



Metropolitan Transportation Authority

Capital Program Oversight Committee Meeting

October 2017

Committee Members

J. Lhota, Chair

F. Ferrer

A. Albert

N. Brown

I. Greenberg

S. Metzger

J. Molloy

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, 10/23/2017
1:15 - 2:15 PM ET**

1. PUBLIC COMMENTS PERIOD

2. APPROVAL OF MINUTES SEPTEMBER 25, 2017

- Minutes from September '17 - Page 4

3. COMMITTEE WORK PLAN

- 2017-2018 CPOC Committee Work Plan - Page 8

4. MNR CAPITAL PROGRAM UPDATE

- Progress Report on Capital Program - Page 10*
- IEC's Project Review on Hudson Line Sandy Restoration - Page 38*
- IEC's Project Review on Harmon Shop Replacement - Page 42*
- IEC's Project Review on Customer Service Initiative - Page 46*

5. LIRR CAPITAL PROGRAM UPDATE

- Progress Report on Capital Program - Page 49*
- IEC's Project Review on Jamaica Capacity Improvements - Page 66*
- IEC's Project Review on Main Line Double Track - Page 69*

6. LIRR & MNR UPDATE ON ROLLING STOCK

- Progress Report on M-9 Railcar Procurement - Page 73*
- IEC's Project Review on M-9 Railcar Procurement - Page 83*

7. LIRR & MNR UPDATE ON POSITIVE TRAIN CONTROL (PTC)

- Progress Report on PTC - Page 87*
- IEC's Project Review on PTC - Page 110*

8. MTACC East Side Access (materials to be distributed separately)

9. LIRR Morris Park Diesel Shop

- Morris Park Risk Assessment Brief - Page 117

10. MTA New Fare Payment System

- NFPS Risk Assessment Brief - Page 120

11. CAPITAL PROGRAM STATUS

- Commitments, Completions, and Funding Report - Page 123

Date of next meeting: Monday, November 13, 2017 at 1:45 PM

MINUTES OF MEETING
MTA CAPITAL PROGRAM OVERSIGHT COMMITTEE
September 25, 2017
New York, New York
1:45 P.M.

MTA CPOC members present:

Hon. Joseoh Lhota
Hon. Andrew Albert
Hon. Fernando Ferrer
Hon. Susan Metzger
Hon. John Molloy
Hon. Mitchell Pally
Hon. Carl Weisbrod

MTA CPOC members not present:

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

MTA staff present:

George Cleary
Naeem Din
Michael Garner
Veronique Hakim
Amil Patel
Donald Spero
Michael Wetherell

MTACC staff present:

Dan Creighton
Tony D'Amico
Tim Gianfrancesco
Eve Michel

Independent Engineering Consultant staff present:

Joe DeVito
Dianne Rinaldi

* * *

Chairman Lhota called the September 25, 2017 meeting of the Capital Program Oversight Committee to order at 4:10 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 July 24, 2017.

Committee Work Plan

Mr. Spero announced that there were two changes to the Work Plan: the East Side Access presentation, originally scheduled for this month, will be provided next month; and the Executive Session to discuss the Capital Program Security Projects, originally scheduled for October, will be moved to November.

Update on Minority, Women, Disadvantaged and Service Disabled Veteran-Owned Business Participation Programs and MTA Small Business Development Programs

Mr. Din cited charts highlighting the MTA-Wide DBE and MWBE Awards through prime contracts, subcontracts, and the Small Business Development Program (SBDP) for the last several years. According to the update on MWDBE/SDVOB Participation Rates for the period covering January–June 2017, the MTA anticipates achieving a 16% participation rate against its 17% federal goal; against its 15% MBE and 15% WBE goals, anticipates achieving 13% and 10% participation rates, respectively; and against its 6% SDVOB goal, anticipates a participation rate of 0%. Mr. Patel then provided an overview of the first seven years of the Small Business Development Program (SBDP) Tier I, comprising 209 project awards to 144 firms for a total award amount of \$129M. In addition, he cited figures for the Tier II Program, which began in 2015 and which to date comprises 29 project awards to 24 firms for a total award amount of \$55M. Finally, Mr. Patel reported that in the first five years of the Small Business Federal Program 39 project awards to 21 firms for a total award amount of \$73M have been achieved. Mr. Garner then reported that in an effort to improve SBDP goal-achievement performance, Managing Director Hakim recently issued a memo to agency presidents outlining a strategy forward. Mr. Garner will soon be working with representatives from each agency to implement this strategy. Mr. Cleary then provided highlights of the Outreach and Development efforts currently underway, including the following: there are a total of 207 prequalified firms in the SBMP Tier I; and within the full SBDP, 95 loans, for a total loan amount of \$13M, have been approved since Program inception; and 318 firms have participated in the training program as of spring 2017. 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/MNR Penn Station Access Project Update

Ms. Michel provided an update on current project activities, including planning and conceptual engineering (comprising track alignment options, operations and power simulations and environmental planning), and the scope of work for the General Engineering Consultant. She then cited various aspects of the Stakeholder Partnership, including MTACC and Metro-North Railroad, Amtrak, CSX, and Connecticut Department of Transportation. Finally, Ms. Michel cited the planned activities for the fourth quarter of 2017: initiate Amtrak design and construction agreements; explore co-development strategies; design team procurement; and complete operations simulations and advance power simulations. 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.

MTACC Second Avenue Subway Phase 2 Overview

Mr. Gianfrancesco provided an overview of the project, including the current status with respect to design (including being on schedule to complete the update of the preliminary engineering by the third quarter of 2018, and design of an early work contract by 2019), field investigation work, environmental work and community outreach (specifically citing that the Community Information Center was opened on September 18, 2017). 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.

MTACC Report on Cortland Street #1 Line

Mr. Creighton reported that the current Revenue Service/Substantial Completion Date is December 2018 and that the current project budget is \$181.8 million (including the \$23.4 million risk reserve approved in the May 2017 Capital Plan Amendment). In its Project Review, the IEC confirmed that the project budget is \$181.8 million, reflecting an increase in the Plan Amendment. According to the IEC, risks to cost contingency include un-negotiated Bulletin 3 design changes and potential impact costs related to schedule delays. With respect to schedule and the Agency's forecast December 2018 Substantial Completion, the IEC reported that during the most recent 6 months of billing contractor productivity averaged \$1.6M per month, and therefore in order to achieve December 2018 Substantial Completion, an average productivity of \$3.6M per month, i.e., an improvement of more than 100%, would be required. The IEC then cited the following risks to the schedule: the prosecution of the work is not proceeding in accordance with a schedule indicating December 2018 Substantial Completion; ongoing interface and quality issues require the diversion of limited contractor resources to remedy; delay in negotiating change orders associated with Bulletin 3 design changes; contractor delays in submitting acceptable shop drawings and critical submittals; and the contractor's failure to submit coordinated drawings and a configuration management plan. The IEC concluded with the following observations: the IEC concurs that contractor prosecution of the work has not proceeded in accordance with the critical path; and the IEC supports the Agency's actions aimed to improve contractor performance and complete the remaining work of this project. 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 on the 2017 Commitment and Completion goals through August. The MTA plans to commit a total of \$7.3 billion, including 51 "major" commitments tracked throughout the year. Through August, the MTA has made twenty-seven major commitments. Ten major commitments are delayed, nine of which are still forecast to be made this year. Through August, agencies committed \$3.2 billion versus a \$5.9 billion year-to-date goal. This shortfall is primarily due to the delays of the R211 fleet and New Fare Payment System awards. By year end, the MTA still forecasts meeting or exceeding its 2017 commitments goal. In terms of completions, agencies plan a total of \$5.0 billion, including 34 "major" completions tracked throughout the year. The MTA has achieved fourteen major completions year-to-date. Six major completions are delayed but are still expected to be achieved this year. Through August, agencies completed \$1.6 billion versus a \$2.8 billion year-to-date goal. This shortfall is primarily due to the delays of Sandy projects and Station projects at NYCT, as well as East Side Access, but the MTA still forecasts meeting or exceeding its completions goal by year end.

Capital Core Program Traffic Light Report

Mr. Spero reported on the Traffic Light Report for the 2nd Quarter 2017. A total of 291 projects were reviewed: 52 in design and 239 in the construction phase. Of the 291 projects reviewed, 65% (188) were designated green; 21% (61) were designated yellow; and 14% (42) were designated red. This is an increase of 31 red projects from the 1st Quarter 2017 report (13 vs. 42). For each of the 42 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 92 active projects were reviewed: 5 in Design, 8 in Post-Design to Construction, and 79 in the Construction phase. Of the 92 projects reviewed, 57% (53) were designated green; 20% (18) were designated yellow; and 23% (21) were designated red. This is an increase of 8 red projects from the 1st Quarter 2017 report (13 vs. 21). For each of the 21 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 2nd Quarter 2017.

Adjournment

Upon motion duly made and seconded, Chairman Lhota adjourned the September 25, 2017 meeting of the MTA Capital Program Oversight Committee at 5:10 PM.

Respectfully submitted,
Michael Jew-Geralds
Office of Construction Oversight



2017-2018 CPOC Committee Work Plan

I. Recurring Agenda Items

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

II. Specific Agenda Items

November

NYCT Capital Program Update
NYCT, LIRR, MNR Update on New Fare Payment System
CPOC Committee Charter Review
Update on Capital Program Security Projects (in Executive Session)

December

Quarterly MTACC Capital Program Update

- Cortlandt Street Station
- East Side Access
- Second Avenue Subway
- Penn Station Access

Quarterly Change Order Report

Quarterly Traffic Light Reports

January

NYCT Capital Program Update

February

B&T Capital Program Update

LIRR and MNR Update on Positive Train Control (PTC)

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 and MNR Capital Programs Update
NYCT, LIRR, MNR Update on New Fare Payment System

June

Quarterly MTACC Capital Program Update
LIRR and MNR Update on Positive Train Control (PTC)
Quarterly Change Order Report
Quarterly Traffic Light Reports

July

NYCT Capital Program Update

September

Quarterly MTACC Capital Program Update
Update on Minority, Women and Disadvantaged Business Participation
Update on Small Business Development Program
Quarterly Change Order Report
Quarterly Traffic Light Reports

October

LIRR and MNR Capital Programs Update
LIRR and MNR Joint Update on Rolling Stock
LIRR and MNR Update on Positive Train Control (PTC)

Capital Program Oversight Committee

Major Projects - Status

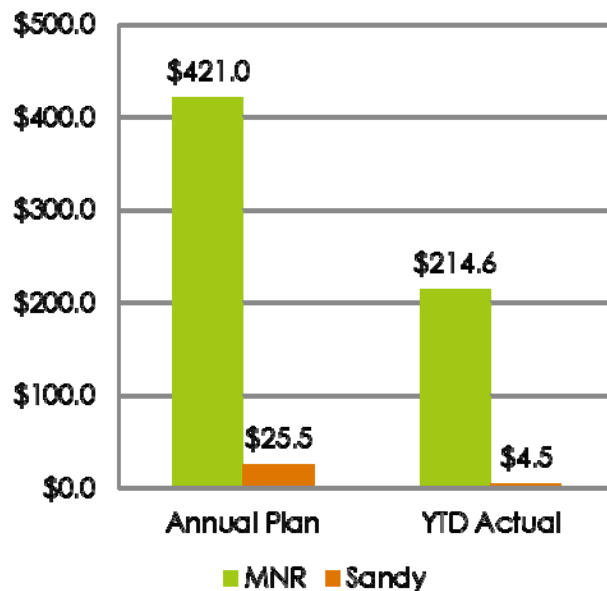
October 2017



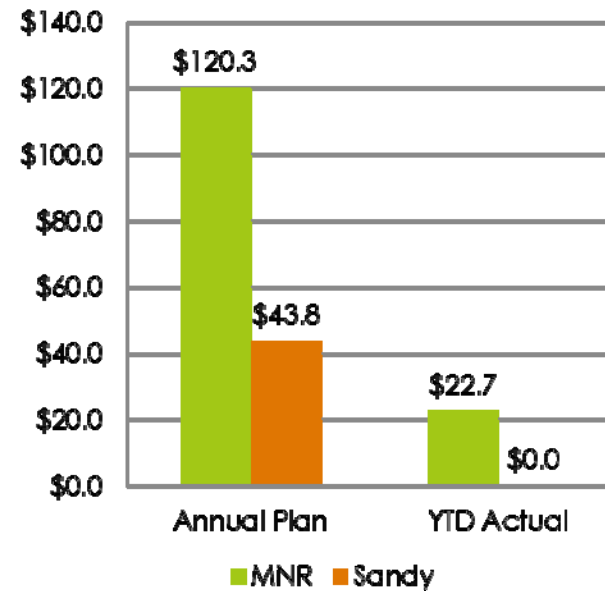
Metro-North Railroad

2017 Metro-North Capital Program Goals Actual Through September 2017

Commitments \$ million



Completions \$ million

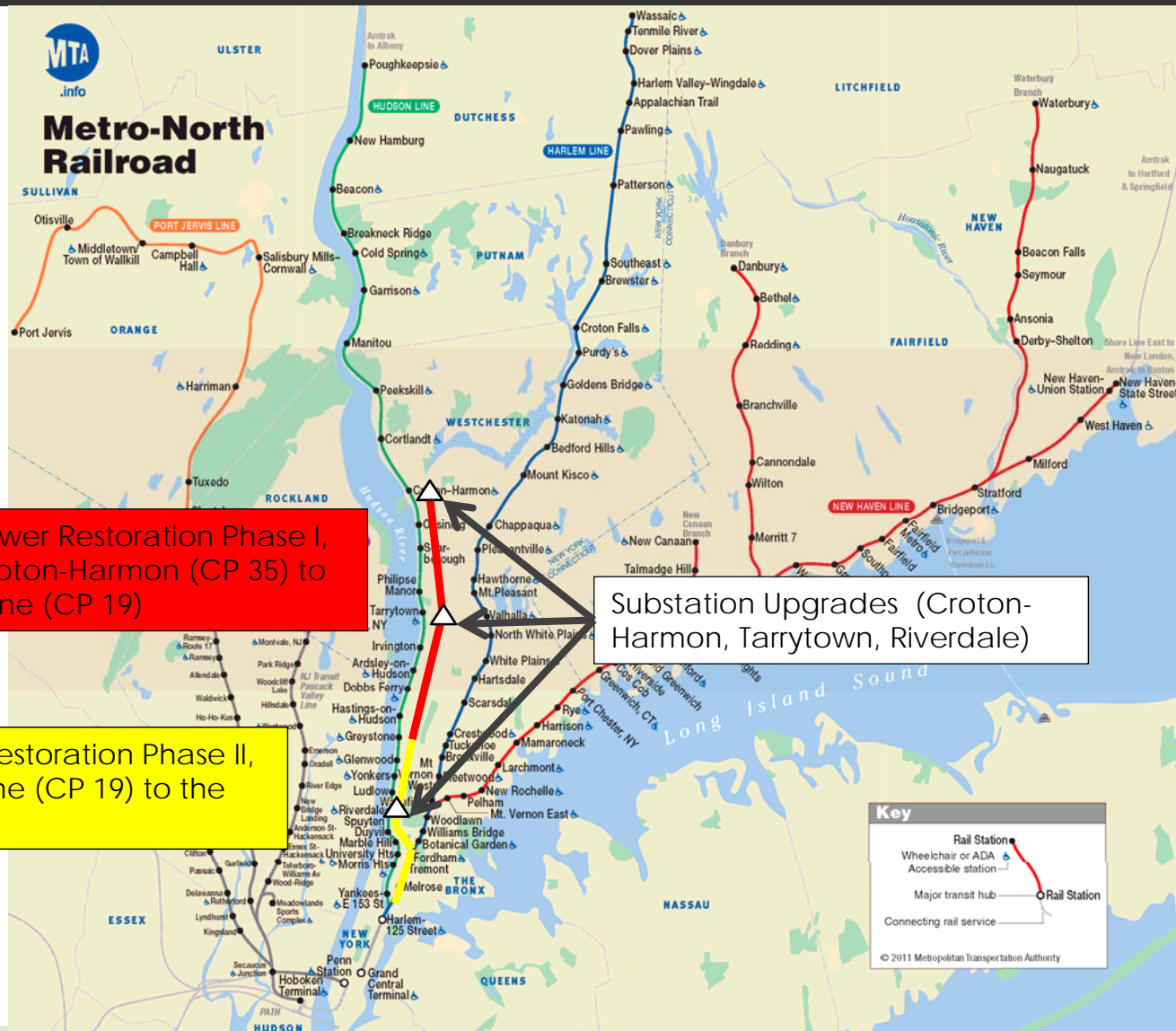


Major Projects

- Superstorm Sandy Restoration/Resiliency
- Customer Service Initiatives
- Harmon Shop Replacement – Phase V



