

PMOC MONTHLY REPORT
East Side Access (MTACC-ESA) Project
Metropolitan Transportation Authority
New York, New York

Report Period July 1 – July 31, 2018

PMOC Contract No. DTFT60D1400017

Project No. DC-27-5287, Task Order No. 0002, Work Order No. 07

Urban Engineers of New York, D.P.C., 2 Penn Plaza, Suite 1103, New York, NY 10121

PMOC Lead: E. Williamson, 212-736-9100; ejwilliamson@urbanengineers.com

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

TABLE OF CONTENTS

Executive Summary	1
Monitoring Report	2
1.0 Project Status	2
a. Engineering Design and Construction Phase Services	2
b. Procurement	4
c. Construction	4
d. Quality Assurance and Quality Control	13
2.0 Schedule Data	13
3.0 Cost Data	18
4.0 Risk Management	20
5.0 ELPEP Compliance Summary	21
6.0 Safety and Security	23
7.0 Issues and Recommendations	23

APPENDICES

Appendix A – Acronyms

Appendix B – Charts and Tables

Table 1 – Summary of Critical Dates

Table 2 – Project Budget/Cost Table

Table 3 – Project Budget and Invoices

Table 4 – Comparison of Standard Cost Categories: FFGA vs. CBB

Table 5 – Summary by FTA Standard Cost Categories

Table 6 – Program Critical Dates 90 Day Look-Ahead – June 1, 2018 IPS

Table 7 – Program Budget Adjustments

Table 8 – ESA Core Accountability Items

Third Party Disclaimer

This report and all subsidiary reports are prepared solely for the Federal Transit Administration (FTA). This report should not be relied upon by any party, except the FTA or the project sponsor, in accordance with the purposes as described below.

For projects funded through the FTA Full Funding Grant Agreements (FFGA) program, FTA and its Project Management Oversight Contractor (PMOC) use a risk-based assessment process to review and validate a project sponsor’s budget and schedule. This risk-based assessment process is a tool for analyzing project development and management. Moreover, the assessment process is iterative in nature; any results of an FTA or PMOC risk-based assessment represent a “snapshot in time” for a particular project under the conditions known at that same point in time. The status of any assessment may be altered at any time by new information, changes in circumstances, or further developments in the project, including any specific measures a sponsor may take to mitigate the risks to project costs, budget, and schedule, or the strategy a sponsor may develop for project execution. Therefore, the information in the monthly reports will change from month to month, based on relevant factors for the month and/or previous months.

EXECUTIVE SUMMARY

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

Overall Program Status: The Overall Program is 77.1% actual versus 82.8% as-planned (based on invoice cost).

Construction Status: The Construction Status is 79.9% actual versus 85.0% as-planned (based on invoice cost).

Contracts

Awarded/Completed: None awarded or completed during July 2018.

Construction Progress Issues: CM014B, CS084, VS086, CS179.

Program Funding: Total program funding is \$10,335 million, which is sufficient for the MTACC forecasts through December 2020.

Program Cost and Budget: (b)(4)

Integrated Project Schedule: The February 2022 forecast target RSD is unchanged. The ESA Program Critical Path is controlled by Manhattan/Systems work.

Risk Management: 10 major risks remain.

Harold Interlocking: Completed signal cutovers of H1, H2, and Location 30 CILs in Harold Interlocking.

Key Stakeholder Issues: LIRR –Late resolution of CS179, CS084, and VS086 issues.
Amtrak – Continuing Force Account availability issues; Electric Traction improved availability.
MTACC - Change Order processing issues, GEC CPS support for Contractor Submittals, redesigns, RFIs, and Field Conditions.

Construction Safety: 2.34 – Lost Time and 3.90 – Recordable BLS Injury ratios during June 2018; both increases from May 2018.

ELPEP Compliance: (b)(4)

Project Management Plan: MTACC to update PMP and Sub-plans to reflect major management, organizational and process changes project-wide.

Buy America: Three CS179 Issues – Small Split HVAC units (waiver requested); Video Display Panels (waiver request in preparation); PA Speakers (waiver request in preparation).

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Monthly Progress Report, May 2018 referenced in this report as the ESA May 2018 MPR, which has a cost and schedule data date of June 1, 2018. Unless otherwise noted, all progress percentages in this report are based on invoiced costs, not actual construction.

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 and quality management activities on the East Side Access (ESA) Mega-Project managed by MTA Capital Construction (MTACC) with MTA as the Sponsor and financed by the FTA FFGA.

MONITORING REPORT

1.0 PROJECT STATUS

a. Engineering Design and Construction Phase Services

In the ESA May 2018 MPR, The PMT reported that the overall Engineering effort is 98.6% complete compared to as-planned completion of 100%. The ESA May 2018 Total Cost Report shows that 98.6% of the overall EIS and Engineering budget, including 98.8% of the design budget, has been invoiced.

Status of Construction Packages Advertised

CS086 Tunnel Systems Package 2 – Signal Installation: At the June 2018 MTA Board meeting, MTA approved MTACC’s recommendation to award this contract. As of July 31, 2018, however, the contract had not been awarded.

CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018.

Forecast bid dates of July 9 and 30, 2018 were not achieved. Revised bid date is August 9, 2018.

Status of Construction Packages Not Awarded

CM015 – 48th Street Entrance: Design work remained suspended through July 2018. MTA has notified the building owner that construction of the 48th St. Entrance has been deferred.

Alternate 47th Street Entrance (proposed modification to Contract CM014B):

MTACC-ESA is developing an alternative LIRR GCT entrance at 47th Street and has approved the associated GEC contract modification. MTACC-ESA has completed and submitted the associated Technical Memorandum for the FTA. As of July 31, 2018, LIRR and MNR continued review of the 100% For-Information-Only drawings. MTACC’s plans to build the alternate 47th Street Entrance by contract modification to the current active CM014B contract.

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. All yard exit options are presently being considered by ESA, Amtrak, and LIRR. The design package has been completed with incorporated LIRR review comments. Amtrak raised five earlier 90% design review issues that had not been satisfactorily resolved and the GEC continued resolution of these issues through July 2018. MTACC/GEC are developing alternatives to the proposed elevated turnout and have identified two options. In support of options evaluation, the existing Sub 4 Line will be surveyed with completion expected in August 2018. 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 FQA33B 100% design package remains temporarily on hold pending finalization and approval of the Sub 4 to Line 2 connection, the primary exit, to be built under FQA33A (see above). The second exit route will be constructed by Amtrak after Contract CQ033 completes the MDSY and upon arranging the funding source from LIRR.

FQL33, Mid-Day Storage Yard Facility – LIRR F/A, provides LIRR force account construction support for CQ033. LIRR has returned comments on the 100% design package that included some revisions to the ET work package. The GEC incorporated the LIRR comments on the 100% design package and returned a revised submission to LIRR in April 2018. LIRR returned additional

comments on May 8, 2018. GEC revised the package and returned it to LIRR for final review and approval. The GEC has incorporated all LIRR final comments and LIRR has approved the package. GEC will provide the signed and sealed package upon request from the CQ033 CM.

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. MTACC will be installing, testing, and commissioning PTC for all track and signal systems built under the ESA Program.

- LIRR had been expected to complete the PTC design by March 31, 2018, but this was not achieved. MTACC now reports that LIRR will not complete the PTC design until later in 2018 and possibly not until the end of the year.
- The GEC has prepared initial scoping of design modifications to Contracts CS179, VS086, and CS086, which will provide for the LIRR designed PTC overlay onto the ESA systems primarily by providing systems “infrastructure” including cable raceways, cabinets, and additional rack space. The GEC has provided LIRR with the proposed changes for PTC on these contracts at the various design stages to insure coordination with the LIRR PTC requirements. The PMOC notes that these changes cannot be finalized until LIRR completes the PTC design.
- 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 subsequently submitted a revised waiver request to the FRA in late December 2017 and received the FRA’s response on May 2, 2018. LIRR is required to submit to the FRA, within 90 days, i.e., August 2, 2018, the revised PTC Implementation Plan with LIRR’s proposed alternate schedule.

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

CS179, Systems Facilities Package No.1: The backlog of overdue submittals 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), unresolved Notices of Change (NOC), and numerous Stop Work Orders (SWOs) are impacting the completion of design work and delaying the contract schedule. The contractor continues to note that there are 30 NOCs contributing to its inability to finalize the design; 12 of which MTACC was to issue Contractor Proposal Requests (CPRs) and 10 more that exceed the 30-day turnaround time duration provision in the contract. The completion of Final Design (FD) for all 10 Control Systems, which was scheduled for completion 27 months ago, has not occurred yet and the completion of FD for all 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 and construction completion also remain unresolved.

CS084, Traction Power Systems Package 4: While the contractor continues to contend that unresolved design issues, differing site conditions, and coordination issues caused delays to the execution of this contract, progress is being made on the fabrication and delivery of equipment. With the recent approval of the SCADA conceptual designs, the subcontractor handling the final integration design and fabrication of the SCADA equipment and the associated Programmable Logic Controllers (PLCs) can commence that work. Some design issues related to water remediation methodologies and other identified field construction issues also remain open. The

contractor indicates that all of the contract milestones are already delayed. Both the contractor and MTACC agree that contract milestones need to be updated.

VS086, Systems Package 3 – Signal Equipment Procurement: The contractor continued to assert that the lack of timely responses on design submittals and inquiries caused delays in the progression of the work. MTACC made some unilateral decisions regarding the use of specialized track circuit equipment; and, despite having no final approval for its use from LIRR, directed the contractor to move forward with a signal design that utilizes this equipment. Contract milestones need to be modified to address issues and delays that have occurred.

b. Procurement

The ESA May 2018 MPR shows that total procurement for the ESA project was 87.9% complete, with \$9.083 billion awarded of the \$10.335 billion current project budget (ESA Program only).

