PMOC MONTHLY REPORT

East Side Access (MTACC-ESA) Project

Metropolitan Transportation Authority

New York, New York

Report Period January 1 – January 31, 2018

PMOC Contract No. DTFT60D1400017

Project No. DC-27-5287, Task Order No. 0002, Work Order No. 06

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Length of time on project: Ten years on project for Urban Engineers

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EXECUTIVE SUMMARY

This summary highlights key events and important issues for the current month.

1. Overall Program Status: The current Overall Program is 74.8% complete versus 78.7% planned (based on invoice cost).
2. Construction Status: The Construction Status is 75.0% complete versus 79.8% planned (based on invoice cost).
3. New Contracts Awarded/Active Contracts Completed: None.
4. Construction /Design/Procurement Progress Issues: CM014B, CS179, CS084, VS086, CH061A.
5. Program Funding: Additional funding for forecast project overruns will not be available until the 2020-2024 Capital Planning Cycle. MTACC evaluating interim budget solutions; results anticipated by March 31, 2018.
6. (b)(4) [redacted]
7. Risk Management: The Accelerated Amtrak Penn Station Program, May/Sep 2017 – had minimal impact. Risk resolved. Program resumed January 2018 until May 2018. Through January 31, 2018, minimal impact.
8. Harold Interlocking: Pre-cutover signal testing and construction leading up May 2018 cutover continued through January 2018.
9. Key Stakeholder Issues: LIRR – Late completion of Positive Train Control design; Amtrak – Continuing Force Account availability issues; MTACC - Change Order processing issues.
10. Construction Safety: 1.85 – Lost Time and 2.78 Recordable Injuries during December 2017.
11. ELPEP Compliance: No issues.
12. Project Management Plan: No issues.

All Project Sponsor cost and schedule data included in this report is based on the MTACC "East Side Access November 2017 Progress Report ", and referenced in this report as the ESA November 2017 MPR (Monthly Progress Report), which has a cost and schedule status data date of December 1, 2017.

MONITORING REPORT

Report Format and Focus

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60D1400017, Task Order No. 0002. Its purpose is to provide information and data to assist the FTA as it continually monitors the Project Sponsor's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Project Sponsor continues to be ready to receive federal funds for further project development.

This report covers the project management activities on the East Side Access (ESA) Mega-Project managed by MTA Capital Construction (MTACC) with MTA as the Project Sponsor and financed by the FTA FFGA. The PMOC notes that the FFGA Amendment was fully executed with MTA's sign-off on August 2, 2016. The amended FFGA incorporates the changes in the Baseline Cost Estimate and Revenue Service Date that have occurred since 2006 when the original FFGA was signed.

1.0 PROJECT STATUS

a. Engineering Design and Construction Phase Services

The ESA November 2017 MPR shows that the overall Engineering effort is 99.0% complete as compared with the planned completion of 100%; and, 97.7% of the overall EIS and Engineering budget has been invoiced, including the Design budget, of which 97.8% has been invoiced.

Status of Construction Packages Advertised

CS086, Systems Package 2 – Tunnel Systems, was advertised on August 10, 2017. A single proposal was submitted on October 31, 2017. This will be a negotiated procurement using the RFP method. Negotiations with the proposer continued through January 2018.

CH057D, Harold Track Work, includes completion of all the remaining track work in the Harold Interlocking Northeast and Southeast Quadrants. The 100% design was approved and the package has been finalized. Contract was advertised on November 30, 2017.

Status of Construction Packages Not Awarded

CM015 – 48th Street Entrance: Design work remained suspended through January 2018. MTA has notified the building owner that construction of the 48th St. Entrance has been deferred. The PMOC notes that MTACC-ESA is developing an alternative LIRR GCT entrance at 47th Street.

CH058A, Harold Structures – Part 3A, B/C Approach, will include construction of the Tunnel B/C approach structure. NYCDOT approved the package as revised to include the alternate support of excavation for the existing 39th Street Bridge piers. The scope of the required catenary work for Amtrak Force Account FHA04A has been finalized and is included in PCO 222. The scope also includes demolition of the existing LIRR GO2 Substation. The 100% design package was submitted on December 1, 2017. Bid package preparation continued through January 2018.

FQA33A, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for west end yard access to the Amtrak mainline through a connection from Sub 4 to Line 2. Based on review and discussions between ESA, GEC, and LIRR, it was decided to develop an expanded Option D scheme that will add additional track along the south section of the west end of the MDSY. LIRR will review the package and then ESA and LIRR will engage Amtrak for their concurrence. This will be the only exit route from the MDSY that will be provided under the ESA Program.

FQA33B, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for a second west end yard access to the Amtrak mainline through a connection from Sub 3 to Line 4. The 100% design package remains temporarily on hold pending finalization and approval of the Sub 4 to Line 2 connection to be built under FQA33A. This exit route will be constructed by Amtrak after completion of construction of the MDSY by CQ033 and upon arranging the funding source.

FQL33, Mid-Day Storage Yard Facility – LIRR F/A, provides LIRR force account construction support for CQ033. LIRR is reviewing the 100% design package.

Positive Train Control: The MOU between MTACC and LIRR for the implementation of Positive Train Control (PTC) on ESA was executed, and the Technical Concurrence Document has been agreed upon by MTACC and LIRR. LIRR did not complete the PTC design by December 31, 2017, as previously forecast, and the new target date is now March 31, 2018. The GEC is preparing the initial design modifications to Contracts CS179, VS086 and CS086, which will provide for the LIRR designed PTC overlay onto the ESA systems. In early October 2017, LIRR formally requested the FRA to waive the requirement to have PTC operational in the Harold Interlocking by December 31, 2018 based on the interlocking's status as an active construction area. LIRR submitted a revised request to the FRA in late December 2017. The FRA's response is still pending.

Status of MTACC and LIRR Review and Approval of Systems Contractors' Final Designs

CS179, Systems Facilities Package No.1: The backlog of overdue submittal and RFI reviews noted in earlier reports continues to be a significant unresolved issue for the CS179 project team. The contractor continues to assert that overdue responses on design submittals and Requests for Information (RFI) and unresolved Notices of Change (NOC), are impacting the completion of design work and delaying the contract schedule. The contractor continues to note that there are 67 NOCs, 52 for which MTACC was to issue Contractor Proposal Requests (CPRs) that are contributing to its inability to finalize the design. The completion of Final Design (FD) for all 10 Control Systems, which were scheduled for completion 20 months ago, has not occurred yet and the FD of the 19 Non-Control Systems is also delayed. The full impact of the Control and Non-Control System FD delays on contract progress remains undetermined at this time. Previously noted Buy/Ship America issues that could impact design completion also remain unresolved.

CS084, Traction Power Systems Package 4: The contractor contends that unresolved design issues, differing site conditions, and coordination issues are causing day-to-day delays to the completion of this contract. The contractor indicates that all of the contract milestones are already delayed and will continue to experience day-to-day delays until the noted problems and issues are resolved.

VS086, Systems Package 3 – Signal Equipment Procurement: The contractor continues to raise concerns over the timeliness of responses from MTACC on design submittals and inquiries and asserts that the lack of timely responses is causing day-to-day delays in the progression of the work. MTACC needs to make key design decisions that have the potential to impact designs already in progress, interim contract milestones, and the overall substantial completion of this contract.

b. Procurement

The November 2017 MPR, shows that total procurement for the ESA project was 88.4% complete, with $8.995 billion awarded of the $10.178 billion current project budget (ESA Program only).

The status of the remaining major near-term procurements is summarized below:

- CM015, 48th Street Entrance: The design work on CM015 remains suspended.
- CS086, Tunnel Systems Package 2 – Tunnel Signals, is being negotiated as a RFP. The planned NTP date has been postponed from Jan 2, 2018, to February 5, 2018.
- CQ057D, Harold Structures – Part 3: Trackwork, was advertised on November 30, 2017, and bids are due on February 7, 2018.

c. Construction

In the November 2017 MPR, MTACC reported that total construction progress reached 75.0% complete versus 80.8% planned.

