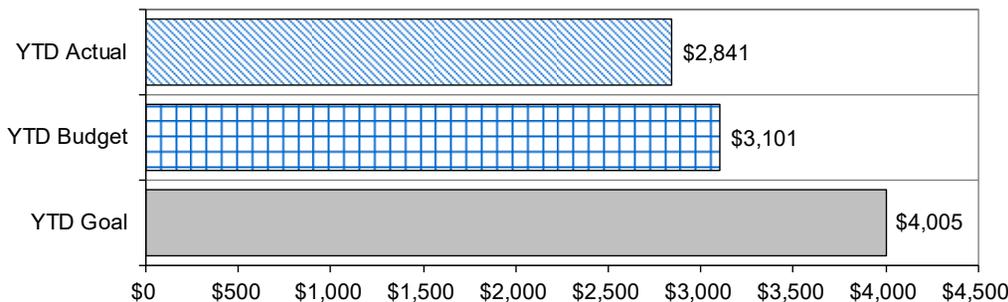
### Year-to-Date Major Commitments



	Count	Percent	Change from Prior Month
<b>GREEN</b> = Commitments made/forecast w within Goal	<b>12</b>	<b>52%</b>	↑ 3
<b>YELLOW</b> = Commitments delayed beyond Goal (already achieved)	<b>7</b>	<b>30%</b>	↑ 2
<b>RED</b> = Commitments delayed beyond Goal (not yet achieved)	<b>4</b>	<b>17%</b>	↑ 1
<b>Total</b>	<b>23</b>	<b>100%</b>	<b>↑ 6</b>

### Budget Analysis

2018 Annual Goal	\$7,337	(\$ in millions)
2018 Forecast	107%	of Annual Goal
Forecast left to Commit	64%	(\$5,038)



### Year-to-Date Agency Breakdown

2018 Goals	Prior month variance		
	GREEN	YELLOW	RED
<b>New York City Transit</b>			
4 3 3	+1 GREEN	---	+2 RED
<b>Long Island Rail Road</b>			
4 1	---	---	+1 RED
<b>Metro-North Railroad</b>			
2 1	---	---	---
<b>Bridges and Tunnels</b>			
2	+2 GREEN	---	---
<b>Capital Construction Company</b>			
1	---	---	---
<b>MTA Bus Company</b>			
2	---	+2 YELLOW	-2 RED
<b>MTA Police Department</b>			
	---	---	---

## Capital Projects – Major Commitments – June 2018 – Schedule Variances

Project	Commitment	Goal	Forecast
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### 4 All-Agency Red Commitments (3 new this month)

#### **NYCT**

##### *Passenger Stations*

ADA: Eastern Parkway-Brooklyn Museum / EPK	Construction Award	May- 18	Aug- 18
		\$39.3	\$47.1

Project award re- scheduled due to delay in advertisement. The cost increases were due to scope changes.

<b>Times Square Reconstruction &amp; ADA, Phase 3 - Shuttle (New Item)</b>	Construction Award	Jun- 18	Aug- 18
		\$259.3	\$284.9

Award re- scheduled due to additional time needed to review and approve final design estimate. Request to advertise is in process. Project cost increased due to additional scope, changes to construction phasing, and extension of construction duration by 3 months.

##### *Traction Power*

<b>Low- Resistance Contact Rail &amp; Negative Cables / QBL (New Item)</b>	Construction Award	Jun- 18	Sep- 18
		\$25.5	\$79.1

Project schedule delayed due to a budget modification staff summary required to fund budget shortfall. Project cost reflects latest estimates at advertisement, with increases to the bid estimate and support costs.

#### **LIRR**

##### *Power*

<b>Sub Station Components (New Item)</b>	Construction Award	Jun- 18	Sep- 18
		\$13.6	\$13.6

Project delayed for rebid due to vendor disqualification. New advertisement planned for July 2018.