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

- CS086 Tunnel Systems Package 2 – Signal Installation is being procured as a RFP. The negotiations with the single proposer concluded in early May 2018. Contract award date forecast for August 2018. BAFO negotiations continued through July 2018.
- CH058A Harold Structures Part 3A, B/C Approach Structure was advertised on May 8, 2018, with bid opening now forecast for August 9, 2018.

c. Construction

In the ESA May 2018 MPR, MTACC reported that total construction progress reached 79.9% complete compared with as-planned progress of 85.0%. The percentages of work complete in this report are based on invoiced costs rather than actual construction progress.

Manhattan Contracts

Costs and substantial completion dates are tabulated below for active Manhattan contracts.

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CM006	361.6	350.2	11.4	346.0	356.0	100.0%	98.8%	6/1/17	12/31/18	
	nc	nc	nc	nc	nc	nc	nc	nc	+198cd	
	361.6	350.2	11.4	346.0	356.0	100.0%	98.8%	6/1/17	6/16/18	
CM007	712.3	662.5	49.8	303.3	734.8	52.3%	45.8%	1/28/20	5/1/20	
	nc	+0.1	(-0.1)	+10.6	(-0.6)	+3.0%	+1.6%	nc	(-56cd)	
	712.3	662.4	49.9	292.7	735.4	49.3%	44.2%	1/28/20	6/26/20	
CM014B	463.6	446.9	16.7	263.5	520.6	94.1%	59.0%	8/18/18	6/9/20	
	nc	+0.1	(-0.2)	+8.1	(-12.9)	+2.8%	+1.8%	nc	+22cd	
	463.6	446.8	16.9	255.4	533.5	91.3%	57.2%	8/18/18	5/18/20	
VM014	46.2	34.9	11.3	23.4	47.6	NA	66.9%	10/25/19	10/16/20	
	nc	nc	nc	nc	+0.2	NA	nc	nc	nc	
	46.2	34.9	11.3	23.4	47.4	NA	66.9%	10/25/19	10/16/20	

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.

Please refer to the contract narratives for additional information.

1. The substantial completion date has been declared

CM006 – Manhattan North Structures:

Schedule: MTACC is currently projecting, MS#3, Substantial Completion (SC), by December 31, 2018, and MS#4, Final Completion, at March 31, 2019.

Construction Progress: Through July 2018, the CM006 contractor continued to complete minor base contract work, water repairs, and open NCR work, necessary for SC. SC was not achieved in the July 2018.

CM007 – GCT Station Caverns and Track:

Schedule: Milestone #4 (Track & 3rd Rail Work Complete) August 7, 2019, is now February 4, 2020, -181 days.

Milestone #5 (Substations US1 and US2 Complete) June 27, 2018, is now December 11, 2018, -167 days.

Milestone #5A (Caverns Ready for Integrated Systems Testing) August 7, 2019, is now August 1, 2019.

Milestone #6 (All Caverns and Tunnel Work Complete) December 16, 2019, is now February 5, 2020, -52 days.

Milestone #6A (Substantial Completion) January 28, 2020, is now May 1, 2020, -94 days.

ESA and the contractor continued to review the contractor's Time Impact Analysis (TIA)/recovery schedule dealing with trackwork issues and may incorporate further impacts due to systems coordination issues.

Construction Progress:

South and North Back of House, East and West: Continued MEP and CMU installation and upper level platform slabs.

45th Street Lobby: Continued MEP and CMU installation.

Cross Passages #3, 4, 5, and 6: Continued wall and ceiling framing.

East Cavern: Continued Mezzanine Level Chase waterproofing installation. Continued stairs steel framing and precast slab installation. Continued under platform MEP installation. The escalator contractor is scheduled start cavern escalator installation in August 2018.

West Cavern: Continued Mezzanine Level electrical installation. Continued under platform MEP installation. Continued stairs steel framing and precast slab installation. The escalator contractor is scheduled start cavern escalator installation in August 2018.

Through July 29, 2018, MTACC reports that precast beams and decks are 88.0% complete. Precast platform walls and deck panels are 63.5% complete.

Track: Continued trackwork construction in the Cavern and into the Tunnel Track area. Continued rail distressing activity. Continued turnout installation at GCT2 and GCT5. Continued qualification testing of Special Trackwork DFF and High Attenuation RTB components, with variances requested from LIRR. Through July 29, 2018, MTACC reports that Track and Third Rail installation is 30.7% complete.

CM014B – Concourse and Facilities Fit-Out

Schedule: The CCM reported that all of the milestones for completion of the various communication rooms and closets have been completed. In rooms and closets that have FM200 fire suppression, the rooms/closets have been pressure sealed, but no gas test have been done,

because mechanical purge systems are not in place. This includes Milestones #1, #2, #3, #4, and #6. Turnover to CS179 is in progress.

Milestone #5 (44th St. Vent Building) June 4, 2017, now forecast for June 2018, but not achieved. The fans have been installed. The building storefront installation is complete. CM014B punch list work is underway.

The design of the 47th Street Entrance remains the primary critical path. Structural steel work has now become the secondary critical path and is significantly behind schedule. The Biltmore Room construction is the tertiary critical path.

Through July 31, 2018, the structural steel erection was 68% complete by piece and 64% by weight. As previously reported, this work is proceeding very slowly and is impacting the schedule and the CS179 contract. Cumulative metal ceiling deck progress was 22% complete.

Construction Progress: Electricians continued with installation of overhead conduit at the B20 Substation and racks/conduit to various zones. Plumbers continue installing sump pumps and sewage ejectors throughout the Concourse. Mechanical work continues with the installation fan coil units and ductwork. Painting of block walls and columns continues throughout Zones 1-4. Painting of Fire Stand Pipe continues throughout the Concourse. Installation of architectural suspended ceiling grid system is underway and installation of the marble stone wall finish has begun in the Public Corridor.

Biltmore Connection: Scheduled CM014B track outages with MNR are impacted by the temporary presence of Amtrak operations through September 2018 as Amtrak continues to divert its Empire Service Line from Penn Station to Grand Central Terminal. Intumescent paint is being applied to structural steel. This work continues on the tertiary critical path for the contract.

Wellways: In Wellway #1, the scaffolding is being re-installed to install ceiling panels. In Wellway #2, inspection of the escalators (4) is underway. Installation of escalators began in Wellways #3 and #4.

47th Street Cross Passage: All work is on hold per Stop Work Order due to a pending design change of the area. At Elevator #13, a Stop Work Order has been directed because the contractor has uncovered unforeseen conditions. The redesign of this entrance continues and the work is now the primary critical path for this contract. East 50th Street Vent Building: The Vent Building continues in full fit-out mode. Work includes fuel oil piping, HVAC pipe testing and pulling branch and outlet wire. Installation of Elevator #9 continues.

VM014 – Vertical Circulation Elements (Escalators and Elevators):

Schedule: In the MTACC May 2018 Report to the PMOC, it is reported that, through May 31, 2018, 59.5% of this contract has been paid. Through July 31, 2018, contract CM007 preparations continued for the beginning of escalator installations during the first week of August 2018.

Although this contract includes milestones covering fabrication and delivery of escalators and elevators, the actual schedule for those areas is driven by the respective schedules and access dates provided by the CM014B and CM007 contractors.

Construction Progress: The contractor still needs formal direction on elevator/escalator unit numbering plan. The MTACC CCM advised that a package on temporary cab protection for Elevators #1 and #2 are being prepared for LIRR review.

Queens Contracts

Costs and substantial completion dates are tabulated below for active Queens Contracts:

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CQ032	265.4	261.5	4.0	260.6	257.5	100.0%	99.7%	9/6/16	12/31/18	
	nc	nc	nc	nc	(-6.7)	nc	nc	nc	nc	
	265.4	261.5	4.0	260.6	264.2	100.0%	99.7%	9/6/16	12/31/18	
CQ033	308.0	294.7	13.3	94.2	347.2	36.3%	32.0%	8/10/20	9/30/20	
	nc	nc	nc	+10.1	+1.4	+3.1%	+3.5%	nc	(-21cd)	
	308.0	294.7	13.3	84.1	345.8	33.2%	28.5%	8/10/20	10/21/20	

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.

Please refer to the contract narratives for additional information.

CQ032 – Plaza Substation and Queens Structures:

Schedule: MTACC is currently projecting, MS#6, Substantial Completion (SC), by December 31, 2018, and MS#7, Final Completion, at March 31, 2019.

Construction Progress: During July 2018, the CQ032 contractor continued to address various open items required to achieve SC: work regarding closure of NCRs, work to eliminate water infiltration conditions, documentation, and other commercial items. SC was not achieved in July 2018. Of concern are the five NCRs on tunnel ductbench as-built deviations from plan.

CQ033 – Mid-Day Storage Yard Facility:

Schedule: MTACC reports that Milestones MS#1, MS#2, MS#3, and MS#4 have been achieved. Milestones MS#4A (Start Integrated Testing), MS#5 (YS Track Completion), and MS#6 (Substantial Completion) are impacted by the delay of Access Restraints AR#1 and AR#2. AR#1 requires Amtrak to remove rail located at the west end of the Mid-Day Yard. AR#2 requires the installation of new catenary poles and Amtrak wire transfers, and new pole locations are obstructed by an existing Amtrak signal trough. The contractor requires both AR#1 and #2 to install underground ductbanks, to complete the YS Track, followed by Integrated Systems Testing. MTACC currently forecasts MS#6 Substantial Completion (SC) at September 30, 2020, -51 days.

