

PMOC Comprehensive Monitoring Report

National Capital Purple Line Light Rail Transit Project Montgomery and Prince George's Counties, MD

Maryland Transit Administration (MTA)

September 2019

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Task Order Number	05	Project Number	FTA- DC-27-5312
Work Order Number	05		
OPs Referenced	25		

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EXECUTIVE SUMMARY

Project Description

The National Capital Purple Line (“Purple Line”) is a 16.2 mile east-west Light Rail Transit (LRT) line extending inside the Washington, DC Beltway from Bethesda in Montgomery County, MD to New Carrollton in Prince George’s County, MD. The Purple Line will operate largely at street level in a combination of dedicated and semi-exclusive right-of-way, and also includes segments on elevated structures and in tunnels. The alignment for the Purple Line will provide direct connections to Washington Metropolitan Area Transit Authority (WMATA) at Bethesda, Silver Spring, College Park, and New Carrollton, MD. The project will also connect to all three Maryland Area Regional Commuter (MARC) commuter rail lines, Amtrak, and local bus routes. The project includes twenty-one stations, two storage and maintenance facilities, and 25 light rail vehicles (LRVs). MTA is executing the project using a Public-Private Partnership (P3) method of project delivery. As documented in the Full Funding Grant Agreement (FFGA), the estimated project cost is \$2,407,030,288 and the scheduled Revenue Service Date (RSD) is December 31, 2022.

Project Status

Following the execution of the FFGA on August 22, 2017, the Purple Line Project is currently in the Construction phase, with Purple Line Transit Partners (PLTP) as the P3 Concessionaire.

Scope / Significant Activities

- Purple Line Transit Constructors (PLTC), the PLTP partner responsible for the design and construction of the capital project, continues with project design. MTA’s assessment of PLTC design progress is forecasting substantial design completion in late December 2019/early January 2020. The original Baseline Schedule anticipated design completion by late fall 2017.
- MTA, PLTC and CSX reached conceptual agreement on the remaining CSX design issues, including the following; except for the Mechanically Stabilized Earth (MSE) wall item, the implementing final design submittals are in process or are already in review by CSX:
 - Design of the mezzanine connector pedestrian bridge as “building concourse” space so that CSX will accept a 23-foot vertical clearance above the CSX tracks (non-FFGA)
 - New drainage connection relocated from the CSX yard area to Montgomery County-owned property (non-FFGA)
 - Final design for the new access road into the CSX yard (non-FFGA)
 - Stabilizing the existing WMATA-owned MSE wall near the Silver Spring Transit Center (SSTC) to meet crash wall standards
 - Final design of the barriers on top of the new Talbot Avenue Bridge parapet.
- MTA and Washington Suburban Sanitary Commission (WSSC) continue evaluating the Veterans Highway median as the alignment into which to relocate the 66-inch water main that currently runs through the Glenridge Operation and Maintenance Facility (OMF). This relocation is not schedule-critical work.

- The Alternate Technical Concepts (ATC) offered during the proposal process for the use of jet fans at the Bethesda Station in lieu of vent shafts is not yet at Released for Construction (RFC) status. However, PLTC has been reviewing the near final design with the Fire Marshall and has been addressing comments with design revisions as applicable. PLTC has contracted with a nationally reputable Fire Protection consultant to perform an independent review, on behalf of the Fire Marshall, of PLTC's Computation Fluid Dynamics analysis that supports the PLTC design. The design will be considered "final" once the Fire Marshall is satisfied.
- MTA continues implementing its non-P3 construction contract activities:
 - Prince George's County Parks Polk Street Maintenance Facility Design-Build (D-B) contract. MTA completed review and returned comments on the 65% design package submitted by the D-B contractor, Forrester, and the 100% design package submittal is due October 1, 2019.
 - Off-site Wetlands Mitigation (Ken-Gar). The Design-Bid-Build construction contract was awarded after the September 4, 2019 BPW award approval, and NTP was issued on September 5, 2019. Kickoff meetings were conducted, and the contractor is preparing to apply herbicides for invasive species during the fall season.
 - Off-site Stream Mitigation (Paint Branch). The Design-Bid-Build construction contract was awarded after the September 4, 2019 BPW award approval, and NTP was issued on September 5, 2019.
- PLTC's construction activities continued throughout the corridor. Utility relocations and retaining wall construction continued in various locations. Subcontractor is mobilizing for the rail overpass structure at Connecticut Avenue; the overpass structural steel members are in shop fabrication. Sheet pile Support of Excavation (SOE) continues in for the rail underpass construction at Jones Mill Road. Pile driving is underway for the abutments of the new Talbot Avenue Bridge. Parking lot construction continues at the Silver Spring International Middle School. Utility relocations are in process along Wayne Avenue. Drilled pier and rebar cage construction for the Silver Spring Transit Center flyover continues. The final liner shotcrete application continues at Plymouth Tunnel. At Manchester Station, the ninth lift of vertical concrete placement of the station wall was successfully completed; work is also in process on the stair tower. Utility relocations continue at various locations throughout Segments 5 through 7, including water, sewer, gas, electrical and communications along University Boulevard and multiple relocations along River Road. Redesign of the underground Medco utilities on the University of Maryland (UMD) campus to accommodate existing underground utilities continues. Pile driving for the new Northwest Branch Anacostia Bridge continued. Maintenance of Traffic measures were put in place at the UMD pump station/railroad underpass for Campus Drive widening. Abutment B and in-water construction of the center pier of the Northeast Branch Anacostia Bridge continued. Demolition of existing abutments and pile driving for the new abutments of the Baltimore-Washington (B-W) Parkway bridges continued. Retaining wall construction along Veteran's Parkway and drilled shafts for the aerial structure along Annapolis Road continue. Glenridge OMF building interior finishes, Mechanical/Electrical/Plumbing rough-ins and structural steel fireproofing work

continues. At Ellin Road, 700 feet of double track was set, and the first concrete was placed for the embedded track.

- Vehicle carshell manufacturing activities, coordinated with design progress, continued in Spain and in Elmira, NY:
 - In Spain, resolution of MTA comments on Intermediate and Final Design packages continue. Also, MTA’s review of the Construcciones y Auxiliar de Ferrocarriles (CAF) Design Conformance Certification Checklist (DCCC) currently has several outstanding comments for CAF resolution. Sixty-two carshell segments have been completed to date and multiple LRVs continue in manufacture. The roof and floor fire endurance tests have been successfully completed and the reports were submitted and reviewed by MTA with all comments resolved.
 - Vehicle final assembly is taking place in CAF’s facility in Elmira, NY. Dynamic testing of the first vehicle is planned to commence in October 2019. All five segments of the second, third and fourth vehicles are in various stages of final assembly activities in Elmira. The first three carshell segments of the fifth vehicle have arrived in Elmira, and the remaining two carshell segments are in shipment to the US. Shipment of the first vehicle from Elmira to the project site is dependent on readiness of on-site storage space, such as the test track, and available traction power, and may occur in early 2020. MTA rejected CAF’s requested design deviation to utilize the current environmental test chamber in Elmira, which is shorter than the overall vehicle and can accommodate only 4 of the 5 segments at a time. CAF plans to proceed at risk and test an early completed vehicle in the existing test chamber and submitted an updated procedure for testing one half the vehicle and performing analysis for accepting the complete vehicle. If MTA still does not accept the deviation after reviewing the tests and analysis report report, there will be sufficient time to test in accordance with the current contract requirements, since the climate test only needs to be performed on one vehicle, which does not need to be the first vehicle.
- FTA concurrence was provided on the small package of high priority LOD changes that was submitted to FTA in June 2019. Currently, two additional LOD change packages continue undergoing FTA review.
- MTA is responsible for providing offsite stormwater mitigation in Montgomery County. MTA had received MDE approval for 5.53 acres (greater than the 5 acres required) of off-site Stormwater Management (SWM) capacity in place by June 30, 2018 in accordance with the P3 contract. MTA is in the process of receiving MDE approvals and adding another 5 acres of identified mitigation to the “bank”. In fall 2019, effort will commence to add yet another 5 acres by mid-2020. MTA is awaiting PLTC’s final approved on-site mitigation capacity, since MTA may not need to actually construct any the sites if PLTC provides sufficient on-site mitigation.
- Right of Way (ROW) acquisition activities continue for the required 466 private parcels and 137 public parcels, for 603 parcels total. As of September 5, 2019, only three private parcels remain for which MTA does not yet have possession, and MTA is evaluating costs for a potential redesign to eliminate the need to acquire one of these three parcels.

- MTA also evaluated and reduced the approximately 280 additional small acquisitions initially identified by the P3 Concessionaire for utility relocations to a current total of approximately 173 parcels, of which 120 are private and 53 are public. To date, 118 of the additional 120 private properties are in MTA possession through rights of entry, options and/or agreements. The remaining 2 private parcels are not for utility relocations and are not as immediately needed. The cost responsibility for these additional parcels has not yet been negotiated.
- To date, 172 of the identified 176 required relocations have been completed. However, the Post Office was initially relocated to an interim short-term space in the Silver Spring Library Building, and work is now in process to complete build out of its final site in advance of the final relocation, scheduled for late October 2019. The Post Office submitted an estimate of its final relocation costs, which is undergoing MTA's review.

Cost

- The project's documented expenditures are \$1,068.2 million through June 2019.
- Currently, \$149.7 million of the original \$150.0 million contingency remains
- Several Change Orders that have a potential cost impact on the project contingency are in process.
- Mitigation to recover the schedule may also result in added costs to the project.
- Refer to the Core Accountability Table below for additional project cost information.

Schedule

- PLTC currently does not have an approved recovery schedule to address the one-year delay to the start of construction caused by the environmental lawsuit. In response to a letter that FTA issued to MTA in early August 2018 expressing concern with the amount of time that the project has advanced without an approved schedule, MTA prepared a working schedule update of the master project schedule and submitted "MTA Master Schedule August 2018". The updated proposed baseline schedule is based on the negotiations as of August 2018 of the P3 contract schedule, which have been ongoing with PLTC since late 2017 and which have been detailed in prior PMOC Monthly Monitoring reports; but the update is not yet based on a mutually agreeable P3 contract schedule. See also the **Major Problems and/or Issues** subsection of this report, below.
- The following are the current key milestone dates for the project, showing the last approved (March 15, 2017) master project schedule, the MTA Master Schedule August 2018 proposed re-baseline and the (most recent) June 15, 2019 progress update of the MTA Master Schedule proposed rebaseline. (Previously actualized milestones are not shown here for brevity but are presented in the body of the report.)

National Capital Purple Line LRT Key Milestone Dates			
Activity	Latest (March 15, 2017) Approved Project Schedule	MTA Master Schedule August 2018 (working baseline)	MTA Master Schedule; June 15, 2019 update
All Significant ROW Acquisition & Relocation	As needed by construction	---	---
Commencement of Trial Running	---	03/09/2022	05/16/2022
P3 Ready to Commence Revenue Service	TBD	10/28/2022*	12/25/2022
MTA Opens for Revenue Service	3/2022	---	12/25/2022
Revenue Operations Date (includes contingency)	12/31/2022	---	12/31/2022
FFGA Revenue Service Date (includes contingency)	12/31/2022	12/31/2022	12/31/2022

* P3 Revenue Service date is based on MTA's working version of an updated integrated master project schedule based on MTA/P3 Concessionaire negotiations, but for which final agreement with the P3 Concessionaire has not yet been reached.

Core Accountability

FFGA Core Accountability Items			
Project Status:		Original at FFGA:	Current Estimate (EAC):
Cost	Cost Estimate	\$2,407,030,289	\$2,407,030,289
Contingency	Unallocated Contingency	\$90,535,748	\$90,243,241
	Total Contingency (allocated plus Unallocated)	\$150,035,748	\$149,743,705
Schedule	Revenue Service Date (FFGA)	December 31, 2022	December 31, 2022
	MTA Target Revenue Service Date	March 31, 2022	December 25, 2022 NOTE 5
		Amount (\$)	Percent (as percent of total)
P3 Planned Value to Date	Total budgeted cost of work scheduled to date (if available) NOTE 1	Not Available	---
P3 Earned Value to Date	Budgeted cost of work completed to date, i.e., actual total value of work earned or done (if available) NOTE 1	Not Available	---
P3 Actual Cost	Total cost of P3 work completed to date (actual total expenditures)	\$625,922,408	34.6%
Total Project Actual Cost	Total cost of work completed to date (actual total expenditures)	\$1,068,196,887	44.4%
Contracts		Amount (\$)	Percent
	Total contracts awarded to date (Note 2)	\$2,264,870,639	94.1%
	Total construction contract awarded to date (construction contracts only) (Note 3)	\$1,043,671,393	99.5%

FFGA Core Accountability Items			
	Physical construction work completed (amount of construction contract work actually completed) (Note 4)	\$221,349,805	21.1%
Major Issues	Status	Comments / Action / Planned Action	
	See discussion below		
Date of Next Quarterly Meeting (if known):		November 21, 2019	

NOTE 1 (Core Accountability Table). The Planned Value to Date and the Earned Value to Date are currently not available, since even approximated values have become unreliable and/or misleading until re-baselining of the P3 cost-loaded schedule is completed. This effort is ongoing with the P3 Contractor.

NOTE 2 (Core Accountability Table). Amount includes value of all construction, right of way, vehicle and professional services contracts awarded to date (right of way “awarded” value is the cost of right of way to date). Percentage is calculated based on total project cost estimate of \$2,407,030,289.