Superstorm Sandy Restoration Projects



Design-Build 30 Mile Hudson Line Power/Communication & Signal Infrastructure Restoration (Phase I + Phase II)

Budget: \$302 M

Phase I – **Ongoing Work** (Croton-Harmon – Greystone)

Phase IA - Croton-Harmon to Tarrytown

Scope of Work

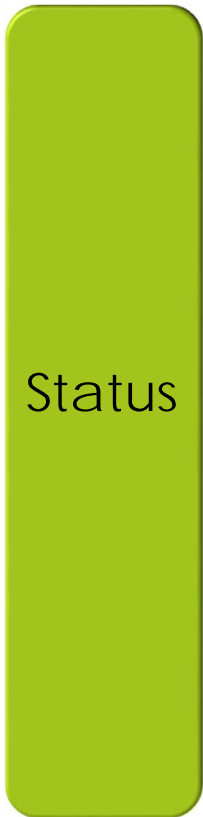
- C & S and Signal Power raceway Qty: 50,200LF
- Cross track conduit systems Qty: 19EA
- Elevated equipment platforms housing sectionalizing switches, snow-melter systems, new Remote Terminal Unit (RTU) houses for system component control Qty: 31EA

Status

- Approximately 85% of Phase 1A work is complete; currently 21 months delayed.
- Required permitting from Army Corp of Engineers for platform installations south of Croton Bridge causeway caused additional 3 month slip since May.
- Challenges continue to be working along right-of-way with limited space for new infrastructure

Schedule

- Phase IA Completion forecast is December 2017



Design-Build 30 Mile Hudson Line Power/Communication & Signal Infrastructure Restoration (Phase I + Phase II)

Phase IB – Tarrytown to Greystone

Status

■ Scope of Work

- C & S and Signal Power raceway Qty: 34,800 LF
- Cross track conduit systems Qty: 04 EA
- Elevated equipment platforms housing sectionalizing switches, snow-melter systems, new Remote Terminal Unit (RTU) houses for system component control Qty: 22 EA

■ Status

- Construction starts in January 2018 after track 4 comeback outage is completed

■ Schedule

- Phase 1 B Completion forecast is March 2019



Design-Build 30 Mile Hudson Line Power/Communication & Signal Infrastructure Restoration (Phase I + Phase II)

Phase II – Mott Haven to Greystone

Scope of Work

- C & S and Signal Power raceway Qty: 66,240 LF
- Cross track conduit systems Qty: 13 EA
- Elevated equipment platforms,
sectionalizing switches, snow-melter systems,
new Remote Terminal Unit (RTU) houses for
system component control Qty: 48 EA

Status

- Design development from preliminary design to “issue for construction” will continue to March 2018.
- Advance start of Phase II “out of outage” (overlap with Phase I) from CP5 to CP19.
- Start date 4th quarter 2017 pending force account added resources (C&S/Power).

Schedule

- Phase II (Final) Completion forecast is March 2021



Utility locate mark out
Phase II

Phase II



Design-Build 30 Mile Hudson Line Power/Communication & Signal Infrastructure Restoration (Phase I + Phase II)



Installation of Double trough at
Croton River Causeway



Backfill with Sand - Platform
foundations at Tarrytown



4" PVC conduits installation at North
of Philipse Manor



Signal pull box south of Croton
Platform between Track 1 & 2



Design-Build 30 Mile Hudson Line Power/Communication & Signal Infrastructure Restoration (Phase I + Phase II)

Mitigation

- Mitigation strategies implemented that will continue:
 - Long-term outages extended past scheduled completion date where appropriate.
 - Increased flaggers from 12 to 16 (33%) to increase production rates.
 - Production has improved in the recent track 4 outage.
 - Performing the prep work for Phase 1B
 - Working nights and weekends
- Additional schedule mitigation being discussed with Design-Builder:
 - Finalizing progressing Phase IB and Phase II construction concurrently.
 - Continue to identify means to enhance productivity by working with Design-Builder on design requirements where appropriate.
Examples include:
 - Smaller trough size at interlocking locations
 - Material type for exposed system installations
 - Potential conduit/trough reuse at distinct locations



Design-Build 30 Mile Hudson Line Power/Communication & Signal Infrastructure Restoration (Phase I + Phase II)

Budget

- Overall Budget Impact
 - Budget: \$302 MM
 - Phase 1: \$165MM; Phase 2: \$137 MM
- Metro-North is assessing impact to budget resulting from an overall 21 month delay
 - Cost increase is expected
- Responsibility for any cost increases needs to be finalized.
 - Analyzing time impact analysis submitted by JV
- Liquidated damages are available in the contract to offset cost increases



Sandy Hudson Line Restoration: Replace 3 Hudson Line Substations: \$44 M Verde/ECCO

Award: December, 2014

Completion: March, 2018

Status

- Croton-Harmon, Riverdale and Tarrytown
 - Component testing, switchgear wiring and terminations ongoing.
 - Next step: Final commissioning and power cut-over.
 - Completion: March 2018
- Delay incurred:
 - Due to “longer than expected” substation fabrication / component and delivery
 - Unanticipated test failures of relay switches and cast coil 4MVA rectifier transformers
 - Local utility (Consolidated Edison Co.) coordination (Inspection/acceptance) according to governing standards and requirements



Substations - Photos



RIVERDALE: DC Traction Substation (AC/DC Switchgear)



TARRYTOWN: DC Traction Substation (AC/DC Switchgear)



CROTON-HARMON: Termination of Cables at Transformer

CUSTOMER SERVICE INITIATIVES



Customer Service Initiatives

- The Customer Service Initiatives (CSI) program of work is a multi-phase project that includes upgrades to systems at:
 - Grand Central Terminal
 - Outlying passenger stations
 - Metro-North facilities : 525 North Broadway, Communication Huts and GCT North End, Track 117 and 7C PA Rooms.
- The CSI program is complemented by an MTA wide Advertising Concessionaire approved in September
 - The concessionaire provides Metro-North with approximately 160 customer information signs that will also carry advertising defraying some of Metro-North capital cost



Customer Service Initiatives

- The CSI program is being advanced under the 2010-2014 and 2015-2019 Capital Program and with funding from the State of Connecticut. Later phases at other New York State stations will be advanced in the 2020-2024 Capital Program.
- Funding for the project is \$198.4M (Incl. \$28.5M - Connecticut)
- The CSI program contains eight procurement packages. Three followed the bid process and selections have been made; no board approval required. Four have been advanced using the RFP process and board approval is sought at the October board. The final, also using the RFP process, will be presented for board approval in December.



CSI Budget and Schedule Overview

Updated 9/29/17

Pkg. #	Contract Description	Budget	Dates		2017												2018												2019												2020																
					Award		Compl.		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D										
									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39										
1	PA/VIS Head End System (Duration = 32 mo.s) (October Board)	\$62,231,681	11/1/17	6/30/20																																																					
2	GCT Cable Plant (Duration 24 mo.s) (October Board)		11/1/17	10/30/19																																																					
3	GCT Big Boards & Gate Boards (Duration = 32 mo.s) (October Board)		11/1/17	6/30/20																																																					
4	Network Infrastructure Equipment/Devices (Duration = 32 mo.s) (No Board Action Required)	\$43,006,604	11/1/17	6/30/20																																																					
5	Communication Huts DC Power Upgrades (Duration = 15 mo.s) (No Board Action Required- Low Bid)		10/15/17	12/16/18																																																					
6	Outlying Stations (Duration = 29 mo.s) (October Board)	\$65,610,000	11/1/17	3/31/20																																																					
7	Security Head End System and Cameras (Duration = 28 mo.s) (November Board)	\$16,802,200	12/1/17	3/31/20																																																					
8	3rd Party Consultant (Duration = 36 mo.s) (No Board Action Required- GEC)	\$10,946,768	11/1/17	10/30/20																																																					
TOTAL: \$198,597,253																																																									



Customer Service Initiative

■ Top Risks and Mitigation:

- Multiple interfaces between all contractors and Metro-North

- **Mitigation:** Bring Construction Manager on quickly to work on integrated schedule

- Unforeseen site conditions

- **Mitigation:** Early validation of conduit routes and perform surveys

- Metro-North project support.

- **Mitigation:** Integrate schedule to optimize use of Metro-North forces



Improved GCT Information

Before



After



Improved GCT Information

■ Replace Big Boards

Before			After	
HUDSON LINE DEPARTURES			HUDSON LINE DEPARTURES	
TIME	TRK	DESTINATION	REMARKS	
2:45	34	POUGHKEEPSIE	Tarrytown – 1st Stop	
1:20	28	CROTON-HARMON	Marble Hill – 1st Stop	
1:45	35	POUGHKEEPSIE	Yankees – E 153rd St – 1st Stop	
2:20	28	CROTON-HARMON	Tarrytown – 1st Stop	
2:45	33	POUGHKEEPSIE	Tarrytown – 1st Stop	
			Marble Hill – 1st Stop	

Improved GCT Information

■ Replace Gate Boards

Before



After



Customer Information and CCTV

Outlying Stations- New Displays, CCTV and PA Upgrades

Before



After



After

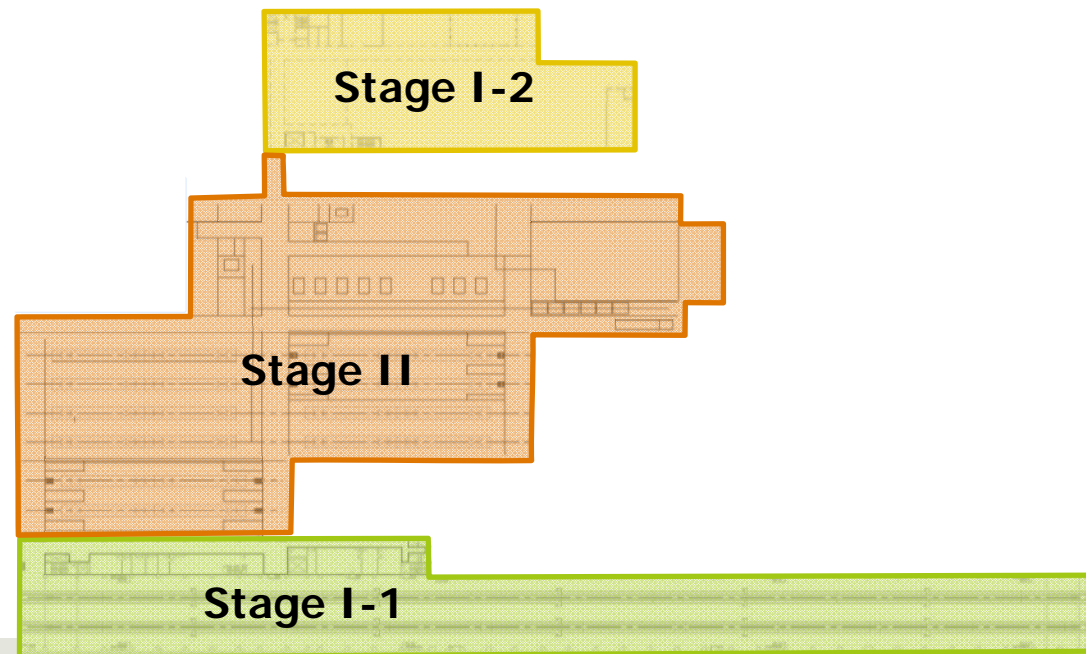


HARMON SHOP REHABILITATION – PHASE V



Harmon Shop - Design-Build Phase V – Stages I and II

	Stage I-1:	Stage I-2:	Stage II:
Facility	Consist Shop Facility	EMU Annex	EMU Running Repair and Support Shops
Program	2010-14	2010-14 (Concurrent w/I-1)	2015-19
Complete	2nd Quarter 2018	2nd Quarter 2018	3 rd Quarter 2022
Major Areas	<ul style="list-style-type: none"> Two Ten-Car Consist Tracks Working Storeroom Lockers, Lunch Room 	<ul style="list-style-type: none"> Wheel and Axle Shop Machine, Carpentry, Sheet Metal, Tread Brake, Armature Shops, Plant Maint., Air Room, Compressor Repair Lockers, Lunch Room 	<ul style="list-style-type: none"> Ten Vehicle Repair Bays Truck, HVAC, Toilet Repair, Battery and Paint Shops, Clean Room Storeroom Training Department, Office Spaces



Harmon Shop - Design-Build Phase V – Stage I

Budget: \$316 M

Completion: April, 2018

Status

■ Consist Shop Facility and EMU Annex

- Interior Mechanical, Electrical, and Plumbing (MEP) utilities are ongoing.
- Finish work in employee facilities has commenced.
- Consist Shop: Track installation inside is complete and the trackwork for the north leads is nearing completion.
- EMU Annex: Industrial Equipment Deliveries and installations have commenced
- On site gas piping completed/tested and ready for gas delivery by Con-Ed.

Project is within budget. The schedule for completion is now projected to be April 2018 due to a 3 month delay in industrial equipment procurements.



Phase V – Stage I Progress Photos



May 2017 – Consist Shop Facility: Installation of car roof level platform railings and stairs, and preparation for translucent wall panels, roof skylights and interior painting.



September 2017 – Building envelop is nearing completion. CMU walls are complete, Roof level platforms and track rail installations are complete. MEP utilities, painting, and HVAC ongoing.

Phase V – Stage I Progress Photos



May 2017 – EMU Annex: Installation of MEP utilities underway, delivery of mechanical, electrical and elevator equipment and preparation for interior painting.



September 2017 – Installation of MEP utilities continues. Installation of cranes, industrial equipment, and elevators ongoing. Painting and CMU blockwork are complete.

Phase V – Stage I Progress Photos



September 2017 – Consist Shop Facility (l.) and EMU Annex (r.): Interior finishes, MEP, HVAC work is ongoing in employee facilities including offices, lunchroom and locker rooms. Tilework has commenced. Elevator installation is ongoing.



Harmon Shop - Design-Build Phase V – Stage II

Budget: \$442 M

Award:

July, 2018

Completion:

July, 2022

Status

- Advertisement of the RFP Phase 1(RFQ) for the Design-Build contract was in June 2017. Upon MTA approval to proceed, Phase 2 (Shortlist) will be issued. Current target October 2017.
- The final 30% preliminary design will be completed in October 2017 for inclusion in Phase 2 of the two-step Design-Build procurement.
- The draft preliminary Risk Assessment report is under review by Metro-North. Upon review, Metro-North will develop mitigation strategies to limit our risks.



October 2017 CPOC IEC Project Review

MNR Hudson Line Sandy
Restoration/Resiliency



Schedule and Budget Review

■ Schedule

- The IEC agrees with MNR's assessment of the project schedule.
- The additional delay is mostly due to a Corps of Engineers' permit delay.
- The continuous track outages for the first stage were extended to complete the work.

■ Budget

- The IEC agrees with MNR that the existing budget will need to be increased. The reasons include:
 - Schedule increase results in additional monthly costs.
 - Executed and projected change orders will likely exceed project contingency.



Risk Mitigations

■ Work Productivity Issues

- **Limited Access and Difficult Work Areas:** Production rates in the next stages should be closer to the estimated ones as there are more areas with fewer constraints.
- **Loss of Long-Term Track Outages:** MNR extended the first two long-term outages until the work was completed.
- **Limited Flagging Support:** MNR has been able to supply additional flaggers over the contractual number.
- **Increasing Number of Crews:** MNR is working with the contractor to achieve efficiencies to allow more crews to work without increasing flagging.