Construction Progress: The CQ033 contractor continued the following construction activities in July 2018: fire line installation, water main, sanitary and storm pipe installation, and duct bank construction. Other activities: Car Appearance Maintenance (CAM) platform work continued, Personnel Access Bridge foundation work continued, and catenary structure work continued. Cart Storage Building foundation work also started in July 2018.

Systems Contracts

Costs and substantial completion dates are tabulated below for active Systems contracts:

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CS179	606.9	565.4	41.5	402.0	646.3	77.5%	70.5%	7/1/20	5/24/21	
	nc	nc	nc	+4.3	+0.5	+2.3%	+0.2%	nc	+14cd	
	606.9	565.4	41.5	397.7	645.8	75.2%	70.3%	7/1/20	5/10/21	1
CS084	79.7	73.0	6.7	14.2	83.1	82.9%	19.5%	12/2/19	12/21/20	
	nc	+0.1	(-0.1)	+0.3	(-0.1)	+1.5%	+0.5%	nc	+13cd	
	79.7	72.9	6.8	13.9	83.2	81.4%	19.0%	12/2/19	12/8/20	1
VS086	21.8	19.9	1.9	9.9	22.3	NA	49.8%	10/14/19	10/14/19	
	nc	nc	nc	+0.8	(-0.1)	NA	+4.3%	nc	nc	
	21.8	19.9	1.9	9.1	22.4	NA	45.5%	10/14/19	10/14/19	1
VH051	30.2	29.5	0.7	29.3	30.1	NA	99.2%	4/30/15	5/20/18	
	nc	nc	nc	nc	(-0.1)	NA	nc	nc	nc	
	30.2	29.5	0.7	29.3	30.2	NA	99.2%	4/30/15	5/20/18	2

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value
Please refer to the contract narratives for additional information.

1. Forecast SC is based on the approved schedule that does not account for open unresolved issues. The PMOC believes that addressing open issues will have significant negative impact on SC dates.
2. Substantial completion not declared.

CS084 – Tunnel Systems Package 4 – Traction Power Systems:

Schedule: The information for CS084 is supplemented by discussions at a mid-July 2018 Progress Meeting that reviewed contract progress up to July 10, 2018. The contractor continues to contend that the variance in the actual versus planned progress is because: 1) funds are not being 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 unlimited access to all substation rooms has precluded the contractor from performing many construction activities. However, a significant portion of the required substation equipment has been released for fabrication, which should cause the invoiced costs to increase at a faster pace. 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, unresolved issues, and site access restraints. The timely development and issuance of necessary contract modifications on this contract and other contracts for which work is required to progress the CS084 work 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 remains an item of concern. Although some minor SCADA information is still needed, the sub-contractor responsible for the final integration design and fabrication of the SCADA-related equipment is moving forward with the necessary SCADA and PLC designs. Other designs related to construction issues are being progressed by the GEC. The PMOC continues to have concerns about the length of time it is taking to address the various design approval issues.

Construction Progress: Some equipment for several of the substations has been fabricated and delivered to storage, where it will remain until the TPSS rooms for those substations are ready for their installation of the substation equipment. The contractor continues to cite coordination issues, design approval delays, access restraints, and differing site conditions as its reasons why work at the various locations cannot progress. With the exception of construction work at the CO5 substation, every one of the remaining six regular substation facilities (C01/C02, C03, C04, and C06/C07) has some level of noted deficiencies or coordination issues precluding the start of significant construction by the contractor. Progress on addressing the issues is severely limited, as a significant number of the cited issues involve coordination with other contracts and will require the development and issuance of contract modifications to various contracts. The PMOC remains concerned about several issues, including:

1. Equipment delivery methodology;
2. Installation of known missing conduit and manholes;
3. Transformer hi-pot testing failure (two test failures);
4. Verification of existing conduit and manholes in several substations;
5. Coordination with other contractors;
6. Traction power cable from C08 substation; and,
7. Improper storage and handling of the 26 inductive reactors provided by MTA.

CS179 – Systems Package 1 – Facilities Systems:

Schedule: While MTACC reports that the SC date for this contract is May 24, 2021, the PMOC questions the validity of achieving substantial completion by that date, because the 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 NOCs; and, 5) does not address any impacts to the contract work from SWOs that remain in effect past the data date of the schedules. Further, MTACC and the contractor have yet to develop a comprehensive Integrated System Test Plan (ISTP) for all the Systems being installed on the ESA Project. MTACC's goal to develop a realistic schedule remains elusive. Three Buy/Ship America issues regarding small HVAC units, public address system speakers, and video monitor display panels remain unresolved. These open Buy America compliance issues pose schedule risks to the successful and timely completion of this contract. The contractor continues to note that there are 30 NOCs contributing to its inability to finalize the design; 12 of which MTACC was to issue Contractor Proposal Requests (CPRs) and 10 more that exceed the 30-day turnaround time duration provision in the contract. MTACC's inability to develop and issue promised CPRs on a timely basis for the NOCs is a significant issue impacting progress on the contract.

Design Progress: The approval of all 10 control system Final Designs (FDs), a critical activity, is now 27 months late. MTACC Senior Management indicates that the LIRR has formally approved 8 out of the 10 Control System FDs. The PMOC, as previously reported, is only aware of 7 formal signed concurrences by the LIRR; and, has asked MTACC to provide a copy of the signed concurrence for the Building Management System – the 8th system noted as approved by MTACC Senior Management. The contractor is also responsible to design, install, and test 19 Non-Control systems; several of which, according to the contractor, continue to have FD progress falling behind schedule. The contractor contends that the lack of resolution on open items (e.g., the open NOCs) is the primary cause for these delays. Despite not having LIRR approval of the FDs for the various Control and Non-Control Systems, the contractor continued to move forward with the development of test plans and equipment fabrication. Moving forward without approved designs on equipment

procurement and fabrication is, as previously noted by the PMOC, a risk to the timely completion of this contract due to possible future non-acceptance by LIRR. The contractor continues to indicate that any continued progress on both these efforts is being severely hampered by unanswered RFIs and unissued CPRs that have the potential to alter existing designs. Further, factory testing of equipment for 5 of the 10 Control Systems is on hold pending the resolution of adjacent contractor coordination issues and Stop Work Orders issued on the CS179 contract.

Construction Progress: In July 2018, the CS179 contractor continued to progress 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. In July 2018, the contractor reported that water infiltration issues at the C03 and C04 substation locations were impacting the progression of CS179 work. Both MTACC and the contractor believe that the water infiltration issue at the C04 substation might be a result of a break in a cable conduit – one that already has cable installed in it. A further investigation of the cause of the water infiltration is needed. The subcontractor developing the Control and Non-Control systems continues to request information from MTACC to enable it to finalize testing plans and procedures, as well as plans for system training; but, due to the many open NOCs/CPRs and RFIs, MTACC has been unable to provide much of that information.

VS086 – Systems Package 3, Signal Equipment Procurement:

Schedule: The information for VS086 is supplemented by discussions at a mid-July 2018 progress meeting that reviewed progress up to July 19, 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 needed 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. However, while the milestones will still require adjustment, MTACC recently made some unilateral decisions regarding the use of specialized track circuit equipment that will enable the contractor to progress design work. 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.

Design Progress: The contractor continued to assert that the lack of timely responses on design submittals and inquiries caused delays in the progression of the work. In an effort to resolve such issues, MTACC, LIRR, and the contractor implemented the following changes:

1. Use of incandescent lighting in lieu of LED lighting for tunnel signals;
2. Use of TRU-III signal circuit equipment;
3. Factory Acceptance Test (FAT) for Plaza Interlocking will be performed locally;
4. The Factory Integrated Acceptance Test will be performed at GCT-4 Interlocking rather than Plaza Interlocking; and,
5. MTACC plans to accelerate use of ATT-20 track circuit equipment.

Additionally, in July 2018, the issue of Electro-Magnetic Interference (EMI) with ESA signal and communications equipment was identified. This issue is presently being analyzed and MTACC and the contractor are attempting to resolve it as quickly as possible.

Equipment Fabrication Progress: The contractor reported that it resolved a wire size issue with LIRR and is now completing the signal cases for Plaza Interlocking. With direction now being given by MTACC on signal lighting and the use of specialized track circuit equipment, the contractor will revise and re-submit its Plaza Interlocking FAT Procedure. Once that Procedure is approved, a final date for the “internal” FAT of Plaza Interlocking will be established. The FIAT, which follows the FAT, is presently scheduled to occur in March 2019; but, is subject to adjustment depending on FAT results, the completion of inter-related designs being done on the ESA CS179 contract, and the timeliness of the award of the ESA CS086 contract.

Harold Interlocking Contracts

Costs and substantial completion dates are tabulated below for active Harold contracts:

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CH061A	42.0	35.6	6.4	26.9	39.8	95.8%	75.4%	5/28/18	8/16/18	
	nc	+1.2	(-1.1)	+2.2	(-0.6)	+3.8%	+3.7%	nc	+65cd	
	42.0	34.4	7.5	24.7	40.4	92.0%	71.7%	5/28/18	6/12/18	1

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.

1. Substantial completion not declared.

CH057D – Harold Trackwork Part 3

Schedule: The CH057D contractor began mobilization to do the Northeast Quadrant (NEQ) trackwork in Harold Interlocking in June 2018 and began demolition of existing trackwork and excavation of subgrade during July 2018. The contractor successfully achieved Milestone #2, excavation of subgrade, by July 31, 2018.