NOTE 3 (Core Accountability Table). Amount includes the SCC 10 through 50 values of all contracts awarded to date. Percentage is calculated based on total project planned SCC 10 through 50 costs contained in the latest project SCC Workbook.

NOTE 4 (Core Accountability Table). Amount includes the SCC 10 through 50 values expended to date. Percentage is calculated based on total project planned SCC 10 through 50 costs contained in the latest project SCC Workbook.

NOTE 5 (Core Accountability Table). The Current Estimate (EAC) for the Schedule (MTA Target Revenue Service Date) of December 25, 2022 is from MTA’s working version of an updated integrated master project schedule progressed through June 15, 2019, which is based on MTA/P3 Concessionaire negotiations to date, but for which final agreement with the P3 Concessionaire has not yet been reached.

Major Problems and/or Issues

- Due to the impacts of the initial lawsuit filed by the Friends of the Capital Crescent Trail, it has been challenging for MTA to strictly follow the procedures and practices established in the Purple Line Project Management Plan (PMP) and its sub-plans.
- According to the PMP, the Master Schedule is to be updated monthly; however, the most recent approved Master Project Schedule update is as of March 15, 2017. Since the December 2016 baseline schedule no longer reflects project conditions, the project does not currently have a current approved resource-loaded Master Integrated Project Schedule to serve as a management tool.
- In May 2018, MTA issued a directive letter for PLTC to incorporate the workshop mitigations, but agreement on a mitigated project schedule was still not imminent. In summer 2018, the Maryland Secretary of Transportation strongly encouraged PLTP to negotiate in good faith, and in August 2018, FTA sent a letter expressing concern with the amount of time that the project has advanced without an approved schedule and requested MTA’s formal response by September 30, 2018. In response, MTA prepared a working schedule update (proposed re-baseline) of the master project schedule. The update is based on the schedule negotiations as of August 2018 but does not yet have the full mutual agreement of both parties. MTA performs monthly progress updates of the MTA Master Project Schedule based on the progress updates received from PLTP as well as from its internal staff, relative to the proposed August 2018 re-baseline.

- Although the most recently issued schedule update (June 15, 2019) of the MTA Master Project Schedule continues to show the start of revenue service prior to the FFGA RSD of December 31, 2022, the current MTA forecasted PLTP Commencement of Revenue Service date is December 25, 2022, which provides essentially no schedule contingency for the 3+ remaining years of construction, testing and commissioning. Also, there is a risk that negotiations of a recovery schedule that is agreeable to both MTA and the P3 Concessionaire under the P3 contract has the potential to push project completion beyond the current FFGA Revenue Service Date.
- Mitigation to recover the schedule may potentially result in added costs to the project, which will need to be negotiated with PLTP.
- Both MTA's delivery of properties to Purple Line Transit Constructors (PLTC) and PLTC's progress toward needing those properties for construction are significantly behind the schedule anticipated in the P3 contract. MTA managed this through weekly meetings of an MTA/PLTC right of way task force that evaluated the needs of the dynamic construction schedule "early start" and "late start" dates for construction activity on each property and determined work around plans to avoid impacts to the extent possible. Now that only three properties remain to be acquired, such meetings are conducted on an as-needed basis. None of the remaining properties are currently impacting construction. Concurrent with its acquisition activities, MTA worked to obtain Construction Rights of Entry for these properties and/or redesign to eliminate the need for the property to avoid impact to construction activities.
- PLTC's forecasted substantial completion of its design scope has slipped until late December 2019 / early January 2020, which is significantly behind the scheduled date of fall 2017 anticipated in the P3 contract. As a result, the construction schedule has also slipped, and therefore, PLTC's need for the properties discussed above has also slipped.

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MONTHLY MEETING REPORT

Introduction

The Project Management Oversight Contractor (PMOC) visited MTA's Purple Line project site and met with project staff on September 12, 2019 in the project offices in Riverdale, MD. Updated information as of that date is reflected in this report.

A. Project Status

After the U.S. Court of Appeals reversed the vacation of the Record of Decision (ROD) in July 2017 (refer to the **Environmental** section of this report for details), the FFGA was executed on August 22, 2017, approximately one year later than planned. The Purple Line project is currently in the Construction phase.

MTA Design

MTA's General Engineering Consultant (GEC) completed the Purple Line project design to approximately 30% design level in fall 2013 with incremental enhancements through late 2015, and this design formed the basis of the Request for Proposal (RFP) for the P3 contract. See the **P3 (Purple Line Transit Constructors) Design** section below for the further advancement of this design.

MTA continued to advance the design to 100% for the following scopes, to support construction contracts under a Design-Bid-Build delivery method separate from the P3 scope:

- Stream mitigation – MTA completed the 100% design packages in June 2017 and received approval from MDE in May 2018. Several design adjustments were subsequently made based on further MDE comments up until the time that the construction contract was advertised on March 8, 2019. See the **Environmental Mitigation** subsection of this report for additional details.
- Wetlands mitigation – MTA completed the 100% design packages in June 2017, and subsequently addressed several late-arriving comments from MDE. Several design adjustments were subsequently made based on further Montgomery County comments up until the time that the construction contract was advertised on May 3, 2019. See the **Environmental Mitigation** subsection of this report for additional details.
- Montgomery County off-site SWM sites – MTA completed design and obtained MDE approval of more than the P3 contract-required 5 acres of off-site mitigation on May 29, 2018, ahead of the June 30, 2018 contract deadline. *MTA continues in the process of receiving MDE approvals for the next 5 acres to be added to the "bank", of which 4 acres were approved by mid-September 2019 and another one acre is anticipated to be approved by the end of September 2019. Afterwards, effort will commence to add yet another 5 acres to the bank by mid-2020. MTA may not need to actually construct any the sites, depending on PLTC's ability to provide on-*

site mitigation. See the **Environmental Mitigation** section of this report for the current requirements.

MTA also completed the design to support a D-B contract for the replacement of the existing Prince George's County Parks Maintenance Facility with a facility on Polk Street. See the **Real Estate Activities** and the **Construction (MTA Scope)** sections of this report for further details.

P3 (Purple Line Transit Constructors) Design

Among the Purple Line Transit Partners (PLTP) partnership, Purple Line Transit Constructors (PLTC) is the partner responsible for the design and construction of the capital project.

PLTC also continues to incorporate one remaining Alternate Technical Concept (ATC) identified during the proposal process that was approved by MTA subject to required approvals by authorities having jurisdiction, related to the use of jet fans at the Bethesda Station in lieu of vent shafts. The final determination of compliance with National Fire Protection Association (NFPA) Standard 130, which will establish acceptability of the ATC, is with the State Fire Marshall, who reviewed and had no comments on the intermediate design but will not offer a final decision until the final design is reviewed. *As of mid-September 2019, the design package by PLTC is not yet at Released for Construction (RFC) status.* However, PLTC has been reviewing the near final design with the Fire Marshall and has been addressing comments with design revisions as applicable. PLTC has contracted with a nationally reputable Fire Protection consultant to perform an independent review, on behalf of the Fire Marshall, of PLTC's Computation Fluid Dynamics analysis that supports the PLTC design. The design will be considered "final" once the Fire Marshall is satisfied. PLTC has advanced the design assuming the Fire Marshall will find the jet fan approach acceptable, however MTA is considering this as a PLTP risk on the project until the Fire Marshall's approval is received. If the jet fan ATC is found to be acceptable and is approved by the Fire Marshall, it would eliminate the need for vent towers and their associated Right of Way (ROW) acquisitions, which to date have not been provided for on the project. Also, if this ATC is accepted, PLTC will prepare the documentation substantiating that this change has no impact on the environmental decision on this project for MTA to submit for FTA's review and concurrence.

MTA and Carr Properties in Bethesda, MD came to agreement on Carr providing for an underground box structure in which the Purple Line project activities can continue while Carr's redevelopment proceeds above it. MTA and Carr Properties executed the Memorandum of Agreement (MOA) March 2018. The construction box was turned over to PLTC on May 31, 2019 in advance of PLTC's readiness to access it for construction.

CSX Railroad informed the project team that its updated design criteria, which were issued after the "setting date" of the P3 contract, are now applicable to the Purple Line design. MTA and CSX continued to work to resolve the applicable design criteria and affected

project areas until mutually agreeable paths forward were defined for all areas by July 2019. *The following is the current status of the issues and their resolutions:*

- To address CSX comments that would have disallowed passenger amenities (fare gates and ticketing kiosks) on the Silver Spring Transit Center (SSTC) Purple Line mezzanine connector pedestrian bridge above CSX tracks, and that would have required a 25-foot vertical clearance, *MTA, PLTC and CSX reached consensus on a design to interpret this area as a “building concourse”. CSX is currently reviewing the implementing design submittal.*
- CSX provided review comments disallowing revised drainage networks related to the Capital Crescent Trail work, which is non-FFGA and separately funded by Montgomery County, to connect to CSX’s existing drainage culverts. *By working with Montgomery County, the connections have been relocated from CSX property to Montgomery County property to eliminate them as a CSX issue. Formal design submittal is anticipated in late September 2019.*
- Details for a new access road into the CSX yard that minimizes impact to both Purple Line and CSX operations were developed using Fenwick Lane for access with the trail crossing paved and marked as if it were a crosswalk. *CSX concurrence has been obtained and final design is anticipated in September 2019. This change affects the Capital Crescent Trail and is a non-FFGA change.*
- CSX has commented that an existing MSE retaining wall near the Silver Spring Transit Center needs to meet CSX requirements for a crash wall. It was resolved that the existing MSE wall, which is owned by WMATA and is not on CSX property, will be stabilized with concrete in front of it to meet CSX crash wall standards. Then the Purple Line project can build its own MSE wall behind it.
(b) (4)
- Regarding the electrification / crash barrier to be placed atop the new Talbot Avenue Bridge parapet, MTA, PLTC, the community and CSX have reached agreement on a concept. The concept employs a “laminated” of an ornamental wrought iron-looking fence and the CSX standard chain link fence, except over the overhead contact system (OCS), where a laminate of the wrought iron-looking fence and Buy America compliant clear solid barrier will be used. *The RFC design package is being updated to reflect the agreed upon barrier.*

Agreements for use of WMATA property at the four common station areas is discussed in the **Real Estate Activities** subsection of this report.

MTA’s assessment of PLTC design progress forecasts PLTC design substantial completion in late December 2019 / early January 2020. The original Baseline Schedule anticipated design completion by late fall 2017. The current progress through mid-September 2019 reflects that 135 of the 212 planned design packages have been issued as RFC.

MTA project team members continue significant effort to facilitate PLTC design progress, including combining some intermediate design submittals via alternative documentation, allowing the issuance of drawings that have “clouded” areas of uncertainty with the information to be provided later by drawing revision, and assisting with MDE approvals

where required. The PMOC noted that the additional effort expended by MTA and its GEC and Project Management Consultant (PMC) members to assist PLTC may be manifested in additional SCC 80 project costs.

Construction

MTA Scope

Although the P3 concessionaire is responsible for the majority of the project construction, MTA also has construction responsibility in the areas of the new Prince George's County Parks Maintenance Facility (which is part of the real estate effort and budget), wetlands mitigation, stream mitigation and possibly some offsite stormwater management sites. Forest mitigation has been accomplished by MTA without the need for additional construction. *The following is the current status of the MTA construction contracts.*

Prince George's County Parks Replacement Maintenance Facility

This Design-Build contract was awarded after the March 20, 2019 BPW construction contract award approval. NTP for the base scope was issued to the D-B contractor, Forrester Construction Company, on April 5, 2019, and NTP for the "Add" and "Alternative" options was issued after award of those scopes in May 2019.

Forrester submitted the 65% design package on July 5, 2019, with several missed items subsequently submitted. MTA completed its review and returned comments, which were reviewed with Forrester in a meeting on August 8, 2019. Forrester is now advancing design to 100%, which is due for submittal by October 1, 2019.

It was recently identified that the existing building roof, which was to be re-used, requires complete replacement, which will be separately funded by Prince George's County. *MTA is awaiting a priced proposal from the D-B contractor, Forrester, for this scope.*

Off-site Wetlands Mitigation (Ken-Gar)

The Wetlands Mitigation construction contract was awarded after the September 4, 2019 BPW award approval and NTP was issued on September 5, 2019. Kickoff meetings were conducted during the week of September 9, 2019 so that the contractor has time to apply herbicides for invasive species during the fall season.

Off-site Stream Mitigation (Paint Branch)

The Stream Mitigation construction contract was awarded after the September 4, 2019 BPW award approval and NTP was issued on September 5, 2019. Construction is planned to extend through 2021 due to separate seasonal moratoriums for forests and for streams that will affect construction of this project.

