

PMOC MONTHLY REPORT

East Side Access (MTACC-ESA) Project

Metropolitan Transportation Authority

New York, New York

Report Period August 1 – August 31, 2016



PMOC Contract No. DTFT6014D00017

Task Order No. 2, Project No. DC-27-5287, Work Order No. 3

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: Nine years on project for Urban Engineers

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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 (FFGAs) 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.

REPORT FORMAT AND FOCUS

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT6014D00017, Task Order No. 003. Its purpose is to provide information and data to assist the FTA as it continually monitors the Grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Grantee 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 Grantee and financed by the FTA FFGA. The PMOC notes that the FFGA Amendment was fully executed with MTA's sign-off of 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.

All Grantee cost and schedule data included in this report is based on the status date of July 1, 2016.

MONITORING REPORT

1.0 PROJECT STATUS

a. Engineering Design and Construction Phase Services

As of the end of June 2016 (July 1 data date), MTACC reported that the overall engineering effort was 99.0% complete, based on Earned Value for Design Deliverables, compared with a planned status of 100.0%. MTACC's Cost Report shows that 92.5% of the overall "EIS and Engineering" category has been invoiced and 92.6% of the "Design" category (including Design Settlement) has been invoiced.

On Contract CM015 (48th St. Entrance), the MTA Board had previously approved the design agreement with the building owner. The building owner, Rudin Management Corporation (RMC), agreed to provide the designs for the relocation of the existing interior utilities and to complete some limited structural design. MTA is continuing discussions with RMC and is nearing completion of the required easements and construction agreements. MTA and RMC have signed

the utility agreement and the construction contract has been awarded. The GEC completed the 100% design and submitted it on July 12, 2016. RMC and the VM015 contractor review comments were received on August 15, 2016. RMC has made additional comments on the entrance design. There remain coordination issues between MTA and RMC. The shear wall design is not completed and workshops are planned for resolution of remaining issues. Submittal will be made to the NYC Department of Buildings. Bid advertisement is scheduled for September 27, 2016.

Contract CH058A will include construction of the Tunnel B/C Approach Structure. The 90% design submission was made on June 17, 2016, and the PMT/GEC team has received comments from the ESA Construction Manager and LIRR. Amtrak will provide comments after its review of package FHA03.

Contract CH058B will include construction of the East Bound Re-route. Final design has been awaiting the completion of a rail traffic simulation study for Harold Interlocking. The first part of the study, operations without Temporary Eastbound LIRR Passenger (TELP) Track, has been completed, and the results indicate minimal impact to Harold Interlocking under peak load conditions. Based on this result and the fact that the TELP Track would have significant cost and schedule impacts to the planned CIL cutovers, the PMT has recommended to LIRR that the GEC complete the CH058B design without the TELP Track. MTA continues to await LIRR's response. In addition, the GEC and the PMT are still evaluating tunneling methods for the Eastbound Re-Route Track (EBRR), with a recommendation now anticipated sometime in September 2016. The PMOC notes that LIRR's decision regarding the TELP Track would take into consideration the PMT-GEC's EBRR tunneling recommendation.

Contract CQ033, Mid- Day Storage Yard Facility, continues progress toward package completion:

- Regarding the Arch Street Yard tie-in, resolution is still required between MTACC and LIRR for final determination on the scope of LIRR Force Account (FA) work;
- The GEC submitted the 90% design, for rail access to Amtrak Line 2 from Sub 4 for Amtrak review on July 6, 2016. This construction work will be by Amtrak;
- The GEC completed a study for the Sub 3 to Amtrak Line 4 connection and submitted it on June 9, 2016. This study supports the cost estimate for LIRR. Amtrak has provided initial comments.
- MTACC continued working with Amtrak regarding coordination of catenary pole relocations with both Amtrak and FDNY regarding the access road width. The access road provides joint use between LIRR and Amtrak for access to the High Speed Shop, Yard C, and the Penn Lead. Amtrak approval is pending;
- GEC will be performing a traffic study for the Access Road under a new PCO.
- ESA-PMT continues to work with LIRR on labor clearance for track and traction power work;
- Construction sequencing meetings are ongoing to coordinate CQ033 work scope with adjacent site/civil and force account packages. Agreement regarding access restraints and milestones is near completion;
- The GEC submitted the cost estimate to ESA Project Controls on July 11, 2016;
- The CQ033 package requires design variance approvals regarding LIRR track standards and clearances in order to provide sufficient yard capacity to store twenty-four 12-car train-sets. All track standard and clearance issues with LIRR were resolved in late May 2016, although a waiver is still required from NYSDOT to

resolve the track clearance issues. In early July 2016, LIRR submitted a waiver request to NYSDOT regarding the substandard clearances required by the design. The NYSDOT response is pending;

- GEC completed work on drawings for approval from NYCT on overhead clearance beneath the No. 7 Line elevated structure over the proposed LIRR tracks. Finalization of drawing package is in progress.
- Demolition of 1,300 LF of existing third-rail by LIRR remains to be determined. This work may be included as a contract option.
- Intent to Advertise is with MTA for final approval.
- The previously forecast bid advertise dates of July 18, 2016 and August 18, 2016, were missed and advertisement is now forecast for September 8, 2016.

Contract CS284 (GEC CS086), Tunnel Signal Installation, is a stand-alone package. The MOU with LIRR for inclusion of Positive Train Control (PTC) in this contract is being finalized. MTACC reports that the proposed Change Order to the GEC for the addition of PTC was being issued and that the GEC has been meeting with the LIRR to confirm the PTC-related scope. The bid advertisement date had been forecast for September 6, 2016, but has been delayed until October 11, 2016. This delay is due to a recently negotiated change order, now awaiting approval by MTA, whose scope includes a refresh of the package and changes control of Plaza Interlocking from Penn Station Control Center to the GCT Train Operations Center. ESA-PMT advised that this change to control of Plaza Interlocking originated with LIRR operations acting through the ESA/LIRR Special Projects Group and that the change was approved by the Change Control Committee.

For Contract VS086, Systems Package 3 – Signal Equipment Procurement, the GEC design was completed but is now being revised to incorporate the requirements of Positive Train Control (PTC).

As noted in earlier reports, the backlog of submittal and RFI reviews was an area of focus for the CS179 project team. In August 2016, there were still 266 submittals out of a cumulative total of 5,624 submitted that required a response from MTACC. The contractor continues to assert that overdue responses on design submittals and Requests for Information (RFIs) are impacting its ability to complete design work in accordance with the contract schedule. The MTACC acknowledges that the response time on many submittals and RFIs has exceeded the 30-day turn-around time period stipulated in the contract. However, the contractor's assertion that this issue is causing overall contract delays cannot be evaluated until the contractor provides an accurate and comprehensive contract schedule that includes all contract modifications and an updated Integrated System Test Plan (ISTP). Despite an increased MTACC effort over the past several months to reduce the backlog of responses to overdue RFIs and design reviews and submittals, the number of overdue responses has not been significantly reduced. This issue remains as a significant concern to the ESA CS179 CM and the PMOC. The MTACC indicated in the Executive Summary of its 2Q2016 Quarterly Progress Report (QPR) that the completion of the Control System Designs will occur in late 2016, six months later than that shown in the baseline schedule. Information presented at the most recent monthly progress meeting indicates that Final Design Review (FDR) documentation for six of the seven remaining Control System Design FDRs has yet to be submitted and the submission dates for two of those six have yet to be determined due, per the contractor, to outstanding design questions. The PMOC believes that the late 2016 forecast date for completion of all 11 Control System Designs is achievable as long as the MTACC continues to aggressively

pursue the closure of design questions. Additional information regarding specific System design for the CS179 contract is provided later in Section 1.0c. under CS179.

The ESA CS084 CM continues to raise a concern that it is taking far too long to obtain comments and responses to contractor submittals and RFIs; and, along with senior ESA management, has discussed the mitigation of this issue with senior LIRR management. The LIRR attempted to reduce this backlog of responses by engaging a design consultant; however, there has been very little improvement. The PMOC had previously suggested to the ESA CM that the review process might be able to be improved if the reviewing parties (the LIRR and the LIRR's design consultant) were co-located; enabling the parties to immediately share ideas and evaluations rather than rely on the back and forth transmission of documents between offices. At the mid-August 2016 progress meeting, the ESA's Deputy Program Executive for Systems advised that the MTACC is working on implementing that PMOC suggestion. Additionally, the approval of critical facility designs and the GEC's completion of re-designs to address design issues identified in various locations continue to be items the contractor cites as critical schedule issues. As noted in previous PMOC reports, the extended length of time taken to approve substation layout and equipment designs, including clarification of SCADA requirements, enabled the contractor to assert that contract Milestone Nos. 1, 2, 3, 4, and 6 were already delayed and would continue to be delayed on a day-to-day basis until the designs were approved and the clarifications were determined. The ESA CS084 project controls group will need to perform a detailed analysis of the contractor's schedule to determine the validity of the contractor's assertions. In its July 2016 report, the PMOC advised that the LIRR and the MTACC reached an agreement on the required number of SCADA sensors and that the contractor would then be requested to submit a cost proposal to modify the SCADA design accordingly. However, at the mid-August 2016 progress meeting, the ESA CS084 CM advised that the GEC has yet to provide a revised Scope of Work (SOW) to address this contract change. The revised SOW must be finalized before the contractor can submit a proposal for the work and, very importantly, give direction to its substation fabricator regarding equipment requirements.

b. Procurement

As of the end of June 2016, the ESA Cost Report showed that total procurement activity for the project was 81.9% complete, with \$8.34 billion awarded out of the \$10.178 billion current projected budget.

Bids for Contract 61A, Tunnel A Approach Structure, were received on August 2, 2016. Qualification hearings for the apparent low bidder have been completed. Notice of award is expected in September 2016 and the Notice-to-Proceed is forecast for October 28, 2016.

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

- CQ033, Mid-Day Storage Yard Facility – Advertise September 8, 2016; Bids due October 11, 2016.
- CM015, 48th Street Entrance – Advertise September 27, 2016; Bids due November 27, 2016.
- CS086, Systems Package 2-Tunnel Systems – Advertise October 11, 2016; Bids due December 5, 2016.

c. Construction

The PMT reported in its 2Q2016 Progress Report that total construction progress reached 64.0% complete versus 66.8% planned.

CM005 - Manhattan South Structures: The MTACC Forecast at Completion for CM005 decreased slightly in June 2016 to \$243,307,691. On June 24, 2016, the MTACC declared retroactive Substantial Completion (SC) as of April 22, 2016. Actual construction progress for June 2016 was 0.0% versus 0.0% planned. Cumulative progress through June 30, 2016, was 98.4% actual versus 100.0% planned.

Construction Progress: During August 2016, the contractor resumed punchlist activity in mid-August 2016 after a three week shutdown during which time the contractor developed a plan to complete underground work. The contractor will complete door installation on receipt of door hardware expected in late October early November 2016. The work at the upper 37th St. facility continued and the completion forecast remains early October 2016. After receipt of a NYC DOB permit, the work at the Union League was completed.