Construction Progress: As noted above, the CH057D contractor completed mobilization and began demolition of existing trackwork and completed excavation of subgrade in preparation to install new turnouts and track during July 2018.

CH061A – Track A Cut and Cover Structure:

Schedule: During July 2018, the CH061A contractor remained on schedule for MS #3, Substantial Completion, and MS#4, Final Completion, on August 14, 2018, and August 27, 2018, respectively.

Construction Progress: During July 2018, the CH061A contractor continued to construct parapet walls on the Tunnel A Approach Structure and continued to construct ductbench within the tunnel itself.

Railroad Force Account Contracts

Railroad force account agreements do not contain schedule requirements, so the PMOC will not report on schedules in this section. Costs and substantial completion dates are tabulated below for active Force Account contracts:

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
	18.8	18.8	--	18.6	18.8	100.0%	99.0%	2/4/16	4/20/19	
	nc	nc	nc	nc	nc	nc	nc	nc	(-163cd)	
FHA01	18.8	18.8	--	18.6	18.8	100.0%	99.0%	2/4/16	9/30/19	1
FHA02	60.2	60.2	--	58.0	60.5	100.0%	96.4%	8/15/17	6/12/19	
&	nc	nc	nc	+0.6	+4.8	nc	+1.0%	nc	nc	
FHA03	60.2	60.2	--	57.4	55.7	100.0%	95.4%	8/15/17	6/12/19	1
	27.3	27.3	--	26.8	35.6	100.0%	98.2%	1/31/19	2/13/19	
	nc	nc	nc	+0.2	(-0.4)	nc	+0.8%	nc	+87cd	
FHL01	27.3	27.3	--	26.6	36.0	100.0%	97.4%	1/31/19	11/18/1	1
									8	
FHL02	96.6	96.6	--	106.6	112.4	100.0%	110.4%	11/25/16	8/26/20	
&	nc	nc	nc	+10.0	(-7.8)	nc	+7.5%	nc	nc	
FHL03	96.6	96.6	--	96.6	120.2	100.0%	102.9%	11/25/16	8/26/20	1

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.

Please refer to the contract narratives for additional information.

1. 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 July 2018. The PMOC is not concerned about this because the remaining Stage 1 work will only take one day and is presently scheduled to be done after the Northeast Quadrant trackwork, which is scheduled for August 2018.

FHA02 and FHA03 – Harold Stage 2 and Stage 3 Amtrak:

Construction Progress: During July 2018, Amtrak C&S personnel continued to test and adjust signal circuits along its New Haven tracks east of Harold Interlocking to support the LIRR CIL cutovers, which were completed in July 2018. Amtrak Electric Traction (ET) personnel removed the catenary wires over LIRR PW #1 Track in the Northeast Quadrant to allow the trackwork scheduled in August 2018 to proceed without overhead wire interference. ET personnel also resumed construction to extend catenary wires over the LIRR Eastward Passenger Track (ELIP) as part of the “PW2 Overrun” project task.

FHL01 – Harold Stage 1 LIRR:

Construction Progress: LIRR Force Account personnel did not complete any significant Stage 1 work during July 2018.

FHL02 and FHL03 – Harold Stages 2 and 3 LIRR:

Construction Progress: During July 2018, LIRR Signal personnel completed cutovers of the “H1”, “H2”, and Location 30 Central Instrument Locations (CILs) in Harold Interlocking. LIRR 3rd Rail Electric Traction personnel removed existing 3rd rail on those Northeast Quadrant (NEQ) that were removed as part of the reconfiguration of Harold Interlocking and provided support for the CIL cutovers. LIRR Track personnel began NEQ track reconfiguration on LI PW 1 (Port Washington

#1), ML1 (Main Line #1), and ML3 (Main Line #3) Tracks, and removed the #803 and #805 crossovers during the process.

d. Quality Assurance and Quality Control

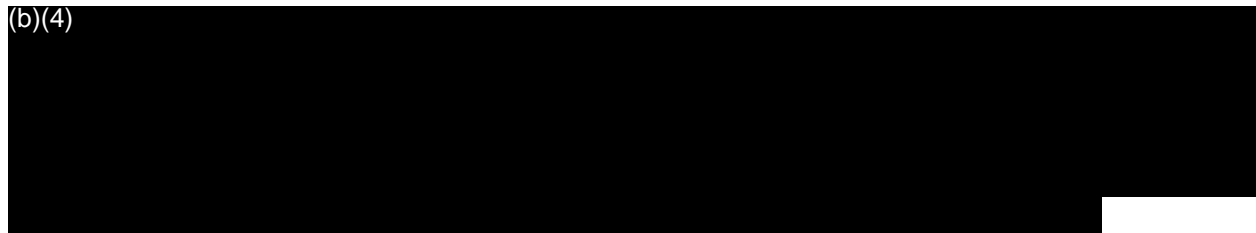
The PMOC reports Quality Assurance/Control issues in its quarterly comprehensive reports. MTACC did not report any significant issues regarding Quality Assurance or Quality Control in its ESA May 2018 MPR. The PMOC continues to track developments regarding the Contract CS084 transformer test failures that occurred in April 2017 and February 2018.

2.0 SCHEDULE DATA

Status and Schedule Contingency

The schedule information in this report is based on the ESA (Alternative) Integrated Project Schedule (IPS) 106 (data date: June 1, 2018) and IPS Progress Report. In this IPS update, the Target Revenue Service Date (RSD) remains forecast on February 21, 2022. The Late, or “public,” RSD remained on December 13, 2022, as previously forecast.

(b)(4)



In IPS 106, the Manhattan/Systems work path remained the most critical, while float changes on the order of critical work paths through Harold Interlocking and Queens reversed. The Harold Interlocking work path ascended to second position and the Queens work path dropped to third position. As shown in Appendix B, Chart 1, the three primary program critical paths in IPS 106 are: 1) Manhattan/Systems work (no float); 2) Harold Interlocking work (205 CDs float); and, Queens work (216 CDs float). Note that the float on the Queens work path (Mid-Day Storage Yard) is being managed to the start of the LIRR FRA Testing (signals and power) activity and the float on the Harold Interlocking work path is being managed to the start of the LIRR Final Systems Test activity.

Table 2.1 shows dates, remaining durations, and contingencies for the Target, Late, and FFGA Revenue Service Dates.

Table 2.1: Schedule Contingency – June 1, 2018 ESA IPS 106

(b)(4)



Program Primary Critical Path – Manhattan/Systems

The primary critical path in the ESA June 1, 2018 IPS remains through Manhattan/Systems work and ends on May 4, 2021 (no float remaining). Table 2.2 shows the work and contracts that comprise the Manhattan/Systems work path through the Late/Public RSD along with forecast start and finish dates, as reported in the June 1, 2018 IPS. There were no changes to the Manhattan/Systems work path in this IPS update. The end date of the Manhattan/Systems work path slipped by approximately two weeks in this IPS update. This slippage resulted in the program Issue Contingency activity likewise being shortened by approximately two weeks.

The PMOC notes that the incremental testing approach that this IPS schedule is based on remains as an MTACC proposal, which has not yet been accepted by either the LIRR or the contracts that would be impacted (CM007, CM014B, CS179, CS084). Therefore, dates and contingency forecasts in the June 1, 2018 IPS are subject to execution of agreements with the contractors so that incremental testing can begin on or about the June 2019 ESA need date. The ESA program schedule contingency could be impacted if the Incremental IST is not started in this timeframe. The work at the beginning of the Manhattan/Systems critical path is CM014B MEP work, which is progressing slowly. The completion of this work lost approximately four weeks in this IPS update. The schedule forecast shows that approximately half of the lost time will be recovered through the completion of the IST. This portion of the critical path includes GCT CM014B finishes and then continues on to CS179 device installation and local testing in GCT Zone 1. The completion of this work leads to the start of Phase 3 backbone communication system IST and then Phase 3 fire alarm testing and the end of the Manhattan/Systems critical path on May 4, 2021. At this point, LIRR FRA testing for signals and traction power begins and is followed by LIRR final testing and previews. This is followed by contingency time, which has been reduced by approximately two weeks in this update, and which has been provided to address impacts from potential future issues, leading to a Target RSD of February 21, 2022.

Table 2.2: Primary Critical Path – June 1, 2018 IPS

Activity Name	Duration	Start	Finish
CM014B – GCT Concourse and Facilities Fit-Out			
Install MEP conduits, piping, ducts, and devices	530	8-Mar-17	20-Aug-18
Install wall, floor, ceiling, and retail finishes	581	20-Aug-18	23-Mar-20
CS179 – System Package 1 – Facilities Systems			
GCT Concourse wire, terminate, install devices, etc.	224	23-Mar-20	2-Nov-20
IST for BCS systems in GCT Concourse and Caverns	77	2-Nov-20	18-Jan-21
IST for FLS, VCE, security, etc. systems in GCT	106	18-Jan-21	4-May-21
Program Activities			
FRA Testing (signal and power) †	113	4-May-21	24-Aug-21
LIRR Final Tests and Final Preview ‡	83	24-Aug-21	14-Nov-21
Issue Contingency	(b)(4)		
Target Revenue Service Date			
ESA Program-Level Contingency	(b)(4)		
Public Revenue Service Date			
			13-Dec-22

Notes: † Successor to Manhattan/Systems critical path and Queens critical path.

‡ Successor to Harold Interlocking critical path.

The Manhattan/Systems work path is subject to change due to several open/unresolved issues. The first is that the schedule includes a proposal for incremental IST, which needs to be discussed, negotiated, and accepted by the LIRR and CS179 contractor, in addition to the contractors for the interfacing contracts. The second issue is that the schedule includes a single placeholder activity of one year in duration for the construction of the 47th Street Entrance.