Manhattan Contracts

Costs and schedule data are tabulated below for active Manhattan contracts.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CM006	361.6	350.2	11.4	346.1	352.8	100.0%	98.8%	6/1/17	12/29/17	
	nc	nc	nc	(-0.1)	nc	nc	+0.5%	nc	+77cd	
	361.6	350.2	11.4	346.0	352.8	100.0%	99.3%	6/1/17	3/16/18	
CM007	712.3	663.4	48.9	186.5	702.4	35.1%	28.1%	1/28/20	6/4/20	
	nc	nc	nc	+22.5	(-0.3)	+4.2%	+3.4%	nc	nc	
	712.3	663.4	48.9	209.0	702.1	39.3%	31.5%	1/28/20	6/4/20	
CM014A	61.1	60.5	0.6	58.6	58.1	100.0%	96.8%	9/7/15	11/1/15	2
	nc	nc	nc	+0.3	nc	nc	+0.6%	nc	+850cd	
	61.1	60.5	0.6	58.9	58.1	100.0%	97.4%	9/7/15	2/28/18	
CM014B	463.6	443.9	19.7	201.9	506.0	79.3%	45.5%	8/18/18	3/4/20	1
	nc	+1.8	(-1.8)	+12.7	+6.1	+1.5%	+2.6%	nc	+75cd	
	463.6	445.7	17.9	214.6	512.1	80.8%	48.1%	8/18/18	5/18/20	
VM014	46.1	34.2	11.9	20.2	45.0	NA	58.9%	10/25/19	10/16/20	
	+0.1	+0.7	(-0.6)	nc	+0.6	NA	nc	nc	nc	
	46.2	34.9	11.3	20.2	45.6	NA	58.9%	10/25/19	10/16/20	

Notes: For each contract: line 1 = prior value; line 2 = period change; nc = no change and, line 3 = current value.
1 Current approved contract does not include full scope.
2 The substantial completion date was established but was not declared.

CM006 – Manhattan North Structures: Construction Progress: Through January 2018, the CM006 contractor continued to complete base contract work, punch list work items, and completion of NCR work necessary for SC.

CM007 – GCT Station Caverns and Track:
Construction Progress:

South Back of House, East: Continued duct bench construction.

South Back of House, West: Continued CMU wall installation.

South Back of House, East and West: Continued stairway construction.

North Back of House, East and West: Continued electrical work, HVAC piping, and duct bench wall construction.

Cross Passageways #1 through 6 and Access Tunnel #3: Continued PAC wall construction.

East and West Caverns: Continued lower level platform precast wall installation, under platform conduit, ductwork, and piping. Continued precast smoke plenum installation, and Mezzanine knee wall construction West Cavern.

Through January 28, 2018 MTACC reports that precast beams and deck are 75% complete. Precast platform walls and deck panels are 23.7% complete. Precast smoke plenum at the Upper Level in the West Cavern is 21.5% complete.

Track: Continued construction of the Direct Fixation Track on Fasteners (DFF) at Track WB1 on concrete plinths. Continued construction of the Direct Fixation Track on Resilient Tie Blocks (RTB) at Tracks A, B/C, and D. Continued laboratory qualification testing of High Attenuation DFF and Special Trackwork (ST) RTB.

CM014A – Concourse and Facilities Fit-Out Early Work: Construction Progress: Through January 2018, the contractor continued to complete punch list items.

CM014B – Concourse and Facilities Fit-Out: Construction Progress: Through January 28, 2018, MTACC reported that structural steel erection in the new GCT concourse was 24% complete by piece count and 28% complete by tonnage. This work is proceeding very slowly and is impacting the schedule and the CS179 contract. Electricians continued with installation of communication racks and available boxes for electronic doors. Installations of air handling units, fan coil units, and other mechanical installations continued throughout the concourse.

Biltmore Connection and Elevator #22: The existing newsstand in this area has been removed and the work zone has been cordoned off and secured. At Elevator #22, Placement of Shaft Walls to the Sub-Cellar Level continues.

Wellways: In Wellways #1 and #2, splicing of sections and fit-out of the units and machine room work continues. In Wellways #3 and #4 finish work is complete and work by the CS179 contractor nears completion.

Elevator #14: Installation continues.

44th Street Vent Building: CM014B is installing the sprinkler system.

47th Street Cross Passage: At Elevator #13, a Stop Work Order has been directed because the contractor has uncovered unforeseen conditions. The elevator shaft does not extend as far down as expected and needed to take the elevator down to the Concourse. The contractor is performing demolition and underpinning in the shaft.

East 48th Street Entrance: Steam main work continues.

East 50thStreet Vent Building: The Vent Building continues in full fit-out mode. Work includes pulling 600v cable at the Concourse and 1st Basement Levels and, installation of conduit and lighting. Installation of Elevator #9 has started. Installation of sprinklers is ongoing.

VM014 – Vertical Circulation Elements (Escalators and Elevators):
The contractor continues to report that the access dates that it receives from the CM014B contractor continue to be extended. The PMOC projects that this contract substantial completion date will be extended.

Construction Progress: MTACC reports that, through December 1 2017, 13 of the 22 escalators and 12 of the 14 elevators have been fabricated for the CM014B contract.

Biltmore Room Connection: The VM014 contractor has been previously advised by the CM014B contractor that it will not make any provisions to allow VM014 to rig the Biltmore Room escalators

into place. The contractor further advised that the CM014B contractor still hasn't answered its RFIs on the rigging. It will take 2-3 weeks to have any rigging plan approved. 1 of the 2 escalators for this area has been fabricated.

Queens Contracts

Costs and schedule data are tabulated below for active Queens Contracts.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CQ032	263.9	262.4	1.5	260.6	263.7	100.0%	99.3%	9/6/16	12/29/17	
	+1.5	nc	+1.5	nc	nc	nc	nc	nc	+105cd	
	265.4	262.4	3.0	260.6	263.7	100.0%	99.3%	9/6/16	4/13/18	
CQ033	308.0	291.7	16.3	29.8	308.0	NA	10.2%	8/10/20	8/10/20	
	nc	+0.1	(-0.1)	nc	nc	NA	nc	nc	+120cd	
	308.0	291.8	16.2	29.8	308.0	NA	10.2%	8/10/20	12/8/20	

Notes: For each contract: line 1 = prior value; line 2 = period change; nc = no change and, line 3 = current value.

CQ032 – Plaza Substation and Queens Structures: Construction Progress: : During December 2017, the CQ032 contractor continued punch list work, preparation of as-built information, O&M Manuals, training, NCR resolution, etc. necessary for SC.

CQ033 – Mid-Day Storage Yard Facility: Construction Progress: During January 2018, the CQ033 contractor continued traction power ductbank work, yard lighting work, sanitary sewer installation, excavation activities, preparation for Personnel Access Bridge work, CAM platform work (warm weather dependent), and demolition of the Montauk approach structure. Demolition of the Montauk Cutoff bridge superstructure over active main line tracks was completed in January 2018.

Systems Contracts

Costs and schedule data are tabulated below for active Systems contracts.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CS179	606.9	551.9	55.0	353.0	604.2	64.1%	64.0%	7/1/20	11/30/20	
	nc	+0.7	nc	+9.2	+1.7	+2.1%	+1.6%	nc	nc	
	606.9	552.6	55.0	362.2	605.9	66.2%	65.6%	7/1/20	11/30/20	
CS084	79.7	73.0	6.7	11.1	79.7	71.6%	15.2%	12/2/19	8/4/20	
	nc	nc	nc	(-0.1)	nc	+2.6%	nc	nc	+29cd	
	79.7	73.0	6.7	11.0	79.7	74.2%	15.2%	12/2/19	9/2/20	
VS086	21.8	19.9	1.9	6.6	21.9	NA	33.1%	10/14/19	10/14/19	
	nc	nc	nc	+1.7	+0.2	NA	nc	nc	nc	
	21.8	19.9	1.9	8.3	22.1	NA	33.1%	10/14/19	10/14/19	

Notes: For each contract: line 1 = prior value; line 2 = period change; nc = no change and, line 3 = current value.