CM006 – Manhattan North Structures: The MTACC Forecast at Completion for CM006 decreased slightly to \$357,260,258 in June 2016. The MTACC forecast for Substantial Completion remained at June 1, 2017. Actual construction progress for June 2016 was 3.7% versus 1.9% planned. Cumulative progress through June 30, 2016, was 82.1% actual versus 92.1% planned. Based on the recent contract modification, the contractor has submitted a new CPM schedule for ESA review.

Construction Progress: During August 2016, the CM006 contractor continued rehabilitation/remediation work at the 63rd St. Tunnels & Structures and anticipates finishing work here in the next two months. The contractor continued arch construction at the GCT 3 East and West Wyes and duct bench construction in tunnel EB4. Remediation and arch concrete construction continued for Tunnel WB3. The contractor completed wall construction at the BOH (Back of House) West Cavern, and now work continues on stairs. The contractor continued concrete construction at the 50th St. air tunnel and continued grouting in the GCT 4 East and GCT 5 West caverns.

CM007 - GCT Station Caverns and Track: The MTACC Forecast at Completion for CM007 remained \$712,311,733 in June 2016. The MTACC forecast for Substantial Completion remained at January 28, 2020. Actual versus planned monthly progress and cumulative progress will be reported when available from MTACC.

Construction Progress: The second monthly Construction Progress Meeting was held on August 11, 2016. During August 2016, the contractor continued to mobilize, prepare permit application documentation, prepare contract and Quality submittals, prepare the baseline schedule and other documentation, and began to prepare LIRR Amityville Yard in Queens for material staging and storage. The CM007 Contractor expects to start casting mockup precast concrete sections in September 2016. Following approval of the mockup sections, the contractor expects precast concrete forms to be delivered to the subcontractor's facility in late September 2016. Other activities included: preparation of the Mock Demonstration Track, replacement/repair of rebar couplers in the caverns, continued 3D survey scans of tunnels & caverns, and continued site inspection for takeover systems.

CM014A – Concourse and Facilities Fit-Out Early Work: MTACC reports that, through July 1, 2016, the project forecast cost at completion remains \$58,128,537. MTACC reports in their June 2016 Monthly Report that Substantial Completion will be November 1, 2015. The MTACC Project Office has advised the PMOC that this retroactive date is the result of negotiations with the contractor and their bonding company. In the MTACC May 2016 Monthly Report, cumulative construction progress remained 97.0% versus 100.0% planned. This has remained the same throughout the 2016 summer months and indicates that there has been very little progress since June 2016.

Construction Progress: Through August 31, 2016, progress at the site continued to be very slow with only 1 or 2 electricians present. There is an ongoing issue with the programming of some of the relays in the switchgear. These relay performance requirements come from ConEd and are in the specifications but the switchgear manufacturer, Siemens, has not been successful in solving the problem and has missed several dates for reprogramming the relays.

Remaining work includes completion of outstanding work items list. This list, originally totaling up to 300 items, is now down to approximately 19 items; SCADA testing, including the issue with the 51G Alarm on the 87 Relay, was completed.

CM014B – Concourse and Facilities Fit-Out: MTACC reports that, through July 1, 2016, the final cost at completion remains \$477,913,666. The Substantial Completion date has been pushed back slightly to January 21, 2016, from the previous February 8, 2019, from the original August 18, 2018, primarily due to ongoing delays in critical structural steel submittals and existing obstruction that must be relocated by MNR. Actual construction progress through July 1, 2016, was 4.3% versus 8.0% planned. Cumulative progress through June 30, 2016, was 19.6% actual versus 25.0% planned.

Construction Progress: Through July 1, 2016, Surveying in the Concourse is continuous and will be on-going throughout this contract.

Milestone #1 (Complete Terminal Management Center, Communication Room C-2 & Communication Closet C-5) – Punch list work is complete. However, FM200 work remains. The FM200 annunciator panel must be supplied, and the mechanical purge system must be designed and installed.

Milestone #2 (50th St Room CR102, Tunnel Fan Room, Electrical Room #126 & ICC Room), June 4, 2016; now April 2017 – The delay to this milestone continues to be tied to the Elevator #9 shaft corrective work, where out of alignment block walls have to be torn out and reconstructed. These walls were constructed by the CM013 contractor. The affected room is the Tunnel Fan Control Room.

Milestone #3 (Comm. Closets CC-C1, CC-C2, CC-C6, MTAPD and BCS Conduit), August 4, 2016 – Construction of the rooms is complete. FM200 controls installation is ongoing in all rooms. Fire alarm, power and lighting conduit and wiring is nearing completion. Punch list work has begun.

Milestone #5A (Completion of 48th St. Entrance) November 25, 2016 – This is being delayed until March 2017 due to delays in demolition of the MTA Building in the Concourse and transfer of personnel to the new 52nd St. Entrance. Some structural beam work is underway.

Concourse (Madison Yard): Stantec Repairs (repairs to privately owned building columns in Madison Yard) continue throughout. 3rd Party Inspections continue for concrete, shotcrete, rebar, masonry, bolting, welding and firestops. Electricians continue to chop columns and weld grounds. Grounding can only be made to GCT columns, and not to any private building columns. Placement of CLSM (Controlled Low Strength Material) backfill continues throughout in various areas. Setting rebar and placement of final concrete slab continues in various areas. The load transfer continued from the temporary power from MNR (TP1 and TP2) to the temporary construction power source at the B30 temporary switchgear (CP31 and CP41).

3118 Chiller Plant, 3128 Heating Plant: Hangers, supports, 24", 12", and 8" continuous weld pipe have been installed in the Chiller Plant. Secondary chilled water pump 1-3 was installed.

Biltmore Connection: There is existing conduit blocking erection of some of the structural steel work. These must be re-routed by MNR and may create a 3 month delay in the work.

Wellways: Unistrut installation is underway in Wellway #1, #2, and #3. Installation of sprinkler piping has begun in Wellway #3. Conduit installation continues in Wellway #4. Installation of Wellway #4 sprinkler piping began on August 22, 2016.

Dining Concourse Connection: Erection of temporary steel is complete. Erection of permanent steel is being delayed due to serious contractor delays in developing and submitting steel shop drawings and relocations required to be made by MNR.

Elevator T-01: The 8" elevator pit wall has been placed. Installation of permanent structural steel began on August 22, 2016.

East 48th St. Entrance: Through August 31, 2016 rock excavation was approximately 85% complete. The north half of the west wall and east half of the south wall have been placed. The footing for the C6 column was placed for the load transfer at the Abutment Wall.

44th St. Vent Building: Cleaning of couplers, installation of formwork, and rebar at the vent hatch continues. Installation of sprinkler piping is ongoing.

East 50th St. Vent Building: Installation of communication conduit continues in the 2nd Basement Level. The rigging plan is being reviewed for installation of the Variable Frequency Drives (VFD) and conduits at the 300 Park Building.

Systems Contracts:

CS084 – Traction Power Substations: In its 2Q2016 Quarterly Progress Report (QPR), the MTACC reports that the Budget and Forecast for the CS084 contract remained at the \$79,717,772 level previously reported. The MTACC's 2Q2016 QPR now shows a 7-month slippage in the forecasted Substantial Completion (SC) date, a slippage from December 2019 to July 2020. The MTACC contends that this revised SC date is being driven by the revised dates in the CS179 Systems Package 1 contract as a result of Contract Modification #18, although the PMOC notes that the delay in the award of the CM007 Contract and/or design delays in the CS179 Contract itself could have also been contributing factors. The MTACC further notes in its 2Q2016 QPR that any further adjustments to the CS179 schedule will also result in corresponding adjustments to the CS084 schedule. As of the mid-August 2016 monthly progress meeting, it was noted that some of the design issues continue to remain unresolved and the impact that any additional delay in resolving these design issues will have on the contract SC date is yet to be determined.

In its 2Q2016 QPR, the MTACC shows a progress curve for the CS084 contract that presents actual contract progress as 10.7% versus a planned 48.5%; numbers that are based on actual versus projected costs, not physical construction efforts. The contractor contends that funds have not been expended as originally projected due to the delays in approving and moving forward with the substation designs and equipment. Thus, the variance in the actual versus projected costs. An analysis of the status of the work activities shown on the approved baseline schedule is necessary to determine the status of the progress of physical work on this contract. Accordingly, the PMOC has requested, and continues to wait for, copies of the CS084 approved baseline schedule and the current monthly schedule update in Primavera format.

Design Progress: The contractor continued with the transmission of contractual submittals and its design development of the substations. As noted in previous PMOC reports, the contractor continues to assert that previous delays in receiving comments back from the MTACC on the C05 facility switchgear, the number of SCADA point sensors, and the general C08 substation design impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. The ESA CS084 CM previously acknowledged that these comments were taking too long to process and met with LIRR senior management and the General Engineering Consultant (GEC) to focus on the priority of these designs. While in May 2016, the ESA CS084 CM advised that the LIRR engaged additional resources to assist in the review of CS084 design submittals, it did not appear to the PMOC that these additional resources had improved the efficiency of the submittal review process. At the mid-July 2016 progress meeting, the ESA CS084 CM noted that there were 299 out of 345 pending submittal responses that were overdue and provided the PMOC with a listing of all outstanding responses that would be used to discuss the mitigation of this issue with senior LIRR management. The LIRR attempted to reduce this backlog of responses by engaging a design consultant; however, there has been very little improvement. The PMOC had previously suggested to the ESA CM that the review process might be able to be improved if the reviewing parties (the LIRR and the LIRR's design consultant) were co-located; enabling the parties to immediately share ideas and evaluations rather than rely on the back and forth transmission of documents between offices. At the mid-August 2016 progress meeting, the ESA's Deputy Program Executive for Systems advised that the MTACC is working on implementing that PMOC suggestion. Also at the July 2016 progress meeting, the ESA CS084 CM advised that the LIRR and the MTACC reached an agreement on the required number of SCADA sensors and that the contractor would be requested to submit a cost proposal to modify the SCADA design accordingly. However, at the mid-August 2016 progress meeting, the ESA CS084 CM also advised that the GEC has yet to provide a revised Scope of Work (SOW) to address this contract change to finalize the SCADA Points. The revised SOW must be finalized before the contractor can submit a proposal for the work; and, very importantly, give direction to its substation fabricator regarding equipment requirements. The GEC continues to work on design changes to address the penetration to the track level and room beam height issues at the Vernon (C05) facility. Implementation of these design changes must be negotiated with the CS179 contractor and progressed before the CS084 contractor begins work in the C05 facility. While the ESA CS084 CM acknowledged that these design efforts were taking too long to complete and need to be accelerated to preclude schedule slippage, as of mid-August 2016, these design efforts remained as on-going. One other previously reported design issue that needs timely resolution is the routing of DC cables at the Vernon (C05) substation facility. The identification of this issue was made several months ago, but the GEC has still not produced a re-design to remedy the problems.

Exacerbating this issue is the fact that, once a revised design is approved by all parties, MTACC will need to determine who – the CS179 or the CS084 contractor – will implement the re-design effort so that the CS084 contractor can install the DC cables. The PMOC continues to have concerns about the various design issues being identified and the length of time it is taking to provide responses and designs to mitigate the various issues. The MTACC needs to prioritize with the GEC the process to provide timely submittal responses and designs so as to preclude any delays to the contract.