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

Appendix B, Table 7 shows the ESA Program the activities on the primary critical Manhattan/Systems work path that are planned for the next 90 days as forecast in the June 1, 2018 IPS.

Sub Program Longest Path – Queens

The June 1, 2018 IPS shows that the Queens work path changed during the update period and now completes 21 CDs earlier than in the prior IPS, ending on September 30, 2020. The float on the path has increased to 216 CDs due to changes on the Manhattan/Systems path. This change resulted in the Queens work path dropping to become the third most critical path.

The initial portion of the Queens path changed due to the insertion of the west end mitigation plan, CPR PCO 211, to address the conflict between the signal trough and catenary system. This mitigation affords an earlier start to the testing of the Mid-Day Storage Yard by three weeks. The Queens path ends on September 30, 2020. This is followed by 216 CDs of float leading to the start of LIRR FRA testing for signals and power in May 2021, at which point the path merges with the Manhattan/Systems critical path. The increased float on this path is due to delays on the Manhattan/Systems work path.

Sub Program Longest Path – Harold Interlocking

The June 1, 2018 IPS shows that the Harold Interlocking critical path remained the same this update period. Although it completes approximately one day earlier on February 1, 2021, the float

has increased by approximately 19 calendar days due to changes on the Manhattan/Systems path. In spite of this improvement, the Harold Interlocking path ascended to become the second most critical path of the ESA program. The PMOC notes that the FHL02 CIL pre-cutover testing is no longer a risk since it has now been completed as planned, although it has not yet been shown in the schedule since it occurred after the IPS data date.

The Harold CIL cutovers are followed by the CH057D construction of the Northeast Quadrant (NEQ). NEQ track work requires extended track outages during July and August 2018. The CH057D construction continues on to southeast quadrant (SEQ) track work and Tunnel B/C preparation work. If LIRR is unable to support SEQ construction as scheduled, the Harold critical path may be impacted because certain SEQ construction is a predecessor activity to future Contract CH058A B/C Approach Structure construction. The CH058A construction schedule is driven by 39th Street underpinning; completion and backfilling the box structure; installation of the duct bench (to 1206+05); and, completion of B/C approach civil and track work (beyond 1206+05). This work is followed by handoffs to CM007 (track), CS084 (traction power), CS086 (signals), and CS179 (communications) up to 1206+05; and, to LIRR FHL04 force account for track and signal installation, testing, and cutover for the B/C track from 1206+05 to Harold. The Harold work path ends on February 1, 2021, and has 205 CDs of float to the start of LIRR final systems testing in May 2021, at which point the path merges with the Manhattan/Systems critical path. The increased float on this path is due to delays on the Manhattan/Systems work path.

The Harold work path is subject to change due to several open/unresolved issues. The PMOC notes that the schedules for two of these contracts – CH057D and CH058A – are preliminary. CH057D was awarded on April 12, 2018 and an approved baseline schedule has not been incorporated into the IPS. Bids for CH058A were due on July 31, 2018, but the bid date was extended to August 9, 2018.

Upcoming Contract Procurements

Table 2.4 shows the status of current and upcoming contract procurements, as reported in the June 1, 2018 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	7/2/18	29 mos.	12/3/20
CH058A: B/C Tunnel	5/8/18A	7/31/18	8/13/18	27 mos.	11/9/20

Negotiations concluded in early May 2018 for CS086, Tunnel Systems Package 2 – Signal Installation, for the RFP received on October 31, 2017, from a single proposer. The MTA board approved MTACC’s recommendation to award Contract CS086 at the June 2018 meeting. The contract has not been awarded as of July 31, 2018.

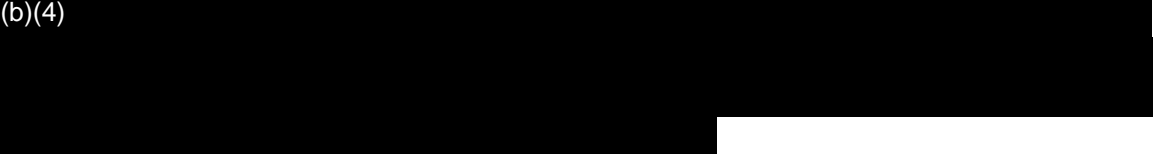
CH058A, B/C Tunnel, was advertised on May 8, 2018, with the Notice to Proceed now anticipated to be August 13, 2018. LIRR resource availability to support Southeast Quadrant work may delay the procurement of CH058A. MTACC and LIRR are reviewing steps to mitigate the delay.

The procurement of CM015, 48th Street Entrance, has been removed from active reporting and from the budget. It is anticipated that the procurement will be deferred until 2020. The PMOC

notes that the PMT is developing alternative access at 47th Street that will be built by contract modification to CM014B.

PMOC Concerns

The PMOC has the following observations and concerns about the ESA schedule:

1. (b)(4) 
2. Slippage on the ESA program primary critical path through Manhattan/Systems work has delayed its completion until May 4, 2021, resulting in a reduction of the Issue Contingency duration of approximately two weeks. Until MTACC works through the uncertainties concerning the schedules for incremental IST and the 47th Street Entrance, it is likely that future completion forecasts may predict further delays and reductions of the Issue Contingency. These two issues are significant concerns.
3. The ESA program most critical path has no float and several significant open/unresolved issues; while the second and third critical paths have significant float – greater than six months – which in turn renders them as not critical. The PMOC believes that the true three most critical paths that currently present the major schedule risks to the on-time completion of the ESA program all run through the contracts that constitute the Manhattan/Systems scope of work, which effectively ends with the completion of IST and start of LIRR FRA testing. The PMOC recommends a closer analysis of the activities leading to the start of LIRR FRA testing to reveal the contracts and work that pose the greatest schedule risks. These additional contracts may include CM007, CS084, and CS086, each of which has its own schedule challenges that may not be readily apparent due to their absence from critical path reporting.
4. The ESA Program needs contract schedules for CH057D Harold Structures and CH058A B/C Tunnel Approach, both of which are the Harold Interlocking critical path. The PMOC recommends that schedules be obtained as soon as possible so that the critical path duration can be predicted accurately.
5. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported at 19.5% complete compared with 82.9% as-planned. The PMOC observes that much of the work has had day-for-day delays in each IPS update period. The PMT is working with the contractor to get a realistic schedule; however, the PMOC believes that a revised schedule will recognize delays in equipment delivery, which will push out milestone dates. The PMOC recommends that ESA analyze options to recover the schedule, focusing on resolution contractor, coordination issues and access restraints, identifying major issues, and determining corrective measures.
6. Concerns continue for the delays in the procurement of CS086, Tunnel Systems Package 2 – Signal Installation. With award of CS086 delayed to August 2018 at the earliest, the PMOC is concerned that the delays may eventually impact the Program schedule in spite of its contract duration having been reduced to 29 months.

3.0 COST DATA

Budget/Cost

At the April 23, 2018, MTA board meeting, MTACC received approval to reallocate \$349.6 million of ESA funds from current and prior Capital Plans and to temporarily transfer \$157 million from the Regional Investment program to the ESA program. These changes have been incorporated into the ESA program and the revised ESA program budget is now \$10.335 billion (excluding rolling stock reserve and financing costs).

In the ESA May 2018 MPR, the PMT reported that the total project progress was 77.1% compared with planned progress of 82.8% of the \$10.335 billion Current Baseline Budget (CBB). The report also shows that construction progress reached 79.9% complete of the CBB compared with planned progress of 85.0%, based on invoiced construction costs. (Details of the project budget and expenditures are shown in report Appendix B and report section 1.0-c.)

During May 2018, a number of adjustments were performed that brought the budgets in line with the revised cost profile which was approved by the MTA board in April 2018. The budgets of certain ESA program line items were reduced or defunded entirely, resulting in reductions of: \$60 million from third party construction; \$33 million from force account construction; \$10 million from project management; \$53 million from real estate; and, \$195 million from rolling stock. The reductions and defunding are temporary budget actions. Funding will be restored to contracts on an as-needed basis. (b)(4)

Contingency

(b)(4)

Table 3.2: ESA Cost Contingency (Costs shown in millions)

(b)(4)

(b)(4)

(b)(4)

The PMOC remains concerned about future demands on the program’s contingencies until the MTA 2020–2024 Capital Plan is funded and the related budget adjustments are performed.

Change Orders/Budget Adjustments

The May 2018 MPR lists eleven Change Orders with magnitudes greater than \$100,000 that were executed in May 2018. The net value of these change orders was \$14.0 million.

Table 3.3: Change Order Log (magnitude > \$100,000)

Contract	Description / Mod No.	Amount
CH061A	Deletion of B-918.5N and B-914W Guy Anchor & Revision of Milestone 2 (mod. 9)	(195,750)
CH061A	Flowable Fill in Existing Tunnel A (mod. 10)	348,000
CH061A	Existing Soldier Pile CLSM (mod. 11)	1,030,000
CM004	Final Resolution of Outstanding Issues (mod. 91)	(131,666)
CM014B	Delete Emergency Shutoff Switches (mod. 112)	(104,427)
CM014B	RFI No. 487: 50th Street Vent Building Security Conduits for Existing Doors (mod. 152)	153,278
CS179	Water Infiltration Issues at Queens Facilities (mod. 74)	2,768,000
CS179	GCT 4 & 5 Room and Equipment Modification (mod. 86)	407,204
GEC	ESA General Engineering Consultant (GEC) Services (mod. 155)	446,293
CCM	Extension of service from April 2018 to June 2018 (mod. 17)	2,500,000
PCM	Extension of service from April 2018 to June 2018 (mod. 41)	6,842,377

Funding

Budget Amendment #3 to the 2015–2019 Capital Plan has been incorporated into the ESA program budget. This action added \$157 million (local funds) and increased the overall ESA program budget from \$10.178 million to a new value of \$10,335 million.