P3 Scope

Highlights of recent (through mid-September 2019) construction activities throughout the alignment include:

Area 1: *Utility relocations and retaining wall construction continue in various locations. Subcontractor is mobilizing for the rail overpass structure at Connecticut Avenue; the overpass structural steel members are in shop fabrication. Sheet pile Support of Excavation (SOE) continues in process for a traffic shift to accommodate Phase 1 of the rail underpass construction at Jones Mill Road. Partial demolition of the Faulkland Apartment building continues. Pile driving is underway for the abutments of the new Talbot Avenue Bridge. Parking lot construction continues at the Silver Spring International Middle School. Utility relocations are in process along Wayne Avenue. Drilled pier and rebar cage construction for the Silver Spring Transit Center flyover continues.*

Area 2: *The first vertical concrete placement of 500 cubic yards at the Bethesda shaft (related but non-FFGA scope) encountered quality issues including voids and cold joints, and non-destructive evaluation and core sampling are being conducted to assess condition while further concrete placements there are on hold. The final liner shotcrete application continues at Plymouth Tunnel. At Manchester Station, the ninth lift of vertical concrete placement of the station wall was successfully completed; work is also in process on the stair tower.*

- Area 3: *Utility relocations continue at various locations throughout Area 3, including water, sewer, gas, electrical and communications along University Boulevard and multiple relocations along River Road, while the redesign of the underground Medco utilities on the UMD campus to accommodate existing underground utilities continues. Pile driving for the new Northwest Branch Anacostia Bridge continued. Phase 1 Maintenance of Traffic measures put in place at the UMD pump station/railroad underpass for Campus Drive widening. Abutment B and in-water construction of the center pier of the Northeast Branch Anacostia Bridge continued. Demolition of existing abutments and pile driving for the new abutments of the Baltimore-Washington (B-W) Parkway bridges continued. Retaining wall construction along Veteran's Parkway and drilled shafts for the aerial structure along Annapolis Road continue. Glenridge OMF building interior finishes, Mechanical/Electrical/Plumbing rough-ins and structural steel fireproofing work continues. At Ellin Road, 700 feet of double track was set, and the first concrete was placed for the embedded track.*

See Appendix 10 of this report for construction photographs.

Real Estate Activities

As of September 5, 2019, the total number of planned property acquisitions is 603, including 466 privately owned properties and 137 public acquisitions. For the private properties, to date a total of 475 offers have been made including for parcels that were subsequently eliminated, 234 offers have been accepted, all but three of the original P3 contract Exhibit 9 private parcels are in MTA possession, some of which are Rights of Entry (ROE) and properties that have been filed for condemnation under the State Highway Administration (SHA) process, and 317 properties have completed settlement. Currently, 281 properties are in process for condemnation, and of these, condemnation is filed for 118 properties, excluding those that have been optioned or settled. In August and September

2019, Montgomery County acquired the Woodmont Plaza property (formerly owned by Street Retail) in Bethesda for which MTA had a construction ROE, and Montgomery County is preparing a deed of transfer to MTA. At the end of project construction, MTA plans to transfer the Caldis property that was acquired to provide project access during the construction phase to Montgomery County in return. As of September 2019, the remaining private parcels yet to be acquired consist of two parcels owned by a developer in the Bethesda Station area and one parcel owned by a different developer near the Silver Spring Transit Center aerial structure. MTA is continuing to finalize the settlement agreement with the building owner for the final acquisition for one of the Bethesda properties (Montgomery Tower). The second Bethesda property (Bethesda Crossing) was expected to follow the first as a template, except that details also needed to be worked out with a new second owner who now owns half of the Bethesda Crossing property. (b) (4)

For the developer's property in Silver Spring (Silver SM), MTA received a limited ROE to perform surveys required for PLTC to complete its design. MTA and the building owner then came to agreement on another 6-month ROE for the construction of the shared footing for the Capital Crescent Trail and the LRT flyover aerial structures to the Silver Spring Transit Center. The ROE was executed on July 8, 2019 and PLTC is currently working on this property, with the work scheduled to complete in October 2019, within the 6-month ROE period. Another mediation is scheduled for this property in October 2019. All required public properties have been available for construction.

Additional small parcel acquisitions were expected to be added to the total as utility down-guys and other utility relocation needs are identified as the project progresses. In December 2017, PLTC initially submitted a list of approximately 280 such utility relocation-related parcels and subsequently added to that list. MTA has resolved that it will acquire these properties, rather than executing amendments to the utility agreement to have the utility companies perform this function. MTA's ability to perform appraisals in-house for these parcels or to waive appraisals for low value uncomplicated parcels is expediting the process somewhat. MTA continues to review such requests for additional properties from PLTC to eliminate the need wherever possible. As of September 5, 2019, the list of additional acquisitions remains at 173 parcels. Of these, 53 are public property and will be acquired by agreement and 120 are private acquisitions. Also, most of the additional private parcels affect property already acquired or currently in the acquisition process. MTA is separately tracking the additional parcels (approximately 98% are for utility relocations) in its right of way tracking system to best manage changes to parcels already acquired or in the process of acquisition. As of September 5, 2019, 118 of the additional 120 private properties are in MTA possession through rights of entry, options and/or agreements. The remaining 2 private parcels are not for utility relocations and are not as immediately needed. 53 of the properties are filed for condemnation, excluding those that were subsequently optioned or settled. The MTA and PLTC cost responsibility for each parcel has not yet been worked out, with the immediate effort being on expediting the acquisitions so as to not impact construction.

The Purple Line Project requires a total of 176 relocations, of which 57 are residential and 119 are businesses. To date, 172 move outs have been completed. The Post Office, which was the last remaining tenant in the Spring Center Shopping Center, signed a lease and temporarily relocated to the Silver Spring Library building in August 2018 for the short term until its final location was decided and ready. The project is responsible for up to 10 month's rent at the interim location. The Silver Spring Library space is not available for the Post Office for the long term, but Montgomery County extended the current lease in the Silver Spring library building until September 15, 2019, *and then again until the end of October 2019*. In July 2019, the Post Office signed a lease for its permanent location. *Work is in process to complete build out of the new space in advance of the final relocation of the Post Office, scheduled for October 28, 2019. The Post Office submitted an estimate of its final relocation costs, which is undergoing MTA's review.* The Purple Line project is responsible for this second and final relocation.

Properties that have not yet settled due to disputed compensation values have been going to trial in accordance with the ROW acquisition process. MTA is tracking actual acquisition costs versus planned expenditures so that contingency can be effectively managed and shares this information with the PMOC. *Settlement / condemnation values continue to trend approximately 30% higher than the Standard Cost Category (SCC) budget less contingency*, with a significant number of high-value settlements yet to be reached. Assessment of forecasted costs yet to be expended for acquisition and relocation activities indicate that the remaining ROW allocated contingency will likely not be sufficient, and that some of the project's unallocated contingency will need to be applied to the completion of the Purple Line ROW scope.

Certain parcels of property currently owned by WMATA and needed for the Purple Line project (at Bethesda, Silver Spring, College Park and New Carrollton) will be acquired via easements from WMATA, as approved by WMATA's Board in late January 2018. In lieu of monetary compensation, MTA will provide WMATA with some of MTA's current property at New Carrollton. The property plats at Bethesda have already been approved by WMATA, and the project has all access that it needs. For College Park, Silver Spring and New Carrollton, ROW access is available. PLTC developed the Exhibits and redlines of the plats for the New Carrollton property, and MTA advanced the property transfer based on these, and received BPW approvals by late March 2019. Since MTA has identified that federal (Highway) funding sources were used for the acquisition of the New Carrollton property, on May 7, 2019, MTA submitted a package of documentation to FTA with the requested documentation to appropriately record responsibility for parcels with federal funding assistance. MTA received comments from FTA and on May 14, 2019, submitted a revised package, *which continues under FTA review*.

MTA's delivery of properties to PLTC fell significantly behind the schedule committed in the P3 contract. On the other hand, PLTC's progress toward needing those properties for construction is also significantly behind the schedule anticipated in the P3 contract. To manage its risk relative to property availability for construction by the concessionaire, MTA had assembled a task force of Purple Line project team members specializing in right


of way, construction management, scheduling, risk management and third party agreements. During the peak property turnover periods of the project, the task force met on a weekly basis to review the forecasted property availability dates based on the latest ROW schedule update relative to the concessionaire's progressed schedule, including the concessionaire's "early start" and "late start" dates for construction activity on each property. *MTA continues to focus its effort to acquire possession of the remaining Exhibit 9 properties as quickly as possible as discussed above.*

The relocation of the existing Prince George's County Parks Maintenance Facility to make way for the siting of the new Purple Line Glenridge light rail maintenance facility is being implemented as a negotiated/functional replacement. MTA's Procurement Department led the Design-Build (D-B) contract solicitation for the Prince George's County facility. Refer to the **Construction** subsection of this report for the current status of this contract. Until construction is completed, the Prince George's County Maintenance facility functions have been relocated to a temporary facility and are currently not being impacted by events related to the construction of the replacement facility.

Utility and Third Party Agreements

All major third party agreements, specifically, those agreements with Washington Gas, Verizon, Potomac Electric Power Company (Pepco), CSX Railroad, the University of Maryland (UMD), Montgomery County Parks, Prince George's County Parks, Washington Metropolitan Area Transit Authority (WMATA), Washington Suburban Sanitary Commission (WSSC), Montgomery County and Prince George's County, were executed as of June 7, 2016.

After execution of its Third Party Agreement, Verizon required that certain currently overhead lines be placed underground when they cross the alignment. To minimize the total cost impact of this change, MTA and Verizon reduced the number of occurrences to 34 locations. MTA is of the opinion that this is a betterment, and therefore the added cost is Verizon's responsibility, but Verizon has not yet accepted that position. PLTC submitted its cost estimate to place these 34 locations underground, and after extended cost negotiations between MTA and PLTC while the physical relocations were being implemented, a final Change Order value of approximately \$5.5 million was agreed in early March 2019. (b) (4)



In early June 2018, MTA and PLTP completed negotiation of all remaining third party agreements with the smaller utility and fiber companies. According to MTA, most of the minor fiber / telecom utilities are not co-located with the electrical utilities, and where they are, Pepco's arrangement with the fiber / telecom utilities does not require Pepco's relocation schedule to be driven by that of the minor fiber / telecom companies.

In addition, the need for amendments for existing executed agreements continue to be evaluated, with current significant items including:

- *To date, the resolution of the design differences with CSX as discussed earlier in this report have been adequately handled through design review and concurrences and has not resulted in the need to amend to the CSX agreement.*
- WSSC wants the project to relocate a 66-inch underground water main that runs through the Glenridge OMF site. The designers have shown that it is acceptable remaining in place, but it would be under significantly deeper cover if access is ever required. MTA agreed that the line will be relocated and MTA and WSSC continue evaluating relocating it into an alignment in the median of Veterans Parkway. This relocation is not schedule-critical, since the existing line would be abandoned in place after the relocation. Also, the State Safety Oversight Agency (SSOA), MDOT, asked for a specific Hazard Analysis for this pipe due to its high pressure and large volume.

The project has been addressing its interface with the Montgomery County Schools through the Third Party Agreement already in place with Montgomery County. However, due to the specific concerns related to the schools and the safety and security of the children, MTA drafted a separate Memorandum of Understanding (MOU) with the Montgomery County School system which was approved by the School Board, signed by the new School Superintendent, Montgomery County and MTA. In the interim, work continued under an executed Right of Entry. A similar MOU was negotiated between MTA and the Rosemary Hills School and was approved at the School Board meeting on February 12, 2019; *it remains with the school for signature.* Rosemary Hills school also provided an interim ROE and work there also continued unimpeded.

Project Delivery Method, Contract Packaging and Procurement

The MTA project team identified Public Private Partnership (P3) as the project delivery method for the Purple Line. The majority of the capital cost of the Purple Line project has been packaged into a Design-Build-Finance-Operate-Maintain (DBFOM) P3 contract. This delivery method fits the State's legal definition of a P3 in that it involves a long-term, performance-based agreement between MTA and a private entity (the P3 "Concessionaire") where appropriate risks and benefits are allocated in a cost-effective manner between the contractual partners. The concessionaire is performing some functions normally undertaken by the transit agency, but MTA remains ultimately accountable for the Purple Line and its public function.

MTA negotiated an approximate 36-year P3 contract, including nearly 6 years of construction and 30 years of operations, and on March 2, 2016, announced that Purple Line Transit Partners (PLTP) had been selected as the P3 concessionaire. Commercial Close occurred on April 7, 2016, and Financial Close of the P3 occurred on June 17, 2016.

Environmental

The FTA issued a Record of Decision (ROD) on March 19, 2014. The National Park Service (NPS) issued its ROD on July 16, 2014.

MTA has continued to submit re-evaluations as required based on design advancement and other causes. To date, PLTC and MTA have prepared multiple packages, primarily for minor Limits of Disturbance (LOD) cases, which were submitted to FTA for review and have received FTA concurrence. *Packages that recently received concurrence, are currently in process or are anticipated to be submitted in the near future include the following:*

- *“June Environmental Report”. The small package of high priority LOD changes that was submitted to FTA in June 2019 received FTA concurrence in late August 2019.*
- *“Package 9”. In February 2019, MTA noted that PLTC was assembling another package of ten to twenty LOD changes resulting from continuing design advancement. In April 2019, that assessment was updated to include approximately 150 LOD changes; however, FTA advised that changes such as bus stop relocations that cause no disturbance do not need to be identified, reducing the number to approximately 120 LOD changes. MTA submitted the package to FTA in late July 2019 and it continues to undergo FTA review.*
- *“Bradford Place”. A single LOD change for the Bradford Place was submitted by MTA to FTA in July 2019 and it continues to undergo FTA review.*
- *PLTC indicated that a few more isolated cases of LOD changes are to be expected over the next several months*

The ATC for the Bethesda station jet fan will be submitted for FTA review after that change is formally accepted by MTA.