Construction Progress: At the mid-August 2016 monthly progress meeting, it was noted that the electrical feeders from Consolidated Edison (ConEd) were energized and the contractor was ready to begin the extra work to ground and test three existing transformers and the MDP-3A panel. This work, which is to address the lack of grounding and testing of the items installed earlier on the ESA project by another ESA contractor, or contractors, must be resolved before the transformers and the panel are energized and turned over to the LIRR. The ESA CM indicated that efforts would be made to expedite the MTA Legal staff's review of the contract modification. As noted in previous reports, the contractor continued to advise the CS084 ESA CM that the water infiltration issue at the Vernon facility needs to be permanently mitigated before any equipment is installed. The continuing water infiltration issue is, per the contractor, precluding the commencement of any physical work in the substation facilities. The PMOC again requested an update on an issue raised in an earlier monthly progress meeting regarding the contractor's inability to perform "dynamic" testing of the C08 substation because the conduit and manhole from the C08 substation to the track would not be installed by another ESA contractor in time for the testing to occur. The ESA CM indicated that, while this was still under investigation, several options were being considered and the GEC would be tasked to prepare a recommendation.

CS179 – Systems Package 1: As of the end of June 2016, per its 2Q2016 Progress Report (QPR), MTACC's Budget and Forecast for CS179 remained \$606,938,540 and \$608,313,473, respectively. Although the reported Forecast clearly exceeds the reported Budget, MTACC unexplainably continues to state that the Forecast is within the Budget; a statement that is not supported by the numbers presented in the 2Q2016 QPR. In its 2Q2016 QPR, MTACC shows a progress curve for the CS179 contract that presents actual contract progress as 24.0% versus a planned 53.9%; numbers that are based on actual versus projected costs, not physical construction efforts. As presented, these progress numbers continue to imply that the contract is significantly behind schedule. MTACC is continuing its evaluation of the contractor's monthly schedule updates to determine if the schedule includes major changes to the contract schedule precipitated by the approval of CS179 contract Modification No. 18 and the implementation of the CM006 and CM007 contracts. In the August 2016 progress meeting, the MTACC requested that the contractor expedite its submission of an updated Integrated System Test Plan (ISTP) so that a comprehensive evaluation of the contract schedule can be performed. As noted in previous PMOC reports, Modification No. 18 to this contract revised the original Milestone, access restraint, Option exercise, and Substantial Completion (SC) dates. The new SC date is July 1, 2020; an approximate seven-month delay from the original November 19, 2019 date. As noted earlier in this PMOC report, the CS084 contract progress is dependent on the completion of Milestones in the CS179 contract; and, the forecasted substantial completion date for the CS084 contract has been revised accordingly. As of the end of August 2016, all but two Contract Options (Option Nos. 4 and 5) were exercised. The ESA CS179 CM indicates that these remaining two contract Options will be exercised in 2017 as per the schedule identified in Contract Modification No. 18. There are still

two potential Buy/Ship America issues that pose significant risks to the successful and timely completion of this contract. The ESA CS179 CM advised that Buy/Ship America waiver request letters for the HVAC equipment and video display panels are still under review by MTA Legal staff. Once the letters are finalized, they will be submitted to the FTA for consideration. As of August 31, 2016, the ESA PMT was not able to forecast a date for when the MTA Legal staff will complete its review.

Design Progress: The MTACC indicated in the Executive Summary of its 2Q2016 Quarterly Progress Report (QPR) that the completion of the Control System Designs will occur in late 2016, six months later than that shown in the baseline schedule. As of the end of August 2016, the Final Design Review (FDR) documentation for six of the seven remaining Control System Design FDRs have yet to be submitted and the submission dates for two of those six have yet to be determined due to, per the contractor, outstanding design questions. The PMOC believes that the late 2016 forecast date for completion of all 11 Control System Designs is achievable as long as the MTACC continues to aggressively pursue the closure of design questions. The contractor continues to assert that the backlog of comments from the MTA on design submittals and Requests for Information (RFIs), as well as the extended time being taken to address facility design issues, is causing delays to the timely progression of the contract. MTACC will need to evaluate these assertions against an updated contract schedule that includes revised Milestone dates developed as part of contract Modification No. 18.

Construction Progress: During August 2016, the CS179 contractor continued various elements of work (e.g., conduit cleaning and installations, concrete work, temporary power installations, fire stopping installations etc.) at the B10; Roosevelt; Vernon; Tunnel Track LL; 39th St.; Queens Plaza; and 63rd St. facilities. In August 2016, the contractor continued the installation of lighting in Tunnel Tracks B/C, D, and LL and commenced the installation of 480 volt cable in Tunnel Track B/C; 480 volt switchgear in the 12th Street facility; HVAC equipment in the 29th Street facility; and fire alarm wiring in the 39th Street facility. There are now five Stop Work Orders (SWOs) on this contract. With regard to two of the SWOs, one is related to the requirement for an Undercar Deluge System at GCT and the other is related to the requirement for a transformer at 43rd Street. These two original work scope items will be deleted from the CS179 contract via a contract modification. Regarding the other three SWOs-all of which needs to be resolved by MTACC, one is related to water infiltration in the 29th Street Facility Power Room, and the second is related to the Fire Stand Pipe installation in the Vernon facility, and the third is related to condenser pipes and drainage issues at the 2nd Avenue facility.

Queens Contracts:

CQ032 – Plaza Substation and Queens Structures: The MTACC Forecast at Completion for CQ032 increased slightly to \$263,532,188 in June 2016. The MTACC Forecast for Substantial Completion slipped by one month to October 6, 2016, primarily due to previously reported unforeseen conditions at the 23rd St. Facility, Con Edison revisions to gas service connection at the Yard Services Building (YSB), and forthcoming water infiltration remediation at the Plaza Interlocking. Actual construction progress for June 2016 was 0.6% versus 0.7% planned. Cumulative progress through June 30, 2016, was 97.6% actual versus 97.2% planned.

Construction Progress: During August 2016, the CQ032 contractor continued architectural and mechanical finishes in the YSB and anticipates completing all work here by the end of September 2016. The contractor continued to install finishes, signage, and continued site clean up at the Plaza

Vent Structure (PVS). The contractor continued Plaza punch list activity. ESA reports that all remaining vent shaft work and water infiltration remediation work at the 23rd St. facility will be transferred to contract CS179. The contractor will commence remediation of pre-existing water infiltration conditions present at the Plaza Structure, which includes waterproofing envelope issues at bracing slabs and in the launch block area. The contractor continued preparation of as-built/closeout documentation.

Harold Interlocking Contracts:

CH057 – Harold Structures Part III: MTACC’s Forecast at Completion for the CH057 contract decreased slightly to \$90,169,599 during August 2016. The Substantial Completion date remained at August 18, 2017, although this contract has several options which could extend the eventual Substantial Completion date. Actual construction progress for June 2016 was 9.4% versus 10.2% planned. Cumulative progress through June 30, 2016, was 33.7% actual versus 38.9% planned.

Construction Progress: During August 2016, the CH057 contractor continued construction of Tunnel D with waterproofing, re-bar, and concrete base slab placement in the TBM reception pit area, continued installation of secant piles in the secant box structure area, and placement of waterproofing, re-bar, and base and sidewall concrete along approximately 100 feet of the East Approach box structure of the tunnel. At the LIRR ML2 Bridge at 48th St., the contractor installed the bridge structure in early August 2016 and formed and poured the concrete deck in late August 2016. Additionally, the contractor installed 3 catenary poles and installed several catenary pole foundations in miscellaneous locations within Harold Interlocking.

CH057A – Part 3 Westbound Bypass: MTACC’s Forecast at Completion for CH057A increased to \$152,186,199 during June 2016 due to scope additions and future potential contract modifications. MTACC’s forecast for Substantial Completion was extended by 3 days to October 31, 2017. Actual construction progress for June 2016 was 1.6% versus 2.1% planned. Cumulative progress through June 30, 2016, was 36.9% versus 100.0% planned. In early August 2016, the CH057A “jacked box” tunnel shield “encountered” the track slab that was placed by the CQ031 contractor in 2013 and determined that there was insufficient clearance for the tunnel shield to proceed. As a result, ESA issued a Stop Work Order (SWO) to the CH057A contractor on August 3, 2016, which remained in effect through August 31, 2016. ESA and the contractor believe that modifications to the tunnel shield, as well as to the tunnel support frames already installed, will be sufficient to allow tunnel excavation to resume on September 12, 2016. If excavation does resume then, the PMOC estimates that the contract will be at least 9-1/2 months behind its original schedule, although MTACC has not made any schedule adjustments to reflect this.

Construction Progress: Despite the tunnel shield SWO, the CH057A continued to de-water throughout the Westbound Bypass work site, continued to install tie-backs and excavate the East Approach Structure, and continued to excavate the West Approach Structure during August 2016.

Railroad Force Account Contracts:

FHA01 – Harold Stage 1 Amtrak: MTACC’s Forecast at Completion for FHA01 remained at \$18,824,861 during June 2016. MTACC further shortened its forecast for Substantial Completion to November 14, 2016, due to the deletion of the Sunnyside Yard Station from the FHA01 scope of work. Actual construction progress for June 2016 was 0.0% versus 0.3% planned. Cumulative progress through June 30, 2016, was 98.8% actual versus 100.0% planned.

Construction Progress: Amtrak did not perform any significant Stage 1 construction during August 2016.

FHA02 – Harold Stage 2 Amtrak: MTACC’s Forecast at Completion for FHA02 remained at \$60,150,231 during June 2016. The Substantial Completion date remained at September 19, 2020. Actual construction progress for June 2016 was 0.0% versus 0.8% planned. Cumulative progress through June 30, 2016, was 100.0% actual versus 99.8% planned (MTACC did not explain this discrepancy although the PMOC notes that it reports construction progress based on accumulated project cost rather than actual construction).

Construction Progress: During August 2016, Amtrak Electric Traction personnel continued installation of the new F33E full tension air break (FTAB) and demolition of the existing F33 air break, installed messenger wire between the B931W and B926W catenary poles, installed ground wire in two locations between catenary poles, and installed catenary brackets, clips, hangars, and other miscellaneous hardware on catenary poles in various locations in Harold Interlocking.

FQA65 – Loop Interlocking Amtrak: MTACC’s Forecast at Completion for FQA65 remained at \$33,287,863 during June 2016. MTACC reduced the Substantial Completion date by approximately 7 weeks to April 16, 2023. Actual construction for June 2016 was 0.0% versus 0.1% planned. Cumulative progress through June 30, 2016, was 19.8% actual versus 55.4% planned (the PMOC is not concerned about this discrepancy due to the extended Substantial Completion date coupled with MTACC reporting of construction progress based on cost rather than actual construction).

Construction Progress: Amtrak did not perform any significant FQA65 construction during August 2016.

FHL01 – Harold Stage 1 LIRR: MTACC’s Forecast at Completion for FHL01 remained at \$24,379,363 during June 2016. The Substantial Completion date remained at June 22, 2017. Actual construction progress for June 2016 was 0.5% versus 0.0% planned. Cumulative progress through June 30, 2016, was 87.3% versus 100.0% planned.

Construction Progress: LIRR did not perform any significant Stage 1 construction during August 2016.