Federal Funding: The total Federal funding commitment to the ESA project is \$2,699 million, of which \$2,698 million was expended through June 1, 2018.

Local Funding: The budget for Local Funding, including the \$157 million added in Budget Amendment #3, is now \$7,637 million. Through June 1, 2018, \$5,067 million of local funds were expended. Financing costs are funded and paid separately from other local sources.

PMOC Concerns and Recommendations

1. (b)(4)

While this strategy gives the MTACC maximum flexibility, it differs from the generally accepted practice of committing to budgets for known program costs. This approach tends to artificially inflate the contingency and reduce the accuracy of the calculation of percent complete. The PMOC recommends that MTACC expedite discussions and negotiations with the CS179, CS084, VS/CS086, CM007, CM014B,

and CQ033 contractors to resolve the major open cost and schedule issues, and incorporate the Incremental IST so that the associated budget lines can be adjusted as soon as possible.

2. The MTACC needs to prepare their 2020–2024 Capital Plan, which is anticipated to include approximately \$950 million to complete the ESA program and to restore \$157 million to the Regional Investment program. This future potential funding constraint could be 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 extended schedule for incremental Integrated Systems Testing.
 - CS084 – the late completion of final design has delayed completion of fabrication of some traction power equipment; transformer test failure, and
 - 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 rate of planned/scheduled expenditures anticipated during their 2014 rebaselining. This may be a negative indicator for the ESA project’s ability to achieve the target date for revenue operations. The PMOC will reevaluate when an updated cost plan is available.

4.0 RISK MANAGEMENT

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

Harold Interlocking – ESA Risk

Harold Re-Sequencing Plan (“ESA First”) Risk

Through July 2018, MTACC continued to adjust the “ESA First” Harold Re-sequencing plan to accommodate railroad force account constraints. As a result, the impacts caused by insufficient Amtrak support were reduced during this period, but not totally eliminated. This situation continues to be a challenge for MTACC although noticeable improvements have been reported through July 2018 for LIRR direct Force Account work and Amtrak ET support.

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 1 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 deferred until 2025, starting with Line 2. Amtrak has provided no details regarding how this change might affect the remaining predecessor hardening work for ERT Lines 1 and 4. The risk remains that reliability issues might require Amtrak to make emergency repairs on either Line 1, 2, or 4 at any time between now and the forecast RSD of December 2022.

LIRR Positive Train Control (PTC) Risk

This risk has three distinct elements, as discussed here.

- a.) A potential risk that may be realized in the near future is the impact that LIRR installation of Positive Train Control (PTC) in Harold Interlocking may have on the Harold Critical Path work, especially the successor activities to the CIL cutovers completed in July 2018. Although LIRR originally submitted a waiver request to the FRA in early October 2017 to have the December 31, 2018, deadline extended and submitted a revised request in late

December 2017, the possibility exists that FRA might not grant the waiver based on LIRR's response, due August 2, 2018, to the FRA's May 2, 2018 request to resubmit the alternate PTC implementation plan and revised schedule. If the waiver is denied, PTC installation may take precedence over the ESA work in Harold.

- b.) Another risk is that LIRR may divert some level of force account resources away from support for the ESA work to provide support for LIRR's systems-wide PTC work during the remainder of 2018.
- c.) LIRR was not able to complete PTC design in 1Q2018, as earlier projected, and design completion is now expected later in 2018. The GEC does not believe that this will be a problem because ESA/GEC has been coordinating with LIRR regarding the required PTC design changes for the associated ESA Contracts VS086, CS086, and CS179. The PMOC is following up with the PMT to determine if this situation presents any schedule risk to the three cited ESA contracts and also with regard to finalization of the CS179 Integrated System Testing Plan.

Capital Funding Risk

The MTACC addressed its concerns for ESA program funding through December 2020 with Budget Amendment 3 for the 2015–2019 Capital Plan. MTACC is also forecasting a need for approximately \$956 million in the 2020–2024 Capital Plan. The PMOC remains concerned that – until the 2020–2024 Capital Plan is approved – this potential future funding constraint may significantly impact the program budget and schedule as well as the start of Revenue Service.

ESA Vehicle Risk

The PMOC remains concerned about the schedule slippage of the LIRR federal vehicle procurement program for the M-9A vehicles because it has the potential to significantly impact delivery of the vehicles, and, hence, MTACC's Revenue Service Date. The PMOC notes that, although the LIRR issued the Phase I, "Qualifications", portion of the two part competitive RFP procurement in November 2017, it had not issued the Phase II, "Cost/Technical", portion by the end of July 2018 as it continued to review vendors' "Qualifications" submissions. The procurement schedule is based on a December 2018 contract award and will require that the prospective vendors' submissions for both the Phase I and Phase II portions of the RFP are complete and satisfactory. The PMOC is growing increasingly concerned that the December 2018 award may not be met based on the amount of time and effort normally involved with a procurement of this type.

Manhattan/Systems Performance Risk

The PMOC is concerned that the ESA program primary critical path is through Manhattan/Systems work. Slow progress on CM014B MEP and finishes resulted in the loss of two to four weeks in May 2018. Additionally, this path is at risk for future open/unresolved issues across multiple contracts. The first is that the schedule includes a proposal for incremental IST, which needs to be discussed, negotiated, and accepted by the LIRR and CS179 contractor, and the other interfacing contractors. The second issue is that the schedule includes a single placeholder activity of one year in duration for the construction of the 47th Street Entrance.

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 3Q2017. In April 2018, FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses management changes resulting from the MTACC Six-Point Plan for ESA.

- **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 from the railroads’ Force Account resource availability, track outages, and other issues regarding the remaining work in Harold Interlocking.
- **Project Management Plan:** MTACC is using the current version of the PMP, Rev. 10, that the PMOC reviewed and the FTA accepted earlier in 2017.
- **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.

(b)(4)

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 Rev. 2 of the SMP, dated September 2016.
- **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 Rev. 2 of the CMP, dated October 2016.
- **Risk Management Plan:** ESA submitted the updated Risk Management Plan in 4Q2017. In April 2018, the FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA.
- **Project Quality Manual:** ESA submitted the updated Project Quality Manual in February 2018. In April 2018, FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA.

The ESA PMT is targeting the end of September 2018 to submit a draft updates of Project, Cost, Schedule, Risk Management Plans, and the Technical Capacity and Capability Plan to document

the changes called for by the incorporation of the MTACC Six-Point Plan for ESA to reduce potential programmatic risks.

Revisions to the ELPEP Document: MTACC submitted an updated ELPEP with suggested revisions in 3Q2017. In April 2018, FTA advised MTACC to re-evaluate its proposed updates in consideration of the changes resulting from the MTACC Six-Point Plan for ESA.

6.0 SAFETY AND SECURITY

Based on safety information supplied by MTA, the PMOC calculated ESA Injury Ratios for May 2018 were 2.48 for Lost Time Injuries (LTI) and 4.13 for Recordable Injuries (RI). Both were above the 2018 Bureau of Labor Statistics (BLS) Safety Guidelines of 1.7 for LTI and 2.8 for RI. Additionally, ESA did not report any significant security issues in the ESA May 2018 MPR.

7.0 ISSUES AND RECOMMENDATIONS

Design: The PMT design management team needs to focus on the timely achievement of intermediate milestones and work closely with the GEC to facilitate finalization of the scopes of work for remaining procurement and construction packages. 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 indicate possible technical capacity and capability issues 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 have been 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 resulted in significant delays to the procurement schedules during 2016, 2017, and into 2018. The PMOC recommends that the ESA PMT make an effort to update the current version of the CPP, Rev. 12.0, and minimize shifting scope for the remainder of the project. This update needs to account for all planned contracts and packages, along scope/scope transfers and a procurement timeline.

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, while a number of the water remediation efforts employed have been successful, others have not; and, this has caused delays to construction work. Further, the CS179 and CS084 contractors continue to advise MTACC of more water infiltration issues in areas where work access is now available. Water conditions remain in three main areas under CQ032: 1) the former Launch Block area, 2) the Stair #2 area and, 3) the former Early Access Chamber area.

Contract CQ032: The PMOC remains concerned about the resolution of five NCRs addressing tunnel ductbench as-built deviations from plan that remain on hold pending MTACC review of the Secondary Survey Report. These deviations have the potential to impact continuing trackwork construction and work train operations.

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;
- Resolution and implementation of coordination issues;
- ESA PMT responses to contractor NOCs and issuance of CPRs; and,
- Timely design review and approvals to the contractor’s design submittals and Requests for Information.

Contract CS084: MTACC should prioritize 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, management of coordination issues related to work area access issues with other contractors, the suitability for use of the MTA-supplied inductive reactors, the transformer test failures, 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 are not being made in a timely manner. Although MTACC directed the contractor to utilize the TRU-III track circuit equipment in the signal design, LIRR is still testing the equipment to determine if the equipment is compatible with other LIRR circuitry. LIRR has yet to approve this equipment for use on its property; and, should LIRR reject the use of this track equipment based on the results of its testing, then some signal re-design work will be required. The PMOC recommends that LIRR accelerate its testing of the TRU-III track circuit equipment to reach an early decision on its use on the ESA Project.

Project Funding: The project is at risk due to the anticipated need for approximately \$950 million to address additional costs that were forecast by the PMT in the April 2018 program review. Interim funding needs through December 2020 have been addressed. The PMOC is concerned about future potential impacts on the program budget and schedule if there are delays in funding the ESA program in the 2020-2024 Capital Plan.