On August 3, 2016 in response to the lawsuit filed by the Friends of the Capital Crescent Trail against the FTA, a federal judge filed his Order and accompanying Memorandum Opinion. In those documents, it was ordered that the ROD for the Purple Line was vacated and remanded, and that a Supplemental Environmental Impact Statement (SEIS) be prepared, in accordance with the accompanying Memorandum Opinion. In a subsequent Order and Opinion filed on November 22, 2016, the judge in part revised the earlier Order by remanding to FTA the responsibility to determine if an SEIS is required, however, the ROD remained vacated. On May 30, 2017, the judge issued his ruling that dismissed the lawsuit except for the reassessment of the impact of declining Washington Metro ridership on the Purple Line Project’s Environmental Impact Statement. The Washington Metro ridership aspect of the ruling was immediately appealed by the Maryland Attorney General. On July 19, 2017, the U.S. Court of Appeals reversed the vacation of the ROD, and set an expedited schedule for the appeals process. The appeals hearing occurred on November 1, 2017. The Appeals Court ruling was issued on December 19, 2017, in which the judges ruled in favor of FTA and the project, and that the transit agencies would not have to conduct a new environmental study to examine other potential routes for the Purple Line.

A second lawsuit was filed by the Friends of the Capital Crescent Trail after the FFGA signing and groundbreaking ceremony was held on August 28, 2017. The September 19, 2017 Preliminary Hearing resulted in no temporary injunctions or restraining orders, and

project construction is proceeding as the case progresses through the court system. On December 5, 2017, FTA and MTA filed a Motion to Dismiss. The plaintiffs subsequently amended and significantly revised the complaint in December 2017, and on March 1, 2018, MTA and FTA filed a Motion to Dismiss. On March 29, 2018, the Plaintiffs filed their response. On March 5, 2019, the judge ruled in favor of the FTA.

A third lawsuit was filed by The Friends of the Capital Crescent Trail in January 2019, this time against U.S. Army Corps of Engineers (USACE). Defense is being provided by the USACE legal staff and the Office of the Attorney General. MTA filed a motion to intervene on behalf of USACE. In early May 2019, the Plaintiffs filed an objection to MTA's motion, but during the week of July 15, 2019, the Court authorized MTA to intervene on behalf of the USACE. The lawsuit is not expected to impact the Paint Branch Stream Mitigation construction.

Environmental Mitigation

Required mitigation for reforestation was achieved through the purchase of 82.5 acres of off-site credits. This is expected to be more than needed, which will be confirmed by the design performed by the P3 Concessionaire. The Forest Conservation Plan (FCP) was formally submitted to the Maryland Department of Natural Resources (DNR) in August 2016 for approval. The DNR concurred with the FCP on January 31, 2017, and the final approved FCP was received from DNR on July 31, 2017. As LOD cases are identified, they are also reviewed against the FCP credits to maintain an accurate accounting of the reforestation mitigation.

The Joint Permit Application (JPA) for Wetlands and Stream mitigation was formally submitted to the U.S. Army Corps of Engineers (USACE) and the MDE in August 2016. In late February 2018, MDE issued its Non-Tidal Wetlands and Waterways permit in advance of the USACE permit, even though it was a joint application. However, due to the passage of time since the permit had been drafted, MDE updated and issued the finalized permit the first week of April 2018. The USACE completed its National Environmental Policy Act (NEPA) and conditions review and public interface, receipt of comments and comment resolution, and issued the Section 10 404 Permit on March 14, 2018. This timing supported MTA's planned advertisement for the Wetlands and Streams mitigation construction contracts. In October 2018, the project submitted a request to USACE and MDE to extend the duration of the permits until December 2021 to accommodate extending construction periods resulting from construction moratoriums for forests and streams. The approval from MDE was received during the week of December 3, 2018, and the USACE approval letter was received in mid-June 2019.

The project team is addressing the environmental mitigation for wetlands through the development of the off-site Ken-Gar location implemented by a separate design-bid-build construction contract administered by MTA. The Ken-Gar final plans were submitted to the Maryland Department of the Environment (MDE) and the USACE in June 2017, completing the requirements for permits to be issued by these agencies. The construction contract was advertised on May 3, 2019, bids were received on June 10, 2019 and

underwent MTA Procurement Department review, and BPW approval of the award was received on September 4, 2019. See the **Construction** section of this report for further progress on this contract.

The project team is addressing the environmental mitigation for streams through the development of the off-site Paint Branch location implemented by a separate design-bid-build construction contract administered by MTA. The Paint Branch final plans were also submitted to the MDE and the USACE in June 2017. MTA advertised the Paint Branch Stream Mitigation construction contract on March 8, 2019. A pre-bid meeting and site tour conducted on March 22, 2019 resulted in a significant number of questions from the bidders, resulting in a series of addenda. After the bid due date was extended several times, proposals were received on May 21, 2019 and underwent MTA review and evaluation. BPW approval of an award was received on September 4, 2019. See the **Construction** section of this report for further progress on this contract.

The project continues with plans to address stormwater mitigation beyond what can be mitigated on the project site, through retrofitting off-site locations in both Montgomery County and Prince George's County. For Montgomery County, the off-site stormwater mitigation sites, if needed, will be implemented via MTA stand-alone contracts. The Purple Line project initially estimated that approximately 17 acres of offsite mitigation would be required in Montgomery County in total. However, as PLTC advanced the project design, that estimate dropped significantly to essentially no needed off-site mitigation, although the estimate continues to oscillate up and down as project details are finalized during design advancement. The Purple Line project committed to providing 5 acres of offsite mitigation for Montgomery County in place (i.e., approved by MDE) within the first two years after Financial Close of the P3 contract, which was by June 30, 2018. MTA received conceptual approvals from MDE, and then advanced site development of sites to provide at least 5 acres and submitted them to MDE for final review. On June 14, 2018, MTA received final MDE approvals for a total of 5.53 acres, satisfying the contract requirement. In addition, in accordance with P3 contract requirements another 5 acres of credit was to be added to the "bank" by June 2019. To establish the next 5 acres of credit, the Purple Line GEC identified additional sites, including previously identified but not designed/approved sites, removal of existing asphalt and concrete surfaces, etc. The project team identified 5.01 acres, *for which approximately four acres have received full MDE approval, and for which final approval of all 5.01 acres anticipated by the end of September 2019.* Since the current construction needs are significantly less than are currently available "in the bank", this delay past the June 2019 date will not impact work. In fall 2019, the GEC team will start the process to identify yet another 5 acres to be added to the bank by June 2020. MDE has also been reviewing PLTC's on-site mitigation for Montgomery County, which will determine the amount of construction, if any, of offsite mitigation required. However, PLTC requested that MDE initially focus on its submittals for Erosion and Sedimentation control to allow construction to commence in additional areas, and MDE review/approval of PLTC's on-site mitigation was significantly behind schedule. In May 2019, the approvals of on-site stormwater mitigation started to resume, and *as of mid-September 2019, MTA continues to forecast that on-site mitigation will be sufficient and that none of the off-site mitigation in Montgomery County will need to be*

constructed. The project plans to continue to hold off advertising any construction of off-site mitigation sites until and unless it determines that the onsite mitigation is not sufficient. The implementation of the Prince George's County stormwater mitigation sites is included within the scope of the P3 contract, although MTA assisted in the identification of potential sites. One of the two large Prince George's County Montpelier Basin sites identified during the P3 procurement phase has been determined to be the only site, if any, needed in Prince George's County. In June 2019, the final approval package for this site was fully executed by Prince George's County, the MDE and the Prince George's County Soil Conservation District. The Montpelier site generates 6.13 acres of credit; current estimates of Prince George's County offsite stormwater mitigations needs are for approximately one to two acres. For the stormwater mitigation sites, once each 100% design package is submitted to and approved by the MDE delegated authority/Soil Conservation District, the credit represented by that package is available to support construction of the project, even though construction of the stormwater mitigation site, if needed, would not yet have been completed.

The joint MTA and University of Maryland (UMD) technical board continued its efforts on the mitigation of noise, vibration and electro-magnetic interference (EMI) at the UMD facilities. The following is the status of key items:

- *The most recent Working Group meeting was September 11, 2019.*
- The vibration report was received in December 2017, but only evaluated areas near critical campus buildings, resulting in approximately 1,300 feet of mitigation, whereas the UMD agreement required the entire campus to be evaluated, which would lead to approximately 6,100 feet of mitigation. *PLTP sent a letter to UMD addressing this issue; no formal response has yet been made.*
- PLTP submitted a Notice of Claim regarding noise and vibration criteria, *but still needs to submit the contract-required related information and data.*
- The UMD Working Group continues working on contract terms with Lawrence Livermore Laboratory for a candidate to replace the team member specializing in EMI that had to resign for personal reasons.
- *The Working Group has several candidates in review to replace the independent representative on Rail matters who recently resigned.*
- CAF submitted its vehicle noise analysis report, which continues under UMD Working Group review.

The Purple Line project team is submitting quarterly Environmental Mitigation Monitoring Reports (MMR) for the project. *PLTP completed the second quarter CY2019 report and MTA is currently finalizing it for submittal to FTA. PLTP has started preparation of the third quarter CY2019 report.*

B. Project Management Plan and Subplans

Project Management Plan (PMP)

Purple Line PMP Version 10, was reviewed in accordance with Oversight Procedure (OP) 20 for a PMP at the FFGA execution stage of the project. Certain areas of the PMP were noted as needing to be updated after development of the relevant documents by the Concessionaire in accordance with P3 contract requirements, and the PMOC recommended that the PMP be revised and resubmitted after execution of the FFGA. MTA commenced an update of the PMP on December 2017 submitted the PMP Version 11 in mid-August 2018. However, since another major update was imminent, the PMOC review was deferred to PMP Version 12 once submitted. On January 3, 2019 MTA submitted PMP Version 12 dated December 14, 2018. The PMOC completed its review in accordance with OP20 for a project in the construction phase and submitted a draft OP20 report to FTA for review on May 9, 2019. FTA review comments were received, and the report was issued final on June 13, 2019, requiring revision and resubmittal.

Due to the impacts of the lawsuit filed by the Friends of the Capital Crescent Trail, it has been challenging for MTA to strictly follow the procedures and practices established in the Purple Line PMP. The most significant deviations from the PMP continue to relate to the project schedule and to any costs associated with schedule recovery. According to the PMP, the Master Schedule is to be updated monthly; however, the most recent approved Master Schedule update is as of March 15, 2017. Now that the FFGA has been executed, MTA and the P3 Concessionaire have produced a plan to collaborate on schedule recovery and to update the project schedule accordingly, and have started to work on those objectives. See the **Project Schedule** section of this report for further details. After MTA reaches agreement with PLTP on schedule recovery, the impact to project cost, if any, will be negotiated.

Safety and Security Management Plan (SSMP)

Purple Line SSMP Version 6 dated October 22, 2014 was reviewed by the PMOC in accordance with OP22 for a project at the FFGA execution stage in February 2016. The PMOC review found that the SSMP was compliant with FTA content requirements for execution of the FFGA, but requested MTA to resubmit the SSMP after FFGA execution, addressing comments in the PMOC report with updated information from the P3 Concessionaire. MTA completed an update of the SSMP incorporating the P3 Concessionaire involvement, and submitted SSMP Version 7, dated June 14, 2018, on August 13, 2018. Since there had been significant project advancement subsequent to the most recent prior review of the Purple Line SSMP, the PMOC first conducted a preliminary or “cursory” review to assure completeness before investing the effort of a detailed review. The PMOC completed the cursory review of SSMP Version 7 in accordance with OP22 and submitted comments to MTA on September 7, 2018. MTA updated the SSMP to address the cursory review comments and on November 1, 2018, submitted SSMP Version 8, dated October 24, 2018. The PMOC forwarded a copy of SSMP Version 8 to Maryland Department of Transportation (MDOT), the State Safety Oversight Agency (SSOA) for

this project, who conducted a review concurrent with the PMOC's OP22 review. The PMOC met with the SSOA in December 2018 and found that the SSOA comments were similar to the PMOC's findings. A draft PMOC OP22 report that also incorporates the SSOA review was submitted for FTA review on January 4, 2019. FTA review comments were received, and the report was issued final on July 3, 2019, requiring revision and resubmittal. *MTA reports that Revision 10 of the SSMP is in process to address the PMOC/SSOA comments of SSMP Revision 8 and is expected to be distributed for review in January 2020.*

Quality Assurance Plan (QAP)

In August 2017, MTA submitted for FTA/PMOC review a complete Quality Assurance Plan update, the MTA Purple Line Quality Assurance Plan Revision 8.0 dated May 2017, which supersedes the Purple Line Project Document for Quality that had been previously reviewed and accepted with comments. The MTA Purple Line Quality Assurance Plan Revision 8.0 incorporates the Concessionaire Quality Program, the Concessionaire's Design Quality Plan (CDQP) and the Concessionaire Construction Quality Plan, as well as an updated Document Control Plan. The PMOC completed its review of QAP Revision 8.0 in accordance with OP24 in October 2017, and found that the documents generally conformed to the OP. Minor comments were provided which can be addressed during the next update, which is currently in process. *The Concessionaire's Construction Quality Plan (CCQP) is being finalized by PLTP for submittal to and approval by MTA. MTA plans to resubmit the collection of plans to FTA/PMOC once all have completed their updates and are mutually consistent.*

Real Estate Acquisition Management Plan (RAMP)

Purple Line project RAMP Version 10 dated January 2, 2019 was reviewed by the PMOC in accordance with OP23 for a project in the construction phase. The PMOC's draft OP23 report was submitted for FTA review and comment on January 31, 2019. After receiving FTA comments, the final OP23 report was issued on February 22, 2019, documenting acceptance of Purple Line RAMP Version 10 for a project in the construction phase.