CS084 – Tunnel Systems Package 4 – Traction Power Systems: The information for CS084 is supplemented by discussions at a mid-January 2018 Progress Meeting that reviewed contract progress up to January 10, 2018. The contractor continues to contend that the variance in the actual versus planned progress is because: 1) funds have not been expended as originally projected due to delays in approving the substation designs and equipment; 2) fabrication of the substations and procurement of equipment is behind schedule because designs were not approved as forecast; and,

3) the lack of access to substation rooms has precluded the contractor from performing construction activities. The contractor continues to indicate that all of the contract milestones are delayed as a result of delays associated with the approval of substation designs and the resolution of Supervisory Control and Data Acquisition (SCADA) requirements. The timely development and issuance of necessary contract modifications continues to be an issue requiring improvement.

Design Progress: The contractor continues to assert that previous delays in receiving comments from MTACC for C08 facility switchgear, SCADA requirements, PLC information, and general C08 substation design impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. Despite continued interaction by MTACC senior management with LIRR senior management, the LIRR's submittal/comment review process is still in need of improvement and an item of concern. The design of the C08 Substation continues to be the primary critical path for the contract; and the continuing delay in approving the designs for this location are, per the contractor, causing a day-to-day delay in the overall contract schedule. The main issue continues to be the previously noted re-design of the C08 communications and storage rooms. The contractor continued to advise MTACC that it needs information about the communications equipment and requirements to re-design the C08 rooms and ensure that all structural requirements for the pre-fabricated building are adequate. Design issues and a previously noted potential issue regarding cable size requirements for the C06/C07 substations remain unresolved. The PMOC continues to have concerns about the length of time it is taking to address the various design approval issues.

Construction Progress: The extra L3 Electrical Service work is complete and was turned over to LIRR. The contractor continues to cite coordination issues, design approval delays, and differing site conditions as its reasons why work at the various locations cannot progress. MTACC issued Stop Work Orders (SWO) at various locations to have time to address some of the differing site conditions and to issue contract modifications, where appropriate. Dates for lifting the SWOs were not established. Each month, the contractor submits a list of what it contends are deficiencies that preclude beginning construction activities in, or completing designs for, the specific facilities. Every one of the eight substations has noted deficiencies precluding the start of construction by the contractor. While MTACC continues to review the list for validity and has indicated that it would take any required appropriate action, many of the items have, from month to month, remained on the list with no apparent resolution by MTACC. A number of the cited issues involve coordination with other contracts and will require the development and issuance of contract modifications to various contracts. Both MTACC and the contractor continue to review the possibility of re-sequencing the work in the substations to progress as much work as soon as possible. The previously noted issue regarding the installation of traction power feeder cables from the C08 substation to the tracks (i.e. the apparent absence of the complete MTA ductwork and manhole system from the substation to the track) remains as a significant risk to the timely completion of this contract. A new issue of significant importance was recently identified by the contractor; that of access to the C01/C02 substation facility to deliver substation equipment. The contractor needs full track access from the Yard Lead tunnel portal in Queens to deliver the equipment via work train; but, from a schedule perspective, it does not appear that the track will be fully installed when the equipment is ready for delivery. MTACC needs to coordinate the track installation work and the various contract schedules. The PMOC previously raised concerns with MTACC that surveys of the remaining substation have not been completed to investigate the conduit/manhole system.

CS179 – Systems Package 1 – Facilities Systems: The planned progress is based on the original contract scope and planning, which does not take into account any approved or anticipated scope changes. MTACC reports that the SC date for this contract remains at November 29, 2020. The contractor continues to show an SC date on-target for July 1, 2020. However, MTACC questions the validity of the contractor's schedule because of numerous disagreements over logic ties, activity durations, out of sequence activities, and the contractor's ability to complete over 5,000 activities by September 1, 2018, to begin Integrated Systems Testing (IST). The PMOC agrees that the contractor's schedule appears to be unrealistic, especially considering that the contractor acknowledges that its schedule: 1) is based on the premise that all submitted designs are final (which is not the case); 2) considers that all field work is ready-to-go as currently understood (which is not the case); 3) does not include any design or testing contingency; 4) does not take into consideration any impact from the open NOC it submitted; and 5) does not address any impacts to the contract work from SWOs that remain in effect past the data date of the schedule. MTACC's goal to develop a realistic schedule by the end of November 2017 was not met and a new date for completion of that effort is undetermined. The three previously reported Buy/Ship America issues – HVAC units, public address system speakers, and video monitor display panels remain unresolved and pose schedule risks to the successful and timely completion of this contract. There are also 67 NOCs, 52 of which MTACC agreed to issue Contractor Proposal Requests (CPR), that are contributing to the contractor's inability to finalize the system designs. MTACC's inability to develop and issue promised CPRs for the NOCs is a significant issue impacting progress on the contract. The contractor indicates that it has been waiting in excess of 200 days for 26 of the 52 NOCs needing CPRs; with 3 in excess of 400 days and 2 more in excess of 500 days.

Design Progress: The approval of all 10 control system FDs, a critical activity, is now 20 months late. Despite having only 4 of the 10 Control System FDs approved by the LIRR, MTACC directed the contractor to move forward with the development of test plans and equipment fabrication. The contractor is also responsible to design, install, and test 19 Non-Control systems; several of which have FD progress falling behind schedule. The contractor is moving forward with the fabrication of equipment racks based on its interpretation of the FDs it submitted, even if the FDs are unapproved. Moving forward without approved designs is, as previously noted, a risk to the timely completion of this contract.

Construction Progress: In January 2018, the CS179 contractor continued progressing a substantial amount of various elements of work (installation of conduit, cable, fire stopping, fire standpipe, lighting, etc.) in the tunnels and at the various substation facilities where access was available and conditions warranted. Coordination issues with other contractors, unexpected field conditions, unresolved design issues, water infiltration remediation efforts, open NOCs/CPRs, and numerous Stop Work Orders continue to impact further progress.

VS086 – Systems Package 3, Signal Equipment Procurement: The information for VS086 is supplemented by discussions at a mid-January 2018 progress meeting that reviewed progress up to January 10, 2018. In July 2017, MTACC issued a contract modification to adjust the interim milestones for this contract. However, in October 2017, both MTACC and the contractor agreed that the contract milestones need to be re-baselined again to address open design, fabrication, and testing issues noted in previous PMOC reports and under Design Progress, below. It remains unclear when this schedule refinement will take place; or, if it will impact the contract substantial completion date.

Design Progress: The contractor continues to raise concerns over the timeliness of responses from the MTA on design submittals and inquiries and asserts that this lack of timely responses caused,

and continues to cause, day-to-day delays in the progression of the work. There are five major unresolved design issues cited by the contractor that continue to impact progress towards design completion. The five issues are: 1) Light emitting diodes (LED) for tunnel signal units; 2) TRU-III track circuit equipment; 3) PTC design; 4) ATT-20 track circuit equipment; and, 5) Low-Smoke-Zero-Halogen (LSZH) signal case wiring. The most critical of these issues is the need for approval of a the LSZH case wiring, as there is a 12 to 14 week lead time from the time of issuance of a purchase order to the delivery of the wire to the contractor; and then, a significant time duration to replace all the wiring already in the cases before the FAT of the signal cases can be accomplished. Once the FAT is successfully accomplished, the delivery of Plaza Interlocking, which was to occur in April 2017, can procced; that delivery date is, now undetermined. The impact of this delay in delivery on the overall contract is unknown. The timely development and issuance of contract modifications continues to be an issue impacting progress. MTACC further notes that any impact on overall design completion, equipment procurement, and schedule can only be determined when design issues are resolved and contract modifications, if any, are approved.

Harold Interlocking Contracts

Costs and schedule data are tabulated below for active Harold contracts.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CH061A	42.0	34.3	7.7	12.2	38.0	63.2%	35.5%	5/28/18	5/28/18	
	nc	nc	nc	+1.6	(-0.4)	+4.9%	+4.6%	nc	nc	
	42.0	34.3	7.7	13.8	37.6	68.1%	40.1%	5/28/18	5/28/18	

Notes: For each contract: line 1 = prior value; line 2 = period change; nc = no change and, line 3 = current value.

CH061A – Track A Cut and Cover Structure: Construction Progress: During January 2018, the CH061A contractor began placement of waterproofing at the Tunnel A portal and sidewall concrete at the mechanical room, and continued excavation and installation of support of excavation at the east end ramp. Although the ESA PMT indicates that Substantial Completion date will remain May 2018, the PMOC believes that, based on remaining construction, SC could be delayed by up to two months or more.