FHL02 – Harold Stage 2 LIRR: MTACC’s Forecast at Completion for FHL02 remained at \$92,932,559 during June 2016. MTACC reduced its forecast Substantial Completion date by 9 weeks to June 7, 2019. Actual construction progress for June 2016 was 3.5% versus 1.0% planned. Cumulative progress through June 30, 2016, was 90.8% actual versus 94.6% planned.

Construction Progress: During August 2016, LIRR Signal personnel set the Location 30 CIL in place and continued to install signal conduits into it, continued to install signal conduits between the “H5” and “H6” CILs and their various local signal cases, continued to test and terminate signal cables in “H5” and “H6”, pulled signal power cables into the “H3” CIL, connected power cables at “H4” CIL, installed signal equipment and cables in Harold Tower, and installed signal conduits at new Signal Bridge 20. LIRR Communications personnel installed fiber communications cables between “H1” and “H2” CILs and between Woodside and “H6” CIL. LIRR High Tension personnel terminated and tested cables at Towers 36 and 40. LIRR 3rd Rail personnel pulled temporary cables for breakers 30 and 40 west of Honeywell Ave.

d. Quality Assurance and Quality Control (QA/QC)

ESA Quality Staff: The ESA Quality Manager resigned after eight years on the job. The PMOC is concerned that there is insufficient quality staff. One year ago, there was a Quality Manager and five quality engineers. One quality engineer resigned and has not been replaced. Another was promoted to the Acting Quality Manager position in August 2016 so the staff is now down two quality engineers. MTACC Quality Management has stated that they are actively recruiting qualified individuals to fill the two vacant positions.

GEC Quality: The ESA Quality Manager conducted an audit of the GEC's Quality System on June 21, 2016, before he resigned and identified the following issues: the GEC's Quality Program has not been signed by GEC's management; there is no internal audit schedule; GEC management is not allocating sufficient time for the GEC Quality Manager to perform his duties; and the GEC is delinquent in providing updated revisions of their quality procedures. The Acting Quality Manager plans to meet with the GEC Quality Manager in September 2016 to discuss the quality issues that were identified during the audit.

CM013: A closeout audit on this contract was held to determine whether any quality issues will prevent this contract from closing. There is an open nonconformance report (NCR) for pipes fabricated in China that were installed and are now inaccessible. Closure of this NCR still awaits resolution between MTACC Legal and the FTA.

CM005: The ESA Quality Manager performed a walkthrough with the CM office in April 2016. The CM office still has a "punchlist" with about 45 items remaining. The contractor is working with a skeleton crew to complete these open punchlist items and electrical conduit repairs. Anticipated completion date is mid-October 2016. Currently, there are some questions regarding survey. The concerns are being evaluated by the CM office and the CM005 surveyor. The PMOC is concerned that there are many actions still to be completed before this contract can be closed.

Quarterly Quality Oversight (QOQs): The PMOC attended QOQ's for eight ESA contracts in August 2016. With the exception of CH057, all of the other seven contractors were well prepared for their QOQ. The CH057 Quality Manager had to search for the required information even though he was provided with a checklist of questions prior to the QOQ. The ESA staff was also well prepared, conducted professional QOQs, and provided the contractors with detailed feedback during the exit meetings. There were no major findings.

CH057A: On August 3, 2016, ESA issued a Stop Work Order to the CH057A contractor to stop advancing the tunnel shield used to excavate the Westbound Bypass Tunnel. The tunnel shield had "encountered" a corner of the concrete track slab that was placed by the CQ031 contractor in 2013. After investigation, it was determined that this corner of the slab was installed 3 inches lower and 24 inches wider than designed. As a result, there was insufficient clearance for the tunnel shield to proceed. During the weekend of August 20th and 21st, 2016, the CH057A contractor removed the corner by saw-cutting. Additionally, it was determined that the tunnel support frames against which the tunnel shield pushes were also moving, thus making it impossible for the shield to maintain its designed excavation course. As of August 31, 2016, the CH057A contractor continued to fabricate the required structural stiffeners to repair this condition.

Conditional Assessments: The MTACC Chief of Quality, Site Security and System Certification has directed that a Conditional Assessment (walk through) be performed of completed Contracts CQ031 and CQ039 every six months to determine if there has been any damage or vandalism.

Previous and new issues will continue to be observed and monitored. To date, none of the issues identified have been significant.

2.0 SCHEDULE DATA

Status and Schedule Contingency:

This report is based on the submitted ESA IPS file entitled “BR09-UPD83-07.01-2016” (IPS #83), data date July 1, 2016, and its associated IPS Report. IPS #83 reported no change to the target and late Revenue Service Dates (RSDs), forecasted to occur on February 12, 2021, and December 13, 2022, respectively. This IPS #83 noted a change in the reporting of contingencies, whereas Project Level Contingency and Program Level Contingency are now represented by one activity each, as compared to two activities previously. The current forecasted target RSD is reported to contain 105 days of total contingency, an increase of two days from the previous IPS update. The late RSD, forecasted for December 13, 2022, is reported to include 775 total days of contingency,

inclusive of the 105 days of Project Level Contingency. The previous IPS update (IPS #82) contained 861 days of total contingency. Therefore, IPS #83 includes a reduction of 86 calendar days of IPS contingency from the previous update, and a reduction of 218 calendar days of total schedule contingency from the 993 calendar days of contingency contained within the July 1, 2014, baseline.

Program Critical Path:

ESA has reported that the program-level (to the Late RSD) critical path of the IPS continues to be the Harold path of work, and that the Manhattan/Systems path of work is approximately three months behind the critical Harold path of work. The critical path of IPS Update #83 goes through the following contracts and tasks and has not changed significantly since the previous update:

- Re-wiring, Testing, and cable termination at Harold MG Function;
- Implementation of Cut-over sequencing plans (phases 0, I, and II);
- H5/H6/Loc 30 Pre-testing;
- H5/H6/Loc30 Cutover and H1/H2/Loc 30 Pre-testing;
- H1/H2 Cutover and NH1/PW1 Outage electrical work;
- FHL04 electrical work;
- CH058 civil work on the B/C Approach Structure;
- Tie-in, Testing, and Cutover of 4C;
- LIRR Revenue Service Date (RSD);
- Train Contract Staffing and LIRR Final 3 Months Period;
- ESA Program Schedule Contingency and Stakeholder Agreed additional Program Contingency; and,
- Late Revenue Service Date (Begin LIRR Revenue Service to GCT).

The PMOC analyzed the progress made in controlling critical path activities over the update period. The previous IPS Update (#82), with a data date of June 1, 2016, showed the following sequence of activities leading up to FHL02-CSR300: Pre-testing – H5/H6/Loc 30, forecasted to begin on October 12, 2016:

Figure 2-1: Controlling Critical Activities as of July 1, 2016 (ESA IPS #83)

Activity ID	Activity Name	Remaining Duration	Start	Finish
CH053-7480	VHL02 Re-wire 60 Hz power for Harold MG	18	02-May-16 A	24-Jun-16
CH053-7190	VHL02 Test Harold MG Function (Powell) (8 Weeks)	10	04-Apr-16 A	11-Jul-16
FHL02-3300	LIRR Terminate cables in Harold MG	5	12-Jul-16	18-Jul-16
FHL02-2220	Implementing Cut-over Sequencing Plan - Phase 0	20	19-Jul-16	15-Aug-16
FHL02-5140	Implementing Cut-over Sequencing Plan - Phase I	20	16-Aug-16	13-Sep-16
FHL02-30140	Implementing Cut-over Sequencing Plan - Phase II	20	14-Sep-16	11-Oct-16
CH053-2080	LIRR Cutover Signal Power Separation and MG Set	0		11-Oct-16
FHL02-3260	LIRR Cutover MG SPS (SPS Complete) w/o EO Control	0		11-Oct-16
FHL02-CSR300	Pre-testing - H5/H6/Loc 30	202	12-Oct-16	28-Jul-17

MTACC’s July 1, 2016 IPS Update (#83) shows that controlling activity CH053-7480: VHL02 Re-wire 60 Hz power for Harold MG made 17 days of progress over the update period, and was forecasted to complete on July 1, 2016. This represents a seven calendar day delay to the completion of this activity since the previous update (IPS #82), which forecasted this activity to be complete by June 24, 2016. The accompanying IPS report does not provide any information related to the extended duration associated with this controlling critical activity.

It appears that the delay to the completion of CH053-7480 was mitigated by the out-of-sequence progress on the following critical path activity, CH053-7190. CH053-7190 was reported to have attained 5 days of progress over the update period, leaving the forecasted start and finish dates for the remaining activities leading up to the start of H5/H6/Loc 30 pre-testing unchanged.

Figure 2-2: Controlling Critical Activities as of July 1, 2016 (ESA IPS #83)

Activity ID	Activity Name	Remaining Duration	Start	Finish
CH053-7480	VHL02 Re-wire 60 Hz power for Harold MG	1	02-May-16 A	01-Jul-16
CH053-7190	VHL02 Test Harold MG Function (Powell) (8 Weeks)	5	04-Apr-16 A	11-Jul-16
FHL02-3300	LIRR Terminate cables in Harold MG	5	12-Jul-16	18-Jul-16
FHL02-2220	Implementing Cut-over Sequencing Plan - Phase 0	20	19-Jul-16	15-Aug-16
FHL02-5140	Implementing Cut-over Sequencing Plan - Phase I	20	16-Aug-16	13-Sep-16
FHL02-30140	Implementing Cut-over Sequencing Plan - Phase II	20	14-Sep-16	11-Oct-16
CH053-2080	LIRR Cutover Signal Power Separation and MG Set	0		11-Oct-16
FHL02-3260	LIRR Cutover MG SPS (SPS Complete) w/o EO Control	0		11-Oct-16
FHL02-CSR300	Pre-testing - H5/H6/Loc 30	206	12-Oct-16	03-Aug-17

The PMOC has observed a change in the planned duration of critical path activity FHL02-CSR300: Pre-testing – H5/H6/Loc 30 over the update period. The previous IPS update (#82) showed a planned duration of 202 days, while the current IPS update (#83) shows a planned duration of 206 days. This was discussed at the August 25, 2016, Cost and Scheduling meeting where the MTACC stated that it has very little definition from LIRR regarding this duration and it is not made up of discrete items based on knowledge and experience. Therefore, this is expected to change as the associated work scope becomes better defined. The PMOC recommends that the PMT fully describe changes to critical path activities that occur between IPS updates in its associated IPS reports.

The PMOC will continue to work with the MTACC Project Controls group to resolve the issues.

Table 2-1, below, shows important 90 day Look-Ahead milestone dates reported in IPS #83:

Table 2-1: Critical Milestones 90 Day Look-Ahead (from ESA IPS #83)

Activity ID	Activity Name	Start	Finish	Total Float

CH053: Harold Structures Part 1 & G.O.2 Substation / FHL02: Harold Stage 1 – LIRR F/A				
CH053-2080 / FHL02-3260	LIRR Cutover Signal Power Separation and MG Set / LIRR Cutover MG SPS (SPS Complete) w/o EO Control		11-Oct-16	-10

ESA reported that work at Manhattan/Systems is a sub-critical path that controls the Target RSD:

The Manhattan/Systems critical path starts with the design, fabrication, and delivery of the first precast elements at the mezzanine level of the GCT Tunnel. The path then continues through the upper level structure, then the lower level. Elevator work then follows. The critical path then proceeds through CM007 work then transitions into the CS179 integrated systems testing (IST). CS179 performs integrated systems testing for the communications systems and facility power at Jamaica Station; fire detection and security at the TMC and MTA Police systems; testing at the Train Operations Center (TOC); and concludes at CS179 substantial completion, currently forecast for July 1, 2020. A 3.5 month contingency currently separates the substantial completion of CS179 from the start of the LIRR planning for final training task, which is driven by the completion of the B/C approach structure track work cutover (4C) in Harold.