Fleet Management Plans

The current FTA/PMOC reviewed version of the Purple Line Rail Fleet Management Plan (RFMP) is RFMP Version 7.0, dated February 15, 2016, which incorporates information from the selected P3 Concessionaire's proposal. The PMOC completed review of RFMP Version 7.0, and documented in its OP37 RFMP review report issued on May 27, 2016 that Version 7.0 met the requirements of OP37 for execution of an FFGA. The review also recommended that MTA submit an update to RFMP Version 7.0 to FTA and the PMOC to reflect the P3 Concessionaire's own Rail Fleet Management Plan after MTA review has confirmed that it meets Purple Line project requirements. The P3 contract requires PLTP to submit its RFMP for MTA review and approval within 90 days after the June 17, 2016 P3 contract Financial Close, to submit the RFMP with the LRV Preliminary Design submittal, to submit an updated RFMP with the LRV Final Design submittal, to submit a

further updated version no later than six months prior to the scheduled beginning of Revenue Service, and to update the RFMP annually once in revenue service. MTA received, reviewed and approved PLTP's Purple Line Rail Fleet Management Plan Revision 0 dated June 22, 2016 after Financial Close, in accordance with contract requirements. At the time of the LRV Preliminary Design submittal, MTA and PLTP reviewed the RFMP again and determined that Revision 0 dated June 22, 2016 was still valid. MTA submitted PLTP's RFMP Revision 0 dated June 22, 2016 to the FTA/PMOC. This PLTP Revision 0 version of the RFMP had not yet had the benefit of any significant engineering by PLTP after contract award, and has not been reviewed by the PMOC in accordance with OP37.

The current version of the Bus Fleet Management Plan (BFMP) is BFMP Version 8.1, which was submitted for FTA/PMOC review on February 12, 2016. The PMOC completed its review of BFMP Version 8.1 and issued the final OP37 BFMP Review Report on March 4, 2016, concluding that the BFMP met the requirements of OP37 for the execution of a FFGA for the Purple Line project.

Risk and Contingency Management Plan (RCMP)

The current version of the RCMP is Version 10, dated May 2016. The PMOC's OP40 review found that Version 10 met the requirements of OP40 for an RCMP at the FFGA stage of a project. However, due to impacts of the lawsuit filed by the Friends of the Capital Crescent Trail, MTA had not been able to establish routine bi-monthly Risk Management Committee meetings or formal updates of the Risk Register as required by the RCMP. MTA resumed bimonthly meetings in October 2017 after the lawsuit was resolved and the FFGA was executed. MTA completed an update of the Purple Line Risk Register in March 2018 and continues to conduct subsequent periodic updates, with copies provided to the PMOC. On January 3, 2019, MTA submitted RCMP Version 12 dated January 2019 as part of its annual update of the major PMP subplans. The PMOC is awaiting FTA Programmatic task authorization to conduct the OP40 RCMP review of Version 12. Also see the **Project Risk** section of this report.

Safety and Security Certification Plan (SSCP)

The current version of the Purple Line SSCP is Version 3 dated November 4, 2014, which was reviewed as a companion document to the SSMP. The PMOC review found that Version 3 met the FTA requirements in support of the FFGA application. An updated version incorporating requirements from the P3 Concessionaire should be submitted for review after the updated SSMP submittal (see SSMP above); formal SSCP review will be by the State Safety Oversight Agency (SSOA). MTA reports that the updated MTA SSCP will be submitted with the next revision of the SSMP.

C. Project Management Capacity and Capability

Through the PMOC's observations and discussions with MTA, especially MTA Transit Development and Delivery (TDD) and Purple Line project management personnel, the PMOC has noted that MTA has been responsive to finding and assigning management capacity and capability as needed to sufficiently complete the project in compliance with applicable FTA requirements. This has included bringing talent, either MTA or Maryland Department of Transportation (MDOT) personnel or consultants, onto the project to manage the current needs, such as planning, P3 procurement and contracting, real estate acquisition, construction, etc.

Recent (August – September 2019) Purple Line staffing activity has included the following:

- The Purple Line Deputy Project Director, who has also been leading much of the Purple Line public outreach effort, has announced his retirement as of October 1, 2019. He will be replaced by the current Assistant Director for Public Outreach, whose current position will then be backfilled.*
- The recently hired MTA PMC Construction Manager for Train Systems and Electrification joined the team in mid-August 2019.*
- Candidates are being evaluated to fill the vacancy created by the passing of the PMC's Project Controls Manager. In the interim, the PMC is furnishing two part-time project controls professionals to continue the work, one of whom was previously the PMC scheduler for the Purple Line project. The PMC and MTA continue evaluating candidates from which one will be selected to permanently fill the position.*

The PMOC continues to monitor the effectiveness of the MTA staff and the added personnel resources from consultants, MDOT and other modal administrations as they have been integrated into overall MTA project management of the Purple Line Project. *To date the PMOC has found the staff changes/additions to be appropriate and effective.*

D. Project Cost

Appendix 6 of this report summarizes the project's current actual expenditures and forecast at completion compared with the project budget as reported in MTA's June 1, 2016 Standard Cost Category (SCC) Workbook, which is the basis of the Purple Line FFGA. The project documented expenditures of \$1,068.2 million through June 15, 2019 (for PLTP costs) /June 30, 2019 (for MTA costs). Refer also to the FFGA Core Accountability table in the Executive Summary section of this report for details on the planned and actual expenditures on the project.

In the cost estimate presented in the June 1, 2016 SCC Workbook, which is the basis for the FFGA, contingency in Year of Expenditure (YOE) dollars is as follows:

Allocated Contingency	\$59,500,464
Unallocated Contingency (SCC 90)	\$90,535,748

Total Contingency

\$150,036,212

Through September 12, 2019, there are 30 Change Orders and one Change Order Amendment in preparation or approved under the P3 contract, not all of which affect the FFGA project, which have resulted in a \$292,507 net cost increase to the estimated cost of the FFGA project and an associated drawdown on contingency. Accordingly, the remaining contingency is currently \$149,743,705. There are also multiple Change Orders pending or proposed under the P3 contract that have potential cost impact on the P3 project. Working with the PMOC, the Purple Line project team developed a three-part change tracking system that documents:

- Executed Change Orders
- Pending Change Orders that are pending execution, and Proposed Change Orders that are currently either being priced by the contractor or are in various stages of negotiation
- Potential Change Orders that the contractor has formally submitted to protect specific rights and privileges, but which have not been either fully developed by the contractor or accepted by MTA

The PMOC monitors the executed, pending, proposed and potential changes reflected in monthly updates to these change logs and reviews any noteworthy changes with the project team.

In addition to the Change Orders above, mitigation to recover the schedule (see the **Project Schedule** section of this report, below) may potentially result in added costs to the project, which will need to be negotiated with PLTP.

Project Funding

The funding for the Purple Line project, as reflected in Attachment 3 for the FFGA, is as follows:

Sources of Federal Funding and Matching Share Ratios

	Costs Attributed to Source of Funds Dollars	Federal/ Local Matching Ratio within Source	All Federal Funds Dollars	Local Funds Dollars*
Federal 5309 New Starts	2,362,030,286	38/62	900,000,000	1,462,030,286
Federal Other (FTA Section 5307)	45,000,000	80/20	36,000,000	9,000,000
Total	2,407,030,286		936,000,000	1,471,030,286
Overall Federal Share of Project			38.9%	
New Starts Share of Project			37.4%	

* Local includes costs funded by the MDOT TTF as well as the P3 concessionaire funded costs. The P3 concessionaire uses Transportation Infrastructure Finance and Innovation Act (TIFIA), private financing, and equity to fund its costs. The P3 concessionaire funded costs are treated as Local Match for the 5309 New Starts funds.

Standard Cost Category (SCC) Worksheets

Appendix 7 presents the Purple Line project cost estimate, based on the June 1, 2016 update of the SCC Workbook in FTA's Standard Cost Category format, which is the basis of the FFGA.

E. Project Schedule

The PMOC receives copies of the master project schedule updates, including the native Primavera scheduling software files, once the update has been approved by MTA. The March 15, 2017 progress update of the master project schedule was approved as noted in May 2017 *and continues to be the latest approved version of the schedule, as later submissions of schedule updates from PLTC have not been approved for various reasons.* However, in response to a letter that FTA issued to MTA in early August 2018 expressing concern with the amount of time that the project has advanced without an approved schedule, MTA prepared a working schedule update of the master project schedule. The update is based on the current negotiations of the P3 contract schedule, which have been ongoing with PLTP since late 2017 and which have been detailed in prior PMOC Monthly Monitoring reports; but the update is not yet based on a mutually agreeable P3 contract schedule. The schedule is titled "MTA Master Schedule August 2018" and was progressed through August 31, 2018. Although the MTA Master Project Schedule August 2018 is not yet the final recovery schedule with the mutual agreement of MTA and PLTP, it does provide a more accurate presentation of the current Purple Line project status than the latest approved project schedule (March 15, 2017).

The most significant differences between the last approved project schedule (March 15, 2017) and the MTA Master Schedule August 2018 (proposed new baseline) were a change in the schedule critical path from through Segment 4 (Plymouth Tunnel) to through Segment 7 (Riverdale aerial structure), and a slip in the "PLTP Commence Revenue Service date" from March 11, 2022 to October 28, 2022. However, according to the MTA Master Schedule August 2018 (proposed new baseline), the Purple Line is still scheduled to start revenue service earlier than the FFGA Revenue Service Date (RSD) of December 31, 2022.

MTA reports that PLTC is currently submitting monthly schedule progress updates for its scope in accordance with the P3 contract. MTA then performs monthly progress updates of the MTA Master Project Schedule based on the progress updates received from PLTP as well as from its internal staff, relative to the MTA Master Schedule August 2018 baseline.

The most recent schedule progress update submitted by MTA is the *June 15, 2019* progress update of the MTA Master Schedule. *The June 15, 2019* update continues to show the start of revenue service prior to the FFGA RSD of December 31, 2022, *with the major interim milestones of the Commencement of Trial Running of May 16, 2022 (improvement of four days from the last report), and the PLTP Commencement of Revenue Service of December 25, 2022 (improvement of two days from the last report).*

The PMOC advises, though, that this is not yet a contractually enforceable schedule, and that MTA/PLTP contractual agreement on the schedule is not anticipated soon. In addition, any costs associated with schedule recovery will need to be determined and assigned responsibility.

A copy of the critical path of the June 15, 2019 progress update of the MTA Master Schedule is included in Appendix 8 of this report.

Key Milestones

The following are the current key milestone dates for the project, showing the last approved (March 15, 2017) progress update of the master project schedule, the MTA Master Schedule August 2018 (proposed rebaseline) and the June 15, 2019 progress update of the MTA Master Schedule.

National Capital Purple Line LRT Key Milestone Dates			
Activity	Latest (March 15, 2017) Approved Project Schedule	MTA Master Schedule August 2018 (working baseline)	MTA Master Schedule; June 2019 update
Locally Preferred Alternative (LPA) Approval Date	08/04/2009 (A)	---	---
FTA Approval to Enter PE	10/07/2011 (A)	---	---
FTA Record of Decision	03/19/2014 (A)	---	---
Issue Final RFP for P3 Concessionaire	07/28/2014 (A)	---	---
FTA Approval to Start Enter Engineering Phase	08/28/2014 (A)	---	---
Issue Addenda 4 through 6 to the P3 RFP	07/2015 through 11/2015 (A)	---	---
P3 Technical Proposals Due	11/17/2015 (A)	---	---
P3 Financial Proposals Due	12/08/2015 (A)	---	---
Evaluation and Announcement of Selected P3 Proposer	01/02/2016- 03/02/2016(A)	---	---
Board of Public Works (BPW) Approval-P3	04/06/2016 (A)	---	---
P3 Commercial Close	04/07/2016 (A)	---	---
Limited Notice to Proceed (LNTP) for P3 Engineering	04/07/2016 (A)	---	---
MTA submit Full Funding Grant Agreement Application	05/24/2016 (A)	---	---
P3 Financial Close	06/17/2016 (A)	---	---
Full Funding Grant Agreement signed	08/22/2017 (A)	---	---
Start of First Major Construction Activity	08/28/2017 (A)	---	---
All Significant ROW Acquisition & Relocation	As needed by construction	---	---
Commencement of Trial Running	---	03/09/2022	05/16/2022
P3 Ready to Commence Revenue Service	TBD	10/28/2022*	12/25/2022
MTA Opens for Revenue Service	3/2022	---	12/25/2022
Revenue Operations Date (includes contingency)	12/31/2022	---	---
FFGA Revenue Service Date (includes contingency)	12/31/2022	12/31/2022	12/31/2022

* P3 Revenue Service date is based on MTA's working version of an updated integrated master project schedule based on MTA/P3 Concessionaire negotiations, but for which final agreement with the P3 Concessionaire has not yet been reached.

90-day Look Ahead

The critical 90-day (*mid-September to mid-December 2019*) look-ahead activities for the National Capital Purple Line project are:

Scheduled Date	Activity / Event
Ongoing	P3 submittal / MTA review of design packages
Ongoing	Completion of critical Real Estate acquisitions and relocations
Ongoing	MTA and PLTP collaboration for agreement on a mitigated project schedule
<i>September/October 2019</i>	Receipt of the Bethesda Station ATC final design package leading to approval of the ATC
<i>October 2019</i>	Start Dynamic Testing of first LRV in Elmira
<i>October 1, 2019</i>	<i>100% design due for Polk Street PG County Parks Maintenance Building</i>
<i>October 4, 2019</i>	<i>Issue Communications design RFC</i>
<i>October 7, 2019</i>	<i>Complete excavation of Bethesda Station top heading (critical path activity)</i>
<i>October 18, 2019</i>	<i>Complete embedded track installation on Ellin Road</i>
<i>November 25, 2019</i>	<i>Deliver track for Segment 6</i>
<i>December 5, 2019</i>	<i>Deliver track for Plymouth Tunnel</i>
<i>December 6, 2019</i>	<i>Glenridge OMF yard ready for track and OCS installation</i>
<i>December 12, 2019</i>	<i>Complete columns for piers 1 through 7 of the SSTC LRT aerial structure</i>

Critical Path Activities

In the *MTA Master Schedule June 15, 2019 update*, for which final agreement with PLTP has not yet been reached, the critical path remains through Area 1, Segment 1, including *construction of Bethesda Station* through integration testing, Trial Running and into Revenue Service.