Railroad Force Account Contracts

Costs and schedule data are tabulated below for active Force Account contracts.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
FHA01	18.8	18.8	--	18.6	18.8	100.0%	98.9%	2/4/16	7/7/18	1,2
	nc	nc	nc	nc	nc	nc	nc	nc	(-203.0)	
	18.8	18.8	--	18.6	18.8	100.0%	98.9%	2/4/16	12/16/17	
FHA02	60.2	60.2	--	54.0	66.4	93.4%	89.7%	8/15/17	7/7/18	1,2
	nc	nc	nc	nc	nc	6.6%	0.5%	nc	+232.0	
	60.2	60.2	--	54.0	66.4	100.0%	90.2%	8/15/17	2/24/19	
FHL01	24.4	24.4	--	24.4	24.4	100.0%	100.0%	4/9/15	4/18/18	1,2
	nc	nc	nc	nc	nc	nc	nc	nc	+50.0	
	24.4	24.4	--	24.4	24.4	100.0%	100.0%	4/9/15	6/7/18	
FHL02	96.6	84.6	12.0	88.6	96.6	100.0%	91.8%	11/25/16	8/26/20	1,2
	nc	+12.0	(-12.0)	+2.6	nc	nc	2.7%	nc	(-7.0)	
	96.6	96.6	--	91.2	96.6	100.0%	94.5%	11/25/16	8/19/20	

Notes: For each contract: line 1 = prior value; line 2 = period change; nc = no change and, line 3 = current value.
1 Current approved contract does not include full scope.
2 Contract Awards for Force Account work are made on an as needed basis. Actual Cumulative % Complete based on Total Budget Value, not Approved Contract.

FHA01 – Harold Stage 1 Amtrak: Construction Progress: Amtrak did not perform any significant Stage 1 construction during January 2018. The PMOC is not concerned that Amtrak did not do any Stage 1 Construction during January 2018, because the remaining work will only take one day, and the ESA PMT has indicated that it can be done after the May 2018 Signal Cutover.

FHA02 – Harold Stage 2 Amtrak: Construction Progress: Amtrak did not perform any significant Stage 2 construction during January 2018. The PMOC is concerned about this because it includes Amtrak signal work in support of the LIRR May 2018 Cutover which must be done prior to that.

FQA65 – Loop Interlocking Amtrak: The PMOC notes that FQA65 is a Regional Investment project that will provide independent utility not required for LIRR service into GCT, although it can impact the FFGA Harold scope of work by placing additional demands for scarce Amtrak force account resources.

Construction Progress: Amtrak did not perform any significant FQA65 construction during January 2018.

FHL01 – Harold Stage 1 LIRR: During January 2018, LIRR 3rd Rail personnel continued installation of 3rd rail traction power cables between main line tracks and the new G02 Substation.

FHL02 – Harold Stage 2 LIRR: Construction Progress: During January 2018, LIRR signal personnel continued to perform FRA signal tests and other pre-cutover activities in preparation for the cutovers of the new "H1", "H2", "H5", "H6", and Location 30 Central Instrument Locations (CILs) scheduled for May 2018.

d. Quality Assurance and Quality Control

The PMOC reports Quality Assurance/Control issues in its quarterly comprehensive reports. MTACC did not report any significant issues regarding Quality Assurance or Quality Control in its ESA November 2017 MPR.

2.0 SCHEDULE DATA

Status and Schedule Contingency

The schedule information in this report is based on the ESA Integrated Project Schedule (IPS) 100, having a data date of December 1, 2017, and IPS Progress Report. The December 1, 2017 IPS forecast for the Target Revenue Service Date (RSD) remains April 15, 2021, and the Late RSD remains December 13, 2022.

(b)(4)

[redacted]

[redacted]

Table 2.1: Schedule Contingency – December 1, 2017 ESA IPS 100

(b)(4)

Program Primary Critical Path – Harold Interlocking

The ESA November 1, 2017 IPS shows that the Program primary critical path did not change and runs through work in Harold Interlocking, as reported previously. Table 2.2 shows the contracts and work that comprises the Harold work path, along with the IPS forecast start and finish dates.

Table 2.2: Critical Path – December 1, 2017 IPS

Contract / Scope	Duration	Start	Finish
FHL02: CIL cutovers pre-testing and cutovers	170 CDs	1-Dec-17	20-May-18
CH057D/FHA03/FHL03/FHL04: NE quad prep, outage, B/C approach prep, switch work	160 CDs	21-May-18	28-Oct-18
FHL02: Harold CIL decommissioning	28 CDs	29-Oct-18	26-Nov-18
CH058A: Track B/C approach work & catenary structures	665 CDs	26-Nov-18	21-Sep-20
FHL04: testing & cutover of 4C	84 CDs	23-Sep-20	16-Dec-20
Train contract staffs LIRR prior to 3 months period	29 CDs	17-Dec-20	15-Jan-21
LIRR 3 month period	91 CDs	16-Jan-21	17-Apr-21
Target Revenue Service Date			**15-Apr-21**
ESA Program Schedule Contingency	(b)(4)		
Late Revenue Service Date			

Discussion of Progress along the Critical Path

The December 1, 2017 IPS shows that there were no changes to the primary critical path through Harold Interlocking and achieved the planned progress during the update period. Work is progressing on Harold CIL cutover pre-testing, which will control the Program Critical Path until May 2018. Maintaining the schedule after the cutover is achieved will hinge on completing procurement and issuing NTPs for CH057D and CH058A. The importance of these procurements to the schedule is evident as CH057D was accelerated by one month and its forecast NTP was moved up to February 7, 2018.

90-Day Look-Ahead of Program Critical Activities/Milestones

Table 2.3 shows the Program critical dates in the December 1, 2017 IPS forecast to occur within the next 90 days.

Table 2.3: Program Critical Dates 90 Day Look-Ahead – December 1, 2017 IPS

Activity	Name	Start	Finish	Float
FHL02				
CSR1240	H5/H6/30 South Pre-Cutover Testing	03-Jul-17A	03-Jan-18	-8
CSR1270	H1/H2/30 North Pre-Cutover Testing	07-Jul-17A	21-Feb-18	-8
CSR1280	Days Lost/Weekend Work /Cutover Float	22-Feb-18	02-May-18	-8
66330	Cutover (2GHI): H5/H6/Loc 30 CIL + 6156, 6176, 6167 + ML4 Cut & Throw	05-May-18	06-May-18	-4
CSR1170	Pre-testing for H1/H2 2J	07-May-18	18-May-18	-10
07260	Cutover 2J: H1/H2/Loc 30 CIL	19-May-18	20-May-18	-2

Sub Program Longest Path – Manhattan/Systems

The December 1, 2017 IPS Report shows that the Manhattan/Systems longest path remained unchanged during the update period and currently has 16 CDs of float. The current critical path runs through CM007 construction of smoke plenums, platforms, and conduit installation in the

caverns; then through CS179 equipment installation, wire pulling and testing in the caverns; and finishes with completion of CS179 Integrated Systems testing on November 30, 2020. The PMOC is concerned that delays to the procurement and construction of CS086 could result in it appearing on and delaying this critical path.

Sub Program Longest Path – Queens

The December 1, 2017 IPS Report shows that the Queens longest path lost approximately four months during the update period and currently has 8 CDs of float remaining. This change was attributed to the recognition and incorporation of time to address catenary work, which is being transferred from CH061A to CQ033. The IPS shows that the lost time has three components: 1) 1-1/2 months for the catenary work and subsequent YS track, switches and third rail; 2) 2 months for Arch Street access and traction power utilities; and, 3) 1/2 month for additional time through commissioning CIL 8.

Upcoming Contract Procurements

Table 2.4 shows the status of current and upcoming contract procurements, as reported in the December 1, 2017 IPS.