## Capital Projects – Major Commitments – June 2018 – Schedule Variances

Project	Commitment	Goal	Actual	Project	Commitment	Goal	Actual
<b>7 All-Agency Yellow Commitments (2 new this month)</b>				<b>MTA Bus Company</b>			
<b>NYCT</b>				<i>Bus Company Projects</i>			
<i>Passenger Stations</i>				<b>53 Articulated Buses (New Item)</b>	Fleet Procurement	Apr- 18	Jun- 18 (A)
ADA: Gun Hill Rd / Dyre	Construction Award	Mar- 18	Apr- 18 (A)		\$53.2	\$50.2	
		\$37.8	\$52.0	Award was revised, due to an audit for Buy America adherence.			
Delayed due to final procurement activities. Project cost increased reflecting unfavorable bids received, as well as additional scope items.				<b>Bus Digital Information Screens (DIS) (New Item)</b>	Construction Award	Apr- 18	Jun- 18 (A)
ADA: Bedford Park Boulevard / Concourse	Construction Award	Mar- 18	Apr- 18 (A)		\$11.7	\$7.5	
		\$37.8	\$29.7	Schedule was pushed out 2 months, due to a lengthy award process.			
Delayed due to several bid extentions and final procurement activities. Project cost reflects favorable bids received.							
Replace 12 Traction Elevators / Broadway- 7th Avenue	Construction Award	Mar- 18	Apr- 18 (A)				
		\$88.1	\$97.9				
Delayed due to final procurement activities. Project cost increased due to scope changes and unfavorable bids.							
<b>MNR</b>							
<i>Signals &amp; Communications</i>							
Harlem Cable Installation	Construction Award	Feb- 18	Mar- 18 (A)				
		\$47.7M	\$47.7M				
The delay in award was due to pre- award activities required to comply with the contract's diversity compliance goals.							
<b>MTACC</b>							
<i>East Side Access</i>							
Harold Structures - Trackwork (CH057D)	Construction Award	Mar- 18	Apr- 18 (A)				
		\$48.5	\$36.4				
Award was delayed due to the contractor's delay in finalizing administrative elements required by procurement to award the contract. Award value reflects good bid savings.							

### Capital Projects – Major Completions – June 2018

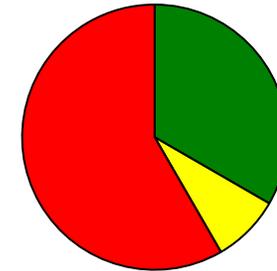
In 2018, agencies plan for a goal of \$6.3 billion in overall completions, with 39 major completions.

Through June, agencies have completed \$1.6 billion versus a \$2.2 billion YTD goal. The shortfall is mostly due to delays with MNR's completion of Harmon Shops Improvements (\$316M) and NYCT completions including Vent Plant: 46<sup>th</sup> Street - Northern Blvd/Queens Blvd line (\$81M) and the purchase of 92 articulated buses (\$82M), all of which are forecast for achievement by year end.

Four major completions were made on time or early, one major completion was delayed but has now been completed, and seven major completions remain delayed. The delays are explained on the following pages.

By year end, the MTA forecasts meeting its overall \$6.3 billion completion goal.

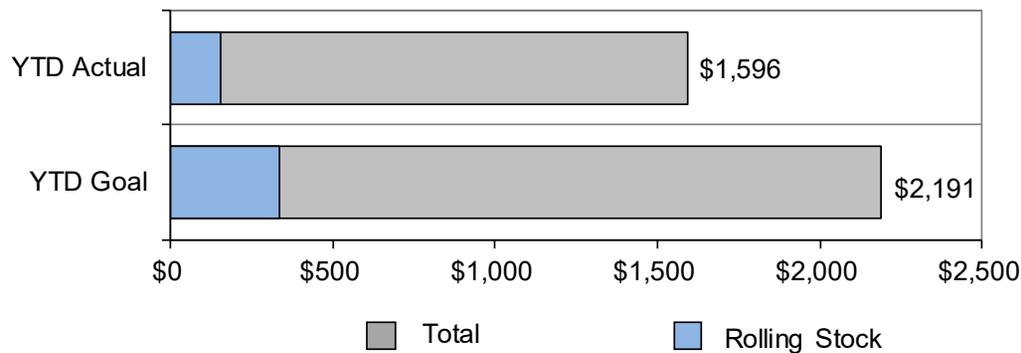
### Year-to-Date Major Completions



	Count	Percent	Change from Prior Month
<b>GREEN</b> = Completions made/forecast within Goal	4	33%	↑ 1
<b>YELLOW</b> = Completions delayed beyond Goal (already achieved)	1	8%	↑ 1
<b>RED</b> = Completions delayed beyond Goal (not yet achieved)	7	58%	↑ 2
<b>TOTAL</b>	12	100%	↑ 4

### Budget Analysis

2018 Annual Goal \$6,299 (\$ in millions)  
 2018 Forecast 100% of Annual Goal  
 Forecast left to Complete 75% (\$4,723)