Project Budget: (b)(4)

While this strategy gives the MTACC maximum flexibility, it differs from the generally accepted practice of committing to budgets for known program costs. This approach tends to artificially inflate the contingency and reduce the accuracy of the calculation of percent complete.

Project Schedule: (b)(4)

The June 1, 2018 IPS shows that Manhattan/Systems work is the primary critical path for the ESA program. The concern remains as the MTACC proposed incremental IST schedule has yet to be accepted by the LIRR, CS179, contractor and other contractors. The PMOC recommends a closer analysis of the activities leading to the start of LIRR FRA testing to reveal the contracts and work that pose

the greatest schedule risks. These additional contracts may include CM007, CS084, and CS086, each of which has its own schedule challenges that may not be readily apparent due to their absence from critical path reporting

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 a significant MTACC-retained risk. 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 Contracts CM014B, 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 – update of the program budgets and inclusion in the MTA Capital Plan (risk realized in 2Q2018);
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 (risk realized in April 2018); 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.

Specific remaining risks for the Harold Interlocking work, previously identified by MTACC, include the following:

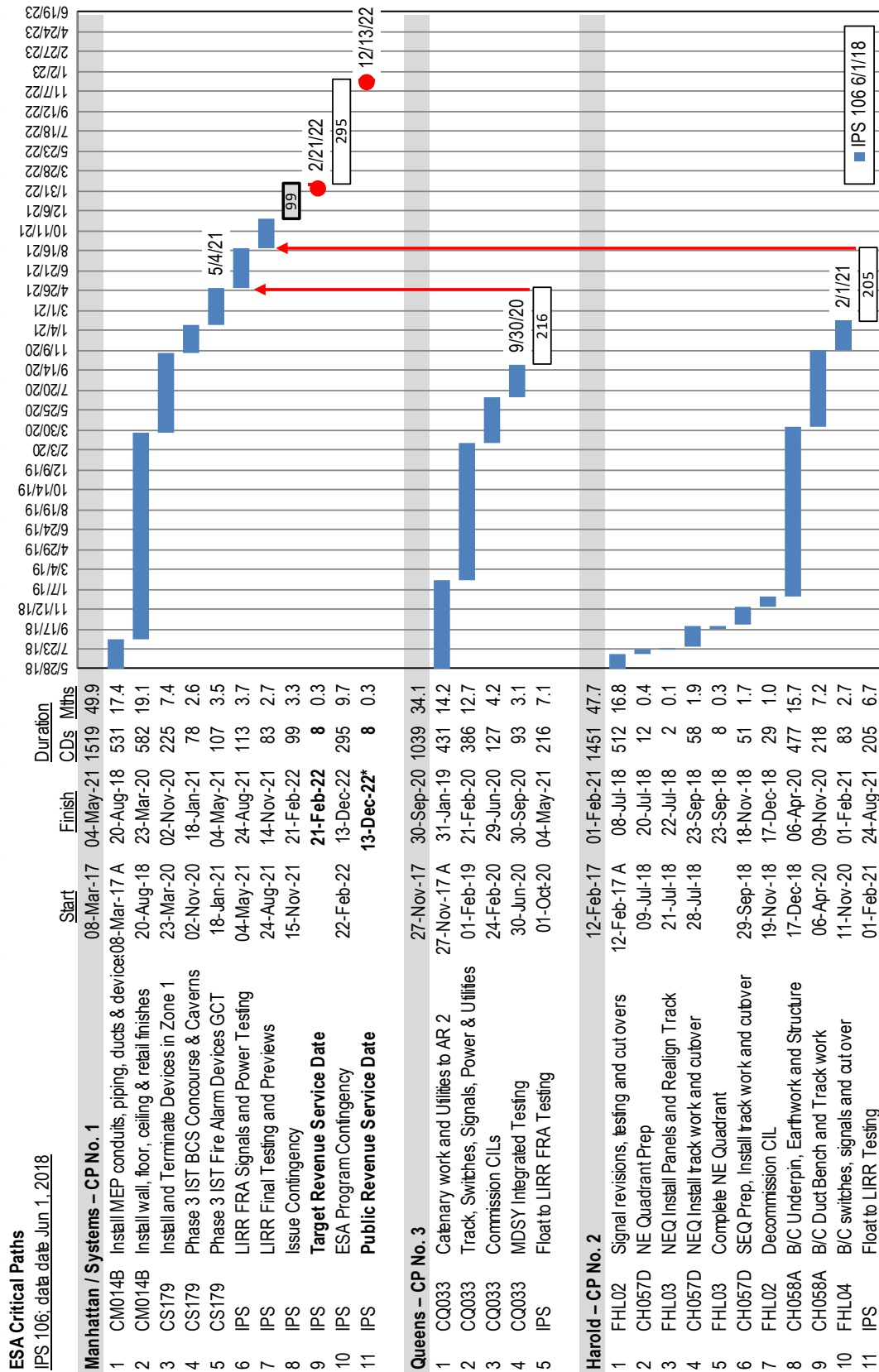
1. Positive Train Control in Harold: LIRR submitted formal waiver request to FRA; LIRR must resubmit its revised PTC Implementation Plan on August 2, 2018.
2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor 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. 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.
5. Funding: ESA Project funding constraints (risk realized in 2Q2017).
6. Amtrak Support: Ongoing/future Regional Projects requiring extensive Amtrak support.
7. Reconstruction of Existing Amtrak ERT Lines 1 and 2: Deferred until after the ESA program. The risk now is from the impact of unplanned emergency tunnel repairs.

APPENDIX A – ACRONYMS

AFI	Allowance for Indeterminates	IST	Integrated System Test
ARRA	American Recovery and Reinvestment Act	LIRR	Long Island Rail Road
AWO	Additional Work Order	LSZH	Low Smoke Zero Halogen
BIM	Building Information Model	MNR	Metro-North Railroad
BLS	Bureau of Labor Statistics	MOD	Contract Modification
BSA	Buy/Ship America	MPR	Monthly Progress Report
C&S	Communication and Signals	MTA	Metropolitan Transportation Authority
CBB	Current Baseline Budget	MTACC	Metropolitan Transportation Authority Capital Construction
CCC	Change Control Committee	NCR	Nonconformance Report
CCM	Consultant Construction Manager	NOC	Notice of Change
CCTV	Closed Circuit Television	NTP	Notice to Proceed
CD	Calendar Day	NYCT	New York City Transit
CIL	Central Instrument Location	OCIP	Owner Controlled Insurance Program
CIR	Central Instrument Room	PAC	Pneumatically Applied Concrete
CM	ESA Construction Manager assigned to each contract	PCO	Proposed Change Order
CMP	Cost Management Plan	PLC	Program Logic Control
CMU	Concrete Masonry Unit	PMOC	Project Management Oversight Contractor (Urban Engineers)
ConEd	Consolidate Edison Company	PMP	Project Management Plan
CPOC	Capital Program Oversight Committee	PMT	ESA Project Management Team
CPP	Contract Packaging Plan	QA	Quality Assurance
CPR	Contractor Proposal Request	QPR	Quarterly Progress Report
DC	Direct Current	RFI	Request for Information
DCB	Detail Cost Breakdown	RFP	Request for Proposal
DFF	Direct Fixation Fastener	RMP	Risk Management Plan
EAC	Estimate at Completion	ROD	Revenue Operations Date
ELPEP	Enterprise Level Project Execution Plan	ROW	Right of Way
ERT	East River Tunnel	RPR	Relocated Primary Route
ESA	East Side Access	RSD	Revenue Service Date
ET	Electric Traction	RTB	Resilient Tie Block
F/A	Force Account	SC	Substantial Completion
FAT	Factory Acceptance Testing	SCADA	Supervisory Control and Data Acquisition
FD	Final Design	SDR	Second Design Review
FFGA	Full Funding Grant Agreement	SLCS	Signal Local Control System
FIAT	Factory Integrated Acceptance Testing	SMP	Schedule Management Plan
FRA	Federal Railroad Administration	SMS	Security Management System
FTA	Federal Transit Administration	SWO	Stop Work Order
GCT	Grand Central Terminal	TCC	Technical Capacity and Capability
GEC	General Engineering Consultant	TPSS	Traction Power Substation
HVAC	Heat, Ventilation and Air Conditioning	TSR	Track and Signal Route
IPS	Integrated Project Schedule	WBY	Westbound Bypass Tunnel
		YSB	Yard Services Building

APPENDIX B – CHARTS

Chart 1: ESA Critical Paths – IPS 106, June 1, 2018



APPENDIX B – TABLES

Table 1: Summary of Critical Dates

Program Milestone	FFGA	Forecast (F) Date, Actual (A) Date		Amended FFGA ***
		Project Sponsor*	PMOC**	
Begin Construction	Sept. 2001	Sept. 2001 (A)	Sept. 2001 (A)	Sept. 2001
Construction Complete	Dec. 2013	Dec. 2022 (F)	Sept. 2023 (F)**	Dec. 2023
Revenue Service	Dec. 2013	Dec. 2022 (F)	Sept. 2023 (F)	Dec. 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.
 *** Source – Amended FFGA, August 2016