Table 2.4: Procurement Schedule

Contract Description	Advertise Date	Bid Date	NTP	Project Length	Substantial Completion
CS086: Tunnel Systems Package 2 – Tunnel Signals	8/10/17A	10/31/17A	2/5/18	33 mos.	11/5/20
CH057D: Harold Trackwork	11/30/17A	2/7/18	2/27/18	15 mos.	5/23/19
CH058A: B/C Tunnel	2/20/18	4/17/18	6/18/18	27 mos.	9/21/20

The procurement process for CS086, Systems Package 2 Signal Installation, slipped one month this period with the NTP date being pushed to February 5, 2018, from January 2, 2018. It is noted that this date will not be met since an approval by the MTA board was not obtained at the January 2018 board meeting. The SC forecast was pushed approximately one month to November 5, 2020, from September 30, 2020.

The planned bid date for CH057D, Harold Trackwork, is February 7, 2018. The contract has been accelerated with planned NTP now February 27, 2018, and planned SC May 23, 2019.

The planned advertisement date for CH058A, B/C Tunnel, slipped to February 20, 2018, from January 16, 2018, and the remaining procurement and contract dates remained the same.

The procurement process for CM015, 48th Street Entrance, remains on hold and has been removed from reporting. The IPS Report notes ongoing discussions with the building owner regarding zoning changes. Procurement dates will be provided when the procurement resumes.

PMOC Concerns

The following summarizes the PMOC's concerns about the IPS:

1. The PMOC is concerned about the transparency of the rationale behind the revisions made to the Program's critical path.
2. The PMOC is concerned that, with only three years remaining to the Target RSD, the float on the three most critical paths is insufficient. This concern is

compounded due to critical procurements that are needed but have shown slippage historically.

3. The PMOC is concerned about the effect of the delays from lags in reviews and the change order process.
4. The PMOC remains concerned with the lack of progress on CS084. The PMOC supports the PMT working with CS084 to obtain an equipment fabrication schedule as soon as possible to improve the delivery dates and develop schedule contingency for installation. Delays on this contract may consume the 16 CD of program float.
5. Loss of 120 CDs of float, from 128 to 8 CDs, along the Queens Sub Program Critical Path.

3.0 COST DATA

Funding

The ESA PMT is analyzing program costs, the result of which it anticipates presenting at the CPOC March 2018 committee meeting. If the analysis determines that additional funding is needed the PMT will pursue a supplement in the 2020–2024 Capital Plan to provide for anticipated cost increases. Until a revised funding plan is approved, if necessary, the PMT would use project contingencies to fund additional costs including: railroad force account cost overruns; continuing OCIP coverage; Owner Initiated Changes to CM014B; as well extensions to the PM/CM, CCM, and GEC professional services contracts. Currently, the PMT forecasts that sufficient contingencies are available to cover planned contract awards and identified cost overruns through the fourth quarter of 2018.

Budget / Cost

The November 2017 MPR shows that the total project progress was 74.8% complete compared with planned progress of 78.7% of the $10.178 billion Current Baseline Budget (CBB). The report also shows that construction progress reached 75.0% complete of the CBB compared with planned progress of 79.8%, based on invoiced construction costs. (Details of the project budget and expenditures are shown in report Appendix B and report section 1.0-c.)

The PMT cost review will include upcoming Systems and Harold procurements (CS086, CH057D, and CH058A) as well as anticipated cost increases. As previously reported, a 2016 Study by the PMT found that $111.4 million in additional Amtrak and LIRR Force Account (F/A) costs would be needed to complete the ESA FFGA scope (Revenue Service), $245 million in additional F/A costs will be needed to complete the full Harold 14-4M alignment, including the Regional Investment scope. Also previously reported was a need for an additional $191 million to fund the OCIP insurance program.

Contingency

(b)(4) [redacted]

(b)(4) [redacted]

Table 3.1: ESA Cost Contingency

(b)(4) [redacted]

Change Orders / Budget Adjustments

The November 2017 MPR shows that the seven construction Change Orders were executed during November 2017 with magnitudes greater than $100,000.

CM014B	MNR Transformer Rigging Frame (mod. 94)	$1,600,000
CQ032	Deletion of Painting at Plaza Interlocking (mod. 86)	$(848,770)
CQ033	B-926WA Guy Anchor (mod. 3)	$126,000
CS179	Yard Services Building Changes in Telephone Layout (mod. 54)	$171,700
CS179	Interim Maintenance Equipment List Revision (mod. 64)	$500,000
GEC	ESA MTA Corporate IT Network Infrastructure (mod. 144)	$390,809
GEC	CS179 Modifications to Access Control and CCTV Systems (mod. 146)	$260,936

PMOC Concerns

1. ESA PMT has not included the costs of the items noted above (i.e. force account; OCIP; CM014B; professional services) in the project forecasts. The MTACC is working to update the Project forecast and anticipates completing the effort in the first quarter of 2018.
2. The PMOC believes that additional funding may be required for the ESA project as a result of the forecast update. As additional costs are realized and accrued to the project, they will deplete remaining ESA program contingencies. The MTA has deferred action on addressing potential funding shortfalls until development of the 2020–2024 Capital Plan. This potential funding constraint is considered a major risk.
3. Ongoing and possible future delays may result in increasing costs for the following contracts:
   - CS179 – the late completion of systems designs and resulting schedule compression needed to hold start of Integrated Systems Testing.
   - CS084 – the late completion of final design has delayed fabrication of some traction power equipment and unresolved construction issues remain.

- VS086 and CS086 – incorporation of Positive Train Control into the ESA signal system; and, technology issues.

4. Construction expenditures (i.e. invoiced costs, preliminary/pencil-copy DCBs) continue to lag significantly behind the planned/scheduled expenditures. This may be a negative indication about the ESA project's ability to achieve the target date for revenue operations.

4.0 RISK MANAGEMENT

The PMOC focuses here on discussion of the most critical risks.

Harold Interlocking Risk Review

During 2Q2017, the ESA Risk Manager, working with the consultant risk assessment facilitator, conducted a comprehensive risk review of the remaining work in the Harold Interlocking required to be complete to provide LIRR service into the new LIRR rail station at Grand Central Terminal. The risk workshop to evaluate the risks and quantify the probability of occurrence and cost and schedule impacts was held over a three-day period and included the primary stakeholders and the PMOC. MTACC continues to finalize the summary of the risk review results.

Harold Interlocking – ESA Risk

Harold Re-Sequencing Plan ("ESA First") Risk

During 2016, 2017, and through January 2018, MTACC continued to adjust the "ESA First" Harold Re-sequencing to accommodate railroad force account constraints. As a result, the impacts caused by insufficient Amtrak support were reduced during 2016 and 2017, but not totally eliminated. This situation continues to be a challenge for MTACC.

Amtrak Preparation for Extended East River Tunnel Outages Risk

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden East River Tunnel (ERT) Lines 3 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, originally planned for 2019, and now apparently planned for 2025. Amtrak has provided no details regarding how this change might affect the remaining predecessor hardening work for ERT Lines 1 and 4.

LIRR Positive Train Control (PTC) Risk

There are two potentially significant impacts of PTC implementation: first, design changes to active contracts CS179 and VS086 and pending contract CS086; second, potential delay to the remaining ESA Harold work after the planned May 2018 LIRR CIL cutovers should FRA not grant LIRR's waiver request to postpone the December 31, 2018 deadline for PTC operation. LIRR was not able to complete the PTC design in 4Q2017, as earlier projected, and design completion is now expected in 1Q2108. If FRA does not grant LIRR's waiver request, LIRR may be required to significantly reduce its support for the ESA work in Harold in order to install, test, and activate PTC by the end of 2018.

Capital Funding Risk

The PMOC is concerned about potentially significant impacts to the program budget coming from anticipated additional costs and the possible resulting impact on the schedule to achieve the target Revenue Service Date. The veracity of this concern may become manifest once the PMT completes its cost review in March 2018. Additional funding, if necessary, would likely be

proposed for the 2020-2024 Capital Plan. The specific impacts will not be known until ESA completes the re-evaluation.

ESA Vehicle Risk

The PMOC remains concerned about the schedule slippage of the LIRR federal vehicle procurement program for the M9-A vehicles because it has the potential to significantly impact delivery of the vehicles, and, hence, the MTACC's Revenue Service Date. The PMOC notes, however, that the MTA issued the "Qualifications" portion of its two part vehicle RFP in November 2017. If LIRR solicits the second "Technical/Cost" portion on schedule, sufficient vehicles could be delivered on time to meet the vehicle requirements for the amended FFGA Revenue Operations Date of December 2023.