### Year-to-Date Agency Breakdown

2018 Goals	Prior month variance		
	GREEN	YELLOW	RED
<b>New York City Transit</b>			
1		+1 YELLOW	-1 RED
<b>Long Island Rail Road</b>			
3			+2 RED
<b>Metro-North Railroad</b>			
1	+1 GREEN		+1 RED
<b>Bridges and Tunnels</b>			
3			
<b>Capital Construction Company</b>			
1			
<b>MTA Bus Company</b>			
<b>MTA Police Department</b>			

## Capital Projects – Major Completions – June 2018 – Schedule Variances

Project	Completion	Goal	Forecast
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### 7 All-Agency Red Completions (3 new this month)

#### NYCT

##### *Line Equipment*

Vent Plant: 46th Street-Northern Blvd / Queens Blvd Line	Construction	May- 18	Aug- 18
		\$80.9	\$78.9

Project completion schedule was extended by three months due to testing issues.

##### *Buses*

Purchase 92 Articulated Buses (Nova)	Fleet Procurement	Mar- 18	Jul- 18
		\$83.9	\$82.2

Deliveries will be completed in July 2018 including retrofit of the pilot bus. Additional technical requirements, processed post- award, have resulted in a longer turn- around time for Nova's overall production of each bus.

#### LIRR

##### *Track Improvement*

Main Line Double Track Ph 2 (Signal Equipment)	Construction	Apr- 18	Aug- 18
		\$30.0	\$30.0

Delay due to additional signal modifications required of the manufacturer.

<b>Main Line Double Track Ph 2 (Track and Systems) (New Item)</b>	Construction	Jun- 18	Aug- 18
		\$71.0	\$71.0

Phase 1 Completion date slipped due to the delay in the Signal Equipment (CIL's) delivery.

##### *Stations*

<b>New Elevators - Flushing - Main St (New Item)</b>	Construction	Jun- 18	Jul- 18
		\$ 14.9	\$ 14.9

Delay due to vandalism at elevator site. Repairs are in progress.

#### MTA CC

##### *East Side Access*

Harold Tunnel A Cut and Cover Structures (CH06 1A)	Construction	May- 18	Aug- 18
		\$42.0	\$42.0

Contractor productivity was less than expected. Resource shortages have limited ability to mitigate delays.

Project	Completion	Goal	Forecast
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#### MNR

##### *Shops and Yards*

<b>Harmon Shop Improvements (New Item)</b>	Construction	Jun- 18	Oct- 18
		\$315.6	\$315.6

Scheduled completion is now projected to be October 2018 due to a delay performing SCADA testing for permanent power, equipment deliveries, and testing of the Consist Shop DC substation and Bug and Stinger system.

## Capital Projects – Major Completions – June 2018 – Schedule Variances

Project	Completion	Goal	Actual
<b>1 All-Agency Yellow Completions (1 new this month)</b>			
<i>Signals and Communications</i>			
<b>2 Interlockings: Union Turnpike &amp; 71 Av (New Item)</b>	Construction	May- 18	Jun- 18
		\$297.8	\$306.0
Delay due to new scope added to the project. An additional work order was issued for the installation of a communication component.			

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# **MTA Capital Program Commitments & Completions Quarterly Report of Prior Years' Delays**

### Prior Years' Major Commitments – Quarterly Update: June 2018

The status of 2014 through 2017 major commitments delayed beyond 2017 are tracked until committed and reported to CPOC quarterly.

In 2014, agencies set an overall MTA commitments goal of \$6.5 billion including 55 major commitments. In 2014, \$5.8 billion was committed, including 39 major commitments. NYCT's Rutgers Tube restoration has been rescheduled until 2022 and is no longer being tracked by this report. To date, \$7.2 billion has been committed against the original \$6.5 billion goal.

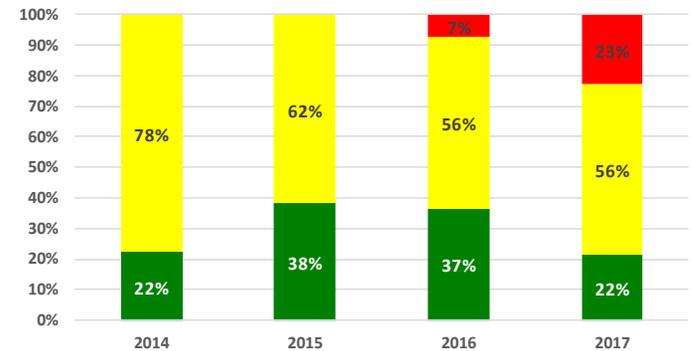
In 2015, agencies set an overall MTA commitments goal of \$3.2 billion including 34 major commitments. In 2015, 25 major commitments and a total of \$2.9 billion were made. The final two projects were committed this year. To date, \$3.6 billion has been committed against the original \$3.2 billion goal.