IEC Observations

- **Improved Productivity:** The IEC believes that production rates in future stages can be improved to avoid additional delays, however, it is unlikely that much of the current delay can be recovered.
- **Additional Mitigations:** The project team is investigating performing work in different stages simultaneously using flagger efficiencies.



October 2017 CPOC IEC Project Review

Harmon Consist Shop Replacement
Phase V, Stages 1 & 2



Schedule/Budget Review–Stage 1

■ Schedule

- As the agency stated, the latest schedule update indicates a 3-month delay to completion primarily due to delays in some shop equipment procurements.
- The 3-month delay was forecast at the previous CPOC meeting in May 2017.

■ Budget

- The project is under budget.
- There is sufficient money in the budget to cover the executed and projected change orders.



Risk Management – Stage 1

■ Budget Risks

- The major budget risk identified during the risk assessment dealt with change orders. That risk is still active.
- At this stage of the project, there is less likelihood of additional budget risks occurring.

■ Schedule Risks

- **Testing and Commissioning** – The schedule is currently being driven by Factory Acceptance Tests. On-site commissioning activities will start soon.
- **Procurement of Equipment** – The submittal and approval process for several items are currently running 1 to 2 months late.



Phase V - Stage 2

- Phase V – Stage 2 design/build contract is presently in procurement. It is on schedule to be awarded by July 2018.
- A risk assessment workshop was held at the 30% design level in May 2017.
- MNR, OCO and the IEC were all active participants.
- An independent review of the cost estimate was performed.



October 2017 CPOC IEC Project Review

Customer Service Initiative



Schedule and Budget Review

■ Schedule

- The IEC conducted a Risk Assessment with MNR which identified the primary risks associated with integrating the 7 packages. The risk informed duration for the project was 4 months longer than the base schedule of 32 months which has been added to the Construction Management Schedule.

■ Budget

- MNR has now received bids for the 8 packages and the IEC notes that the budget of \$198.4M should be sufficient for the current scope assuming effective mitigations are implemented.



Recommendation

- The IEC recommends that MNR bring a Construction Manager on board as soon as possible to establish an integrated program plan.



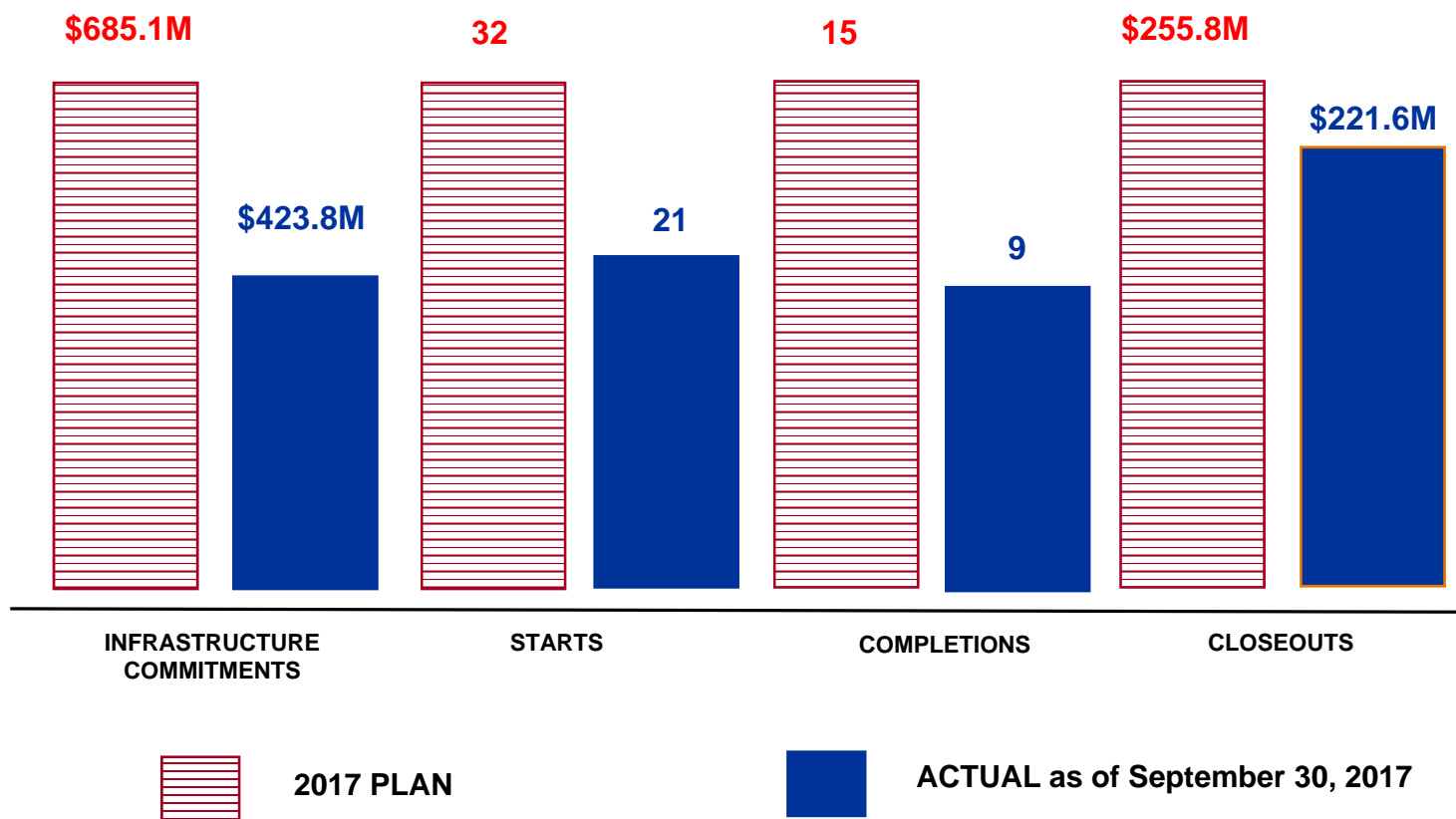
Capital Program Oversight Committee

Long Island Rail Road
Capital Program Overview

October 2017



2017 LIRR Capital Program Goals



2017 Major Starts and Completions

▣ Planned Major Starts:

▣ Construction

- ✓ 2017 Track Program
- ✓ Main Line Double Track Phase II
- Murray Hill Station Elevators
- ✓ Buckram Road Bridge
- Mid-Suffolk Electric Yard
- Morris Park Diesel Locomotive Shop

▣ Design

- Jamaica Capacity Improvements (JCI)
Phase II Design

▣ Planned Major Completions:

▣ Construction

- ✓ 150th Street – Jamaica Bridge Rehab
- ✓ Escalator Replacement Program
- ✓ Wreck Lead Bridge Systems Restoration
- Massapequa Pocket Track
- ✓ Employee Facilities Renewal
- Speonk to Montauk Signalization
- 2017 Track Program



Morris Park Locomotive Shop



Morris Park Locomotive Shop and Employee Facility



Locomotive Shop Rendering

- **Project Status:** RFP issued, Procurement process ongoing
- **Schedule**
 - Design/Build Contract Award: 4th Q 2017
 - Beneficial Use: 1st Q 2020
- **Budget:** \$108.3M



Morris Park Locomotive Shop and Employee Facility

■ Risk Management

- A comprehensive Risk Assessment was completed in July 2016 and updated June 2017.
- The Risk Assessment and resultant risk register will be tracked and updated throughout completion of the project.



Existing Shop (Built in 1889)



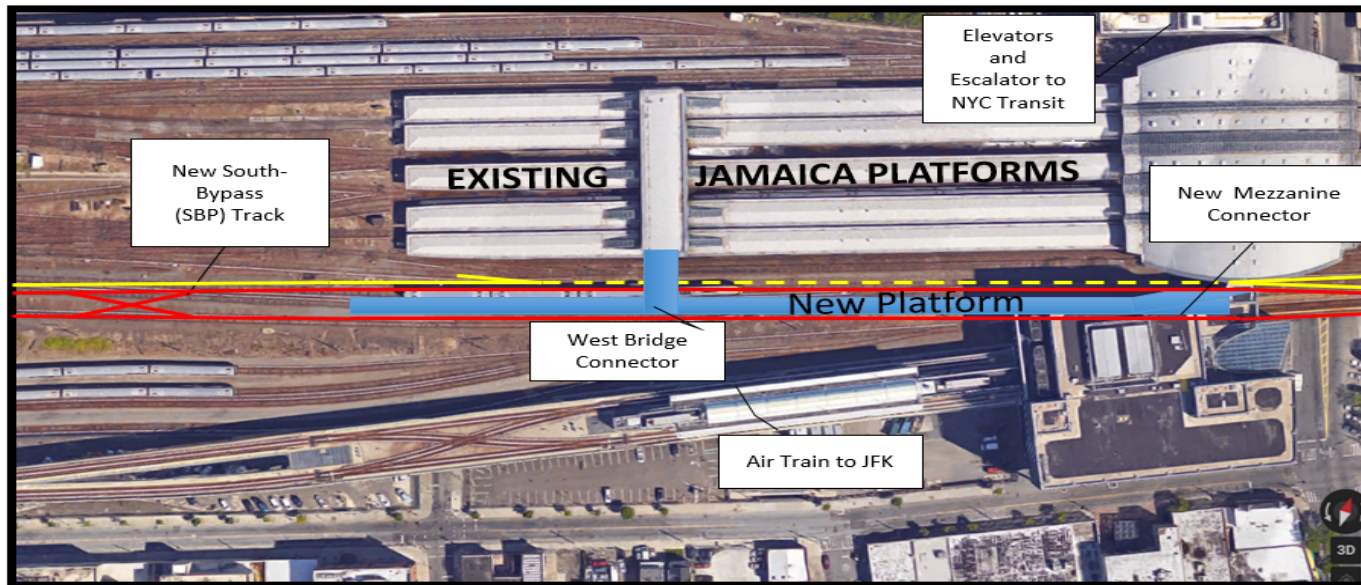
Facility Footprint



Jamaica Capacity Improvements



Jamaica Capacity Improvements - Phase I



■ Schedule:

■ Force Account Construction

- South Bypass Track cut-over in May 2017 (A)

■ Third Party Platform F Construction

- Completion: 3rd Q 2019 (F)

■ Universal Crossovers (Union, Metropolitan, and Beaver) to facilitate JCI Phase 2: 3rd Q 2020 (F)

■ Budget (Phase I): \$301.6M



Jamaica Capacity Improvements - Phase I



December 2016 Progress Photo



October - 2017 Progress Photo



Jamaica Capacity Improvements - Phase I



Support of Excavation – Future Platform F Stairway



Pile Drilling - Future Platform F

Jamaica Capacity Improvements - Phase I



Dunton 3-Crossover Installed

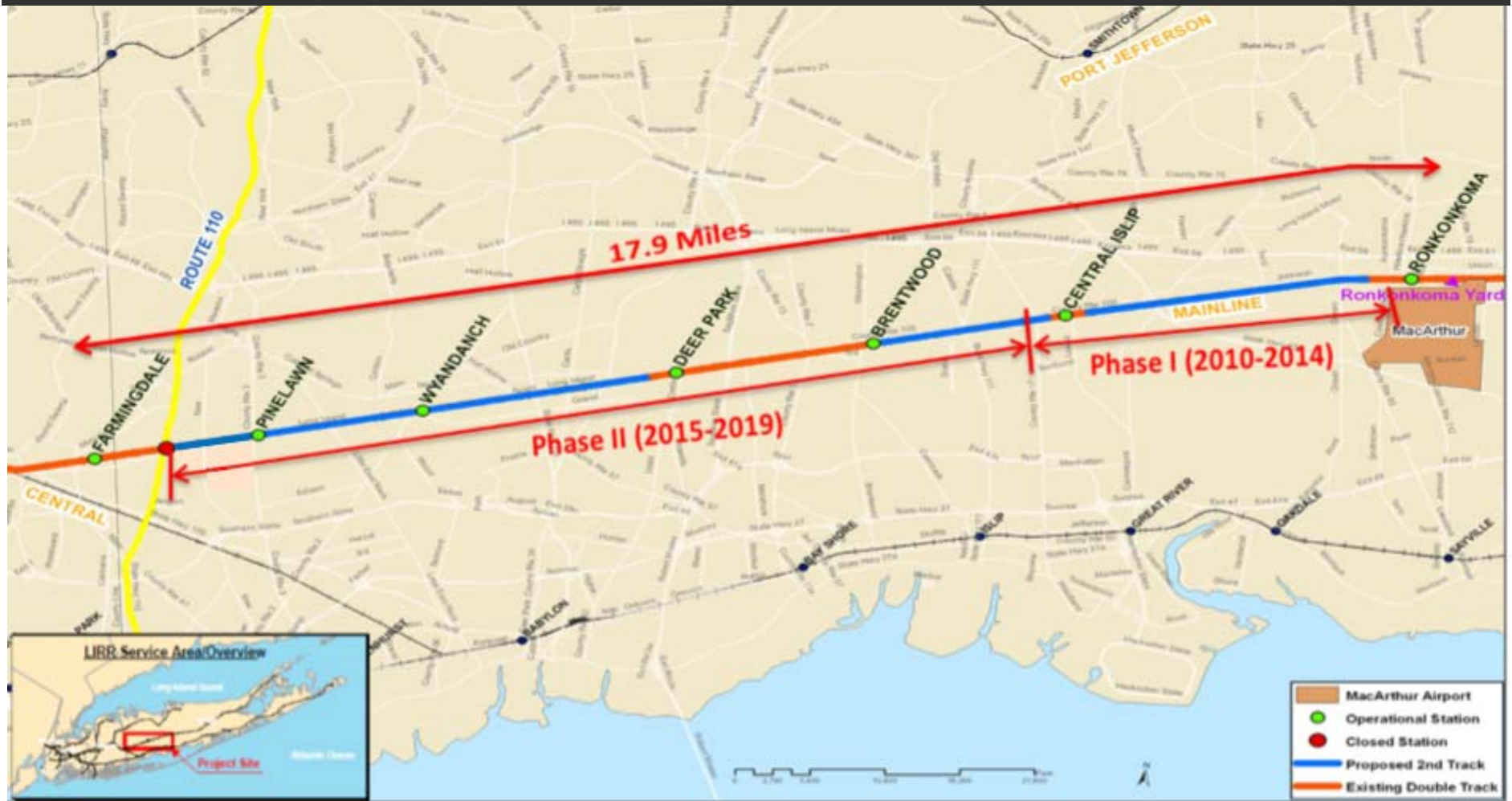


Dunton 3-Crossover New Signal Equipment

Main Line Double Track



Main Line Double Track Project



- Budget: \$137.2M (Phase 1)
- Budget: \$250.0M (Phase 2)

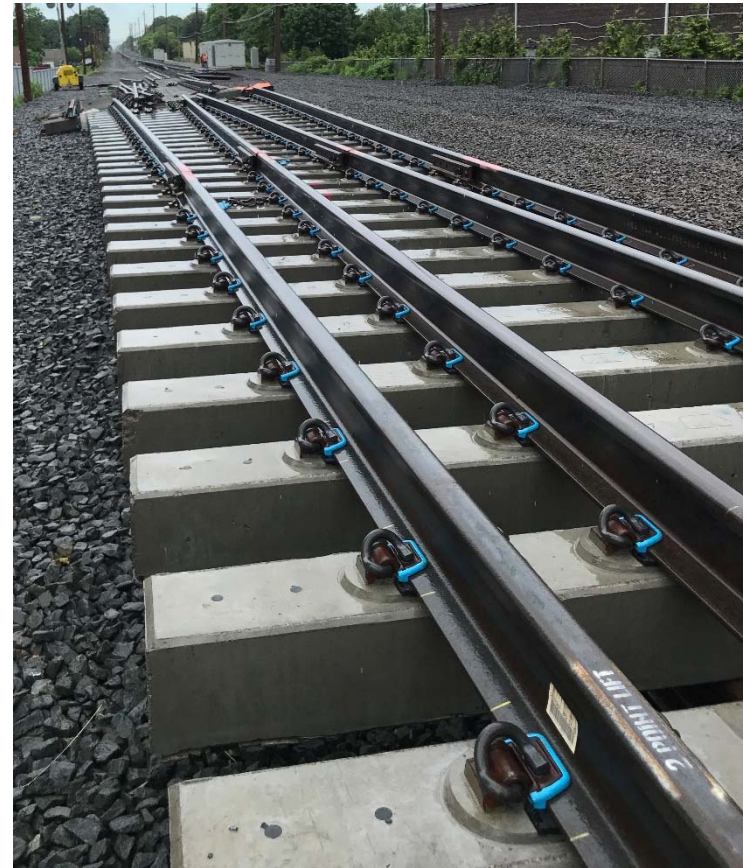


Main Line Double Track Project

Phase I - West of Central Islip to Ronkonkoma

■ Schedule:

- Base Civil and Site Work
 - Substantial Completion: May 2016 (A)
- Track and Systems Installation (LIRR Force Account)
 - Substantial Completion: 1st Q 2018



Installing 21 crossover at Central Islip on Mainline



New Third Rail installation East of
Veterans Memorial Highway

Main Line Double Track Project

Phase II - Farmingdale to West of Central Islip

Phase 2 Civil and Site Work

■ Schedule:

- Notice of Award: June 2016 A
- Substantial Completion: Nov 2017



Track Sub-base along fill wall in Deer Park



New paving at grade crossing in Wyandanch



Fence on top of fill wall in Deer Park



Main Line Double Track Project

Phase II - Farmingdale to West of Central Islip

Phase 1 and 2 Signal Equipment

■ Schedule:

- Notice of Award: June 2016 A
- Substantial Completion: 1st Q 2018



Phase 1: Prepping for crossing hut at Carleton Ave



Phase 1: Setting of CI (Central Islip) Interlocking Hut

Main Line Double Track Project

Phase II - Farmingdale to West of Central Islip

Phase 2 Track, Systems and Station Platforms

■ Schedule:

- Notice of Award: June 2017 (A)
- Substantial Completion: 3rd Q 2018



Communication pole installation
in Brentwood



Digging for new pole line in Deer Park



October 2017 CPOC IEC Project Review

Jamaica Capacity Improvements – Phase I



Schedule and Budget Review

■ Schedule

- The project remains on schedule.
- In the opinion of the IEC, based on current progress, the project schedule has sufficient contingency to reach substantial completion.