Manhattan/Systems Performance Risk

The primary PMOC concern is that this near critical schedule path currently has only 16 CDs of float and the forecast completion for the contracts along this path extends from July 2019 to July 2020, or 20 to 32 months from now. The PMOC believes that it is likely that Manhattan/Systems schedule path could become critical in the near future.

5.0 ELPEP COMPLIANCE SUMMARY

The current status of each of the remaining main Enterprise Level Project Execution Plan (ELPEP) components is summarized as follows:

- **Technical Capacity and Capability:** MTACC previously indicated that it will review the Technical Capacity and Capability (TCC) Plan and propose revisions, if required, to reflect the current status of the Program. MTACC submitted an updated TCC Plan in September 2017 and the PMOC continues its review of the plans.
- **Continuing ELPEP Compliance:** The ESA project should continue to make additional improvements in the following areas: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising with the railroads' Force Account resource availability, track outages, and other issues regarding the remaining work in the Harold Interlocking.
- **Project Management Plan:** MTACC is using the current version of the PMP, Rev. 10 that the FTA accepted earlier this year.
- **Cost/Schedule Contingency:** MTACC has reached agreement with the FTA and the PMOC on the ELPEP minimum cost and schedule contingency hold points, levels, and drawdowns. MTACC continues to report the cost and schedule contingency levels against the ELPEP minimums in its quarterly reports to the FTA.

The PMOC notes that, with completion of the most recent Schedule Management Plan and Cost Management Plan updates as well as the FFGA amendment, the ESA project is better able to generally remain compliant with ELPEP.

- **Schedule Management Plan:** The ESA project should continue to make additional improvements to the Schedule Management Plan (SMP) in the following areas: Integrated Project Schedule (IPS) Updating, Forecasting, and Schedule Contingency

Management against a current baseline schedule. MTACC is using the current version of the SMP, Rev. 2, dated September 2016, which the FTA accepted.

- **Cost Management Plan:** The ESA project should continue to make additional improvements to the Cost Management Plan (CMP) in the following areas: Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC Cost Contingency Management and Secondary Mitigation. MTACC is using the current version of the CMP, Rev. 2, dated October 2016, which the FTA accepted.

Revisions to the ELPEP Document: As part of the process of updating the ELPEP document, the PMOC completed an independent evaluation of the minimum required future cost and schedule contingencies. During 1Q2016, MTACC and the ESA PMT accepted the FTA/PMOC recommended ELPEP cost and schedule contingency hold points, values, and curves for the remainder of the program. MTACC submitted an updated ELPEP with suggested revisions in September 2017 and the PMOC continues its review of the proposed revisions.

6.0 SAFETY AND SECURITY

Based on safety information supplied by MTA, the PMOC calculated ESA Injury Ratios for CY2017 through December 31, 2017, were 0.31 for Lost Time Injuries and 0.94 for Recordable Injuries. Both were below Bureau of Labor Statistics (BLS) Safety Guidelines and indicated ESA's continued safety improvement. Additionally, the ESA PMT did not report any significant security issues during January 2018.

7.0 ISSUES AND RECOMMENDATIONS

Design: The PMT design management team needs to focus on the timely achievement of intermediate milestones and working closely with the GEC to facilitate finalization of the scopes of work for remaining procurement and construction packages. Shifting scope between packages has made finalizing design documents and drawings very challenging and time consuming.

Also, the PMOC has observed the following:

- Approvals from the railroads, both LIRR and Amtrak, and other outside stakeholders, are requiring considerably more time than planned; and,
- LIRR is making changes that alter the design basis and result in time-consuming and costly re-design work by the GEC.

The ESA PMT needs to continue to monitor and better coordinate the interface of design reviews and equipment approvals between the GEC and LIRR for the CS084, CS179, and VS086 contracts. These shortcomings point to insufficient technical capacity and capability in the particular design support areas. The PMOC acknowledges the efforts by senior management to resolve these issues and recognizes that some short-term improvements were achieved, but notes that more sustained effort is needed.

Procurement: The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. Scope shifting among different packages delays completion and finalization of the required design packages and caused significant delays to the procurement schedules during 2016 and 2017. The PMOC continues to recommend that the ESA PMT make an effort to adhere to the current version of the CPP, rev. 11.0, and minimize shifting scope for the remainder of the project.

Water Infiltration Concerns Regarding Contracts CS179, CS084, and CQ032: The PMOC remains concerned about the numerous water infiltration issues in the electrical and electronic equipment rooms either constructed by, or provided for, these contracts. The PMOC notes that, to date, none of the water remediation efforts that have been employed have been totally successful and this has caused delays to follow-on construction.

Contract CS179: The PMOC recommends that the ESA PMT continue making improvements regarding the PMOC's following concerns for CS179:

- Timely delivery and discussion about the contractors' monthly schedule submissions;
- Timely preparation and submission of documentation for two potential Buy/Ship America issues;
- ESA PMT responses to contractor NOCs and issuance of CPRs; and,
- Timely design review and approvals to contractor's design submittals.

Contract CS084: MTACC should prioritize the delivery of requested design information, the approval of substation designs, and the execution of contract modifications to preclude any further impact to substation design and fabrication. Additionally, the PMOC remains concerned about the issue related to the installation of traction power feeder cables between the C08 substation and the track, the live load (dynamic) testing of the C08 Substation, the integrated testing of all CS084 substations, and the resolution of access issues for the delivery of substation equipment at the C01/C02 substations. Also, no additional surveys have been conducted to verify availability of required conduit/manhole system for each TPSS.

Contract VS086: The PMOC remains concerned that there is no accurate and comprehensive schedule in place that would allow MTACC to effectively manage this contract and encourages MTACC to quickly complete discussions regarding the development of such a schedule that addresses all the issues currently identified on this contract. The PMOC is concerned that design decisions that have the potential to negatively impact the contract schedule are not being made in a timely manner. The PMOC encourages the MTACC management team on this contract to work with the LIRR and the GEC to provide timely answers and comments to design questions and submittals.

Project Funding: The project is at risk due to anticipated additional costs that are not yet in the project forecast and for which considerations of additional funding have been deferred to the 2020–2024 Capital Planning cycle. The PMOC is concerned about potential impacts to the program budget and schedule, as well as the target Revenue Service Date. The specific cost, budget, and schedule impacts will not be known until ESA completes its re-evaluation, anticipated in March 2018.

Project Budget: The PMOC remains concerned about the adequacy of remaining cost contingency to address major risks detailed in the Risk Management discussion below and potential other additional costs noted elsewhere in this report. (b)(4) [redacted]

Project Schedule: The PMOC remains concerned about the ability of the program to make planned progress on the three critical paths. Although key dates in late 2017 were achieved for CIL cutover pre-testing on the Harold path, the path also includes work by two contracts, CH057D and CH058A, that are not yet awarded – a process that has historically been problematic. The

second and third critical paths – both two weeks or less behind the Harold path – have each realized significant lost time in 2017.

Risk Management: The segmentation of construction packages has created multiple inter-contract interfaces and milestones. In the PMOC's opinion, managing inter-contract handoffs and interfaces will continue to be very challenging and represents significant MTACC-retained risks. The PMOC does recognize the PMT's efforts to mitigate some of the potential cost exposure by negotiating adjustments to schedule constraints across the four ESA contracts currently held by the same contractor (CM006, CM007, CS179, and CQ032). However, the PMOC believes that any meaningful schedule recovery, especially for CM007, CS179, and CS084, will be difficult at best.

The PMOC considers the major remaining risks for the East Side Access Program to be:

1. Program Funding – completion of the program cost review and inclusion, if necessary, in the 2020–2024 Capital Plan;
2. Recovery of lost time due to significant schedule delays on CM014B and CS084;
3. Successful execution of multiple hand-off interfaces across several contracts;
4. Contractor access and work area coordination in Manhattan;
5. Duration of integrated systems testing;
6. Continued availability of adequate Amtrak and LIRR force account resources;
7. Continued availability of required track outages in Harold Interlocking;
8. Maintaining adequate schedule performance of the remaining work in Harold Interlocking;
9. Remaining schedule path float will be used in the near future and Manhattan/Systems path will become critical; and,
10. Coordination risk retained by MTACC in Manhattan and the ESA tunnels with regard to construction and testing interface management for the systems work.