Upcoming Contract Procurements:

Table 2-2, below, shows the reported status of current and upcoming Contract procurements in IPS #83:

Table 2-2: Future Procurement Schedule

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CH061A Tunnel A	5/23/2016 (A)	08/2/2016	10/28/2016	16 Months	02/28/2018
CQ033 Mid-Day Storage Yard	8/18/2016	10/11/2016	01/25/2017	40 Months	05/06/2020
CM015 48th Street Entrance	9/27/2016	12/5/2016	3/1/2017	30 Months	08/20/2019
CS086 Systems Package 2: Signal Installation	10/11/2016	12/5/2016	3/1/2017	41 Months	07/01/2020

The PMOC is concerned about the delay to the procurement of CM015. The forecasted Advertise Date for CM015 has moved from August 25, 2016 to September 27, 2016, a delay of one month over the last update period (month), equating to an almost day-for-day delay. This appears to be due to a delay in attaining 100% design. The IPS report also noted that the forecasted duration for this Contract work increased from 24 months to 30 months over the update period, based on scope changes. Combined, the forecasted delay to the Advertise Date and the increased project duration, has impacted the planned Substantial Completion by approximately seven and a half months, from the January 3, 2019, date shown in IPS #82 to the August 20, 2019, date shown above, in IPS #83.

The PMOC is also concerned about the delay to the advertise date for CS086, which was delayed from September 6, 2016, in the previous IPS update (#82) to October 11, 2016, in the current IPS update (#83). However, the Substantial Completion date for this Contract remained the same, forecasted to occur on July 1, 2020. The PMOC noted that this appears to be due to the decrease of estimated time to complete the work, from 43 months in IPS #82, to 41 months in IPS #83. No mention of the change to the forecasted project period was included in the IPS #83 report.

IPS Concerns:

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

1. The PMOC is concerned about the delay to the procurement of CQ033 and CS086 and recommends that any change related to estimated project periods be explained in detail in the IPS report.
2. The PMOC has noted a trend in Force Account Work not being completed as scheduled, due to a lack of LIRR and Amtrak resource personnel needed to perform the work. Due to the concern that this work may begin to have an impact on the Project, the PMOC has been tracking this work and will begin to incorporate an analysis of any noted delays in these reports.
3. The PMOC recommends that the PMT fully describe changes in critical path activities between updates in the associated IPS reports.

3.0 COST DATA

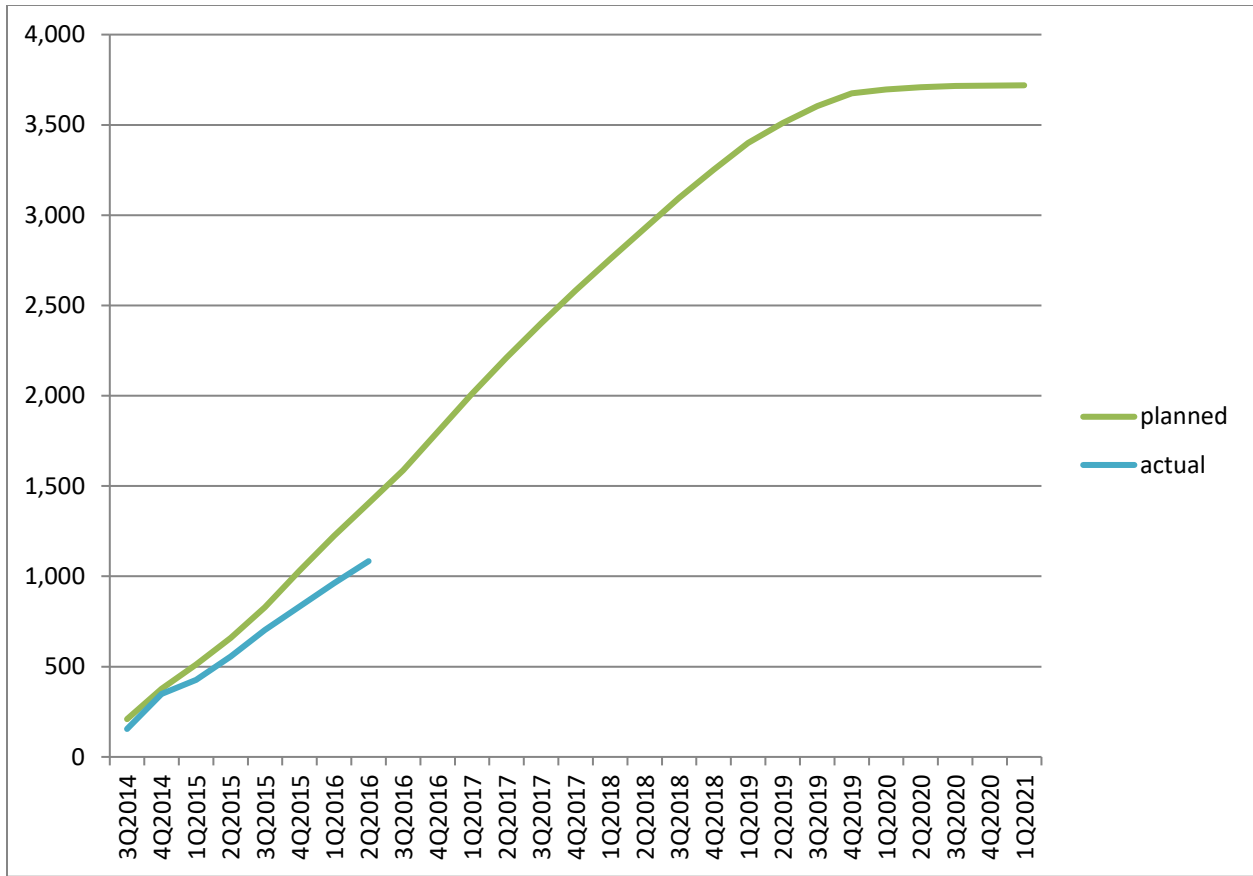
Funding: The funding concern that the PMOC previously identified was resolved in May 2016 with CPRB approval of the 2015-19 Capital Planning.

Budget/Cost: The ESA 2Q2016 Progress Report (July 1 data date) shows that the actual total project progress was 64.3% versus 65.9% planned against the Current Baseline Budget (CBB) of \$10.178 billion. Total actual construction progress was 64.0% versus 66.8% planned based on the total invoiced amount of construction (details of project budget and expenditures are shown in Appendix B, Tables 2 and 3). A PMOC review of the ESA Planned Cash Flow Chart shows that it is based on a February 2021 completion date. This now aligns with the Target Revenue Service

date resulting from the July 1, 2016, data date of the IPS. Since the 2014 re-baseline, the actual cumulative construction amount spent is 91.4% of the planned construction spending. As shown in Table 3-1, the divergence between plan and actual spending is increasing, suggesting a worsening trend. As a result of its inability to achieve the planned construction spending, and the increase in construction budget from the 2014 re-baselining to current, MTACC is no longer striving to achieve the Early Revenue Service Date. This spending trend and future projections are shown in Tables 3-1 and 3-2 below.

Table 3-1: Planned vs Actual Construction Cash Flow

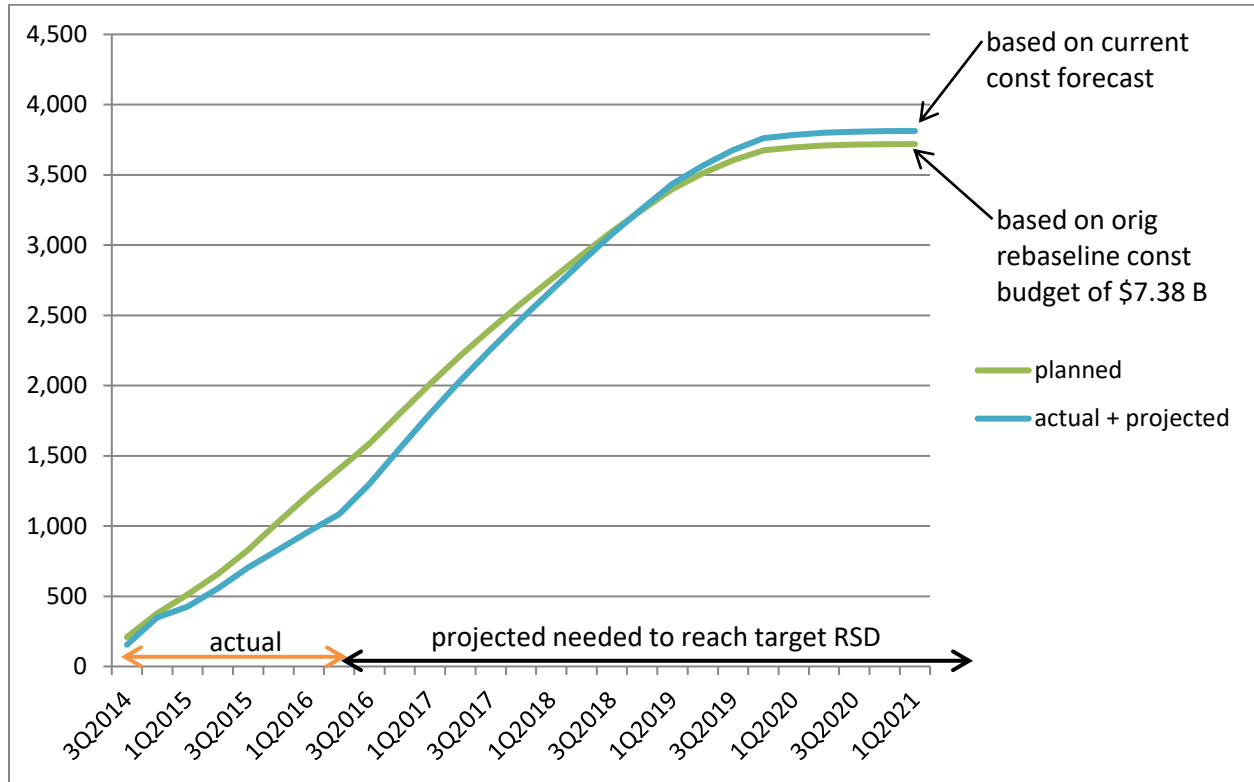
The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1Q 2021. The vertical axis is \$million, starting at \$0 at the time of the re-baselining. The "actual" curve, up to the 2Q 2016, shows actual construction spending as reported by ESA.