■ Budget

- The project is on budget.
- In the opinion of the IEC, the project budget has sufficient budget contingency to reach substantial completion.



Risk

- The LIRR PM team has continuous reviews of risk mitigation with all parties involved to manage key risk areas, such as:
 - Coordination between third party and FA crews, and
 - LIRR project support.
- In the opinion of the IEC, the project is managed well and the appropriate steps are taken to mitigate cost and schedule risks.



October 2017 CPOC IEC Project Review

Main Line Double Track



Budget Review

- The project is on budget.
- The agency is evaluating the project contingency, in order to account for additional work orders requested by various entities.
- In the opinion of the IEC, based on the anticipated contingency expenditures, the project contingency & risk reserves may need to be increased.



Schedule Review

- The project is on schedule.
- Since the last CPOC presentation, the project substantial completion date has been accelerated from October 31, 2018 to August 31, 2018. As a result, the new project schedule has no contingency.
- If the contractors accelerate construction activities and complete the project 1 month early, they will receive the contractual incentives.



IEC Observation

- The IEC has observed that the LIRR PM team continues to implement innovative ideas to accelerate the schedule, such as holding over the shoulder design meetings between agency and contractor senior designers. Comments and approvals are given at these meetings, instead of the standard 30 day turnaround time.



M-9 Railcar Procurement CPOC October 2017



M-9 Railcar Procurement Contract Information

- Budget (92 LIRR Base Order Cars)
 - Initial Estimate at Completion \$375.0M
 - Current Estimate at Completion \$382.4M
 - Total Project Funding \$393.7M (Includes \$11.3M Contingency)
- Kawasaki has achieved 40% Commercial-Off-The-Shelf (COTS) which meets the contractual goal
- LIRR is in the process of negotiating the option for 110-cars



M-9 Railcar Procurement Progress to Date

- Contract Awarded: September 2013
- Design Review Completed: 4th qtr 2016
- First Article Inspections (FAI) Commenced: 1st qtr 2016
- Qualification Testing (QT) Commenced: 2nd qtr 2016



M-9 Railcar Procurement Major Milestone Look Ahead

Milestone	Current Schedule	Approximate Shift from 2016 CPOC
System Qualification Tests Complete	4 th Quarter 2017	12-Months
First Article Inspections Complete	4 th Quarter 2017	9-Months
Pilot Car testing in Pueblo	Nov 2017 – Feb 2018	4-Months
Pilot Car testing at LIRR	Mar 2018 - Jun 2018	4-Months
92 Base Car Deliveries	Jul 2018 - Mar 2019	1-Month



M-9 Pilot Car Interior

Kawasaki Heavy Industries (KHI), Japan



M-9 Pilot Car Interior

Kawasaki Heavy Industry (KHI) , Japan



M-9 Pilot Car Engineers Cab

Kawasaki Heavy Industry (KHI), Japan



M-9 Production Car

Kawasaki Motors Manufacturing (KMM), Lincoln Nebraska



Side Walls



Final Car Shell Assembly



M-9 Production Car

Kawasaki Motors Manufacturing (KMM), Lincoln Nebraska



End Frame



Roof Assembly



M-9 Final Assembly

Kawasaki Rail Car (KRC), Yonkers New York

- Underfloor Equipment
- Underfloor Wiring
- Coupler
- Luggage Rack
- Seating
- Truck
- Function Test



October 2017 CPOC IEC Project Review

LIRR M-9 Railcar Procurement



Schedule Review

- The project is approximately 6 months late with a projected delivery completion date of March 2019. The contractual delivery completion date is September 2018. The carbuilder has requested an extension of time which is under consideration by LIRR.
- The IEC notes that the critical path is being driven by pilot car qualification testing and production. The start of pilot car qualification testing has slipped since the Oct 2016 CPOC report. The carbuilder plans to recover the slippage during production and is holding the March 2019 delivery completion date.
- In the IEC's opinion, KRC can meet their testing and production schedule assuming the risks in pilot car qualification testing or accelerated production are not realized.



Budget Review

- The project is within budget. The current budget is \$393.7M for the base order program, an increase of \$11.3M since the October 2016 CPOC report.
- Based on cost estimates from the current change order log, the IEC projects that the contingency is adequate for the remainder of the project.



Observations

- The delay in the start of pilot car qualification testing represents a continued risk to the schedule. LIRR and the carbuilder are correctly prioritizing issues that impact the start of qualification testing to avoid further delay.
- Replacement Parts – The IEC recognizes that LIRR and the carbuilder have achieved the contractual goal of 40% for Commercial-off-the-Shelf Components (COTS).



October 2017 CPOC LIRR/MNR PTC Project Update

October 23, 2017



PTC Overall Project Status

Item	Comments
Schedule	FRA Compliance by December 31, 2018
Cost	Current Budget is \$968M



PTC FRA Compliance

In 2015, Congress set a PTC deadline to December 31, 2018.

As part of the new law, an alternate schedule may be requested by the Railroads to complete implementation of PTC if the following criteria are met:

- Necessary hardware to support operations is installed by December 31, 2018;
- Acquired all necessary spectrum for the Railroads' PTC system by December 31, 2018;
- Training programs are completely developed and enough staff are trained to support RSD by December 31, 2018;
- Functional testing and documentation is complete and RSD has been approved for at least one territory by December 31, 2018.



LIRR/MNR are on schedule to be in FRA Compliance at the end of 2018.

PTC New PTC Implementation Approach

MNR/LIRR revised their implementation approach based on the realization of 3 project risks in August and September:

- Risk #1 - FDR completion
- Risk #2 - Complete development of Site Acceptance Test documentation
- Risk #3 - Commissioning on Port Jervis Line

The new approach:

- Gives the software developers more time to develop and test.
- Focuses on FRA compliance in December 2018.
- Provides more time to the field test team to create their detailed test plans/procedures.
- Utilizes new information from FRA to streamline the timeline for testing on non-pilot lines.
- Assumes formal pilot testing will utilize the pre-FAT integrated system software.
- Focuses on getting into RSD followed by FRA safety certification.



PTC Highlights – June to September 2017

Progress (54% complete)

Both MNR and LIRR:

- Progressed Wayside and On-Board equipment deliveries and installations.
- Progressed Final Design Review (FDR).
- Continued development of Software.
 - Completed On-Board Computer (OBC) FAT in July.
 - Conducted Communications FAT (Base to Mobile Interface) in August.
 - Conducted Office Software FAT in July.
 - Conducted Transponder FAT for pilot lines in August.
- Continued finalizing Interoperability design with Amtrak.
- Continued preliminary field testing of the communications interface between the train and wayside/office elements.
- Continued training of Railroad Forces.
- Equipped vehicles required for pilot testing.
- Completed the audit on Contractor's internal safety review process.



PTC Highlights – June to September 2017

LIRR

- Completed equipment installations in their Office Primary Control Center location.
- Completed all the equipment installations on the Port Washington pilot line.
- Established communications from all wayside elements to the Backup Control Center on Port Washington pilot line.

MNR

- Installed, verified, tested and commissioned Civil Speed Enforcement (CSE).
 - Hudson Line from Spuyten Duyvil (CP12) to GCT (CP1)
 - New Haven Line from Pelham (CP215) to Mount Vernon (CP12).
- Installed, tested and qualified their Test Track to begin dynamic testing.
- Completed the training of 381 locomotive engineers to support Civil Speed Enforcement (1st Qtr. 2018).
 - To date trained 2197 employees on PTC for different crafts.
- Finalizing interoperability requirements with other Tenant Railroads.



PTC Highlights – June to September 2017

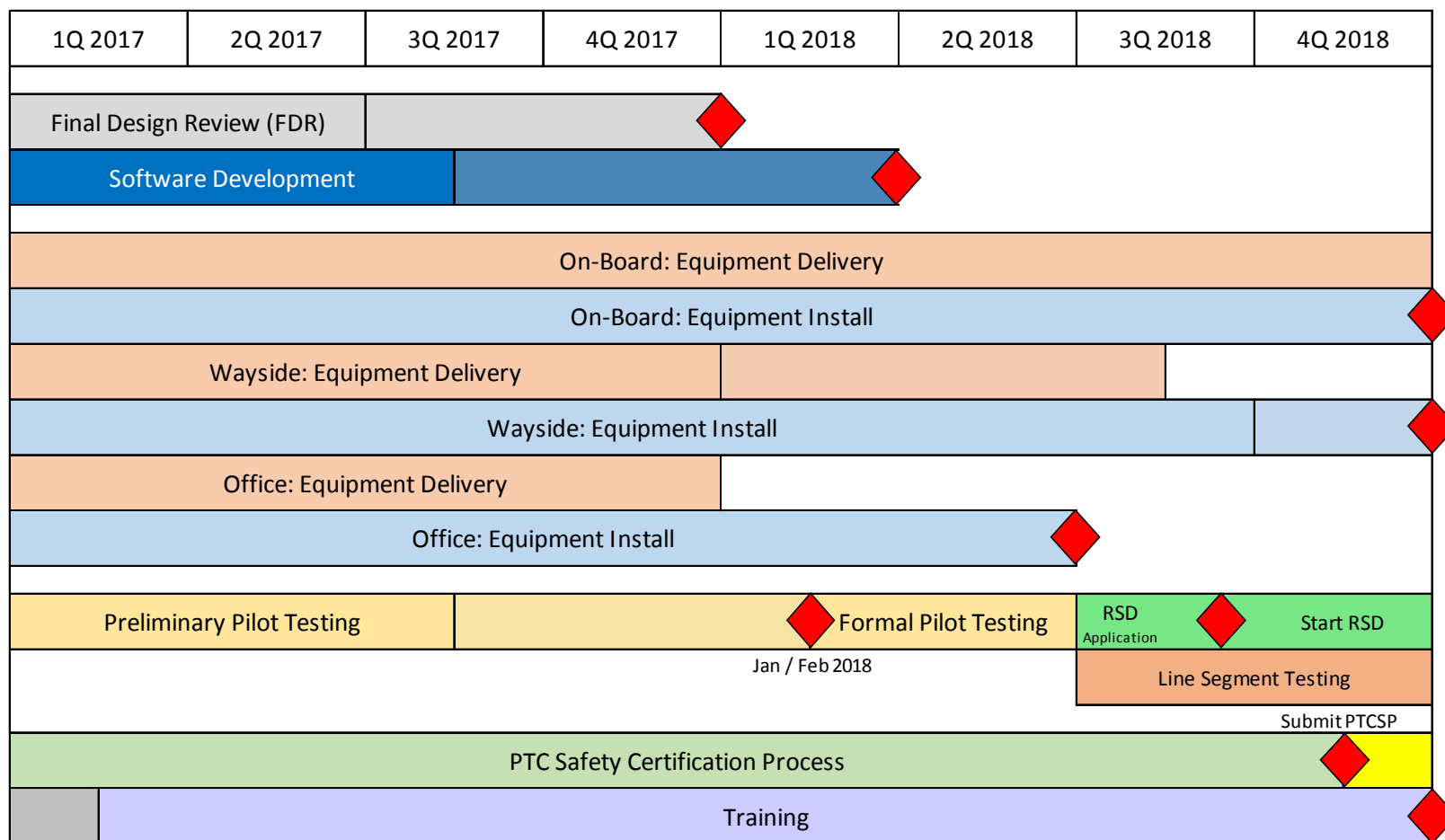
Equipment Installations

Equipment	LIRR		MNR	
	120 Day Target	120 Day Actual	120 Day Target	120 Day Actual
Transponders	350	260 ¹	500 (276 ⁴)	238
Wayside Interface Units (WIU)	14	8 ²	18	29
Radio Communication Cases	28	37	24	4 ⁵
M7	72	133	42	51
Diesel Electric/Dual Mode (DE/DM)	4	1 ³	n/a	n/a

1. Delays due to processing of data from camera surveys.
2. Deferred installations to coordinate with other capital contracts.
3. Addressing a safety concern with current design.
4. Transponder forecast was an estimate required to complete CSE Installations. The final design only requires 276 with 38 remaining to be installed.
5. Deliveries lagged due to design issues found during environmental testing requiring retrofits at the factory.



PTC Summary Schedule



Pilot Lines

MNR: Hudson Line

LIRR: Port Washington and Montauk ABS territory



PTC Software

Proven Software Products

- On-Board Computer (OBC) Software – used on other Railroads.
- Safety Servers – Office system built upon platform used for other signaling systems.
- Communications Manager – used on other Railroads.

However, the LIRR/MNR PTC systems require a large degree of customization.

Office Software is on the project's critical path.

- It includes security, interoperability, diagnostics maintenance, network management, Roadway Worker Protection (RWPS) for LIRR only, User interface, Safety Servers.

FAT Completion extended to January 2018 (new approach).

Integrated System FAT completion targeted in March 2018.

Other software elements:

- Transponders and WIUs – line specific.
 - Requires verification of PTC database.
 - Testing on pilot will validate the design for rest of the system.
- Communications Manager – FAT in progress.
- On Board Computer – FAT completed with the exception of remote diagnostics.



PTC Forecast – October 2017 to January 2018

Equipment Installations

Equipment	LIRR	MNR
	120 Day Target	120 Day Target
Transponders	30	38
Wayside Interface Units	11	6
Communication Cases	39	10
M7	96	28

120 Day Look Ahead

MNR and LIRR

- Achieve Final Design Review.
- Complete Subsystem Factory Acceptance Tests (FATs).
- Complete Office Software Factory Acceptance Tests (ALL PTC functionality).
- Complete System Integrated Pre-FAT (ALL PTC functionality).
- Start Integrated System FAT (ALL PTC functionality).
- Continue deliveries and installation of On-Board and Wayside equipment.
- Continue the development of additional training material and training of Railroad Forces.
- Complete the Verification & Validation of the PTC vital database for the pilot lines.
- Continue preliminary field testing.
- Start formal pilot testing with Pre-FAT version of integrated system software.
- Start the development of Revenue Service Demonstration (RSD) request.