F. Quality Assurance / Quality Control (QA/QC)

The Purple Line QA/QC is addressed in Section 10 of the PMP, Quality Program Plan, and the updated MTA Quality Assurance Program Revision 8.0, which incorporates the implementing Quality Plans prepared by PLTC. The most current versions of the PMP, the Purple Line Document for Quality and the QAP are as discussed in the **Project Management Plan and Subplans** section of this report. MTA has been reviewing the multiple updated Quality Assurance plans being updated and resubmitted by PLTC. MTA plans to submit to FTA the package of inter-related quality plans once all have been reviewed and approved by MTA.

The Purple Line project continues to conduct its monthly meeting to review the QA/QC activities performed by the Purple Line project team, including those by the P3 Concessionaire, PMC and the GEC. Documentation from these meetings is distributed separately. The PMOC performs an overview of each distributed package, with more detailed reviews conducted on periodic basis.

The project's Monthly Progress Report to FTA also contains a brief summary of the significant current QA/QC activities/events on the project, including quality audits and quality reviews of PLTC submittals, and QA/QC is reviewed with MTA and the PMC at the PMOC's periodic monitoring meetings.

G. Safety and Security

PLTP has conducted forty-three Preliminary Hazard Analysis (PHA) workshop sessions to date. Workshops continue to be held to resolve MTA comments on the PHAs completed to date. PLTP's Safety and Security Working Group (SSWG) continues to oversee the hazard management process. MTA has representation on the group to provide comments and insight, but does not vote on topics before the PLTP SSWG.

MTA chairs a Safety and Security Certification Committee (SSCC) that reviews, comments on, and approves PLTP hazard management and certification issues. The first meeting of the MTA SSCC was conducted on March 20, 2018. Starting with July 11, 2018, the meeting has been held on a monthly basis on the second Wednesday of the month until the level of activity requires more frequent meetings. *The most recent meeting of the SSCC was held on September 11, 2019, during which finalization of several PLTC PHAs were discussed. The next meeting is scheduled for October 9, 2019.*

The PLTP System Safety team completed development of its first Design Criteria Conformance Checklist (DCCC) in May 2017 and submitted it for MTA approval. However, it did not meet MTA expectations and was returned for revision and resubmittal. PLTP had not been preparing DCCCs until January 2018, when they resumed preparing them, since MTA stated it would reject any Final Design Packages submitted without an associated DCCC. MTA (assisted by the PMC) reviews the DCCCs as part of the Final Design Package according to the established submittal review process. Per PLTP, the DCCCs are being verified prior to the issuance of RFC packages. *MTA reviewed and returned comments on PLTP's Revision 2 of the Certified Elements List (CEL), which now includes Operations and Maintenance and System Integration Testing elements. PLTP continues to address MTA comments on the Certified Items List (CIL) Revision 1, which is to be revised and resubmitted.* MTA expressed that the remaining comments are not of a nature that would affect DCCCs that have already been issued with RFC packages. *In late summer 2019, MTA and PLTP started working on agreement of the content and format of the Construction Specification Conformance Checklists.*

PLTC also completed its initial Threat and Vulnerability Assessment (TVA) process and submitted the draft TVA report for MTA review and comment. MTA's review resulted in a significant number of comments, which were returned to PLTC to be addressed. TVA Revision D was subsequently submitted by PLTC, reviewed by MTA and returned with 3 comments to be revised and resubmitted. MTA accepted and verified the comment responses and approved PLTC's TVA on July 15, 2019.

The MTA Purple Line Safety and Security personnel review and comment on the PLTC design submittals, including those of the vehicle supplier.

MTA continues to conduct Fire/Life Safety meetings with each Montgomery and Prince George's Counties on bi-monthly basis. The meetings provide a basis for the County emergency responders to understand the features of the Purple Line systems, and to resolve any concerns. The Prince George's County Fire/Life Safety meeting scheduled for August 15, 2019 was canceled due to lack of agenda items and the next meeting is scheduled for October 17, 2019. *The Montgomery County Fire/life Safety meeting remains scheduled for September 19, 2019.*

As required by the P3 contract, the P3 concessionaire, PLTP, is responsible for directly implementing many of the safety and security requirements for the project, including construction safety and the collection and maintenance of the Occupational Safety and Health Administration (OSHA) safety statistics for the project. *PLTP's project-to-date OSHA statistics through August 2019 are:*

- TCIR (Recordable) Rate:
 - Actual: 0.47
 - PLTP goal: 0.40
 - National Ave. 2.5 (Construction – heavy civil)
- DART (Days Away/Restricted/Transfer) Rate:
 - Actual: 0.30
 - PLTP goal: 0.15
 - National Ave. 1.5 (Construction – heavy civil)

See Section B of this report for the status of the safety and security related subplans of the PMP. Appendix 1 of this report includes extensive additional safety and security-related information for the Purple Line project on a quarterly basis.

H. Americans with Disabilities Act (ADA)

The PMOC confirmed that the Design Criteria Manual applicable to the Purple Line project addresses ADA requirements, including references to the requirements in the Maryland Accessibility Code (MAC), the ADA Accessibility Guidelines for Buildings and Facilities (ADAAG), and the ADA Standards for Transportation Facilities.

Accessibility and compliance with ADA are required as part of the functional requirements for stations and guideway and as part of the codes and standards for light rail vehicles within the P3 contract (Book 2 Part 2) for the Purple Line project. The design packages prepared in accordance with the P3 contract by PLTC are reviewed by MTA and its consultants. In project reviews conducted by the PMOC, MTA has confirmed that it includes ADA compliance in its QA Oversight reviews of PLTC's design packages. ADA compliance is included in the PMOC periodic project reviews, during which timely project ADA-related items are discussed. *In August 2019 through mid-September 2019, there were no identified ADA concerns.*

I. Buy America

The PMOC has discussed Buy America requirements with the Purple Line project team during the PMOC project review meetings, and has confirmed that MTA understands that Buy America compliance applies not only to the rail vehicles but is also required for procurement of all manufactured products, including all iron and steel. MTA is also aware that domestic manufacture of all federally-funded procurements is required and should be certifiable. Compliance with Buy America is contained in MTA standard clauses for its procurements, and the P3 contract contains explicit Buy America language in its Appendix 16.

As designs are reaching finalization, PLTC is starting to encounter more occurrences wherein Buy-America compliant supply of as-designed commodities may not be available. However, since PLTC is responsible for the design and has committed to compliance with Buy America provisions, MTA is holding PLTC responsible for complying with the regulations and the P3 contract in this respect. The Purple Line project team continues spot checking materials being used in utility relocations, since Buy America compliance of utility-supplied materials has historically been more troublesome and since utility relocation constitutes a significant percentage of the current construction activity.

PLTC passed the Buy America requirements on to the vehicle supplier, Construcciones y Auxiliar de Ferrocarriles (CAF). The Buy America Pre-Award audit was conducted by Virginkar and Associates, who concluded that there is reasonable certainty that CAF will satisfy the Buy America requirements as stated in 49 CFR 661. MTA has interpreted that since the vehicle Request for Proposal was advertised prior to December 4, 2015, the 49 CFR 661 Public Interest Waiver that limits domestic content to a minimum of 60%, as opposed to the escalating domestic content requirements of the FAST Act, applies in this case. An intermediate post-award Buy America audit for added confidence that the post-delivery audit will not identify issues was conducted of CAF's Elmira, NY facility during the week of October 2, 2017. There were no significant findings, and based on the audit, the domestic content of the LRVs is currently estimated at approximately 62% as compared to the required 60% for these vehicles. CAF is targeting 65% domestic content in the completed vehicle. MTA has also been in communication with the U.S. Maritime Administration regarding the use of US Flagship carriers for the transport of carshells from Spain to the United States for final assembly.

J. Vehicles and Vehicle Technology

The vehicles are 136-foot long, multiple articulated light rail vehicles operated as single car maximum length trains. Due to the vehicle's extended length, only 25 vehicles (21 plus 4 spares) will be provided under the FFGA for opening year.

PLTP executed the LRV contract with CAF on June 17, 2016 and issued CAF Notice to proceed on July 5, 2016.

Vehicle carshell manufacturing activities, coordinated with design progress, continued in Spain and in Elmira, NY in August through mid-September 2019.

In Spain, resolution of MTA comments on Intermediate and Final Design packages continue. MTA's review of the DCCC, which addressed all 174 requirements from the Technical Provisions of the P3 contract that are applicable to the vehicles, currently has several outstanding comments for CAF resolution. Regarding carshell manufacturing in Spain, the following is the current status:

- *Work resumed in Spain after the August holiday.*
- *Sixty-two carshell segments have been completed to date, including those already shipped to the U.S.*
- *Multiple LRVs are in the manufacturing process in Spain.*
- *The roof fire endurance test and the floor fire endurance test have been successfully completed and the reports were submitted and reviewed by MTA with all comments resolved.*
- *The toxicity report is still pending*

Vehicle final assembly is taking place in CAF's facility in Elmira, NY. CAF assembled all five carshell segments of the first vehicle together, placed the vehicle on its trucks on the Elmira test track and started performing static testing in June 2019. *Dynamic testing of the first vehicle is planned to commence in October 2019. All five segments of the second, third and fourth vehicles are in various stages of final assembly activities in Elmira. The first three carshell segments of the fifth vehicle have arrived in Elmira, and the remaining two carshell segments are due to arrive in Baltimore in early September 2019 for shipment to Elmira.* Shipment of the first vehicle to the project site is dependent on readiness of on-site storage space, such as the test track, and available traction power, and may occur in early 2020.

MTA rejected CAF's requested design deviation to utilize the current environmental test chamber in Elmira, which is shorter than the overall vehicle, for a second time. MTA has been performing its own research by conferring with other agencies that have extended length vehicles but has not yet reached a conclusion. The climate test is a qualification test and only needs to be performed on one vehicle, which does not need to be the first vehicle. CAF plans to proceed at risk and test an early completed vehicle in the existing test chamber, *and submitted an updated procedure for testing one half the vehicle and performing analysis for accepting the complete vehicle.* CAF will then submit the report with full analysis for MTA approval. If MTA still does not accept the deviation, sufficient time will remain in the schedule to test in accordance with the current contract requirements.

Additional Vehicle Status information is included as Appendix 9 of this report on a quarterly basis.

PROJECT RISK

MTA has established a risk management organization, which is defined in the project's Risk and Contingency Management Plan, and which is overseen by MTA's Risk Management Committee. Two major elements of the RCMP are the periodic performance of Quantitative Risk Assessments and the maintenance and use of a Risk Register.

During the approximately one-year period of time in which the ROD had been vacated by the federal judge in his decision related to the Friends of the Capital Crescent Trail lawsuit, MTA did not conduct formal Risk Management Committee meetings, conduct additional Quantitative Risk Assessments or perform formal updates of the Risk Register. Though, the Purple Line project management team did assess and respond to the risks associated with that unforeseen chain of events.

The project team resumed formal risk meetings in October 2017, including individual updates of each risk on the current Risk Register by the risk owner. An overall update of the Risk Register was completed as draft in January 2018 and updated further and reissued in March 2018. Updating of the Risk Register is an ongoing process throughout a project's duration, and according to MTA's current RCMP, is to be performed bi-monthly. The current status of the RCMP is discussed in Section B, Project Management Plan and Subplans, of this report.

MTA provides copies of significant updates of the Purple Line Risk Register to the FTA and PMOC. The top risks from the project's latest issued update of the Risk Register and PMOC-assessed risks are included as Appendix 2 of this report on a Quarterly basis.

ACTION ITEMS

Action Items are identified at MTA/FTA Quarterly Progress Meetings, at MTA/PMOC Monthly Progress Meetings and at MTA/FTA Biweekly New Starts Progress Conference Calls. Separate lists for each are included. Items identified as closed are removed from the subsequent monthly report. There is currently one open Action Item applicable to the Purple Line project, related to providing FTA documentation regarding the exchange of MTA property with federal interest at New Carrollton in return for easements from WMATA, as discussed in the **Real Estate Activities** subsection of this report.

APPENDICES

The following Appendices or placeholders are provided with this report:

- Appendix 1 Safety and Security Checklist
Per OP25, this item is issued quarterly.

- Appendix 2 Top Project Risks
Per OP25, this item is issued quarterly.

- Appendix 3 Roadmap to Revenue Operations
Per OP25, this item is issued quarterly “as a separate attachment”.

- Appendix 4 Project Map

- Appendix 5 Acronyms

- Appendix 6 Cost vs. Budget

- Appendix 7 FTA SCC Workbook – BUILD Main Worksheet

- Appendix 8 Project Schedule

- Appendix 9 Vehicle Status Report
Per OP25, this item is issued quarterly.