Construction Cash Flow at 2Q 2016 – Starting at 2014 Rebaseline

Table 3-2: Actual & Projected Construction Cash Flow to Early RSD

The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1Q2021. At that time the total construction budget was \$7.38 billion. The vertical axis is \$million, starting at \$0 at the time of the re-baselining. The "actual" curve, up to 2Q2016, shows actual construction spending as reported by ESA. The "projected" portion of that curve, from the 1Q2016 through 1Q2021, shows the PMOC's projected construction spending rate to reach the current \$7.48 billion final construction budget by the 1Q2021.



Construction Cash Flow - Starting at 2014 Rebaseline

Several significant items were discussed at the Monthly Cost Review meetings of August 25, 2016. ESA reported that Force Account forecasts will likely add \$200 million to \$300 million to the budget. This projection will be finalized shortly and presented to the FTA and PMOC. It is reported that there will also be an increase in OCIP costs of approximately \$191 million to fund the insurance program through February 2022. ESA indicated that it will pursue the increase in OCIP costs through MTA funding. It should be noted that ESA has not yet changed the reported forecast amounts for either FA construction or OCIP. Finally, the forecast for Project wide Reserve is \$273 million. This is \$74 million below the current budget and \$166 million below the baseline amount.

Contingency: The ESA June 2016 contingency report showed that the Current Budget total project contingency was \$594.7 million, which includes \$347.2 million of unallocated contingency and \$247.5 million of allocated contingency. This total represents a \$48.44 million decrease from 1Q2016, due largely to scope transfers and contract overruns.

The PMOC is concerned that the projected cost increases as stated above for Force Account and OCIP have the potential to reduce contingency to unacceptable levels.

Table 3-3: Summary of ESA Cost Contingency

Contingency	June 2014 Baseline	February 2016 Contingency	March 2016 Contingency	April 2016 Contingency	May 2016 Contingency	June 2016 Contingency
Allocated Contingency						
Pre-Award Contingency (AFI)	\$112,701,505	79,564,409	79,564,409	48,235,809	48,235,809	48,235,809
Post-Award Contingency (AWO)	\$266,286,180	183,556,140	181,297,963	201,476,724	201,111,937	199,279,663
Sub-Total	\$378,987,685	\$263,120,549	\$260,862,372	\$249,712,533	\$249,347,746	\$247,515,472
Unallocated Contingency	\$439,000,000	385,930,788	382,195,086	350,843,852	347,176,465	347,176,465
Total	\$817,987,685	\$649,051,337	\$643,057,458	\$600,556,385	\$596,524,211	\$594,691,937

Change Orders/Budget Adjustments: The PMT reported that, during 2Q2016, twenty three (23) construction Change Orders greater than \$100,000 were executed for a total of \$32.35 million. These include construction and GEC design modifications.

4.0 RISK MANAGEMENT

The ESA Risk Manager conducted a comprehensive risk review of the CQ033 Contract, Mid-Day Storage Yard Facility, over a two day period on May 10 and 11, 2016. The facilitator subsequently submitted its draft risk report to ESA. On August 25, 2016, ESA made a summary level presentation to the PMOC of the risk based cost and schedule outcomes. The PMOC subsequently requested a copy of the presentation and the draft risk report.

Based on long standing issues and concerns regarding Amtrak’s ability to provide sufficient force account support to the ESA project, especially Electric Traction (ET) resources, ESA completed a Harold schedule re-sequencing in December 2014, also known as “ESA First,” that advanced work elements required for the new LIRR service to GCT and delays some of the FRA funded High Speed Rail (HSR) work beyond 2017. Railroad construction work prior to development of the “ESA First” schedule was also falling behind schedule due to the overall delays to much of the Harold work. MTA continues to work with both the FTA and the FRA to resolve funding drawdown issues.

With regard to the implementation of the “ESA First” Harold Re-sequencing of late 2014, the PMOC notes, that through 2015 and into 2016, Amtrak has not been able to provide even the reduced level of force account resources that were planned in support of the schedule. Additionally, the projected force account costs are trending noticeably higher than planned and the force account contingency budget line item is nearly depleted. Additionally, Amtrak has recently notified MTA not to rely on critical weekend track outages in support of the planned ESA work in the Harold Interlocking. Since late 2015, ESA has been working on a comprehensive study to identify and evaluate the reasons for inadequate level of force account resources required to support the Harold schedule and to make recommendations to revise the schedule and to plan for the increasing force account costs. Based on the outcome of the study, the revised project schedule indicates that the Harold critical path has now become the ESA program critical path and currently

leads the secondary Manhattan/Systems critical path by three months. Cost impacts have been evaluated and ESA estimates the additional Amtrak and LIRR force account cost to be \$200-300 million for support of all remaining Harold Interlocking work to complete the 14-4M alignment.

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden ERT Lines 3 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, now planned for 2019. There is concern, shared by both the PMOC and MTACC, that significant Amtrak Force Account resources will be needed to support the hardening work, which could further reduce the Amtrak resources available to support the ESA Harold Re-Sequencing Plan. During July 2016, Amtrak advised MTACC that it plans to start work on the total track replacement in ERT Lines 3 and 4 during 4Q2016. There is also concern that track outages required for the hardening work may conflict with ESA needs to support completion of the planned Harold work, including the High Speed Rail scope, by 2020. The PMOC does note, however, that MTACC does not believe that Amtrak's decision about taking ERT Line 2 out of service first, in 2019, for the 18-month reconstruction work will directly impact the completion of the Harold work needed to commence LIRR service into GCT.

Amtrak's decision will, however, impact Contract CH058B, Harold Structures – Part 3B, Eastbound Re-route, and the ESA-PMT has indicated that there is no work-around plan for this situation where ERT Line 1 cannot be taken out of service.

5.0 ELPEP COMPLIANCE SUMMARY

The current status of each of the remaining main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** The FTA requested MTACC to update its TCC Plan in response to the FTA/PMOC comments that were generated in November 2013 as a result of significant changes in key ESA upper management level positions. The MTACC submitted its revised Technical Capacity and Capability Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 7, 2015. The MTACC submitted a revised TCC Plan in response to FTA/PMOC comments on June 12, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and recommended a meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the evaluation. MTACC responded with a reply on September 24, 2015.
- **Continuing ELPEP Compliance:** The following ELPEP components continue to need improvement: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Issues Management; Procurement; Timely Decision Making; and Risk-Informed Decision Making. The PMOC has noted progress in two areas – management decision making and timeliness of decision making, particularly when responding to new issues arising with the railroads' Force Account resource available, track outages, and the Harold Interlocking work. The new ESA Risk Manager started in January 2016 and has worked to re-establish risk management as one of the key inputs to the decision-making process. The PMOC anticipates seeing continued improvements in the risk management area.

- **Project Management Plan:** The PMOC completed its review and evaluation of MTACC's revisions and responses and submitted its findings to FTA-RII in 4Q2014. MTACC subsequently submitted a revised Rev. 10 on March 13, 2015, that included updated information on the Change Control Committee. The revised Rev. 10 of the PMP was reviewed by the PMOC against the PMOC's evaluation in 4Q2014. The PMOC continues to coordinate with MTACC, arranging working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings have been held since June 2015 and continued through December 2015. MTACC and the PMOC are working to schedule the few remaining meetings with ESA chapter authors required to complete this process. MTACC submitted the next revision to the PMP in June 2016 that reflects ESA organizational changes along with some additional updates and revisions to certain sections. The PMOC is currently reviewing these changes and plans to provide its evaluation in September 2016.
- **Cost/Schedule Contingency:** MTACC has reached agreement with the FTA and PMOC on both the ELPEP minimum cost and schedule contingency hold points, levels, and drawdown. The PMOC notes that MTACC has now included formal reporting of the actual cost and contingency levels against the ELPEP minimums in its reports to the FTA. Cost and schedule contingency status, use, and trending are discussed in, respectively, Section 3.0 and Section 2.0 of this report.

The PMOC notes that, since June 2013, the ESA project has continued to be non-compliant with ELPEP and is not meeting some of the more important requirements of the Schedule Management Plan (SMP) and Cost Management Plan (CMP) sub-plans to the PMP as noted above. The PMOC believes that this continues to be a deficiency and needs to be corrected. The PMOC has noted progress in certain areas. The PMOC's major areas of concern include:

- **Schedule Management Plan (SMP):** The ESA project remains partially non-compliant, with requirements for Integrated Project Schedule (IPS) Updating, Forecasting, and Schedule Contingency Management against a current baseline schedule. The revised SMP was submitted in 4Q2015, and the PMOC completed its review in June 2016. Review comments were forwarded to MTACC on July 15, 2016, and a working meeting was held on August 25, 2016, to review, discuss, and resolve the comments. MTACC will follow up with the agreed upon revisions to the SMP.
- **Cost Management Plan (CMP):** The ESA project remains partially non-compliant with requirements for Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC Cost Contingency Management and Secondary Mitigation. The PMOC has noted some improvement in a number of areas, but more work is needed in other areas. After progressing with resolution of many PMOC comments, the PMOC met with MTACC in November 2015 to focus on the remaining issues. MTACC continued working on additional agreed upon revisions and evaluated the PMOC's recommendations in six areas. MTACC provided an initial draft of the revised CMP on December 15, 2015, and the PMOC completed its review in early June 2016. MTACC and the PMOC met on June 22, 2016, to review the PMOC

comments. MTACC will follow up with the PMOC regarding any remaining actions.

Revisions to the ELPEP Document: As part of the process of updating the ELPEP document, the PMOC has performed an independent evaluation of the minimum required cost and schedule contingencies going forward. The PMOC's recommendations were presented at several meetings with the MTACC. On January 15, 2016, MTACC and the ESA PMT accepted the FTA/PMOC proposed ELPEP minimum cost contingency hold point values. In conclusion, MTACC has accepted the FTA/PMOC recommended ELPEP cost and schedule contingency hold points, values, and curves for the remainder of the program. The PMOC continues work on a draft revision to the ELPEP document that reflects these agreements.

The next ELPEP Quarterly Review Meeting with the MTACC, FTA-RIL, the SAS and ESA projects, and the PMOC had been scheduled for June 16, 2016, but was postponed and had not been rescheduled as of the end of August 2016.

6.0 0 SAFETY AND SECURITY

Table 6-1, below, shows the PMOC Calculated and ESA Reported Lost Time and Recordable injury ratios through July 31, 2016. The PMOC developed this table to demonstrate the effectiveness of ESA's most recent safety efforts rather than its cumulative safety record, which ESA uses to report in each of its monthly reports. The PMOC believes that this provides a more accurate measure of ESA's current safety performance than its cumulative record does.

Table 6-1: ESA 2016 Lost Time and Recordable Injury Ratios

	Lost Time Ratio	Recordable Ratio
2015 BLS Ratio (used by OSHA)	1.80	3.20
PMOC Calculated ESA July 2016 Ratio	0.00	2.06
PMOC Calculated ESA CY2016 Ratio	0.54	2.14
ESA Reported Ratio (Cumulative since beginning of project as of June 30, 2016)	1.90	ESA does not report cumulative Recordable Injury Rates

Additionally, the ESA PMT did not report any significant security issues during August 2016.

7.0 ISSUES AND RECOMMENDATIONS

Design: The PMT design management team needs to focus on achieving intermediate milestones in a timely fashion and working closely with the GEC to facilitate finalization of the scope of work for the remaining procurement and construction packages. The continued shifting of 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, are requiring considerably more time than expected; and,
- LIRR is making changes that alter the design basis and results in time-consuming and costly re-design work by the GEC.