PTC Forecast – October 2017 to January 2018

120 Day Look Ahead (continued)

LIRR

- ▣ Start commissioning of M7 vehicles with in-service OBC software.
- ▣ Award installation contract for Atlantic tunnel PTC cable.
- ▣ Award installation contract (Mentoring Program) for PCC electrical & HVAC upgrade
- ▣ Configure, connect and test workstations in BCC to support pilot testing.
- ▣ Start surveys and designs for remote workstation locations.

MNR

- ▣ Install and test remaining 38 transponders required for CSE.
- ▣ Complete CSE testing (Hudson, Harlem, New Haven, New Canaan, Danbury and Waterbury lines).
This will be a **major accomplishment**.
- ▣ Complete the wiring and testing of the Emergency Control Center equipment.
- ▣ Perform PTC level testing on the Test Track.
- ▣ Start uploading approved CSE software onto the M7 and M8 vehicles.
- ▣ Complete installation of remaining 6 WIUs.
- ▣ Complete installation for remaining 28 M7 vehicles.



PTC LIRR Installation Totals and Projections

PTC Equipment		Total through Sept '16	Oct '16 - Jan '17	Feb '17 - May '17	June '17 - Sept '17	Oct '17 - Jan '18	Feb '18 - May '18	June '18 - Sept '18	Oct '18 - Dec '18	System Totals
Transponders	Planned		600	450	350	30	394	393		3183
	Actual	971	605	530	260					2366
WIUs	Planned		24	16	14	11	15	22		150
	Actual	49	25	20	8					102
C-Cases	Planned		10	24	28	39	3			111
	Actual	0	8	24	37					69
M7	Planned		61	79	72	96	36			418
	Actual	15	62	76	133					286
DE/DM	Planned		0	8	4	12	13	19		45
	Actual	0	0	0	1					1
C3	Planned		0	4	2	4	8	11		23
	Actual	0	0	0	0					0
E15 (DPM)	Planned		0	0	0	2	6	11		19
	Actual	0	0	0	0					0
NYAR (GP38)	Planned		0	0	0	0	4			4
	Actual	0	0	0	0					0
NYAR (E15)	Planned		0	0	0	0	2	2		4
	Actual	0	0	0	0					0
M9	Planned		0	0	0	0	0	33	33	66
	Actual	0	0	0	0					0
TC-82	Planned		0	1	1	1				1
	Actual	0	0	0	0					0




PTC MNR Installation Totals and Projections

PTC Equipment		Total through Sept '16	Oct '16 - Jan '17	Feb '17 - May '17	June '17 - Sept '17	Oct '17 - Jan '18	Feb '18 - May '18	June '18 - Sept '18	Oct '18 - Dec '18	System Totals
Transponders	Planned		500	500	500	38	100	200	222	2913
	Actual	1122	405	588	238					2353
WIUs	Planned		15	18	18	6				84
	Actual	13	11	25	29					78
C-Cases	Planned		3	20	24	10	20	30	32	104
	Actual	0	1	7	4					12
M7	Planned		36	42	42	28				168
	Actual	4	38	47	51					140
M3A	Planned		0	8	10	16	17	17	17	69
	Actual	0	0	2	0					2
Cab Cars C12/19/21	Planned		0	1	4	5	8	6		19
	Actual	0	0	0	0					0
Cab Cars C34/38	Planned		0	1	4	5	8	8	12	33
	Actual	0	0	0	0					0
P32	Planned		0	0	4	5	8	8	10	31
	Actual	0	0	0	0					0
BL20	Planned		0	0	0	0	5	4	3	12
	Actual	0	0	0	0					0
BL14	Planned		0	0	0	0	0	0	2	2
	Actual	0	0	0	0					0
GP35	Planned		0	0	0	0	0	3	4	7
	Actual	0	0	0	0					0
M8	Planned		0	0	0	0	60	65	65	190
	Actual	0	0	0	0					0






PTC Critical Milestones and Issues


Status	Activity	Date Needed	Issues
 Red	Final Design & Software Development	December 2017 (FDR) March 2018 (Software)	<p>RISK REALIZED in August 2017</p> <p>Issue: Continued delays by the Contractor to finalize design and software development including the vital database.</p> <p>Impact: The design and software for FDR was not completed by the need date impacting the completion of the Office software FAT and end date.</p> <p>Mitigation: The Railroads re-evaluated their plan and established a new implementation approach to collapse the software development into a single phase, giving more time for the developers to build the required PTC functionality and reducing unnecessary overhead to a multi-phase approach. The Railroads will continue to audit the development process making regular trips to Pittsburgh to monitor progress. A priority is being placed on completing requirements traceability matrix to mitigate risk of missing important functionality of office software and re-work. The Railroads worked with the contractor to revise the project CPM schedule to reflect this new approach.</p>



Legend




	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.

PTC Critical Milestones and Issues


Status	Activity	Date Needed	Issues
 Red	Site Acceptance Testing and Commissioning Plans/Procedures	December 2017	<p>RISK REALIZED in August 2017</p> <p>Issue: Continued delays in the development of the complete suite of approved test plans and procedures required to fully test the integrated PTC system(s).</p> <p>Impact: Delays in the development of the test plans/procedures has delayed the overall test program and reduced the available time to test and demonstrate complete PTC functionality.</p> <p>Mitigation: The new PTC implementation approach has re-focused the project resources to support the completion of FDR and office and integrated system FATs. This gives the field test team more time to develop a detailed test strategy and write the required test procedures to support full PTC deployment. The Railroads will continue to take opportunities to test PTC functionality earlier. Further discussions with the FRA have also better defined the requirements for the RSD application, changed previous assumptions that were incorporated into the CPM schedule, and streamlined the testing timeline for the non-pilot segments. The Railroads' test tracks (extension to the lab) have already proven to minimize the amount of time required to test on live tracks.</p>



Legend




	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.

PTC Critical Milestones and Issues


Status	Activity	Date Needed	Issues
 Red	PTC Commissioning on Port Jervis Line	December 2018	<p>RISK REALIZED in September 2017</p> <p>Issue: Delays in Cab Signal System Commissioning and PTC Design for MNR's Port Jervis Line.</p> <p>Impact: PTC Commissioning Schedule on Port Jervis Line could go beyond December 2018.</p> <p>Mitigation: MNR continues to actively work with NJ Transit to recover schedule delays for PTC design and delivery of equipment for installation by December 2018. Anticipate NJ Transit to request a time extension to complete PTC commissioning.</p>



Legend




	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.

PTC Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Yellow	Manufacturing and Delivery of On-Board and Wayside Equipment	June 2018	<p>Issue: Equipment manufacturing and deliveries of PTC equipment due to late designs.</p> <p>Impact: Delays of On-Board equipment deliveries will impact installations for all fleets impacting line segment testing, commissioning and acceptance. Delays in Wayside equipment deliveries will strain Railroad Force Account and require installations to be done in a shorter time period in order to match the testing program.</p> <p>Mitigation: The Contractor has increased their engineering support for data validation and post data processing of the camera surveys to minimize the delays in WIU and transponder engineering; Railroads will continue to accept deliveries to allow installations to continue without all the completed programming; The Contractor continues to ramp up their production levels through early 2018 and LIRR is utilizing third party installers to support their installation efforts. They will be issuing a new contract to have the PTC antenna cable installed in the Atlantic Tunnel in order to ensure they meet the PTC deadline.</p>



Legend

	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.

PTC LIRR PTC Photos



Vortok Bracket Trial Installation



BCC Office Patch Cable Installation



C-Case Site Acceptance Testing



Final PCC Office Cabinet Install Cabinets #8-13



NYAR Undercar Install Fit-Up



C-Case Conduit Installation



Pilot Line 1 Transponder Installation



PTC MNR PTC Photos

Radio Case Environmental Testing –Wind Blown Rain Test @ 40 Mph



PTC Appendix - LIRR Wayside Equipment Installation Tracking (as of 9/30/2017)

LIRR Pilot 1 (Babylon to Patchogue)

PTC Equipment	Target Quantity	Actuals to Date	Remaining	% Complete
Transponders	372	347	25	93.3%
Wayside Interface Unit Locations	17	17	0	100.0%
Communication Cases	7	7	0	100.0%
Poles / Antennas	7	7	0	100.0%

LIRR Pilot 2 (Port Washington to Harold)

PTC Equipment	Target Quantity	Actuals to Date	Remaining	% Complete
Transponders	177	177	0	100.0%
Wayside Interface Unit Locations	8	8	0	100.0%
Communication Cases	8	8	0	100.0%
Poles / Antennas	8	8	0	100.0%

LIRR System Total

PTC Equipment	Target Quantity	Actuals to Date	Remaining	% Complete
Transponders	3183	2366	817	74.3%
Wayside Interface Unit Locations	150	102	48	68.0%
Communication Cases	111	69	42	62.2%
Poles / Antennas	111	69	42	62.2%

PTC Appendix - LIRR On-Board Equipment Installation Tracking (as of 9/30/2017)

Car Type	Vehicles Total		LIRR Pilot 1 Location (Babylon to Patchogue)		LIRR Pilot 2 Location (Port Washington to Harold)	
	Planned	Actual	Planned	Actual	Planned	Actual
M7	418	286	NA	NA	4	4
DE / DM	45	1	4	1	NA	NA
C3	23	0	4	0	NA	NA
E15	19	0	6	0	NA	NA
NYAR	8	0	4	0	NA	NA
TC-82	1	0	NA	NA	NA	NA
M9	66	0	NA	NA	NA	NA
Totals	580	287	18	1	4	4

On-Board Partial Installation Tracking				
Train Type	Undercar Scanner Antenna	OBC / Completion	Roof Antenna	MCP
M7	296	286	316	304
DE / DM	21	21	7	2



PTC Appendix - MNR Wayside Equipment Installation Tracking (as of 9/30/2017)

MNR Pilot (Tarrytown to Croton Harmon)

PTC Equipment	Target Quantity	Actuals to Date	Remaining	% Complete
Transponders	208	208	0	100.0%
Wayside Interface Unit Locations	5	5	0	100.0%
Communication Cases	5	3	2	60.0%
Poles / Antennas	5	5	0	100.0%

MNR System Total

PTC Equipment	Target Quantity	Actuals to Date	Remaining	% Complete
Transponders	2913	2353	560	80.8%
Wayside Interface Unit Locations	84	78	6	92.9%
Communication Cases	104	12	92	11.5%
Poles / Antennas	104	17	87	16.3%



PTC Appendix - MNR On-Board Equipment Installation Tracking (as of 9/30/2017)

Vehicle Type	Vehicles Total	Complete Vehicle Retrofitted (MCP/OBC/Undercar Antenna/Scanner)	Partial Vehicle Retrofitted (OBC/Undercar Antenna/Scanner)
M7	168	140	0
Cab Car C34/38	33	0	33
Cab Car C12/19/21	19	0	0
M3	69	2	4
BL20	12	0	12
BL14	2	0	0
P32	31	0	31
GP35	7	0	0
M8 Car	190	0	190
MCP - Mobile Communication Package			
OBC - On-Board Computer			



October 2017 CPOC IEC Project Review

Positive Train Control



Budget Review

- The current project budget is \$968M.
 - This remains as last reported in June 2017.
 - As a result of delays to design completion and project deliverables, the IEC anticipates that the Railroads will review the budget to determine if additional funds are needed for:
 - Additional force account resources
 - Third party services



Schedule Review

- Agency Schedule Forecast.

The Agencies are forecasting meeting the requirements for Statute Compliance by December 2018.

- System Integrator (SI) made insufficient progress since June further putting the schedule at risk. A number of key scheduled activities were delayed.
- Achieving the December 2018 compliance date is challenging, as the time allocated to remaining activities has been compressed.
- The current revised plan is dependent on the ability of the SI to progress and complete software development and testing activities concurrently with finalizing requirements and detailed design.



IEC Observations

- The FAT results since June point to the need for improvements in requirements traceability, dry run testing, test case coverage and related documents.
- The SI has encountered challenges in progressing field data base verification.
 - SI hired additional expertise to address issue. However, in the IEC's opinion additional time is needed to complete this task
- SI delayed the start of Formal Pilot testing from August 2017 to February 2018.
 - To mitigate further delay, project team commenced preliminary testing on pilot lines.



IEC Observations

- In order to achieve completion by December 2018, multiple Revenue Service Demonstrations (RSDs) would be required within a short period of time. This would be difficult to achieve due to constraints on resources and track access.



Project Risks

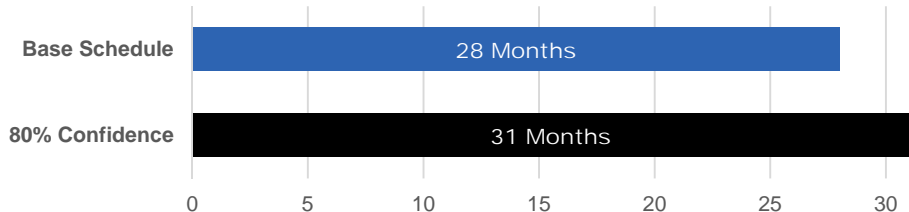
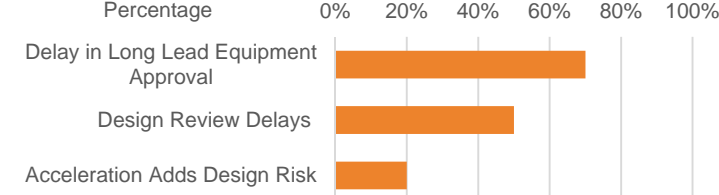
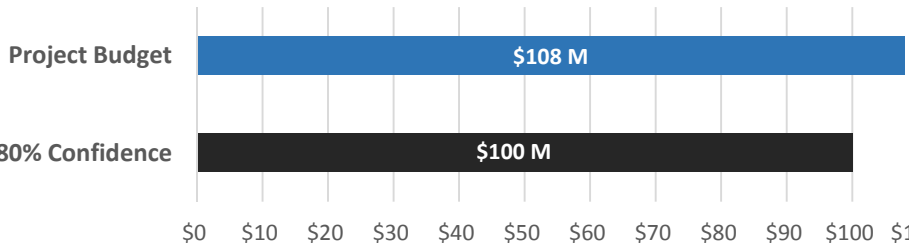
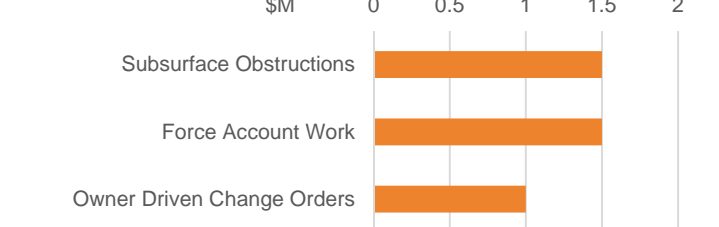
- The critical path on the common schedule is through office software development, and system integration Pre-FAT and FAT. Schedule risks include:
 - Insufficient contingency to address requirements clarifications, variances and Railroad feedback comments,
 - Insufficient contingency to resolve issues uncovered during integrated FAT activities.
- Progressing multiple system development activities and testing in parallel continue to stretch resources at both the Railroads and SI. Availability of experienced resources is necessary to mitigate schedule delays.



Project Risks

- Field verification of vital data remains an issue. This has impacted the delivery of transponders for LIRR installation, and could impact completion of the data configuration for the back office servers.
- The design for the Roadway Worker Protection System (RWSP) for LIRR must be completed prior to the start of RSD on the pilot line. A delay in defining RR requirements and proposed solutions could impact the RSD for the Pilot Line.