The comprehensive Harold risk review conducted in April 2017 identified a number of potentially significant risks that could delay completion of the critical work in Harold Interlocking planned for 2017-18 that could cause a significant delay to the Revenue Service Date. These risks include the following:

A. Major Risks included in the Risk Assessment

1. Positive Train Control: Implementation of Positive Train Control in Harold Interlocking to the degree necessary to achieve the December 31, 2018, FRA deadline. Risk is not well defined because scope and schedule details have not been finalized. Possible mitigation: LIRR submitted the formal waiver request to the FRA in early October 2017 to postpone this requirement based on Harold remaining an active construction area after 2018. LIRR submitted a revision to the original waiver request in December 2017.
2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work involving track, 3rd rail, and signals, in accordance with the current ESA schedule.
3. Northeast Quadrant Rail Work: Ability of MTACC-ESA, Amtrak, and LIRR to fully complete the planned work in the Northeast Quadrant in Harold Interlocking as per the current ESA schedule, on a very tight schedule involving major Amtrak and LIRR track outages.

4. LIRR CIL Cutovers: Ability of LIRR to complete the pre-testing and final cutovers of CILs H1/H2/H5/H6/Loc 30 in accordance with the current ESA schedule plan.
5. CH058A Preparation Work: Ability of Amtrak and LIRR force account resources to complete, in accordance with the current ESA schedule plan, all track, catenary, and third-rail work required prior to NTP for CH058A.

B. Potential Risks with Major Schedule Impacts – Not Included in Risk Assessment

1. ESA Project funding constraints;
2. Ongoing and future Regional Projects requiring extensive support from Amtrak; and,
3. Amtrak program to reconstruct existing ERT Lines 1 and 2 has apparently been deferred until after the ESA program. The risk now is from the impact of unplanned emergency tunnel repairs.

The PMOC notes that, although MTACC has actively engaged Amtrak to develop some specific mitigations for certain risks and continues to work on strategies for mitigating many of the other identified risks, continued shortcomings in provision of adequate force account resources have adversely impacted the current Harold schedule and have, over time, caused the remaining Harold work to become the ESA program schedule critical path. The PMOC recognizes that MTACC and ESA have been proactive in dealing with these issues as they arise and also recognizes ESA's efforts to re-baseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation still requires improvement and the PMOC recommends that the PMT actively engage executive management in MTACC and MTA to assist with resolution of outstanding issues with Amtrak and LIRR.

Through January 2018, the Moynihan Station project remained as Amtrak's top priority for assignment of the local division force account resources. The PMOC believes that this situation needs to change in order for Amtrak to provide the required force account resources and track outages required to support ESA's schedule for completion of the remaining critical work in the Harold Interlocking scheduled through 2018.

APPENDIX A – ACRONYMS

AFI	Allowance for Indeterminates
ARRA	American Recovery and Reinvestment Act
AWO	Additional Work Order
BIM	Building Information Model
BLS	Bureau of Labor Statistics
BSA	Buy/Ship America
C&S	Communication and Signals
CBB	Current Baseline Budget
CCC	Change Control Committee
CCM	Consultant Construction Manager
CCTV	Closed Circuit Television
CD	Calendar Day
CIL	Central Instrument Location
CIR	Central Instrument Room
CM	ESA Construction Manager assigned to each contract
CMP	Cost Management Plan
CMU	Concrete Masonry Unit
ConEd	Consolidate Edison Company
CPOC	Capital Program Oversight Committee
CPP	Contract Packaging Plan
CPR	Contractor Proposal Request
DC	Direct Current
DCB	Detail Cost Breakdown
DFF	Direct Fixation Fastener
EAC	Estimate at Completion
ELPEP	Enterprise Level Project Execution Plan
ERT	East River Tunnel
ESA	East Side Access
ET	Electric Traction
F/A	Force Account
FAT	Factory Acceptance Testing
FD	Final Design
FFGA	Full Funding Grant Agreement
FIAT	Factory Integrated Acceptance Testing
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GCT	Grand Central Terminal
GEC	General Engineering Consultant
HVAC	Heat, Ventilation and Air Conditioning
IPS	Integrated Project Schedule
IST	Integrated System Test
LIRR	Long Island Rail Road
MNR	Metro-North Railroad
MOD	Contract Modification
MPR	Monthly Progress Report
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority Capital Construction
N/A	Not Applicable
NCR	Nonconformance Report
NOC	Notice of Change
NTP	Notice to Proceed
NYCT	New York City Transit
OCIP	Owner Controlled Insurance Program
PAC	Pneumatically Applied Concrete
PCO	Proposed Change Order
PLC	Program Logic Control
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PMT	ESA Project Management Team
QA	Quality Assurance
QPR	Quarterly Progress Report
RFI	Request for Information
RFP	Request for Proposal
RMC	Rudin Management Corporation
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RPR	Relocated Primary Route
RSD	Revenue Service Date
RTB	Resilient Tie Block
SC	Substantial Completion
SCADA	Supervisory Control and Data Acquisition
SDR	Second Design Review
SMP	Schedule Management Plan
SMS	Security Management System
SWO	Stop Work Order
TCC	Technical Capacity and Capability
TPSS	Traction Power Substation
TSR	Track and Signal Route
WBY	Westbound Bypass Tunnel
YSB	Yard Services Building

APPENDIX B – TABLES

Table 1: Summary of Critical Dates

Program Milestone	FFGA	Forecast (F) Completion, Actual (A) Start		Amended FFGA Dates
		Project Sponsor*	PMOC**	
Begin Construction	September 2001	September 2001(A)	September 2001(A)	September 2001
Construction Complete	December 2013	December 2022 (F)	September 2023(F)**	December 2023
Revenue Service	December 2013	December 2022 (F)	September 2023 (F)	December 2023

Notes: * Project Sponsor forecast Revenue Operations Date per presentation the MTA CPOC in June 2014.
** Source –Based on PMOC 2014 schedule trending analysis representing a medium degree of mitigation.

Table 2: Project Budget / Cost Table
(Cost shown in millions)

	FFGA			MTA Current Baseline Budget (CBB)			Expenditures December 1, 2017	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of Total CBB	Expend-itures	Pct. of CBB
Grand Total	7,386.0	12,038.0	100.00%	4,724.0	11,214.0	100.00%	8,021.2	71.53%
Financing Cost	1,036.0		14.03%	617.0	1,036.0	9.24%	617.6	59.61%
		1,116.0	9.27%					
Total Project Cost	6,350.0		85.97%	4,107.0	10,178.0	90.76%	7,403.6	72.74%
		10,922.0	90.73%					
Federal Share	2,683.0		36.33%	1,148.0	2,699.0	24.07%	2,535.2	93.93%
		2,683.0	22.29%					
5309 New Starts share	2,632.0		35.63%	1,098.0	2,437.0	21.73%	2,273.1	93.27%
		2,632.0	21.86%					
Non New Starts share	51.0		0.69%	50.0	67.0	0.60%	66.7	99.55%
		51.0	0.42%					
ARRA	0.0	0.0	0.00%	0.0	195.0	1.74%	195.4	100.21%
Local Share	3,667.0		49.65%	2,959.0	7,479.0	66.69%	4,868.4	65.09%
		8,239.0	68.44%					

Table 3: Project Budget and Invoices
(Cost shown in millions)

Elements	Baseline Budget June 2014	December 1, 2017			
		Current Budget	Actual Awards	Invoiced to Date	Inv. Pct. of Budget
Construction Subtotal	7,379.3	7,545.5	6,978.1	5,460.7	72.37%
Soft Costs Subtotal	2,798.5	2,632.3	2,017.5	1,942.8	73.81%
Engineering	720.6	735.9	734.9	715.8	97.27%
OCIP	282.6	307.6	300.8	300.4	97.64%
Project Mgmt.	972.2	972.2	859.8	809.0	83.21%
Real Estate	182.1	178.0	119.2	117.7	66.09%
Rolling Stock	202.0	202.0	2.7	--	0.00%
Program Reserve	(b)(4)				
Total w/o Financing	(b)(4)				