The PMOC recommends that the PMT engage the upper level management of stakeholders involved to assist in resolution of the more serious issues. The GEC is challenged to meet the schedule requirements for review of design submittals from the CS084 and CS179 contractors. The PMT needs to address this continuing problem and to also better coordinate the associated LIRR reviews. These shortcomings point to insufficient technical capacity and capability in the particular design support areas.

Procurement: The lack of stability in the contracting strategy and Contract Packaging Plan remains a concern. The scope shifting among different packages delays completion of the required design packages, delays the procurement schedules, and makes it difficult to fully understand the impact of these changes to the overall ESA Program. The PMOC continues to recommend that the ESA PMT should make an effort to adhere to the current version of the CPP and minimize shifting scope for the remainder of the project.

Contract CS179: As noted in previous reports, the PMOC remains concerned that Buy/Ship America compliance issues remain as significant risks to the timely and successful completion of this contract. MTACC needs to quickly move forward with its intent to request Buy/Ship America waivers for the potential non-compliance issues so as not to adversely impact the CS179 and overall ESA project schedule.

The Buy/Ship America waiver request process can be a lengthy one, with no guarantee that a waiver will be granted. The sooner the waiver request documentation is finalized and submitted to the FTA, the sooner the MTA will know if alternative strategies and/or equipment are required to fulfill the contract's operational functionality requirements.

A fully tested solution to the numerous water infiltration issues in the equipment rooms remains a concern to the PMOC. To avoid Contract CS179 schedule slippage, proposed mitigation solutions need to be quickly approved and implemented so that these equipment rooms can be turned over to the CS179 contractor as soon as possible.

Late completion of reviews of contractor design submittals by ESA has caused the design completion date to slip seven months. ESA, working with the GEC and LIRR, needs to effectively manage the remaining design reviews to prevent any further schedule slippage.

Contract CS084: The PMOC remains concerned about the numerous water infiltration issues in the equipment rooms and the solutions that need to be implemented to provide permanent mitigation of the water infiltration in rooms with electronic equipment. While the GEC has now proposed a possible mitigation methodology, its implementation has yet to begin and its ability to successfully mitigate the water infiltration problem can only be validated after the mitigation work is complete.

If this proposed mitigation methodology is not entirely successful in preventing water infiltration, then it may be necessary to develop another strategy; further impacting the design and construction processes on this and other contracts.

The PMOC continues to have concerns about the various design issues now being identified and the length of time it is taking to provide responses and designs to mitigate the various issues. Lastly, ESA, the GEC and LIRR need to continue to aggressively reduce the backlog of contractor design submittals under review.

Contract CM006: The contractor has submitted a new CPM schedule for ESA review based on the recent contract modification. This issue is closed.

Project Budget: The PMOC remains concerned about the adequacy of remaining cost contingency to address major risks detailed in the Risk Management discussion below. It is noted that the forecast for Unallocated Contingency is \$273.0 million. This forecast does not incorporate the results of the study of Force Account overruns, nor the anticipated additional costs for OCIP. As noted in Section 3.0 above, the Force Account forecasts will likely add \$200 million to \$300 million to the budget, with an additional increase of \$191 million in OCIP costs. With the Total Contingency now at \$594.7 million, these additions to the budget will diminish contingency to unacceptable levels.

The PMOC has been briefed by ESA regarding the results of the CQ033 risk assessment exercise. ESA has asked that these results remain confidential. The PMOC has provided a confidential trip report to the FTA reporting the results of this briefing.

Project Schedule: The PMOC is still concerned that, as stated by the PMT, Amtrak is not providing enough resources to support the ESA's scheduled critical work. The PMT has stated that they will continue to meet with Amtrak and has obtained clearances to transfer Amtrak work to 3rd parties to try to partially mitigate schedule delays. The PMOC is also concerned about LIRR's requirement to have all CIL cutover software approved prior to any of the pretesting required for the cutovers, as this lengthy pretesting durations are currently on the Program critical path. However, the PMOC wishes to note that the PMT has worked through a special task force to address this issue and has proposed a resequencing solution that appears to have mitigated the impact.

Risk Management:

This segmentation of construction packages has created multiple inter-contract interfaces and milestones. In the PMOC's opinion, the probability of successfully achieving all of them is low, and leads to the possibility of a ripple effect of delays and coordination difficulties between contracts. There is very limited opportunity, at best, for the contractors to make up any of the time lost to interface delays due to work site time and access constraints, especially because the majority of the work is underground. Should delays start to accumulate, recovery will likely not be possible. Managing inter-contract handoffs and interfaces will be challenging and represents significant MTACC-retained risks. The PMOC has recognized 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). These mitigations, however, are not necessarily effective in solving the productivity challenges presented by the CM007 schedule that the PMOC considers very aggressive.

The PMOC remains concerned about the coordination risk retained by MTACC on the completion of the work in Manhattan, especially construction and testing interface management for the systems work. When combined with the extensive scope re-configuration changes associated with the Harold Interlocking work, the PMOC believes that this may create significant changes to the overall project risk profile.

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

- Successful execution of multiple hand-off interfaces across several contracts;
- Contractor access and work area coordination in Manhattan;
- Duration of integrated systems testing;
- Continued availability of adequate Amtrak and LIRR force account resources [increasing risk trend noted in 3Q2015 through 2Q2016]; and,
- Continued availability of required track outages in Harold Interlocking. [Starting in September 2016, fewer priority weekend track outages will be available].

Although MTACC has actively engaged Amtrak to develop some specific mitigations for the last two risks and continues to work on strategies for mitigating many of the other identified risks, the PMOC notes that continued shortcomings in provision of adequate force account resources continues to adversely impact the current Harold schedule and have caused the remaining Harold work to become the ESA program schedule critical path. Many external stakeholder issues with Amtrak and LIRR will remain beyond MTACC's direct control, however, and are likely to complicate development and acceptance of the specific problem resolutions that are essential to completion of the ESA project. Although MTACC and ESA have been proactive in dealing with these issues as they arise, the PMOC believes that most of these issues require resolution at the executive management level.

The PMOC notes that ESA has been unable to develop a sustainable schedule for the remaining Harold Interlocking work that can be achieved despite the most recent full re-plans in 2013-2014 and again in 2015 as the "ESA First" Harold Re-Sequencing. Based on insufficient support from Amtrak during 2015 and into 2016, ESA has undertaken another Harold re-plan effort that reflects the continued deterioration of Amtrak support with regard to force account resources and track outages for ESA work. The results of the study, along with the recent Amtrak decision about the ERT tunnel program, do not provide any basis for optimism going forward, especially considering that the situation has deteriorated so quickly since the current baseline was established only 2 years ago:

- ESA has used all of the 10 months of schedule contingency embedded within the 2104 Harold schedule;
- The Harold critical path has now become the ESA Program Critical Path and leads by three months, the secondary Manhattan/Systems critical path,
- Amtrak's decision to take ERT Line 2 out of service first for an extended outage of one year or more will not support the current ESA planning to complete all of the remaining Harold work, including the High Speed Rail work by 2020. The PMOC does note, however, that MTACC believes that Amtrak's decision about ERT Line 2 will not impact the remaining work in the Harold Interlocking required to provide LIRR service to Grand Central Terminal; and,

- Amtrak plans to commence total track replacement in the ERT Lines 3 and 4 structures during 4Q2016 in preparation for the extended outages for ERT Lines 1 and 2 starting in 2019; this situation may adversely impact the availability of force account resources for the remaining ESA work.

During 2Q2016 and into August 2016, ESA continued to experience a worsening trend of insufficient Amtrak Force Account personnel, predominately Electric Traction (ET), to properly support its 3rd Party contractors currently working in Harold Interlocking, Contracts CH053, CH057, and CH057A. Additionally, the ESA PMT has reported that it does not receive all the track outages it requires to do the work that it schedules. The ESA PMT has stated that both of these conditions have been major factors for why Harold construction recently became the critical path of the ESA Project. The PMOC recognizes ESA's efforts to re-baseline the remaining work in the Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation continues to deteriorate and the PMOC recommends that the PMT engage executive management in MTACC and MTA to assist with resolution of this problem.

During August 2016, the PMOC was advised of new situations that will likely result in additional delays and costs for completion of the remaining work in the Harold Interlocking:

- ESA has been pursuing labor clearance agreements in the current and future Harold third-party contracts to allow third-party contractors to do work that is normally claimed by the various Amtrak unions. The demands on Amtrak's force account resources are currently so high that they will be unable to provide access and protection to third-party contractors for performing work for which labor clearance has been granted.
- Amtrak has apparently advised MTA that ESA should limit the number of critical weekend outages.

APPENDIX A - ACRONYMS

AFI	Allowance for Indeterminates
ARRA	American Recovery and Reinvestment Act
BLS	Bureau of Labor Statistics
BOH	Back of House
BAFO	Best and Final Offer
C&S	Communication and Signals
CCC	Change Control Committee
CCM	Consultant Construction Manager
CIL	Central Instrument Location
CLSM	Controlled Low Strength Material
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
CPRB	Capital Program Review Board
EAC	Estimate at Completion
ELPEP	Enterprise Level Project Execution Plan
ERT	East River Tunnel
ESA	East Side Access
ET	Electric Traction
FA	Force Account
FDR	Final Design Review
FFGA	Full Funding Grant Agreement
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GCT	Grand Central Terminal
GEC	General Engineering Consultant
HSR	High Speed Rail

IEC	Independent Engineering Consultant (to MTA)
IFB	Invitation for Bid
IPS	Integrated Project Schedule
IST	Integrated System Testing
ISTP	Integrated System Test Plan
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
NTP	Notice to Proceed
NYAR	New York and Atlantic Railroad
NYCT	New York City Transit
PAC	Pneumatically Applied Concrete
PDR	Preliminary Design Review
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PMT	ESA Project Management Team
PQM	Project Quality Manual
PVS	Plaza Vent Structure
PWE	Project Working Estimate
QA	Quality Assurance
QPR	Quarterly Progress Report
RAMP	Real Estate Acquisition Management Plan
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
RTU	Remote Terminal Unit
SC	Substantial Completion
SCADA	Supervisory Control and Data Acquisition
SCC	Standard Cost Category
SDR	Second Design Review
SMP	Schedule Management Plan
SMU	Snow Melter Unit
SOE	Support of Excavation
SSMP	Safety and Security Management Plan
SWO	Stop Work Order
TCC	Technical Capacity and Capability
TELP	Temporary Eastbound LIRR Passenger
WBY	Westbound Bypass Tunnel
YSB	Yard Services Building

APPENDIX B – TABLES

Table 1: Summary of Critical Dates

	FFGA	Forecast (F) Completion, Actual (A) Start	
		Grantee*	PMOC**
Begin Construction	September 2001	September 2001(A)	September 2001(A)
Construction Complete	December 2013	December 2022 (F)	September 2023(F)**
Revenue Service	December 2013	December 2022 (F)	September 2023 (F)

* Source – Grantee forecast Revenue Operations Date per information presented to 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