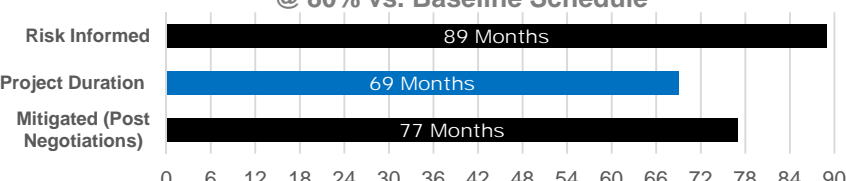
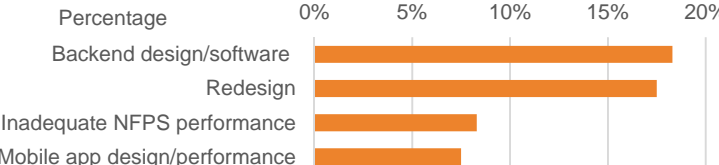
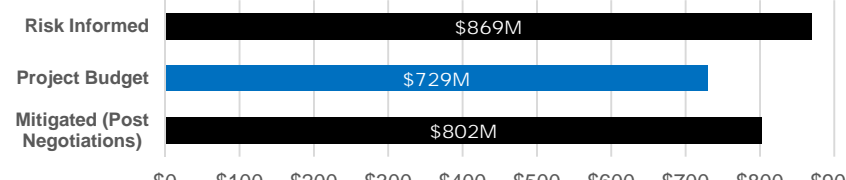
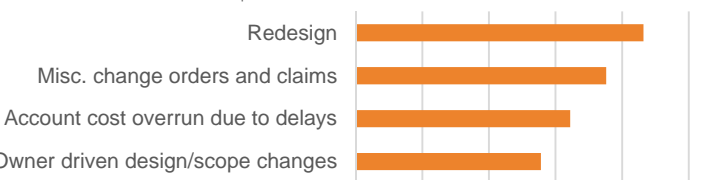
MTA Metropolitan Transportation Authority		10/25/2017	Risk Assessment Brief														
MTA Agency: Long Island Rail Road		Risk Assessment Report Date: June 6, 2017															
Project Name: Morris Park Locomotive Shop & Employee Facility		Status of Project when Risk Assessment Was Performed: Pre-Award															
Project Description																	
The Long Island Rail Road will construct a new locomotive repair shop to replace the existing 125 year old Morris Park Round House which has surpassed its design life and is presenting an additional maintenance burden on operating resources. The new facility will be better equipped to maintain the LIRR's current fleet of diesel locomotives used in revenue service as well as the fleet of diesel work locomotives. Customer service will be enhanced through better locomotive reliability and on-time performance.																	
Risk Assessment Findings																	
Based upon simulation results at the 80% Confidence Level, the unmitigated Risk-Informed project duration is 31 months, adding 3 months to the project baseline schedule duration of 28 months. The major contributor to the additional 3 months is the risk of delay in long lead equipment approval. The project budget is \$108 million, which includes contingency, which is \$8 million above the result of the projects 80% confidence level cost. The two biggest cost risks of Budget being too low and inability to finding qualified contractor have been mitigated and retired during the Design Build procurement process.																	
P80 numbers represents non mitigated values which can be brought back through suggested mitigations.																	
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<div>Project Schedule 80% Confidence vs. Baseline Schedule</div>  <table><tr><th>Schedule Type</th><th>Duration (Months)</th></tr><tr><td>Base Schedule</td><td>28 Months</td></tr><tr><td>80% Confidence</td><td>31 Months</td></tr></table>		Schedule Type	Duration (Months)	Base Schedule	28 Months	80% Confidence	31 Months	<div>Top Schedule Risks (Relative Contribution)</div>  <table><tr><th>Risk</th><th>Percentage Contribution</th></tr><tr><td>Delay in Long Lead Equipment Approval</td><td>~70%</td></tr><tr><td>Design Review Delays</td><td>~55%</td></tr><tr><td>Acceleration Adds Design Risk</td><td>~15%</td></tr></table>		Risk	Percentage Contribution	Delay in Long Lead Equipment Approval	~70%	Design Review Delays	~55%	Acceleration Adds Design Risk	~15%
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**Summary of Major Schedule Risks & Mitigations**

Risks	Mitigation Measure	Resources Required	Time Frame for Mitigation
Delay in Long Lead Equipment Approval	The contractor will mitigate this risk by identifying and submitting for approval of all Long Lead Equipment within the early stages of contract.	Contractor to provide detailed schedule & Industrial equipment submittal logs.	Design Phase
Design Review Delays	The LIRR, design consultant and contractor will coordinate periodic work shop review prior to submission of all stages of design.	The contractor and LIRR project team to conduct semi-monthly design review work shops & weekly field review meetings.	First Quarter after Notice of Award (NOA)
Schedule risks due to acceleration	The risk is reduced as schedule has been revised from 21 months to 24 months, for substantial completion.	Contractor to submit detailed schedule & design submission log.	Notice of Award + 90 Days

**Summary of Major Cost Risks & Mitigations**

Risks	Mitigation Measure	Resources Required	Time Frame for Mitigation
Subsurface Obstructions	Under Addendum #5, the LIRR has instructed contractors to provide a \$250K allowance for the removal of existing underground unforeseen conditions. Above \$250K will be captured under a T&M change order, covered by contingency.	Contractor to submit foundation design submission & detailed activity logs identifying allowance work.	2 nd Quarter after NOA
Additional Force Account Work	The LIRR and Contractor to Define scope early to manage force account work.	Force Account manpower for final sanitary, water, gas and power connections.	Post Design/ Pre Construction
Owner Driven Change Orders	Required user group justification and need for all owner driven change orders.	User groups to provide justification letters and funding.	Project Duration

MTA Agency: MTA	Risk Assessment Report Date: September 22, 2017																		
Project Name: MTA New Fare Payment System	Status of Project when Risk Assessment Was Performed: Pre-Award																		
Project Description <p>This project provides for replacement of New York City Transit's (NYCT's) legacy MetroCard system, as well as Metro-North Railroad (MNR)/Long Island Rail Road's (LIRR's) legacy fare systems with a state-of-the-art fare collection system that uses open architecture (non-proprietary, where feasible), account based, open payment (contactless bank card acceptance), smart card, and mobile payment technologies. All front-end and back-end equipment and software will be replaced, except for NYCT's point of entry devices (i.e. turnstiles, etc.) which will be retained and new electronics will be layered in by the NFPS System Integrator (SI). Once completed, the project provides for a fully integrated fare collection system across all three MTA agencies, with capability to add other affiliate agencies and partners to MTA's NFPS when needed.</p>																			
Risk Assessment Findings <p>Based on P80 simulation results, the unmitigated Risk-Informed duration from award (assumed to be in October 2017) to completion is 89 months, adding 20 months to the project substantial completion of 69 months (completion for full beneficial use will occur 60 months after the award). Major contributors to the additional 20 months are backend design and software issues, risk of redesign due to owner-driven design and scope changes, design review and approval delays, and demands to adopt to new technology. With proactive risk mitigation strategies implemented for these key risks, the <u>mitigated</u> Risk-Informed duration is reduced by 12 months. In that this is a pre-award risk assessment, performance and software development risks are transferred to the contractor upon award who will further mitigate potential schedule delays. The unmitigated Risk-Informed estimate results at P80 for total project cost is \$869 million (including escalation). The project budget is \$729 million, which includes the NFPS SI contract and NYCT, MNR/LIRR Force Account staff support and all related project support costs. It includes contingency, and is \$140 million below the unmitigated Risk-Informed cost. The <u>mitigated</u> post negotiation risk value below assumes the removal of approximately \$20 million in bid risks from the P80 amount of \$822 million, resulting in \$802 million which is \$73 million above the program budget and \$67 million below the unmitigated Risk-Informed cost. MTA is currently reconciling the project budget with the mitigated Risk-Informed cost. It should be noted that potential additions to the program, such as MTA Paratransit, are excluded since these will be funded separately.</p>																			
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<p>Risk Informed Project Duration @ 80% vs. Baseline Schedule</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Duration (Months)</th> </tr> </thead> <tbody> <tr> <td>Risk Informed</td> <td>89 Months</td> </tr> <tr> <td>Project Duration</td> <td>69 Months</td> </tr> <tr> <td>Mitigated (Post Negotiations)</td> <td>77 Months</td> </tr> </tbody> </table>	Category	Duration (Months)	Risk Informed	89 Months	Project Duration	69 Months	Mitigated (Post Negotiations)	77 Months	<p>Top Schedule Risks (Relative Contribution)</p>  <table border="1"> <thead> <tr> <th>Risk</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Backend design/software</td> <td>~18%</td> </tr> <tr> <td>Redesign</td> <td>~17%</td> </tr> <tr> <td>Inadequate NFPS performance</td> <td>~8%</td> </tr> <tr> <td>Mobile app design/performance</td> <td>~7%</td> </tr> </tbody> </table>	Risk	Percentage	Backend design/software	~18%	Redesign	~17%	Inadequate NFPS performance	~8%	Mobile app design/performance	~7%
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**Summary of Major Schedule Risks & Mitigations**

Risks	Mitigation Measure	Resources Required	Time Frame for Mitigation
Backend design and software issues	The NFPS SI has service proven backend and backoffice software that will form the foundation for the NYCT and MNR/LIRR fare system. The software modules will be configured to support each agencies business requirements.	The NFPS SI has extensive software development and configuration experience and the MTA Agencies' staff are experienced and supported by technical consultants.	The NFPS SI contract and project plan establish key deliverables as part of each Beneficial Use (BU) phase.
Redesign; e.g., demands to adopt new technology, and operational and maintenance issues	The NFPS System Integrator (SI) contract is based on implementation of fare system technologies that have been customer service proven. In addition, the MTA, NYCT, and MNR/LIRR have developed business rules to assist with the SI's design of the system.	The NFPS SI staff has extensive fare systems experience and the MTA Agencies' staff are experienced and supported by technical consultants.	The NFPS SI contract and project plan establish key deliverables as part of each Beneficial Use (BU) phase.
Inadequate NFPS performance, individual problems	Individual contract deliverables are included to mitigate problems before introduced in a production, customer facing environment. In addition, the NFPS SI contract contains significant provisions to protect the MTA and Agencies through, but not limited to, performance bond and liquidated damages.	The NFPS SI has a proven track record and will provide appropriate resources as required throughout development and implementation of equipment and software.	The NFPS SI contract and project plan establish key deliverables as part of each Beneficial Use (BU) phase.
Mobile app design and performance	The NFPS SI has experience as a prime and sub contractor team to support design, development and deployment of quality mobile solutions.	SI and their sub contractor team with experience with mobile applications.	Prior to completion of respective BUs.



Summary of Major Cost Risks & Mitigations

Risks	Mitigation Measure	Resources Required	Time Frame for Mitigation
Redesign; e.g., demands to adopt new technology, and operational and maintenance issues	The NFPS System Integrator (SI) contract is based on implementation of fare system technologies that have been customer service proven. In addition, the MTA, NYCT, and MNR/LIRR have developed business rules to assist with the SI's design of the system.	The NFPS SI staff has extensive fare systems experience and the MTA Agencies' staff are experienced and supported by technical consultants.	The NFPS SI contract and project plan establish key deliverables as part of each Beneficial Use (BU) phase.
Miscellaneous change orders and claims	The NFPS contract is based on industry leading and proven technology solutions to support NYCT and MNR/LIRR business requirements. In addition, the contract establishes process to design the system so that it is flexible, scalable and configurable to support current and potential business requirements.	The NYCT Materiel has established policy and procedures to effectively manage any change orders/claims.	The NFPS SI contract and project plan establish key deliverables as part of each Beneficial Use (BU) phase.
Force Account (FA) cost overrun due to delays	The MTA, NYCT and MNR/LIRR have established plan and commitment to support the NFPS program. Each agency will have flexibility to work with the SI to schedule required FA work as required.	The MTA Program Office in coordination with agency dedicated Project Managers (PMS) will monitor and control FA support activities.	Mitigation, if required, would occur based on required agency staff support during each milestone.
Owner driven design and scope changes	The MTA, NYCT and MNR/LIRR worked jointly to identify their functional technical requirements based on pre-determined business strategy and plan. These requirements are included within the NFPS SI contract and supported by program process to avoid design/scope changes.	The NFPS SI staff has extensive fare systems experience and the MTA Agencies' staff are experienced and supported by technical consultants.	The NFPS SI contract and project plan establish key deliverables as part of each Beneficial Use (BU) phase.

MTA Capital Program Commitments & Completions

through September 30, 2017



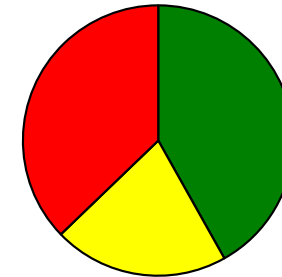
Capital Projects – Major Commitments – September 2017

In 2017, agencies plan a total of \$7.3 billion in overall commitments with 51 major commitments planned.

Through September, agencies committed \$3.4 billion versus a \$6.3 billion YTD goal. Eighteen major commitments were made on time or early, nine were delayed, but have now been committed and sixteen other major commitments remain delayed. All delays are explained on the following pages. The nearly \$3 billion shortfall is mostly due to delays of the R211 fleet and New Fare Payment System.

The MTA forecasts meeting its \$7.3 billion commitment goal. This forecast is partly due to the LIRR's commitment for the Moynihan Train Hall as well as NYCT commitments for the Enhanced Station Initiative. These commitments were not part of the original 2017 commitment goals. In addition, most year to date delays are still expected to be made by year end.

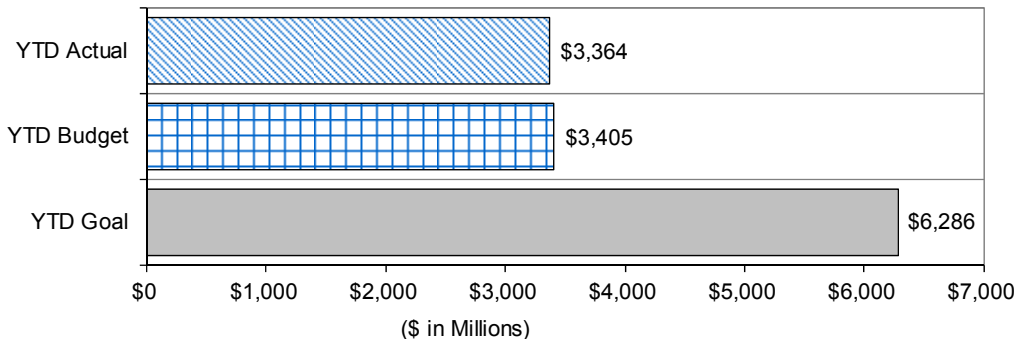
Year-to-Date Major Commitments



	Count	Percent	Change from Prior Month
GREEN = Commitments made/forecast w within Goal	18	42%	↑ 1
YELLOW = Commitments delayed beyond Goal (already achieved)	9	21%	-
RED = Commitments delayed beyond Goal (not yet achieved)	16	37%	↑ 4
	43	100%	↑ 5

Budget Analysis

2017 Annual Goal	\$7,280	(\$ in millions)
2017 Forecast	113%	of Annual Goal
Forecast left to Commit	59%	(\$4,826)



Year-to-Date Agency Breakdown

2017 Goals	Prior month variance		
	GREEN	YELLOW	RED
New York City Transit			
4	5	5	
Long Island Rail Road			
3	2	4	
	+1 GREEN		+2 RED
Metro-North Railroad			
2	1		
Bridges and Tunnels			
8	1	3	
			+1 RED
Capital Construction Company			
2			
MTA Bus Company			
1			
			+1 RED
MTA Police Department			
1	1		

Capital Projects – Major Commitments – September 2017 – Schedule Variances

Project	Commitment	Goal	Forecast	Project	Commitment	Goal	Forecast
16 All-Agency Red Commitments (4 new this month)				LIRR			
NYCT				Communications and Signals			
Signals & Communications							
ISIM-B Module 3: Rail Traffic Systems	Construction Award	Aug- 17 \$91.7M	Dec- 17 \$91.0M	Positive Train Control	Force Account	Feb- 17 \$49.1M	Nov- 17 \$49.1M
Project award extended pending revised specifications based on oral presentations during procurement.				\$28.9 million was committed in March with the balance to be awarded by November 2017. Funding for force account activities have been adjusted based on updated cash flow needs and not all funding needed to be committed in March. The overall PTC beneficial use date is unaffected and remains 12/2018.			
Subway Cars				Stations			
Purchase 425 R211 Cars & 10 Open Gangway	Construction Award	Jun- 17 \$1534.5M	Nov- 17 \$1998.5M	Murray Hill Station Elevators	Construction Award	May- 17 \$12.6M	Nov- 17 \$12.6M
Award of the contact is moved to November because proposals are still under review. Project Cost reflects Capital Program budget revision.				Reflects the delay in the time frame for legal to complete their review of contractual documents.			
Passenger Stations				Track			
New Fare Payment System	Construction Award	Jun- 17 \$525.9M	Oct- 17 \$523.8M	Diesel Locomotive Shop (New Item)	Construction Award	Sep- 17 \$97.9M	Nov- 17 \$97.9M
Award delayed due to scope addition incorporating, as part of this project, a full NFPS treatment for Long Island Rail Road and Metro- North Railroad.				Delay in RFP process- vendor now selected and going before October Board for approval. Award anticipated in November.			
Access Improvements: Grand Central: Phase 2	Construction Award	Jul- 17 \$66.7M	Jul- 19 \$66.7M	JCI Phase II Design (New Item)	Design Award	Sep- 17 \$28.0M	Nov- 17 \$28.0M
Procurement will be done through multiple phases reflecting the various activities in the project. The last expected awarded will be in 2019.				Delay has resulted from a prolonged procurement process. Currently the designer has been chosen and negotiations are taking place in October.			
Track				Buses			
Mainline Track & Switch Program (6 Projects) - 3rd Qtr	Construction Award	Aug- 17 \$37.9M	Oct- 17 \$37.9M	Bus Company Projects			
Construction start delayed due to track access availability and the usage of manpower to complete prioritized track work in preparation for the Canarsie Tube closure.				Security: JFK & Spring Creek (New Item)	Construction Award	Sep- 17 \$9.2M	Oct- 17 \$8.5M
				The bid- opening date was re- scheduled as per bidders' request.			
MNR				MTA CC			
Stations				East Side Access			
GCT PA Head End and VIS Systems	Construction Award	Jul- 17 \$32.6M	Oct- 17 \$32.6M	48th Street Entrance	Construction Award	Jun- 17 \$36.0M	post 2017 \$36.0M
Due to a protracted procurement the Design/Build award is forecasted for October 2017.				This station entrance package is currently under review by the East Side Access team and is not expected to be committed in 2017. A more specific forecast date is to be determined.			
				Systems Package 2 : Installation of Signals	Construction Award	Jun- 17 \$44.9M	Dec- 17 \$44.9M
				Additional time required for extended review process.			