In 2016, agencies set an overall MTA commitments goal of \$6.6 billion including 41 major commitments. In 2016, 27 major commitments and a total of \$5.0 billion were made. Of the remaining projects, three remain delayed. Two are forecast for award in 2018 and one in the first quarter in 2019. To date, \$6.3 billion has now been committed.

In 2017, agencies set an overall MTA commitments goal of \$7.3 billion including 51 major commitments. In 2017, the MTA achieved 100% of its \$7.3 billion commitments goal, including 39 major commitments. One project will no longer be progressed at this time, and will not be tracked by this report. Of the remaining projects, five were awarded in the first two quarters of 2018, six are forecast for award in the second half of 2018, and one multi-phase project has its final award activities scheduled for 2019.

Actual		MTA-Wide Prior Years' Major Commitments														Post 2018
Goal	Total	On Time	Achieved Late	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	
	180															
2014	54	12	42													
2015	34	13	19				1		1							
2016	41	15	23								1				1	1
2017	51	17	22		2		2	1		4	1				1	1

% of Project Status by Year



This chart tracks when all major commitments are forecast/achieved versus original goal, starting with those that were committed within 2014, 2015, 2016 and 2017, followed by those that slipped beyond 2017. Green represents projects that were achieved on-time, yellow represents projects that were delayed but have since been committed, and red represents projects that are still delayed. Projects that are red will become yellow when they are committed.

**GREEN** = Commitments made/forecast w ithin Goal    **YELLOW** = Commitments delayed beyond Goal (already achieved)    **RED** = Commitments delayed beyond Goal (not yet achieved)

**Prior Year Major Commitments – June 2018 – Schedule Variances**
**Actual Results Shaded**

Project	Commitment	Goal	Forecast
<b>10 All-Agency Red Commitments</b>			
<b>NYCT</b>			
Sandy: 207th Yard Perimeter Protection & Power Cable	Construction Award	Oct-16 \$222.7M	Aug-18 \$199.0M
Delayed to August 2018 due to rescheduling of bid opening to accommodate bidders' requests. Lower estimate for perimeter protection scope reduces the overall cost. Scope for yard signals, track and switches is included in 2018 goals for NYCT.			
<b>Passenger Stations</b>			
ADA: 68 St- Hunter College / Lexington	Construction Award	Sep-16 \$66.8M	Mar-19 \$116.3M
Award Schedule delayed to 2019 due to pending resolution of real estate issues at adjacent properties. Project cost increased because of added architectural, structural, electrical and utility relocation work. The complexity of the utility relocation under the street work with limited space constraints requires multiple construction phasing to keep the street open to both vehicular and pedestrian traffic throughout construction.			
Access Improvements: Grand Central: Phase 2	Construction Award	Jul-17 \$66.7M	Jul-19 \$66.7M
Procurement will be done through multiple phases reflecting the various activities in the project.			
<b>Signals &amp; Communications</b>			
ISIM- B Module 3: Rail Traffic Systems	Construction Award	Aug-17 \$91.7M	Jul-18 \$108.1M
Project award extended further due to protracted negotiations for this RFP contract			
<b>Service Vehicle</b>			
Purchase Locomotives	Purchase Award	Dec-17 \$128.3M	Dec-18 \$128.3M
Responses to NYCT's industry outreach necessitated changes to the technical specifications in order to comply with New York State Department of Labor requirements regarding workers' exposure to diesel exhaust emissions.			