Note: ESA carries the Rolling Stock Reserve as an off-line cost, not in the Budget

Table 4: Comparison of Standard Cost Categories: FFGA vs. CBB
(Cost shown in millions)

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Sep 2017 CBB	Oct 2017 CBB	Nov 2017 CBB	CBB / FFGA Variance	CBB / Amended FFGA Variance
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,509.5	3,509.5	3,510.8	76.53%	4.69%
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,328.2	2,328.2	2,328.2	99.22%	0.06%
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	513.0	513.0	513.1	44.03%	13.84%
40 - Site Work and Special Conditions	205.1	610.6	562.5	560.9	560.9	560.9	173.48%	-0.27%
50 - Systems	619.3	605.6	627.7	586.7	586.7	587.2	-5.19%	-6.45%
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	215.4	215.4	30.31%	12.04%
70 - Vehicles	494.0	209.9	879.5	209.9	209.9	209.9	-57.50%	-76.13%
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,015.7	2,015.7	2,015.7	70.25%	11.43%
90 - Unallocated Contingency	(b)							
Subtotal	(b)(4)							
100 - Financing Cost	(b)(4)							
Total	(b)(4)							

Table 5: Summary by FTA Standard Cost Categories
(Costs shown in millions)

Standard Cost Category	FFGA	June 2014		December 1, 2017		
		Project Budget	Amended FFGA	Current Budget	Awarded Value	Paid to Date
10 - Guideway & Track Elements	1,989	3,405	3,353	3,510.8	3,285.8	2,837.1
20 - Stations, Stops, Terminals, Intermodal	1,169	2,238	2,327	2,328.2	2,185.6	1,507.6
30 - Support Facilities (Yards, Shops, Admin)	356	474	451	513.1	495.2	231.8
40 - Site Work and Special Conditions	205	611	562	560.9	485.7	485.3
50 - Systems	619	606	628	587.2	480.6	356.0
60 - ROW, Land, Existing Improvements	165	219	192	215.4	156.5	155.0
70 - Vehicles	494	210	880	209.9	10.6	5.5
80 - Professional Services	1,184	1,975	1,809	2,015.7	1,895.5	1,825.2
90 - Unallocated Contingency	(b)(4) [redacted]					
Subtotal						
100 - Financing Cost						
Total						

Table 6: Quarterly Actual and Planned Cash Flow – June 2014 Plan
(Cost shown in millions)

Year – Quarter	Construc-tion	Engineer-ing	OCIP	Project Management	Real Estate	Rolling Stock
Prior Payments >	**3,660.2**	**646.4**	**155.6**	**580.0**	**112.6**	**--**
Remaining >	**3,719.1**	**74.2**	**127.0**	**392.1**	**69.4**	**202.0**
3Q2014	209.3	(-3.3)	4.8	16.7	--	--
4Q2014	168.3	(-3.3)	4.8	16.7	0.1	--
1Q2015	134.6	(-3.2)	4.6	16.1	4.5	--
2Q2015	147.4	(-3.3)	4.8	16.7	4.7	--
3Q2015	169.7	(-3.3)	4.8	16.7	4.7	--
4Q2015	201.2	(-3.3)	4.8	16.7	4.7	--
1Q2016	193.3	(-3.2)	4.7	16.3	4.6	--
2Q2016	180.9	(-3.3)	4.8	16.7	4.7	8.7
3Q2016	182.0	(-2.0)	4.8	16.7	4.7	13.1
4Q2016	214.2	6.7	4.8	16.0	4.7	13.1
1Q2017	210.6	6.5	4.6	15.5	4.5	12.6
2Q2017	199.7	6.7	4.8	16.0	4.7	13.1
3Q2017	189.4	6.7	4.8	16.0	4.7	13.1
Remaining Plan	1,318.7	75.7	65.3	179.7	18.5	141.5
Remaining Actual*	2,017.0	23.2	7.3	174.7	60.7	202.0
4Q2017	182.1	6.7	4.8	16.0	4.7	13.1
1Q2018	174.2	6.5	4.6	15.5	4.5	12.6
2Q2018	170.5	6.7	4.8	16.0	4.7	13.1
3Q2018	168.5	6.7	4.8	16.0	4.7	14.0
4Q2018	155.2	6.7	4.8	16.0	0.1	14.0
1Q2019	148.4	6.5	4.6	15.5	--	13.6
2Q2019	110.9	6.7	4.8	16.0	--	14.0
3Q2019	93.6	6.7	4.8	16.0	--	14.0
4Q2019	71.6	6.7	4.8	16.0	--	14.0
1Q2020	20.7	6.6	4.7	15.6	--	5.0
2Q2020	11.7	6.7	4.8	16.0	--	0.9
3Q2020	7.6	2.3	4.9	5.4	--	--
4Q2020	2.8	--	5.0	--	--	--
1Q2021	0.9	--	3.3	--	--	--
2Q2021	--	--	--	--	--	--
3Q2021	--	--	--	--	--	--
4Q2021	--	--	--	--	--	--

Note: * Remaining Actual cost is calculated by PMOC as: current budget (CBB) less amount invoiced.

Table 7: ESA Core Accountability Items

Project Status		Original at FFGA	Amended FFGA	Current*	ELPEP **
Cost	Cost Estimate	$7.386 B	$10.922 B	$10.178 B	$8.119 B
Contingency	Unallocated /Risk Contingency	(b)(4) [redacted]	[redacted]	[redacted]	[redacted]
	Total Contingency (Allocated plus Unallocated)	(b)(4) [redacted]	[redacted]	[redacted]	[redacted]
Schedule	RSD	Dec. 31, 2013	Dec. 31, 2023	Dec. 2022	April 30, 2018
Total Project Percent Complete	Based on Invoiced Amount	74.8% actual vs. 78.7% planned (ESA calc.)			
Project Performance Rate Since 2014 ESA Re-Plan	Based on Earned Value	80.4% (PMOC calculation of construction spending at 3Q 2017 planned vs. actual since re-baselining)			
Contracts	Total contracts awarded to date	$8.995 B	88.4% of total awards		
	Total construction contracts awarded to date	$6.978 B	92.5% of construction awards		

Major Issue	Status	Comments
Project Funding and Budget	In 2Q2017, MTACC determined that it would not pursue an ESA amendment to 2015-19 Capital Plan for additional required funding for forecast cost overruns. This may have a significant impact on the project's budget, especially the Unallocated Contingency.	ESA PMT continues to evaluate cost, budget, and schedule impacts. Results are anticipated in March 2018. (b)(4) [redacted]
Project Cost	MTACC has identified significant forecast cost overruns: ▪ OCIP - $190 million ▪ Railroad Force Account - $110 million ▪ OICs for Contract CM014B - $65 million ▪ PM/CM, CCM, GEC Services – (TBD) Schedule delays due to funding constraints may result in additional escalation costs. Review of forecast cost overruns based on new funding constraint continued during January 2018.	ESA PMT is continuing its evaluation of the cost of PM/CM, CCM, and GEC Services to the target RSD. The current PMT funding strategy may delay the completion of current contracts, the award of remaining contracts, and the completion of railroad force account work. The resulting added cost escalation could be significant.
Project Schedule	(b)(4) [redacted]	(b)(4) [redacted]
Harold Schedule	The schedule for the remaining ESA work in Harold Interlocking has been revised several times since the June 2014 Program Schedule re-baseline; Dec. 2014 (ESA First); 2015 (Harold Re-Sequencing); and, 1Q2016 schedule adjustment resulting in the Program critical path passing through the Harold work. Primary cause for these schedule revisions is inadequate railroad force account support due to other higher priority Amtrak projects in the region.	MTACC PMT made progress in coordinating a regional inter-agency schedule to minimize conflicts among force account resources, resulting in better on-time completion of planned work. All LIRR signal work on Harold CILs on weekend track outages in November 2017 was completed.

Notes: * Current Budget was approved by MTA CPOC in June 2014.

** 2010 ELPEP reflecting medium level of risk mitigation, excluding financing cost of $1,116 million. This is currently being re-evaluated.