Capital Projects – Major Commitments – September 2017 – Schedule Variances

Project	Commitment	Goal	Forecast
B&T			
<i>Miscellaneous</i>			
Install Electronic Monitoring & Detection Systems (Bronx Whitestone)	Construction Award	Jul- 17 \$23.0M	Dec- 17 \$23.0M
Additional time is required to respond to questions from interested Design/Build teams and modify the scope.			
Install Electronic Monitoring & Detection Systems (Robert F. Kennedy)	Construction Award	Jul- 17 \$34.3M	Dec- 17 \$34.3M
Additional time is required to respond to questions from interested Design/Build teams and modify the scope.			
Interim Repairs - FDR Ramp (New Item)	Construction Award	Sep- 17 \$20.0M	Nov- 17 \$20.0M
The design package took longer than anticipated which pushed the construction forecast start date out by two months.			

Capital Projects – Major Commitments – September 2017 – Schedule Variances

Project	Commitment	Goal	Actual
9 All-Agency Yellow Commitments (0 new this month)			
NYCT			
<i>Line Structures</i>			
Structural Repairs / 4th Ave	Construction Award	Feb- 17 \$84.4M	May- 17 (A) \$87.2M
The project award was delayed due to a higher than expected bid.			
<i>Track</i>			
Mainline Track & Switch Program (18 Projects)- 1st Qtr	Construction Award	Mar- 17 \$217.8M	May- 17 (A) \$218.7M
The 2017 Yard Track & Switch projects were delayed due to attention to other track work priorities and inclement weather.			
<i>Signals & Communications</i>			
B- Division Beacon Train Arrival System, Phase 2	Construction Award	Feb- 17 \$70.0M	Aug- 17 (A) \$69.1M
Project was delayed due to funding allocation approval which has been resolved.			
<i>Traction Power</i>			
New Substation & 2 CBHs - Maspeth Av- Humboldt St / CNR	Construction Award	Apr- 17 \$76.7M	Aug- 17 (A) \$59.5M
There was a delayed in advertisement. Bids were received in May and the contract was awarded in August. Project cost reflects favorable bids.			
New Substation: Harrison Pl/ Canarsie	Construction Award	Jul- 17 \$63.4M	Aug- 17 (A) \$52.2M
This Design- Build project needed approval by the Board before award. Procurement action was approved by the July Board and the contract was awarded in August. Project cost reflects negotiated bid price.			

Project	Commitment	Goal	Actual
LIRR			
<i>Track</i>			
2017 Track Program	Construction Award	Feb- 17 \$75.0M	Mar- 17 (A) \$75.0M
Full administrative reviews and approvals had not been concluded by the end of February and full commitment was delayed until March.			
Main Line Double Track Phase 2- Track & Systems	Construction Award	Apr- 17 \$52.0M	Jun- 17 (A) \$52.0M
Bid opening delayed due to time extension requests from prospective contractors to secure pricing from their subcontractors. This contract was awarded in June.			
MTA PD			
Nassau County District Office	Construction Award	Feb- 17 \$7.0M	Mar- 17 (A) \$7.0M
A lease was signed with the property owner in February. Administrative reviews and procedures to award the project have delayed forecast award to March.			
B&T			
<i>Structures</i>			
Henry Hudson Skewback Retrofit	Construction Award	Apr- 17 \$83.7M	May- 17 (A) \$85.7M
Delay due to contract and Insurance issues which took longer than anticipated to resolve.			

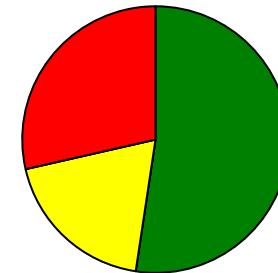
Capital Projects – Major Completions – September 2017

In 2017, agencies plan a total of \$5.0 billion in overall completions with 34 major completions planned.

Through September, agencies have completed \$1.8 billion versus a \$3.0 billion YTD goal. Eleven major completions were achieved on time or early. Four major completion were delayed but have now been completed, and six major completions remain delayed and are largely responsible for the over \$1 billion shortfall. All delays are explained on the following pages.

By year-end, the MTA forecasts meeting or exceeding its \$5.0 billion goal.

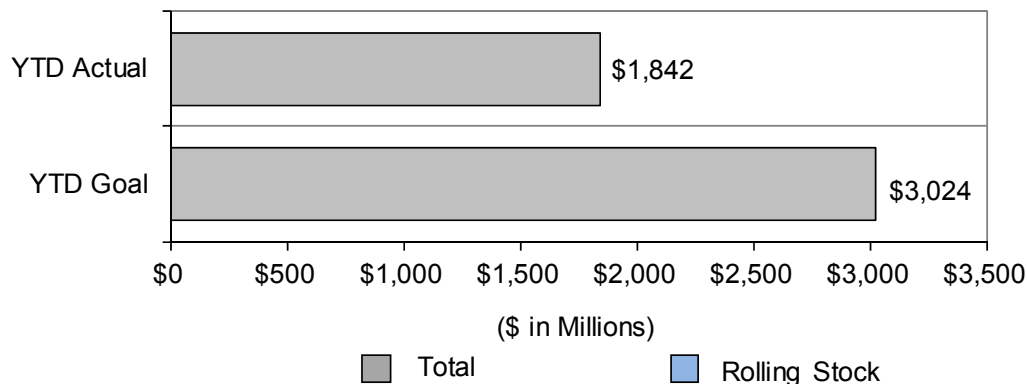
Year-to-Date Major Completions



	Count	Percent	Change from Prior Month
GREEN = Completions made/forecast within Goal	11	52%	-
YELLOW = Completions delayed beyond Goal (already achieved)	4	19%	↑ 1
RED = Completions delayed beyond Goal (not yet achieved)	6	29%	-
	21	100%	↑ 1

Budget Analysis

2017 Annual Goal \$4,970 (\$ in millions)
 2017 Forecast 100% of Annual Goal
 Forecast left to Complete 63% (\$3,143)



Year-to-Date Agency Breakdown

2017 Goals	Prior month variance		
	GREEN	YELLOW	RED
New York City Transit			
3 1 4	----	----	+1 RED
Long Island Rail Road			
2 2	----	+1 YELLOW	-1 RED
Metro-North Railroad			
1 1	----	----	----
Bridges and Tunnels			
5	----	----	----
Capital Construction Company			
1 1	----	----	----
MTA Bus Company			
	----	----	----
MTA Police Department			
	----	----	----

Capital Projects – Major Completions – September 2017 – Schedule Variances

Project	Completion	Goal	Forecast
6 All-Agency Red Completions (1 new this month)			
NYCT			
<i>Sandy</i>			
Sandy: 53rd St Tube	Construction	Apr- 17 \$92.6M	Oct- 17 \$92.6M
Delay due to the the removal of the underperforming subcontractor. In addition, ConEd's schedule for inspections did not fit in the milestone dates that was previously forecasted.			
Sandy: Joralemon Tube	Construction	Jun- 17 \$113.8M	Oct- 17 \$121.3M
Completion was delayed due to lack of available weeknight GOs. Only two weeks of night GOs available in July and the remaining are scheduled in August			
<i>Passenger Stations</i>			
Station Renewal: 7 Stations / New Lots	Construction	Jun- 17 \$80.7M	Nov- 17 \$97.6M
Project schedule delayed due to significant increases in the quantity of platform girder repairs identified during condition survey prior to award. Project cost increased mainly due to additional work such as Canopy column repair and additional TA Labor support costs.			
<i>Bus Replacement</i>			
Purchase 138 Standard CNG Buses (New Item)	Construction	Sep- 17 \$84.9M	Oct- 17 \$84.9M
Beneficial use has been delayed due to NYS Environmental Conservation requirement to use scow barges to store dredged material, which delayed the excavation work.			
MNR			
<i>Sandy</i>			
Power Infrastructure Restoration - Substations	Construction	Aug- 17 \$43.8M	Mar- 18 \$44.4M
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.			
MTA CC			
<i>East Side Access</i>			
Manhattan Northern Structures	Construction	Jun- 17 \$361.6M	Oct- 17 \$361.6M
Delay is due to slower than expected completion of contract work and administrative requirements.			

Project	Completion	Goal	Actual
4 All-Agency Yellow Completions (1 new this month)			
NYCT			
<i>Sandy</i>			
Sandy: Cranberry Tube	Construction	May- 17 \$101.9M	Aug- 17 (A) \$104.2M
Delay due to issues encountered during signal testing which resulted in additional signal cut over work required.			
LIRR			
<i>Stations</i>			
Escalator Replacement Program	Construction	Mar- 17 \$11.2M	Apr- 17 (A) \$11.2M
An escalator testing issue at Baldwin station caused the delay.			
<i>Sandy</i>			
Wreck Lead Bridge Systems Restoration (New Item)	Construction	Apr- 17 \$14.9M	Sept- 17 (A) \$14.9M
Beneficial use has been delayed due to NYS Environmental Conservation requirement to use scow barges to store dredged material, which delayed the excavation work.			
MNR			
<i>Stations</i>			
GCT Elevator Rehab Phase 4	Construction	May- 17 \$9.6M	Jun- 17 (A) \$9.8M
The completion has been delayed one month due to design issues that were associated with the A- Car elevator rail backing installation.			

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

Prior Years' Major Commitments – Quarterly Update: September 2017

The status of 2014, 2015 and 2016 major commitments delayed beyond 2016 are tracked until committed and reported to CPOC quarterly.

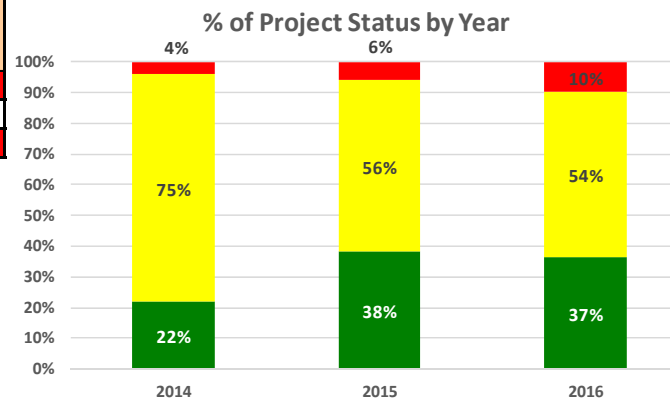
In 2014, agencies set an overall MTA commitments goal of \$6.5 billion including 55 major commitments. In 2014, \$5.8 billion was committed, including 39 major commitments. Of the 16 major commitments that slipped from 2014, nine were made in 2015 and seven slipped beyond 2015. Five of these commitments were made in 2016. The remaining two projects will continue to be tracked as part of this report. To date, \$7.1 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 totaling \$2.9 billion were made. Nine major commitments slipped beyond 2015 and seven achieved in 2016. Two remain delayed and are forecast for award in 2017. To date, \$3.1 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 totaling \$5.0 billion were made. Fourteen major commitments are now forecast for 2017 and 2018 with ten achieved so far in 2017. To date, \$6.3 billion has now been committed.

Actual		MTA-Wide Prior Years' Major Commitments														Post 2017
		On Time	Achieved Late	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	
Goal																
Total	130															
2014	55	12	41										1		1	
2015	34	13	19											2		
2016	41	15	12	1	1	2	3	2	1			1		2	1	

This chart tracks when all major commitments are forecast/achieved versus original goal, starting with those that were committed within 2014, 2015 and 2016, followed by those that slipped beyond 2016. 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 within Goal **YELLOW** = Commitments delayed beyond Goal (already achieved) **RED** = Commitments delayed beyond Goal (not yet achieved)

Prior Year Major Commitments – September 2017– Schedule Variances

Actual Results Shaded

Project	Commitment	Goal	Forecast
8 All-Agency Red Commitments			
NYCT			
<i>Stations</i>			
ADA: Phase 2: 57 Street - 7 Avenue / Broadway	Construction Award	Nov-14 \$35.9M	Nov-17 \$90.0M
Project delayed further due to delay in advertisement and to address budget shortfall which requires budget modification and plan revision approval. Earlier delays due to existing ducts in the vicinity of excavation which impact design completion schedule. Project Cost estimate being finalized prior to advertisement. The design schedule was delayed further due to the need to study alternatives for providing ADA access to the 57th Street Station. A feasibility study to locate the ADA elevators at the 55th Street mezzanine was completed. The team is working on the revised scope of work and conceptual design plans. Design of new scheme started in September 2015. Project cost increased reflecting estimates of the new design scheme.			
ADA: 68 St- Hunter College / Lexington	Construction Award	Sep-16 \$66.8M	Dec-17 \$116.3M
Award Schedule impacted pending resolution of Real estate issues. Project cost increased due additional scope that resulted in additional architectural, structural, electrical and utility relocation work.			
Renew Five Astoria Line Stations	Construction Award	Dec-16 \$71.5M	Oct-17 \$22.8M
Four of the stations are combined into package #2 of the Enhanced Stations Initiative and will be reported in the ESI program. The remaining station is scheduled for award in October.			
<i>Sandy Recovery & Mitigation</i>			
Sandy: 148th Yard Long- Term Perimeter Protection & Power Cable	Construction Award	Dec-16 \$135.1M	Dec-17 \$134.7M
Delayed from Aug to Dec 2017 due to delay in obtaining the necessary easement agreement which prevents us from advertising the project. Negotiations with property owner, Esplanade Gardens, concluded and an agreement was reached. Cost increased reflecting revised RTA.			
Sandy Repairs: Rutgers and Cranberry Tubes	Construction Award	Jun-14 \$154.M	Feb-22 \$165.M
Award of the tubes is done via separate contracts. The Cranberry tube contract awarded in December 2014 while the Rutgers tube was rescheduled to 2022 due to construction sequencing of the tubes. Project cost increased reflecting unfavorable bids received for Cranberry contract.			