- Appendix 10 Construction Photographs

Appendix 1 Safety and Security Checklist

(Updated September 2019)

Project Overview		National Capital Purple Line Light Rail Transit Project	
Project mode (Rail, Bus, BRT, multimode)		Rail	
Project phase (Project Development, Construction, or Start-up)		Construction	
Project Delivery Method (Design/Build, Design/Build/Operate/Maintain, CMGG, etc)		Public Private Partnership (P3)	
Project Plans	Version	Review By FTA	Status
Safety and Security Management Plan	Version 8 dated October 24, 2018	Y	PL submitted Version 8 dated October 24, 2018 to FTA/PMOC on November 1, 2018. <i>Resolution of PMOC and SSOA comments is in process to be incorporated into the next revision.</i> PLTC SSMP Rev D was approved by MTA on November 27, 2016.
Safety and Security Certification Plan	Version 3, November 3, 2014	Y	PL submitted Version 3 dated November 3, 2014 to the PMOC on November 25, 2014. An updated revision of the MTA SSCP is being prepared by MTA. PLTC's supporting contractor-level SSCP Rev. 1 was approved by MTA in April 2019.
System Safety Program Plan (SSPP)	Reviewed annually and revised as required	2019 SSPP signed 7/15/18	The existing MTA SSPP will be revised to incorporate the Purple Line during the late Construction and Testing and Start-Up Phases. Internal Safety Review Audit performed August 2019 on elements 8, 9, & 10 by the Office of Safety Management and Risk Control.
System Security Plan (SSP) or Security and Emergency Preparedness Plan (SEPP)	Reviewed annually and revised as required	2019 SSEPP is approved (date to be determined)	The existing MTA SSP will be revised to incorporate the Purple Line during the late Construction and Testing and Start-Up Phases.
Construction Safety and Security Plan	-	-	PLTC's Site Security Plan was accepted by MTA on November 9, 2016. PLTC's Health & Safety Plan was accepted by MTA on November 9, 2016.

Safety and Security Authority	Y/N	Notes/Status
Is the grantee subject to 49 CFR Part 659 state safety oversight requirements?	Y	
Has the State designated an oversight agency as per Part 659.9	Y	MDOT Rail Safety Oversight Agency (RSOA)

Safety and Security Authority	Y/N	Notes/Status
Has the oversight agency reviewed and approved the Project Sponsor's Security Plan or SSPP as per 49 CFR Part 659.17?	Y	RSOA oversees MTA's SSPP and SSP in compliance with 49 CFR Part 659
Did the oversight agency participate in the last Quarterly Program Review Meeting (QPRM)?	Y	The oversight agency typically attends the QPRM.
Has the grantee submitted its safety certification plan to the oversight agency?	-	The final Safety Certification Plan will be submitted in accordance with MTA's SSPP.
Has the grantee implemented security directives issues by the Department Homeland Security (DHS), Transportation Security Administration (TSA)?	Y	MTA has, and will continue to, implement DHS/TSA Directives as indicated in SSMP Section 11.

SSMP Monitoring	Y/N	Notes/Status
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y	
Grantee reviews the SSMP and related project plans to determine if updates are necessary?	Y	Specified in SSMP
Does the grantee implement a process through which the Safety Manager and Security Manager are integrated into the overall project management team? Please specify.	Y	Specified in SSMP; the Safety Manager and Security Managers participate in project meetings and are involved in the project.
Does the grantee maintain a regularly scheduled report on the status of safety and security activities?	Y	Safety and Security activities are regularly reported in the monthly progress report.
Has the grantee established staffing requirements, procedures and authority for safety and security activities throughout all project phases?	Y	Specified in SSMP
Does the grantee update the safety and security responsibility matrix/organizational chart as necessary?	Y	Specified in SSMP.
Has the grantee allocated sufficient resources to oversee or carry out safety and security activities?	Y	Specified in the SSMP; evaluating need for future resources.
Has the grantee developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?	Y	Specified in SSMP.
Does the grantee implement regularly scheduled meetings to track to resolution of any identified hazards and/or vulnerabilities?	Y	Specified in SSMP.
Does the grantee monitor the progress of safety and security activities throughout all project phases? Please describe briefly.	Y	Specified in SSMP.
Does the grantee ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.	Y	Specified in SSMP. PHA is complete and signed by all parties. TVA is complete and signed by all parties.

SSMP Monitoring	Y/N	Notes/Status
Has the grantee ensured the development of safety design criteria?	Y	Specified in SSMP. MTA developed criteria are in the Design Criteria Manual Version 3 that was issued in September 2014. Specific draft safety and security criteria have been submitted by PLTP for review and comment.
Has the grantee ensured the development of security design criteria?	Y	Specified in SSMP. MTA developed criteria are in the Design Criteria Manual Version 3 that was issued in September 2014. Specific draft safety and security criteria have been submitted by PLTP for review and comment.
Has the grantee ensured conformance with safety and security requirements in design?	Y	Specified in SSMP. P3 Concessionaire will develop the Design Conformance Checklists in its engineering phase. Ninety-one Design Criteria Conformance Checklist (DCCC) have been submitted to date.
Has the grantee verified conformance with safety and security requirements in equipment and materials procurement?	-	<i>Procurement documentation such as product data sheets and product cut sheets has been reviewed. These items are submitted to the Document Control System for multi-disciplinary review.</i>
Has the grantee verified construction specification conformance?	N	P3 Concessionaire is developing the Construction Specification Conformance Checklists as the project advances. Construction Specification Conformance Checklists have not yet been submitted.
Has the grantee identified safety and security critical tests to be performed prior to passenger operations?	N	P3 Concessionaire will identify tests in its engineering and construction phases as the project advances. Safety and Security related tests have not yet been identified.
Has the grantee verified conformance with safety and security requirements during testing, inspection and start-up phases?	N	P3 Concessionaire will verify conformance in its Testing and Start-Up Phase activity These requirements have not yet been submitted.
Does the grantee evaluate change orders, design waivers, or test variances for potential hazards and /or vulnerabilities?	Y	Specified in SSMP.
Has the grantee ensured the performance of safety and security analyses for proposed work-arounds?	-	Specified in SSMP; these activities will not begin until Testing and Start-Up
Has the grantee demonstrated through meetings or other methods, the integration of safety and security in the following: <ul style="list-style-type: none"> • Activation Plan and Procedures • Integrated Test Plan and Procedures • Operations and Maintenance Plan • Emergency Operations Plan 	-	Specified in SSMP; these activities will not begin until late Construction and Testing and Start-Up Phases
Has the grantee issued final safety and security certification?	-	Specified in SSMP; this activity will not begin until end of Testing and Start-Up Phase
Has the grantee issued the final safety and security verification report?	-	Specified in SSMP; these activities will not begin until end of Testing and Start-Up Phase

Construction Safety	Y/N	Notes/Status
Does the grantee have a documented /implemented Contractor Safety Program with which it expects contractors to comply?	Y	Specified in SSMP; P3 Concessionaire has developed a Safety and Health Plan. P3 contract requires compliance with MTA's Contractor Health and Safety Plan Guidelines.
Does the grantee's contractor(s) have a documented company-wide safety and security program plan?	Y	P3 Concessionaire main Joint Venture partner, Fluor, has company-wide safety and security plans.
Does the grantee's contractor(s) have a site-specific safety and security program plan?	Y	Concessionaire has developed a System Safety Plan and a Concessionaire Security Plan (TP Book2A Section 8.4). MTA has approved both plans.
Provide the grantee's OSHA statistics compared to the national average for the same type of work?	Y	Through April 2019: <ul style="list-style-type: none"> • <i>Recordable Rate: 0.47</i> • <i>DART Rate: 0.30</i> • <i>DART (lost workday): 0.11</i>
If the comparison is not favorable, what actions are being taken by the grantee to improve its safety record?	N/A	Performance is favorable.
Does the grantee conduct site audits of the contractor's performance versus required safety/security procedures?	Y	This will be a construction phase activity. Grantee has hired oversight personnel who are conducting the construction safety oversight.

Federal Railroad Administration	Y/N	Notes/Status
If shared track: has grantee submitted its waiver request application to Federal Railroad Administration (FRA)? (Please identify specific regulations for which waivers are being requested)	N/A	There is no shared track.
If shared corridor: has grantee specified specific measures to address shared corridor safety concerns?	Y	Future FRA coordination may be required if a currently unused freight Right of Way is reactivated.
Is the Collision Hazard Analysis underway?	N	If required, will be responsibility of new freight operator.
Other FRA required Hazard Analysis – Fencing, etc.?	-	Future FRA coordination may be required if a currently unused freight Right of Way is reactivated.
Does the project have Quiet Zones?	N	
Does FRA attend the Quarterly Review Meetings?	N	

Appendix 2 Top Project Risks

As documented in the most recent (Revision 3) of the Purple Line Risk Register as updated by the Purple Line Risk Management process in June 2019, the following are the Purple Line cost and schedule risks that are rated “Significant” or “High”. Of these, MTA’s September 2019 monthly review of project risks identified the items noted below in **bold** as the current top project risks.

- Area 1 ROW - With approximately 15 out 18 private parcels acquired, there may be insufficient time in the schedule to clear the ROW for a project of this size and scope consistent with commitments made to PLTP
- Lack of utility information and/ or incorrect information could lead to additional costs and schedule delay.
- As the design progresses, PLTP continues to identify additional ROW which could lead to schedule and cost delays.
- PLTP underestimates the magnitude/value of the work due to incorrect assumptions, misinterpretation of the TP’s and/or Agreement, thus formally seeking relief of work requirements or lowering quality standards and build to those lower standards without MTA approval; or b), embarks on a campaign of claims to recoup losses or increase revenue.
- If Concessionaire is unable to utilize select backfill, then additional rock may need to be acquired.
- **Glenridge 66-inch diameter water main.** PLTP identified that the water main would remain in place and in their opinion as demonstrated that water main can withstand the proposed live and dead loads associated with the Project. The MTA procurement strategy could have a risk associated with this. This may potentially cause schedule delays.
- Area 3 ROW - With approximately 39 out 40 private parcels acquired, there may be insufficient time in the schedule to clear the ROW for a project of this size and scope consistent with commitments made to PLTP
- WSSC has a waterline not within their easement. Question is who pays for the relocation, whether MTA, WSSC, OR PLTP. Potential Cost. Location is in Glenridge Yard, 66" diameter water main.
- **Potential risk noise and vibration mitigation at University of Maryland.** Noise and vibration outside of UMD. PLTP is claiming several million dollars for this. Potential cost implications for MTA.
- **Approval of Traffic Design submittals.** Long, sequential review and approval process for traffic design submittals threatening availability of RFC Packages. There is a schedule risk in delaying construction of traffic related items.
- **Right of Entry at Silver SM Building.** MTA has provided a limited ROE with a short duration for an Exhibit 9 property. If the ROE does not provide sufficient time to complete the work, or MTA fails to reach an agreement with the property

owner prior to the ROE expiration, PLTC will be unable to complete the Purple Line scope of work and the schedule will be impacted.

In addition to the top risk items in the Purple Line Project Risk Register noted above, the following risk items were also discussed at the Purple Line PMOC project review meetings:

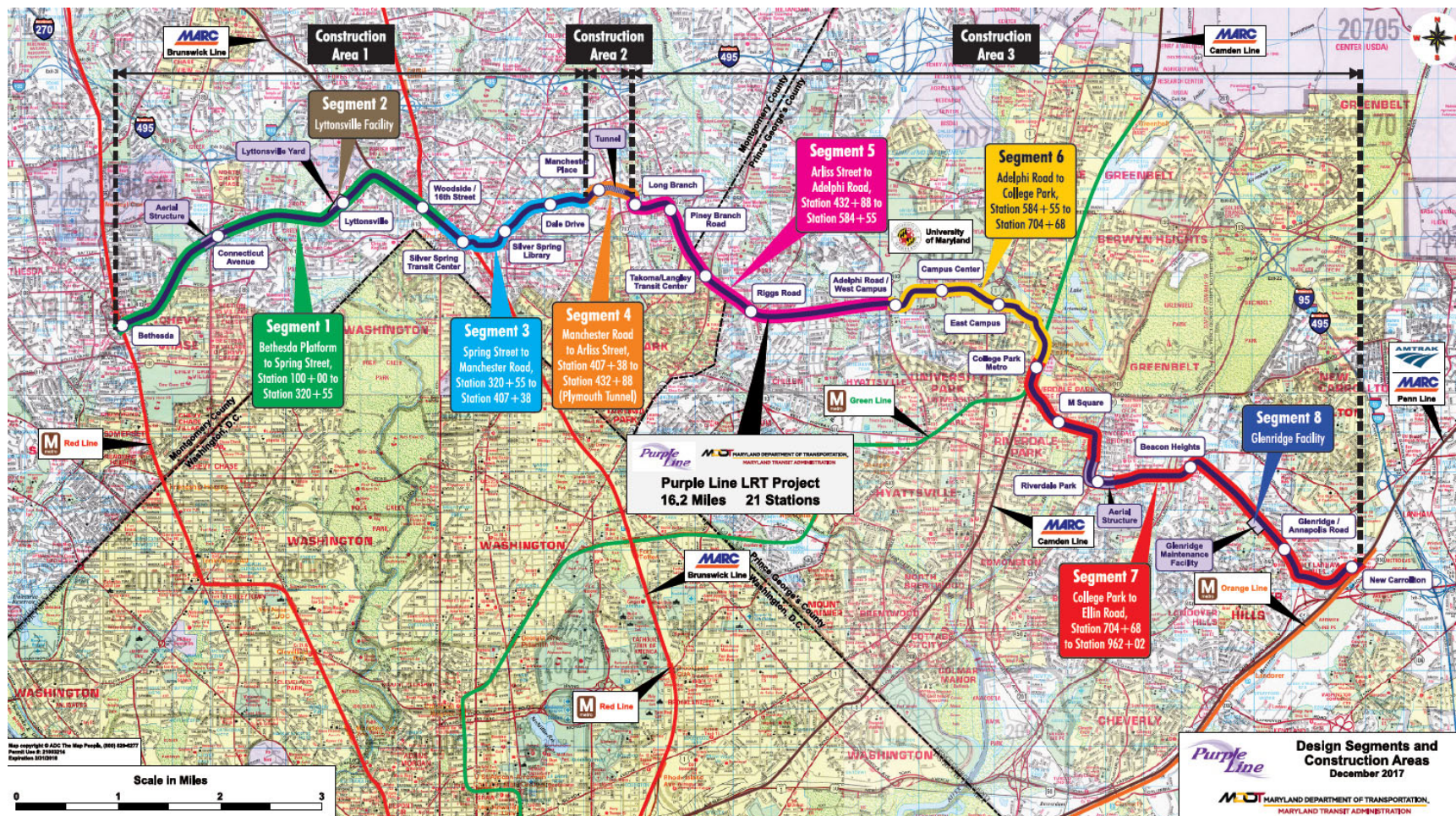
- MTA is managing the project based on a working schedule update of the master project schedule. The update is based on the current negotiations of the P3 contract schedule, which have been ongoing with PLTP since late 2017, but the update is not yet based on a mutually agreed upon P3 contract schedule. As a result, project management decisions are not fully informed until an acceptable recovery schedule is finalized with the P3 Concessionaire. Serious negotiations on project schedule resumed in summer/fall 2019, but finalization of a mutually agreeable revised baseline schedule will likely take at least several months.
- Achievement of a recovery schedule that is agreeable to both MTA and the P3 Concessionaire under the P3 contract will likely consume most, if not all, of the current schedule contingency, and has the potential to push the project completion beyond the current FFGA Revenue Service Date.
- Achievement of a recovery schedule that is agreeable to both MTA and the P3 Concessionaire under the P3 contract may result in additional project costs.