	FFGA			MTA's Current Baseline Budget CBB		Expenditures	
	(Millions)	(% of Grand Total Cost)	Obligated	(Millions)	(% of Grand Total Cost)	(Millions)	(% of CBB)
Grand Total Cost	\$7,386	100.0%	\$4,724	\$11,214.0	100.00%	\$6,994.9	62.38%
Financing Cost	\$1,036	14.0%	\$617	\$1,036.0	9.24%	\$617.6	59.61%
Total Project Cost	\$6,350	86.0%	\$4,107	\$10,178.0	90.76%	\$6,377.3	62.66%
Federal Share	\$2,683	36.3%	\$1,148	\$2,699.0	24.07%	\$2,228.2	82.56%
5309 New Starts Share	\$2,632	35.6%	\$1,098	\$2,436.6	21.73%	\$1,966.1	80.69%
Non New Starts Grants	\$51	0.7%	\$50	\$67.0	0.60%	\$66.7	99.55%
ARRA	0	0.0%	0	\$195.4	1.74%	\$195.4	100.0%
Local Share	\$3,667	49.6%	\$2,959	\$7,479.0	66.69%	\$4,103.1	54.86%

Table 3: Project Budget and Invoices as of June 30, 2016

Elements	Baseline Total Budget (June 2014)	Current Baseline Budget (June 2016)	Actual Awards (June 2016)	Paid to Date (June 2016)	Actual % Budget Paid
Construction	\$7,379,296,706	\$ 7,472,240,677	\$ 6,412,224,420	\$ 4,628,855,306	61.95%
Soft Costs Subtotal	\$2,798,474,304	\$2,705,530,333	\$1,927,504,410	\$1,748,406,845	64.62%
Engineering	\$720,615,810	\$723,521,828	Invoices as of J \$689,572,786	\$669,532,094	92.54%
OCIP	\$282,613,620	\$282,613,620	\$282,613,620	\$258,048,522	91.31%
Project Mgmt.	\$972,168,644	\$972,168,644	\$837,851,335	\$705,026,544	72.52%
Real Estate	\$182,076,230	\$178,049,776	\$117,466,669	\$115,799,685	65.04%
Rolling Stock	\$202,000,000	\$202,000,000	\$0	\$0	0.00%
Management Reserve	\$439,000,000	\$347,176,465	\$0	\$0	0.00%
Project subtotal w/o Financing &	\$10,177,771,010	\$10,177,771,010	\$8,339,728,830	\$6,377,262,151	62.66%

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

Standard Cost Category (SCC) No.	FFGA SCC baseline (YOE \$) M	June, 2014 Re-Plan (YOE \$)	January 2016 SSC (YOE \$) M	February 2016 SSC (YOE \$) M	March 2016 SSC (YOE \$) M	May 2016 SSC (YOE \$) M	June 2016 SSC (YOE \$) M	CBB Variance from FFGA %
10	1,989	3,405	3,419	3,419	3,443	3,469	3,443	73.10%
20	1,169	2,238	2,338	2,338	2,314	2,323	2,314	97.95%
30	356	474	472	472	472	473	472	32.58%
40	205	611	593	593	594	594	594	189.76%
50	619	606	566	566	569	569	569	-8.08%
60	165	220	217	217	216	215	216	30.91%
70	957	210	210	210	210	210	210	-78.06%
80	1,184	1,975	1,977	1,977	1,977	1,978	1,978	67.06%
90	169	439	386	386	382	347	382	126.04%
Subtotal	6,813	10,178	10,178	10,178	10,178	10,178	10,178	49.39%
100	1,036	1,036	1,036	1,036	1,036	1,036	1,036	0.00%
Total Project Cost (10 – 100)	7,849	11,214*	11,214*	11,214*	11,214	11,214	11,214	42.87%

Table 5: Quarterly ESA Planned Cash Flow- Actuals to Date and Actuals Remaining (as of 2Q2016)

Table G-1: ESA Planned Cash Flow- With Actuals to Date and Actual Remaining (ao 2Q2016)						
Quarter/year	Construction \$(000)	Engineering \$(000)	OCIP \$(000)	Project Mgmt. \$(000)	Real Estate \$(000)	Rolling Stock \$(000)
Paid To Date	3,660,194,771	646,377,892	155,604,955	580,041,291	112,634,547	0
Remaining	3,719,144,273	74,237,918	127,008,665	392,127,353	69,441,683	202,000,000
3Q2014	209,340,620	-3,311,163	4,774,951	16,667,454	0	0
4Q2014	168,280,817	-3,290,689	4,774,951	16,667,454	75,948	0
1Q2015	134,568,200	-3,183,384	4,619,246	16,123,950	4,506,241	0
2Q2015	147,357,357	-3,290,689	4,774,951	16,667,454	4,658,137	0
3Q2015	169,688,509	-3,290,689	4,774,951	16,667,454	4,658,137	0
4Q2015	201,239,698	-3,290,689	4,774,951	16,667,454	4,658,137	0
1Q2016	193,275,933	-3,219,153	4,671,147	16,305,118	4,556,873	0
2Q2016	180,854,738	-3,290,689	4,774,951	16,667,454	4,658,137	8,666,545
Remaining Planned	2,314,538,401	100,405,063	98,618,468	293,028,469	50,986,347	202,000,000
Remaining Actual	2,843,385,371	53,989,734	24,565,098	267,142,100	62,250,091	202,000,000
3Q2016	181,988,455	-1,983,850	4,774,951	16,652,320	4,658,137	13,070,855
4Q2016	214,173,807	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
1Q2017	210,556,624	6,509,009	4,619,246	15,450,479	4,506,241	12,644,631
2Q2017	199,737,103	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
3Q2017	189,382,506	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
4Q2017	182,084,699	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
1Q2018	174,210,593	6,509,009	4,619,246	15,450,479	4,506,241	12,644,631
2Q2018	170,524,739	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
3Q2018	168,497,619	6,728,414	4,774,951	15,971,281	4,658,137	14,014,767
4Q2018	155,245,094	6,728,414	4,774,951	15,971,281	50,632	14,014,767
1Q2019	148,441,548	6,509,009	4,619,246	15,450,479	0	13,557,764
2Q2019	110,893,994	6,728,414	4,774,951	15,971,281	0	14,014,767
3Q2019	93,559,944	6,728,414	4,774,951	15,971,281	0	14,014,767
4Q2019	71,649,848	6,728,414	4,774,951	15,971,281	0	14,014,767
1Q2020	20,704,406	6,582,144	4,671,147	15,624,080	0	5,043,553
2Q2020	11,682,057	6,728,414	4,774,951	15,971,281	0	943,912
3Q2020	7,573,078	2,267,183	4,947,825	5,381,627	0	0
4Q2020	2,750,374	0	5,035,679	0	0	0
1Q2021	881,913	0	3,256,771	0	0	0
2Q2021	0	0	0	0	0	0

**Table 6: MTA ESA Project Summary by FTA Standardized Cost Categories
2014 Re-plan (\$ in Thousands)**

\$1,000s

Standardized Cost Category	FFGA	May 2012 Re-Baseline	June 2014 Re-Plan	Awarded Value (2Q16)	Paid To Date (2Q16)
10- Guideway & Track Elements	\$1,513,998	\$2,943,165	\$3,405,463	\$3,081,581	\$2,382,200
20- Stations, Stops, Terminals, Intermodal	\$1,168,655	\$1,513,998	\$2,238,235	\$2,147,111	\$1,224,743
30- Support Facilities, Yards, Shops, Admin Buildings	\$356,264	\$384,583	\$474,177	\$230,369	\$209,538
40- Site Works and Special Conditions	\$205,105	\$491,341	\$610,570	\$474,102	\$462,186
50- Systems	\$619,343	\$698,296	\$605,592	\$433,903	\$307,318
60-ROW, Land, Existing Improvements	\$165,280	\$203,639	\$219,397	\$154,788	\$153,121
70- Vehicles	\$493,982	\$674,372	\$209,938	\$7,838	\$5,549
80- Professional Services	\$1,184,000	\$1,648,606	\$1,975,398	\$1,810,038	\$1,632,607
90- Unallocated Contingency	\$168,529	\$150,000	\$439,000	\$0	\$0
Sub-Total	\$6,349,900	\$8,708,000	\$10,177,771	\$8,339,730	\$6,377,262
Estimated Financing Cost	\$1,036,100	\$1,116,000	\$1,036,000	\$617,607	\$617,607
Total	\$7,386,000	\$9,824,000	\$11,213,771	\$8,957,337	\$6,994,869

Table 7: ESA Core Accountability Items

Project Status:		Original at FFGA	Current*	ELPEP **
Cost	Cost Estimate	\$7.368 billion	\$10.178 billion	\$8.119 billion
Contingency	Unallocated /Risk Contingency	\$367 million	\$347.2 million	\$260 million
	Total Contingency (Allocated plus Unallocated)	\$738.7 million	\$594.7 million	\$722 million
Schedule	RSD	December 31, 2013	December 2022	April 30, 2018
Total Project Percent Complete		Based on Invoiced Amount	64.3% vs 65.9% planned (ESA Figure)	
Project Performance Rate(Since 2014 ESA "Re-Plan")		Based on Earned Value ±	91.4% (PMOC Calculation of construction spending planned vs actual since rebaselining)	
Major Issue	Status		Comments	
Project Schedule	MTACC presented a new baseline schedule to the MTA CPOC in June 2014, with an RSD in December 2022. This schedule incorporates 22 months of Program level contingency. It should be noted that there have been significant changes in elements comprising the baseline schedule, including two full re-sequencings of the Harold work and restructuring of the interfaces among the following construction contracts that are held by the same contractor. CM006; CM007; CQ032; and CS179. The Integrated Project Schedule (Data Date July 1, 2016) shows that the remaining Harold work is now the ESA Program Critical Path and leads the secondary Manhattan/Systems Critical Path by 3 months.		<p>The PMOC remains concerned about recent developments with regard to the remaining work in Harold Interlocking.</p> <ul style="list-style-type: none"> • ESA used all of the 10 months scheduled contingency embedded within the 2014 Harold Baseline Schedule; • The Harold critical path has now become the ESA Program Critical Path and leads the secondary Manhattan/Systems Critical Path by three months; and, • Amtrak’s decision to take ERT Line 2 out of service first for an extended outage of one year or more will not support the current ESA planning to complete all of the remaining Harold work, including the High Speed Rail work, by 2020. 	
Harold Re-planning	Based on continuing issues with inadequate railroad force account support, ESA completed a Harold schedule re-sequencing in December 2014, also known as “ESA First”, that advances work elements required for the new LIRR service to GCT and delays the FRA funded High Speed Rail Work beyond 2017. The 2015 Harold Re-Sequenced schedule advanced completion of ESA elements but did not achieve goals due to insufficient Amtrak force account support. The schedule has again been re-evaluated and the ESA Program Critical Path now passes through the remaining work in the Harold Interlocking.		Work on Harold Interlocking is subject to influences outside of the control of ESA. Continuing issues with the level of Amtrak force account support, currently providing only 60% of required resources, to support the “ESA First” schedule, has further delayed completion of the Harold Interlocking work and has forced it onto the ESA Program Critical Path.	

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

** 2010 Enterprise Level Project Execution Plan (ELPEP) reflecting medium level of risk mitigation, excluding financing cost of \$1,116 million. This is currently being re-evaluated.