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

	FFGA				MTA Current Baseline Budget (CBB)		Expenditures June 1, 2018	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of Total CBB	Expenditures	Pct. of CBB
Grand Total	7,386.0	12,038.5	100.0%	9,872.9	11,371.1	100.0%	8,383.2	73.7%
Financing Cost	1,036.0		14.0%	617.6	1,036.0	9.1%	617.6	59.6%
		1,116.5	9.3%					
Total Project Cost	6,350.0		86.0%	9,255.3	10,335.1	90.9%	7,765.6	75.1%
		10,922.0	90.7%					
Federal Share	2,683.0		36.3%	2,698.9	2,698.8	23.7%	2,698.0	99.96%
		2,698.8	22.4%					
5309 New Starts share	2,632.0		35.6%	2,436.7	2,436.7	21.4%	2,435.9	99.95%
		2,632.1	21.9%					
Non New Starts share	51.0		0.7%	66.7	66.7	0.6%	66.7	99.9%
		66.6	0.6%					
ARRA	0.0	195.4	1.6%	195.4	195.4	1.7%	195.4	100.0%
Local Share	3,667.0		49.6%	6,556.4	7,636.2	67.2%	5,067.6	66.4%
		8,223.2	68.3%					

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

Note: ESA carries the Rolling Stock Reserve as an off-line cost, outside the program budget

Elements	Baseline Budget June 2014	June 1, 2018			
		Current Budget	Actual Awards	Invoiced to Date	Inv. Pct. of Budget
Construction Subtotal	7,379.3	7,458.5	7,040.3	5,961.9	79.9%
Soft Costs Subtotal	2,798.5	2,876.7	2,042.7	2,001.3	69.6%
Engineering	720.6	739.6	739.2	729.0	98.6%
OCIP	282.6	307.6	307.6	307.4	99.9%
Project Mgmt.	972.2	963.1	874.0	847.0	87.9%
Real Estate	182.1	124.9	119.2	117.8	94.3%
Rolling Stock	202.0	7.5	2.7	0.1	1.8%
Program Reserve	(b)(4)				
Total w/o Financing					

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

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Mar 2018 CBB	Apr 2018 CBB	May 2018 CBB	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,413.0	3,409.1	3,396.4	70.8%	1.3%
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,327.7	2,327.7	2,277.1	94.8%	-2.1%
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	516.0	516.0	516.0	44.8%	14.5%
40 - Site Work and Special Conditions	205.1	610.6	562.5	560.7	560.7	548.3	167.3%	-2.5%
50 - Systems	619.3	605.6	627.7	692.6	692.6	675.3	9.0%	7.6%
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	215.4	162.3	-1.8%	-15.6%
70 - Vehicles	494.0	209.9	879.5	209.9	209.9	15.4	-96.9%	-98.2%
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,019.3	2,019.3	2,010.3	69.8%	11.1%
90 - Unallocated Contingency	(b)(4)							
Subtotal								
100 - Finance Cost								
Total								

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

Standard Cost Category	FFGA	June 2014		June 1, 2018		
		Project Budget	Amended FFGA	Current Budget	Awarded Value	Paid to Date
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,396.4	3,230.9	2,875.4
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,277.1	2,193.4	1,646.9
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	516.0	502.6	278.4
40 - Site Work and Special Conditions	205.1	610.6	562.5	548.3	492.1	499.7
50 - Systems	619.3	605.6	627.7	675.3	576.2	430.1
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	162.3	156.5	155.1
70 - Vehicles	494.0	209.9	879.5	15.4	10.6	5.7
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,010.3	1,920.8	1,874.3
90 - Unallocated Contingency	(b)(4)					
Subtotal						
100 - Finance Cost						
Total						

Table 6: Program Critical Dates 90 Day Look-Ahead – June 1, 2018 IPS

Act. Id.	Name	Start	Finish	Float
CM014B – GCT Concourse and Facilities Fit-Out				
20212	Install Electrical Hangers and Supports -Rooms -(Tile 3101)	08-Mar-17 A	04-Jun-18	0
20214	Install Conduits -Rooms -(Tile 3101)	15-Mar-17 A	06-Jun-18	0
20310	Install Sprinkler Hangers and Supports (Tile 3101)	03-Apr-17 A	19-Jun-18	0
20312	Install Sprinkler Valves & Mains Piping -(Tile 3101)	26-Sep-16 A	02-Jul-18	0
20314	Install Sprinkler Branch Piping -(Tile 3101)	03-Apr-17 A	16-Jul-18	0
20316	Install Sprinkler Drops -(Tile 3101)	03-Apr-17 A	20-Jul-18	0
20318	Sprinkler Piping Test -(Tile 3101)	20-Jul-18	27-Jul-18	0
20052	Install Hangers & Supports for Mechanical Piping System - (Tile 3101)	27-Jul-18	31-Jul-18	0
20056	Install Hot Water Piping (Mechanical) - (Tile 3101)	31-Jul-18	07-Aug-18	0
20016	Install Fans - (Tile 3101)	12-Apr-18 A	09-Aug-18	0
20032	Install Duct Insulation - (Tile 3101)	09-Aug-18	16-Aug-18	0
20024	Install Air Outlets -(Tile 3101)	16-Aug-18	17-Aug-18	0
20050A	FIAT -AHU-C43-13 - (Tile 3101)	17-Aug-18	20-Aug-18	0
MEP-3101	MEP Complete - (Tile 3101) - Col Ln; 1 to 9		20-Aug-18	0

Table 7: Program Budget Adjustments
(Costs shown in millions)

Contract / Task Description	Change in Budget
Construction	
<u>Manhattan</u>	
CM015 - 48th St Entrance at 415 Madison	(15,966,038)
CM018 - Concourse, Cavern, Facility Detailing	(20,000,000)
CMC14 - Art in Transit	(710,868)
<u>System Wide</u>	
CS098 - Materials Warranties	(13,950,000)
CSU99 - Utility Allowance Package	(9,030,598)
Force Account	
<u>Long Island Rail Road</u>	
FHL03 - Harold Stage 3: LIRR	(6,353,672)
FHL04 - Harold Stage 4: LIRR	(16,844,173)
FHLTR - Operational Readiness Training LIRR	(2,279,199)
FHLTT - Test Trains LIRR F/A	(1,146,485)
FSL00 - FA System Testing & Comm.	(6,690,667)
VHB51 - HTSCS	(1,989,218)
Construction Management	
SH800 - LIRR Operating Support Services	(7,424,200)
SHA00 - Amtrak Operating Support Services	(218,188)
SS896 - CM Office Costs	(1,377,913)
Real Estate	
R0100 - Real Estate	(53,105,070)
Rolling Stock	
T0900 - Rolling Stock	(194,500,000)
Contingency/Reserve	
X0100 - Program Support	(b)(4)
X0200 - Additional Program Support	(b)(4)

Table 8: ESA Core Accountability Items

Project Status		Original at FFGA	Amended FFGA	Current*	ELPEP **
Cost	Cost Estimate	\$7,386 M	\$10,922 M	\$10,335 M	\$8,119 M
Contingency	Unallocated /Risk Contingency	(b)(4)			
	Total Contingency (Allocated plus Unallocated)	(b)(4)			
Schedule	RSD	Dec. 31, 2013	Dec. 31, 2023	Dec. 2022	April 30, 2018
Total Project Percent Complete		Based on Invoiced Amount	77.1% actual vs. 82.8% planned (ESA calc.)		
Project Performance Rate Since 2014 ESA Re-Plan		Based on Earned Value	78.4% (PMOC calculation of construction spending at 2Q 2018 planned vs. actual since re-baselining)		
Contracts	Total contracts awarded to date		\$9,083 M	87.9% of total awards	
	Total construction contracts awarded to date		\$7,040 M	94.4% of construction awards	
Major Issue	Status		Comments		
Project Funding and Budget	The ESA PMT updated the ESA program budgets based on the approval of Budget Amendment 3 for the 2015–2019 Capital Plan. (b)(4) The MTACC needs an additional approximately \$956 million in the 2020–2024 Capital Plan to complete the ESA program.		The MTACC funding strategy requires \$956 million in the 2020–2024 Capital Plan. (b)(4)		
Project Cost	The ESA PMT updated the ESA program budgets based on the approval of Budget Amendment 3 for the 2015–2019 Capital Plan.		If the 2020-2024 Capital Plan is not approved for the required ESA funds then there may be significant impacts to the completion of current contracts, award of remaining contracts, and/or completion of railroad force account work.		
Project Schedule	<u>Alternative IPS Reporting:</u> The primary critical and near-critical paths to target RSD include: ▪ Manhattan/Systems – 0 CDs float (critical path) ▪ Harold Interlocking – 205 CDs float ▪ Midday Storage Yard (Queens) – 216 CDs float The target RSD is forecast for February 2022, unchanged from the previous IPS update. The public RSD remains December 2022. The Amended FFGA Revenue Operations Date is December 2023.		<u>Alternative IPS Reporting:</u> The remaining schedule floats, 0 CDs on primary critical path, and 205 CDs and 216 CDs on the two near critical paths, will be monitored for the construction work scheduled to be completed in the remaining 40 months to the target/public RSD.		
Manh./ Systems Schedule Path	The June 1, 2018 Alternative IPS shows that the ESA Program Critical Path runs through the Manhattan/Systems work. This path lost approximately two to four weeks during this monthly update, the time for which was recovered from the Issue Contingency schedule activity.		Concerns continue about the ESA critical path through Manhattan/Systems work, which consumed its entire float. This schedule has unresolved issues (Incremental IST, 47 th Street Entrance) that may mask delays on other critical Manhattan/Systems work. Acceptable work progress along this schedule path relies heavily on the effectiveness of MTACC/ESA coordination efforts across 7 construction contracts, including systems testing.		

Notes: * The current budget was established in May 2018.

** 2010 Enterprise Level Project Execution Plan (ELPEP) reflecting medium level of risk mitigation, excluding financing cost of \$1,116 million.