Project	Commitment	Goal	Forecast
<b>NYCT (Continued)</b>			
<b>Misc.</b>			
Livingston Plaza Electrical and Mechanical System Improvements	Construction Award	Dec-17 \$62.7M	Jul-18 \$62.6M
The project is split into 2 parts (Contract A, the redundant Dry Coolant System for the 4th Floor Data Center and Contract B for the remainder scope).			
<b>MNR</b>			
<b>Sandy</b>			
Power and Signal Mitigation	Construction Award	Nov-17 \$20.6M	Aug-18 \$20.6M
Due to procurement challenges, contract will be readvertised in February 2018 and is scheduled to be awarded in August 2018.			
<b>MTA CC</b>			
<b>East Side Access</b>			
Systems Package 2 : Installation of Signals	Construction Award	Jun-17 \$44.9M	Jul-18 \$60.9M
Additional time required for extended review process. Negotiations were extended. The award was approved by the Board in June and a NTP is forecast for July.			
<b>Penn Station Access</b>			
GEC Design	Construction Award	Dec-17 \$37.0M	Jul-18 \$33.5M
Delay due to change in procurement strategy. The award is expected to go to the Board in July.			
<b>MTA PD</b>			
<b>Communications</b>			
Penn Station / Atlantic Tunnel Radio Upgrade	Construction Award	Dec-16 \$25.0M	Dec-18 \$25.0M
The continuing schedule delay is due to ongoing MOU negotiations between users of the radio system as well as for considerations of other construction work at Penn Station external to this project.			

**Prior Year Major Commitments – June 2018 – Schedule Variances**
**Actual Results Shaded**

Project	Commitment	Goal	Actual
<b>7 All-Agency Yellow Commitments (5 new this month)</b>			
<b>NYCT</b>			
<i>Subway Cars</i>			
Purchase 525 R211 Cars & 10 Open Gangway	Construction Award	Jun- 17	Feb- 18
		\$1534.5M	\$1735.9M
Contract awarded in February, but Board approved in 12/2017. Bids were higher than goal, but lower than the July 2017 Capital Program Amendment's revised budget.			
<i>Sandy</i>			
<b>Sandy: 148th Yard Long-Term Perimeter Protection &amp; Power Cable (New Item)</b>	Construction Award	Nov-15	Apr-18
		\$135.1M	\$88.7M
Delayed from August 2017 to April 2018 due to delay in obtaining the necessary easement agreement with an adjacent property owner. Project cost reflects favorable bids received.			
<b>Sandy Mitigation: Upgrade Emergency Booth Comm System (New Item)</b>	Construction Award	Nov- 17	Apr- 18
		\$67.1M	\$75.3M
Project awarded in April. Award was delayed due to protracted RFP procurement process. Project cost increased reflecting negotiated amount.			
<i>Work Equipment</i>			
<b>Work Train &amp; Special Equipment: 54 Flat Cars (New Item)</b>	Purchase Award	Dec-15	Jun-18
		\$33.5M	\$52.7M
Awarded in June 2018. Project cost increased reflecting final negotiated price and the increased quantity from 54 to 65 flat cars			
<b>MTA Bus Company</b>			
<i>Depot Projects</i>			
Security: JFK and Spring Creek	Construction Award	Sep-17	Feb-18
		\$9.2M	\$8.5M
Award slipped due to a protracted procurement and a longer than expected award process following bidding.			

Project	Commitment	Goal	Actual
<b>B&amp;T</b>			
<b>Electrical/Mechanical Rehab of HR Lift Span (New Item)</b>	Construction Award	Nov- 17	May- 18
		\$17.0M	\$30.9M
Design/Build teams requested additional time to review RFP documents. The Design-Build contract was awarded May 2, 2018.			
<b>MTA PD</b>			
<i>Communications</i>			
<b>Public Radio Phase 3</b>	Construction Award	Feb-17	Apr-18
		\$5.7M	\$5.4M
Motorola Radio Equipment originally assumed for purchase in 2017 was delayed to align the purchase with overall PD radio system upgrade progress.			

## Prior Years' Major Completions – Quarterly Update: June 2018

The status of 2014 through 2017 major completions delayed beyond 2017 are tracked until achieved and are reported to CPOC quarterly.

In 2014, agencies set an overall MTA completions goal of \$5.7 billion including 46 major completions. In 2014, \$4.5 billion was completed, including 28 major completions. Of the remaining projects, one has been deferred and another is no longer being tracked. The final project was completed in June 2018. To date, \$6.5 billion has been completed against the original \$5.7 billion goal.