Project	Commitment	Goal	Forecast
NYCT (Continued)			
Sandy: 207th Yard Perimeter Protection & Power Cable	Construction Award	Oct-16 \$222.7M	May-18 \$758.3M
Delayed from Dec 2017 to May 2018 due to the need to redesign the perimeter wall to address a DEP concern, which is to avoid interferences with a major water main. Also, CPM is combining the signal and track work which was prepared as a separate project with the perimeter wall and portal work to make it all one project. Cost reflects combined projects including Signals, Track & Switches			
<i>Work Equipment</i>			
Work Train & Special Equipment: 54 Flat Cars	Purchase Award	Dec-15 \$33.5M	Dec-17 \$33.5M
Award re- scheduled to December 2017 due to funding constraints. This project was not considered for priority funding in the first half of 2016. A procurement staff summary was approved to cancel the RFP and issue an "Immediate Operating Need" as a means to expedite the procurement process going forward.			
MTA PD			
<i>Communications</i>			
Penn Station / Atlantic Tunnel Radio Upgrade	Construction Award	Dec-16 \$25.0M	Dec-17 \$25.0M
The 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 – September 2017– Schedule Variances

Actual Results Shaded

Project	Commitment	Goal	Actual
10 All-Agency Yellow Commitments (0 new this quarter)			
NYCT			
<i>Sandy Recovery & Mitigation</i>			
Sandy Mitigation: 7 Stations (8 Stns M/Q/Bx Initiative)	Construction Award	May-16 \$96.3M	Apr-17 (A) \$47.7M
Scope includes Internal Station Hardening. Delayed advertisement resulted in delayed bid opening. Bids received on January 25th. Bid protest was submitted but denied on 2/24. Project awarded in April and Cost reflects favorable bid.			
Sandy Canarsie Tube Restoration & Core Capacity Improvements	Construction Award	Nov-16 \$883.3M	Apr-17 (A) \$674.6M
Project was delayed seeking Board approval for the award. Board has approved and the project was awarded in April. Project cost now reflects full funding for support costs.			
Sandy Mitigation: 9 Stations (9 Stns BK/Q Initiative)	Construction Award	Jun-16 \$100.7M	Mar-17 (A) \$52.8M
Delay in advertisement postponed the award. This was the result of additional time required for design phase drawing, spec and contract document approvals.			
<i>Power</i>			
Power Upgrade: RCC, PCC	Construction Award	Jul-16 \$50.2M	Jan-17 (A) \$55.5M
Project awarded in January. Project cost increased reflecting unfavorable bid			
LIRR			
<i>Stations</i>			
Nostrand Avenue Station	Construction Award	Nov-16 \$21.0M	Jun-17 (A) \$15.7M
The project was initially delayed due to an extended design process prior to advertisement. A further delay to award resulted from coordination of final award from key stakeholders.			

Project	Commitment	Goal	Actual
MNR			
<i>Track</i>			
Rock Slope Remediation (West of Hudson)	Construction Award	Dec-16 \$15.0M	Feb-17 (A) \$10.0M
Due to a protracted procurement the construction award was delayed until February 2017. Actual commitment is lower than the forecasted due to a favorable low competitive bid for construction.			
<i>Signals & Communications</i>			
Positive Train Control	Construction Award	Dec-16 \$57.0M	May-17 (A) \$57.5M
The design of the radio communications was delayed due to radio coverage issues therefore delaying the installation construction which which was rescheduled to be awarded in March 2017. Due to an unfavorable bid the contract was re-bid; an award was executed in May 2017.			
Positive Train Control	Construction Award	Dec-16 \$45.3M	May-17 (A) \$34.8M
The design of the radio communications was delayed due to radio coverage issues therefore delaying the installation construction which which was rescheduled to be awarded in March 2017. Due to an unfavorable bid the contract was re-bid; an award was executed in May 2017. Actual commitment is lower than the forecasted due to an adjustment for CDOT funding.			
MTACC			
<i>East Side Access</i>			
Mid-Day Storage Yard - CQ033	Construction Award	Nov-16 \$266.0M	Apr-17 (A) \$300.8M
Additional time required for extended review process and delay in completion of design documents. Budget updated to reflect award value. This contract has an option of \$2 million which could be exercised at a later date.			
B&T			
Installation of Fire Standpipe and Upgrade of Fire Protection System	Construction Award	Dec-16 \$17.0M	Mar-17 (A) \$19.4M
The delay was attributable to previously outstanding compliance with reporting obligations which have since been resolved.			

Prior Years' Major Completions – Quarterly Update: September 2017

The status of 2014, 2015 and 2016 major completions delayed beyond 2016 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 18 major completions that slipped from 2014, nine were made in 2015 and nine slipped beyond 2015. Since 2015, six of these completions were achieved in 2016. The remaining three projects are forecast for completion in 2017 and 2018. To date, \$6.4 billion has been completed against the original \$5.7 billion goal.

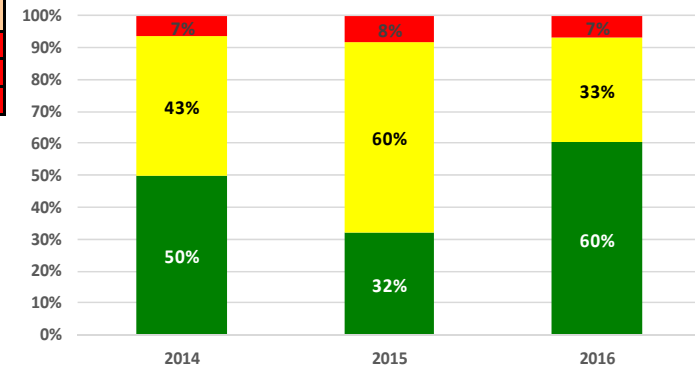
In 2015, agencies set an overall MTA completions goal of \$2.6 billion including 25 major completions. In 2015, 19 major completions totaling \$2.1 billion were made. The remaining six major completions slipped beyond 2015 and four of the six were achieved in 2016. Two remain delayed and are forecast beyond 2017. 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 2nd Ave Subway Phase 1 which achieved beneficial use in December 2016. The six of the seven remaining major completions are forecast for 2017 with four achieved so far in 2017. To date, over \$4.1 billion has been completed.

Actual Goal		MTA-Wide Prior Years' Major Completions													Post 2017
		On Time	Achieved Late	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	
Total	114														
2014	46	23	20									1		1	1
2015	25	8	15												2
2016	43	26	10	1	1		1		1			1	1		1

This chart tracks when all major completions are forecast/achieved versus original goal, starting with those that were completed within 2014, 2015 and 2016, followed by those that slipped beyond 2016. 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.

% of Project Status by Year



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 – September 2017– Schedule Variances

Project	Completion	Goal	Forecast	Project	Completion	Goal	Forecast
8 All-Agency Red Completions				MNR			
NYCT				Grand Central Terminal			
Stations				GCT Leaks Remediation	Construction Completion	Dec-16	Mar-18
ADA & Station Renewal at Ozone Park- Lefferts Blvd/ LIB	Construction Completion	Aug-16	Nov-17			\$18.6M	\$18.6M
		\$23.9M	\$23.8M	Due to time impacts associated with additional unforeseen structural repairs to the 45th St Bridges and historic 45th St bridge panel restoration production delays the project completion has been rescheduled for March 2018.			
Recent delay due to additional scope items added to the contract. The contractor submitted time extension request being reviewed by NYCT. Earlier delays due Gutter Support Design Modification at the East End. Contractor has requested time extension for this work.							
Depots / Rolling Stock				MTACC			
AVLM: Paratransit - 2,273 Vehicle	Purchase	Dec-14	Dec-17	East Side Access			
		\$35.8M	\$37.0M	Plaza Substation and Structures (CQ032)	Construction Completion	Aug-16	Oct-17
Java software testing has not begun. As the software design-build commenced for modification #3 it was found that the current server platform was not fully adequate. Along with the new hardware specs to host new software, the current servers are also operating with the old Windows operating system. MTA- IT has mandated Agency wide compliance for servers to be migrated to the latest Windows operating system. The substantial completion has to be delayed to accommodate deployment of new servers with the latest software. Prior delay of 12 months and cost increased by \$2 million to pre-wire additional 433 Paratransit vehicle.						\$250.2M	\$257.7M
				Substantial completion date delayed to reflect additional Con Ed utility work at the yard services building, which will now take place after the summer season and associated as-builts required. Completion of final work items has taken longer than expected.			
Signals and Communications				GCT Councourse Finishes Early Work	Construction Completion	Apr-14	Oct-17
PA/CIS at 45 Stations - Install Cable	Construction Completion	Dec-15	Jan-18			\$56.7M	\$58.0M
		\$56.1M	\$56.1M	Delay due to substantial SCADA (supervisory control and data acquisition) redesign work. Delays in the delivery of the medium voltage switchgear has delayed forecasted substantial completion. Additionally, a facility control room leak has developed and mitigation is required. Delays due to productivity being lower than expected. Current delay is as a result of additional time required for coordination of final Con Ed activities, which will now take place after the summer season. Completion of final work items has taken longer than expected.			
Project delayed to 2018 due to slow progress of work. In-house forces were diverted to address other safety sensitive projects.							
LIRR							
Signals and Communications							
Centralized Traffic Control	Construction Completion	Jun-15	May-18				
		\$12.9M	\$12.9M				
As a result of a re- evaluation of the Theater Operations, it was determined that a re- design of the Theater is necessary.							
Power							
F Circuit Breaker House	Construction Completion	Oct-14	Feb-18				
		\$7.2M	\$7.2M				
Project on- hold pending power load study							

Prior Year Major Completions – September 2017– Schedule Variances

Actual Results Shaded

Project	Completion	Goal	Actual
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4 All-Agency Yellow Completions (0 new this quarter)

NYCT

Stations

Replace 11 Hydraulic Elevators	Construction Completion	Aug-16	Feb-17 (A)
		\$24.M	\$24.1M

Project completed in February

SIR: Station Construction Arthur Kill	Construction Completion	Aug-16	Jun-17 (A)
		\$23.2M	\$25.3M

Project completed. The current delay is for the demolition of the adjacent Nassau and Atlantic Stations which will be replaced by Arthur Kill. The platforms will be removed under upcoming weekend GOs. Substantial Completion will be declared after this is complete. Project cost increase due to increased project duration.

Track

2016 Annual Track Program	Construction Completion	Dec-16	Jan-17 (A)
		\$17.6M	\$17.6M

Completion delayed due to December snowstorm that prevented completion of the final crossing.

MTA Bus

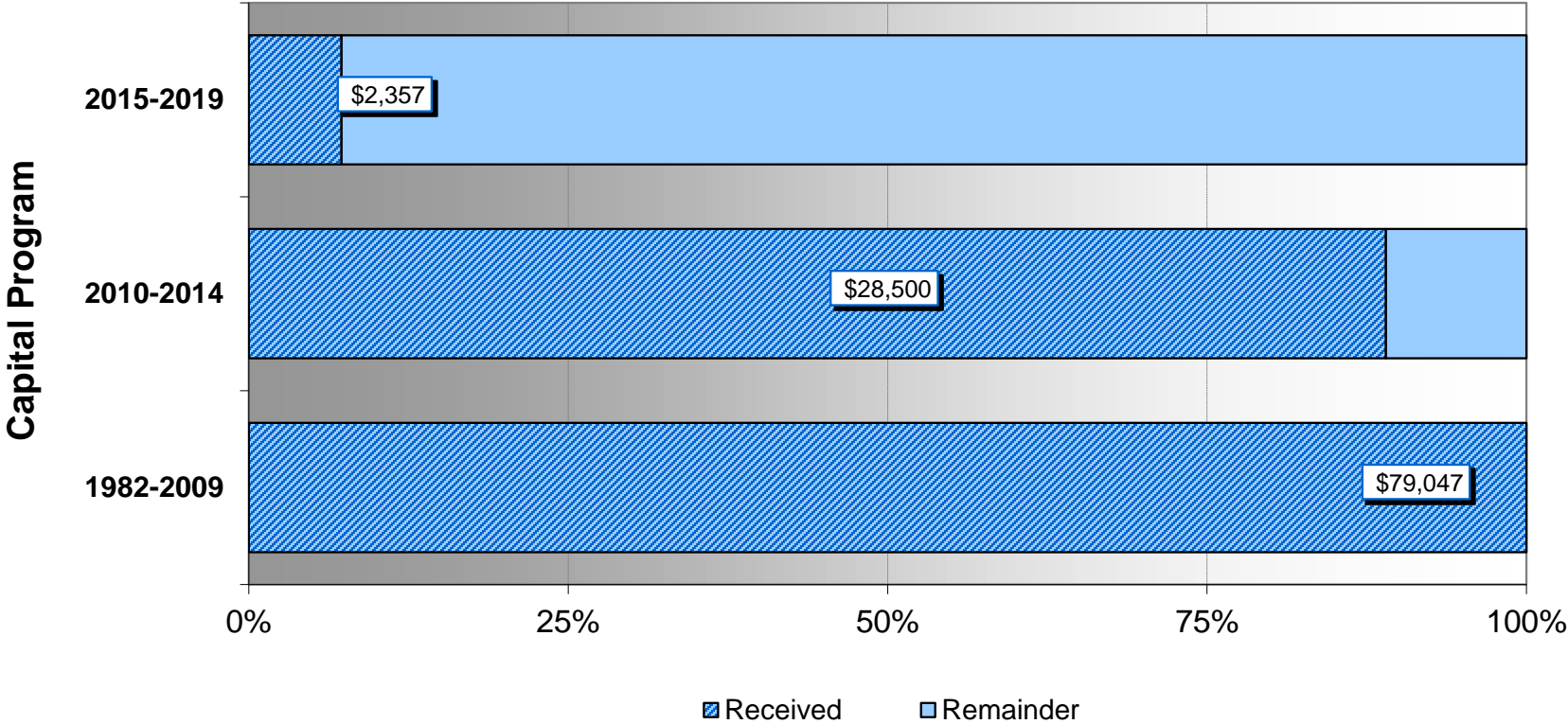
Bus Company Projects

Security Upgrades - Rockaway and Baisley Park	Construction Completion	Sep-16	Apr-17 (A)
		\$9.9M	\$9.9M

Delay was due to negotiations for remaining additional work orders (AWOs).

Status of MTA Capital Program Funding

Capital Funding (September 30, 2017)
\$ in millions



Capital Funding Detail (September 30, 2017)

2010-2014 Program

Federal Formula, Flexible, Misc
 Federal High Speed Rail
 Federal Security
 Federal New Start
 Federal RIFF Loan
 City Capital Funds
 State Assistance
 MTA Bus Federal and City Match
 MTA Bonds (Payroll Mobility Tax)
 Other (Including Operating to Capital)
 B&T Bonds
 Hurricane Sandy Recovery
 Insurance Proceeds/Federal Reimbursement
 PAYGO
 Sandy Recovery MTA Bonds
 Sandy Recovery B&T Bonds

	Funding Plan	Receipts		
	<u>Current</u>	<u>Thru August</u>	<u>This month</u>	<u>Received to date</u>
	\$5,544	\$5,544	\$ -	\$5,544
	295	295	-	295
	189	100	-	100
	1,257	-	1,257	1,257
	-	-	-	-
	729	607	-	607
	770	400	-	400
	132	108	-	108
	11,772	10,840	-	10,840
	1,746	1,445	-	1,445
	2,018	1,916	-	1,916
		-	-	-
	6,343	4,727	1,090	5,818
	235	81	-	81
	758	-	-	-
	230	89	-	89
Total	32,017	26,152	2,347	28,500

2015-2019 Program

Federal Formula, Flexible, Misc
 Federal Core Capacity
 Federal New Start
 State Assistance
 City Capital Funds
 MTA Bonds
 Asset Sales/Leases
 Pay-as-you-go (PAYGO)
 Other
 B&T Bonds & PAYGO

	Funding Plan	Receipts		
	<u>Current</u>	<u>Thru August</u>	<u>This month</u>	<u>Received to date</u>
	\$6,956	\$163	\$867	\$1,030
	100	-	-	-
	500	-	-	-
	8,466	65	-	65
	2,492	120	-	120
	7,558	12	-	12
	600	-	-	-
	2,270	1,094	-	1,094
	575	36	-	36
	2,940	-	-	-
Total	32,457	1,490	867	2,357