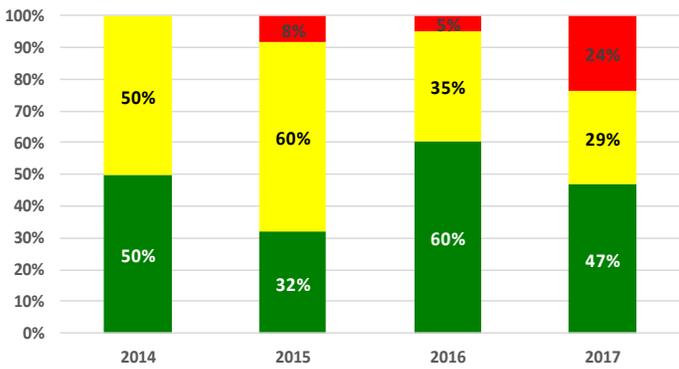
In 2015, agencies set an overall MTA completions goal of \$2.6 billion including 25 major completions. In 2015, 19 major completions totaling \$2.1 billion were made. Of the remaining projects, two remain delayed and are forecast for completion in 2018. To date, \$2.2 billion has been completed against the original \$2.6 billion goal.

In 2016, agencies set an overall MTA completions goal of \$4.6 billion including 43 major completions. In 2016, 36 major completions were made including several MTACC contracts associated with 2<sup>nd</sup> Ave Subway Phase 1 which achieved beneficial use in December 2016. Two remaining projects are now forecast for completion in 2018. To date, over \$4.2 billion has been completed.

In 2017, agencies set an overall MTA completions goal of \$5.0 billion including 34 major completions. In 2017, twenty-four major completions were achieved. Two projects were completed in the first quarter, and eight remain delayed.

Actual Goal	MTA-Wide Prior Years' Major Completions														Post 2018	
	On Time	Achieved Late	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18		
Total	148															
2014	46	23	22					1								
2015	25	8	15							1	1					
2016	43	26	15							1				1		
2017	34	16	8	1		1				2	1	2		1	2	

**% of Project Status by Year**



This chart tracks when all major completions are forecast/achieved versus original goal, starting with those that were completed within 2014, 2015, 2016, and 2017 followed by those that slipped beyond 2017. Green represents projects that were achieved on-time, yellow represents projects that were delayed but have since been completed, and red represents projects that are still delayed. Projects that are red will become yellow when completed.

**GREEN** = Completions made/forecast within Goal      **YELLOW** = Completions delayed beyond Goal (already completed)      **RED** = Completions delayed beyond Goal (not yet achieved)

## Prior Year Major Completions – June 2018 – Schedule Variances

Project	Completion	Goal	Forecast	Project	Completion	Goal	Forecast
<b>12 All-Agency Red Completions</b>				<b>LIRR (continued)</b>			
<b>NYCT</b>				<b>Track</b>			
<i>Signals and Communications</i>				Massapequa Pocket Track (New Item)			
PA/CIS at 45 Stations - Install Cable	Construction Completion	Dec-15	Dec-18	Construction	Nov-17	Apr-19	
		\$56.1M	\$56.0M		\$19.6M	\$19.6M	
Project delayed to 2018 due to slow progress of work. In-house forces were diverted to address other safety sensitive projects.				Delay due to lack of available force account resources in the signals area.			
<i>CBTC Flushing Line</i>				<b>MNR</b>			
CBTC Flushing Line	Construction	Nov-17	Oct-18	<i>Grand Central Terminal</i>			
		\$505.2M	\$563.6M	GCT Leaks Remediation	Construction Completion	Dec-16	Aug-18
Project is delayed due to hardware and software issues that need to be addressed to achieve system stability and system performance. The project cost was increased due to higher force account costs, car equipment installation, increased costs for 3rd rail power removal, and additional cost for Consultant Construction Administration & Independent Safety Assessor (ISA).					\$18.6M	\$18.6M	
				Substantial completion has been delayed from May to August 2018 as a result of the additional time needed to install the decorative bridge panels and structural steel repair to the 42nd Street ceiling stringer.			
<i>Subway Cars</i>				<b>Sandy</b>			
Accept 62 R179 Rail Cars	Fleet Purchase	Dec-17	Mar-19	Power Infrastructure Restoration - Substations	Construction	Aug-17	Sep-18
		\$162.8M	\$162.8M		\$43.8M	\$44.4M	
No cars were accepted in 2017. 236 cars are now scheduled to be accepted throughout 2018, while the remaining 64 cars (including these 62 cars) are scheduled in 1st Qtr 2019.				The completion date has been pushed back to accommodate Con Edison's utility cut-over schedule. Final commissioning, testing, and acceptance phase will immediately follow.			
<i>Depots</i>				<b>Power</b>			
Bus Command Center Construction	Construction	Nov-17	Aug-18	Substation Bridge 23 - Construction	Construction	Oct-17	Oct-18
		\$51.4M	\$57.2M		\$41.7M	\$41.7M	
Substantial Completion is delayed to August 2018 due to delay in installing components for building enclosure, interference of sprinkler heads with other components in the operating theater, delay in the installation of elevator, fabrication of shaft glass curtain wall, energizing Switch Gear and Panels, and obtaining gas service				Delay due to fabrication of the substation equipment taking longer than expected. Additional time was required for system integration to ensure all equipment were compatible.			
<b>LIRR</b>							
<i>Signals and Communications</i>							
Centralized Traffic Control	Construction Completion	Jun-15	Sep-18				
		\$12.9M	\$12.9M				
Due to an extended design schedule, add'l time was needed for the procurement process and legal review.							

**Prior Year Major Completions – June 2018 – Schedule Variances**
**Actual Results Shaded**

Project	Completion	Goal	Forecast
<b>MTACC</b>			
<i>East Side Access</i>			
Plaza Substation and Structures (CQ032)	Construction Completion	Aug-16 \$250.2M	Dec-18 \$259.2M
Completion of final work items has taken longer than expected. Final outstanding items are expected to be completed by June 2018.			
Manhattan Northern Structures (CM006)	Construction	Jun- 17 \$361.6M	Dec- 18 \$361.6M
Delay is due to contractor productivity issues.			
<b>BUS COMPANY</b>			
<i>Bus Company Projects</i>			
Bus Command Center - MTA Bus	Construction	Dec- 17 \$17.1M	Aug- 18 \$17.3M
Substantial Completion is delayed to August 2018 due to delay in installing components for building enclosure, interference of sprinkler heads with other components in the operating theater, delay in the installation of elevator, fabrication of shaft glass curtain wall, energizing Switch Gear and Panels, and obtaining gas service			

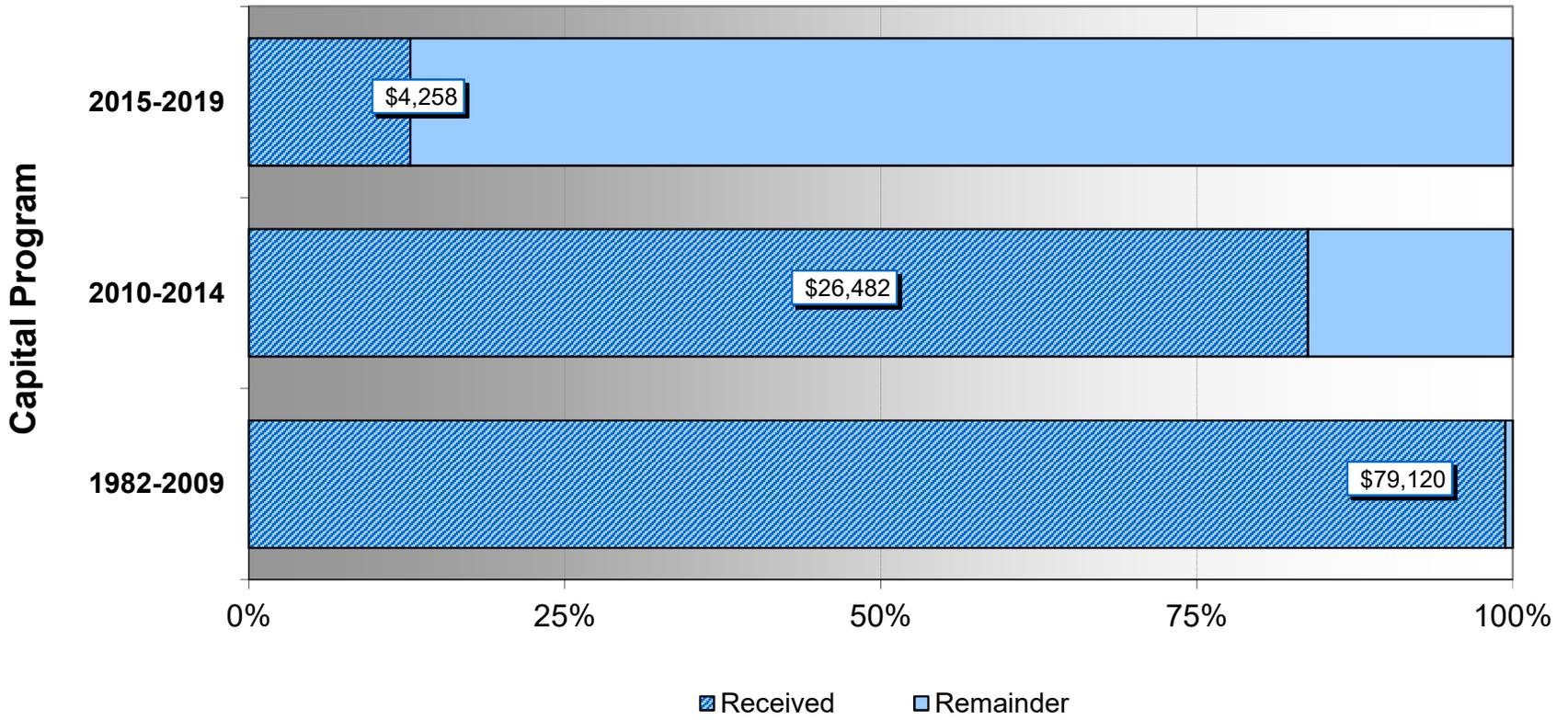
Project	Completion	Goal	Actual
<b>3 All-Agency Yellow Completions (1 new this quarter)</b>			
<b>NYCT</b>			
<i>Bus Replacement</i>			
Purchase 139 Articulated Buses	Fleet Purchase	Nov- 17 \$120.3M	Jan- 18 \$120.2M
The delay was due to required testing for the fleet's braking systems.			
<b>B&amp;T</b>			
MPB / CBB Master Plan & Resiliency Needs	Construction	Dec- 17 \$10.0M	Mar- 18 \$10.0M
Additional time required for structural data collection and traffic analysis			
<b>MTACC</b>			
<i>East Side Access</i>			
<b>GCT Councourse Finishes Early Work (New Item)</b>	Construction Completion	Apr-14 \$56.7M	Jun-18 \$60.0M
Completion of final work items took longer than expected.			

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## Status of MTA Capital Program Funding

# Capital Funding (June 2018)

\$ in millions



## Capital Funding Detail (June 30, 2018)

\$ in millions

	Funding Plan	Receipts		
	Current	May	This month	Received to date
<b>1992-1999 Program</b>	18,099	18,099	-	18,099
<b>2000-2004 Program</b>	21,691	21,691	-	21,691
<b>2005-2009 Program</b>	24,401	23,935	4	23,939

	Funding Plan	Receipts		
	Current	May	This month	Received to date
<b>2010-2014 Program</b>				
Federal Formula, Flexible, Misc	\$5,844	\$5,830	\$ -	\$5,830
Federal High Speed Rail	295	295	-	295
Federal New Start	1,257	-	-	-
Federal Security	189	100	-	100
Federal RIFF Loan	-	-	-	-
City Capital Funds	719	608	-	608
State Assistance	770	400	-	400
MTA Bus Federal and City Match	132	108	-	108
MTA Bonds (Payroll Mobility Tax)	11,483	10,980	-	10,980
Other (Including Operating to Capital)	1,323	1,183	-	1,183
B&T Bonds	2,025	2,025	-	2,025
Hurricane Sandy Recovery				
<i>Insurance Proceeds/Federal Reimbursement</i>	6,343	4,727	18	4,746
<i>PAYGO</i>	235	81	-	81
<i>Sandy Recovery MTA Bonds</i>	758	2	-	2
<i>Sandy Recovery B&amp;T Bonds</i>	230	124	-	124
<b>Total</b>	<b>31,602</b>	<b>26,463</b>	<b>18</b>	<b>26,482</b>

	Funding Plan	Receipts		
	Current	May	This month	Received to date
<b>2015-2019 Program</b>				
Federal Formula, Flexible, Misc	\$6,704	\$909	\$3	\$912
Federal Core Capacity	100	-	-	-
Federal New Start	500	-	-	-
Federal Security	3	-	3	3
State Assistance	8,640	65	300	365
City Capital Funds	2,666	492	12	503
MTA Bonds	7,968	12	-	12
Asset Sales/Leases	1,018	297	-	297
Pay-as-you-go (PAYGO)	2,145	1,691	-	1,691
Other	592	-	-	-
B&T Bonds & PAYGO	2,936	475	-	475
<b>Total</b>	<b>33,273</b>	<b>3,941</b>	<b>318</b>	<b>4,258</b>