Appendix 3 Roadmap to Revenue Operations

In accordance with OP25, the Roadmap to Revenue Operations, prepared from the Project Sponsor's Master Schedule, is issued quarterly as a separate electronic file. Since the Project Sponsor's Master Schedule is undergoing a major revision for schedule recovery, the dates currently shown on this issue of the roadmap are likely to change.

Refer to the separately issued Appendix 3 file.

Appendix 4 Project Map



Appendix 5**List of Acronyms**

ADA	-	Americans with Disabilities Act
ADAAG	-	ADA Accessibility Guidelines for Buildings and Facilities
ATC	-	Alternate Technical Concepts
B-W	-	Baltimore-Washington
BFMP	-	Bus Fleet Management Plan
BPW	-	Board of Public Works
CAF	-	Construcciones y Auxiliar de Ferrocarriles
CCQP	-	Concessionaire's Construction Quality Plan
CDQP	-	Concessionaire's Design Quality Plan
CEL	-	Certified Elements List
CIL	-	Certified Items List
DART	-	Days Away, Restricted or Transferred
D-B	-	Design-Build
DBFOM	-	Design/Build/Finance/Operate/Maintain
DCCC	-	Design Criteria Conformance Checklist
DNR	-	Maryland Department of Natural Resources
DSDC	-	Design Services During Construction
EMI	-	Electro-Magnetic Interference
FCP	-	Forest Conservation Plan
FFGA	-	Full Funding Grant Agreement
FTA	-	Federal Transit Administration
GEC	-	General Engineering Consultant
JPA	-	Joint Permit Application
LNTP	-	Limited Notice to Proceed
LOD	-	Limits Of Disturbance
LPA	-	Locally Preferred Alternative
LRT	-	Light Rail Transit
LRV	-	Light Rail Vehicle
MAC	-	Maryland Accessibility Code
MARC	-	Maryland Area Regional Commuter
MDE	-	Maryland Department of the Environment
MDOT	-	Maryland Department of Transportation
MMR	-	Mitigation Monitoring Report
MOA	-	Memorandum of Agreement
MOT	-	Maintenance of Traffic
MSE	-	Mechanically Stabilized Earth
MTA	-	Maryland Transit Administration
NEPA	-	National Environmental Policy Act
NFPA	-	National Fire Protection Association
NPS	-	National Parks Service
NTP	-	Notice to Proceed
OCS	-	Overhead Contact System
OMF	-	Operation and Maintenance Facility
OP	-	Oversight Procedures

OSHA	-	Occupational Health and Safety Administration
P3	-	Public Private Partnership
PD	-	Project Development
PEPCO	-	Potomac Electric Power Corporation
PHA	-	Preliminary Hazards Analysis
PLTC	-	Purple Line Transit Constructors
PLTP	-	Purple Line Transit Partners
PMC	-	Project Management Consultant
PMOC	-	Project Management Oversight Contractor
PMP	-	Project Management Plan
QA/QC	-	Quality Assurance/Quality Control
QAP	-	Quality Assurance Plan
RAMP	-	Real Estate Acquisition and Management Plan
RCMP	-	Risk and Contingency Management Plan
RFMP	-	Rail Fleet Management Plan
RFC	-	Released for Construction
RFP	-	Request for Proposal
ROD	-	Record of Decision
ROE	-	Right of Entry
ROW	-	Right-of-Way
RSD	-	Revenue Service Date
SCC	-	Standard Cost Category
SEIS	-	Supplemental Environmental Impact Statement
SHA	-	State Highway Administration
SOE	-	Support of Excavation
SSCC	-	Safety and Security Certification Committee
SSCP	-	Safety and Security Certification Plan
SSMP	-	Safety and Security Management Plan
SSOA	-	State Safety Oversight Agency
SSTC	-	Silver Spring Transit Center
SWM	-	Stormwater Management
SSWG	-	Safety and Security Working Group
TDD	-	Transit Development and Delivery
TIFIA	-	Transportation Infrastructure Finance and Innovation Act
TVA	-	Threat and Vulnerability Assessment
UMD	-	University of Maryland
USACE	-	United States Army Corps of Engineers
WMATA	-	Washington Metropolitan Area Transit Authority
WSSC	-	Washington Suburban Sanitary Commission
YOE	-	Year of Expenditure

Appendix 6 Cost vs. Budget

The following are project budgets, actual expenditures and forecast at completion amounts through June 15, 2019 (for PLTP costs) and June 30, 2019 (for MTA costs), compared with the project budget as reported in MTA's June 1, 2016 SCC Workbook and MTA's current Working Budget.

(in \$1,000)

SCC	Cost Category	Budget (June 1, 2016 SCC Workbook)	Working Budget* (Jan. 1, 2017 SCC Workbook)	Expended	Forecast at Completion
10	Guideway and Track	280,620,726	258,782,885	64,372,221	258,782,885
20	Stations	114,857,016	116,127,445	5,363,295	116,127,445
30	Maintenance Facility	94,155,591	94,155,591	14,672,266	94,155,591
40	Sitework	521,968,990	315,482,782	104,208,257	315,775,289
50	Systems	263,887,313	263,887,313	32,733,765	263,887,313
	Subtotal 10 thru 50	1,275,489,636	1,048,436,017	221,349,805	1,048,728,524
60	Right-of-Way	229,600,000	229,600,000	209,546,586	229,600,000
70	Vehicles	212,940,927	212,940,927	31,124,636	212,940,927
80	Professional Services (total)	571,658,114	798,711,733	606,175,861	798,711,733
80.01	Project Development (PD)	87,149,878	87,149,878	87,149,878	87,149,878
80.02	Engineering	139,766,036	114,618,846	108,150,079	114,618,846
80.03	Project Management for Design and Construction	148,555,323	227,047,206	163,859,929	227,047,206
80.04	Construction Administration & Management	83,269,280	255,349,776	197,546,327	255,349,776
80.05	Professional Liability; other Non-Construction Insurance	34,534,796	34,534,796	28,756,417	34,534,796
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	5,805,117	10,205,293	9,514,470	10,205,293
80.07	Surveys, Testing, Investigation, Inspection	15,164,346	16,798,570	11,198,760	16,798,570
80.08	Start up	57,413,338	53,007,367	-	53,007,367
	Subtotal 10 - 80	2,289,688,678	2,289,688,678	1,068,196,887	2,289,981,185
90	Contingency	90,535,748	90,535,748	-	90,243,241
100	Finance Charges	26,805,863	26,805,863	-	26,805,863
	Total	2,407,030,288	2,407,030,288	1,068,196,887	2,407,030,288

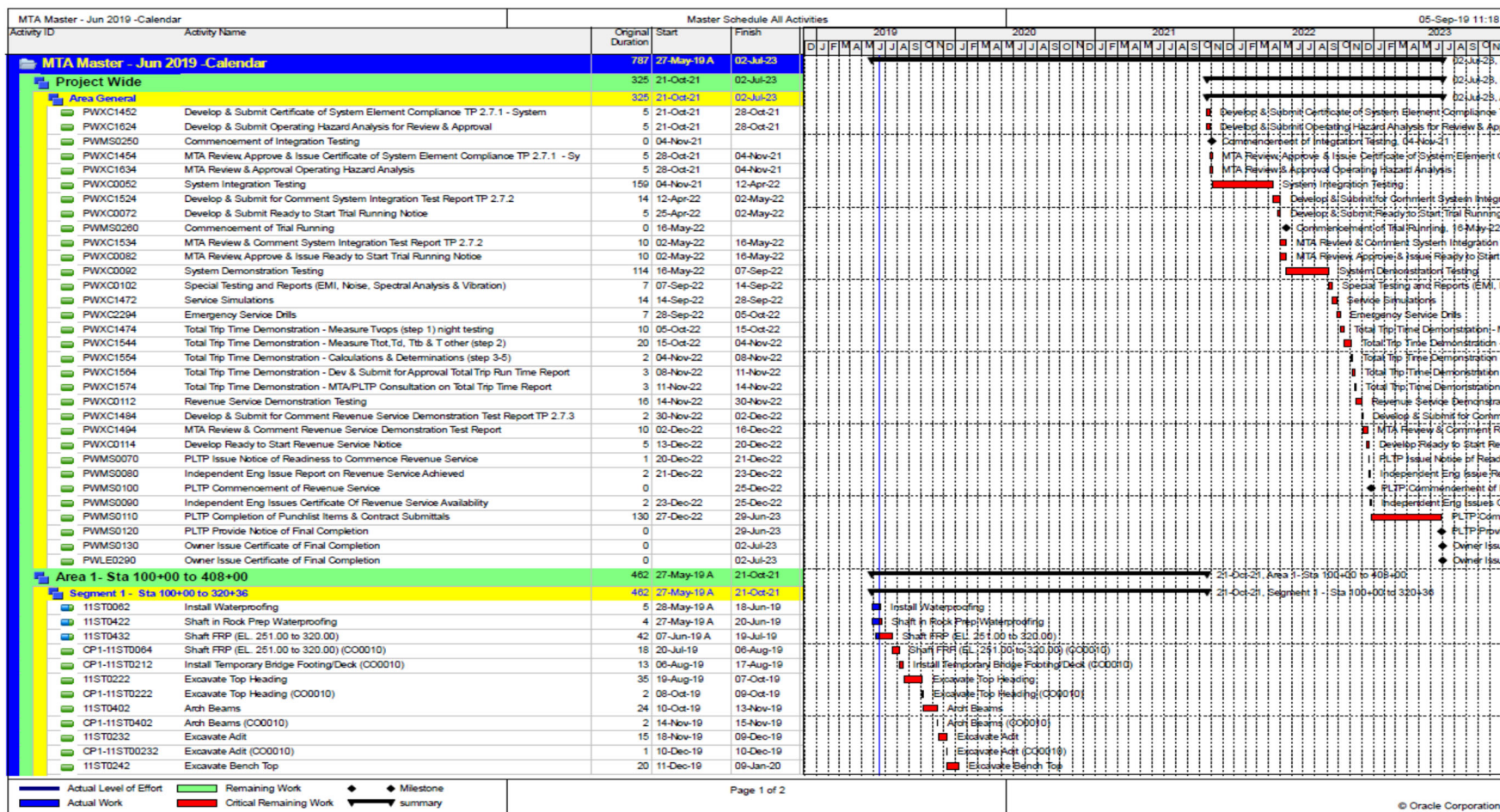
* NOTE: The Purple Line Working Budget is based on the current approved (December 2016) cost and resource loaded Baseline Project Schedule, which is undergoing mitigation and revision. Once the project schedule is re-baselined, the budget can be accordingly updated.

Appendix 7 FTA SCC Workbook – BUILD Main, June 1, 2016 Update

MAIN WORKSHEET - BUILD ALTERNATIVE								0
Maryland Transit Administration						Today's Date	5/24/16	
Maryland National Capital Purple Line						Yr of Base Year \$	2016	
FFGA Application						Yr of Revenue Ops	2022	
	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	16.20	259,766	0.00	259,766	\$16,035	22%	12%	280,621
10 01 Guideway At-grade exclusive right-of-way	3.26	2,978		2,978	\$913			3,244
10 02 Guideway At-grade semi-exclusive (allows cross-traffic)	9.67	12,497		12,497	\$1,292			13,205
10 03 Guideway At-grade in mixed traffic	1.20	12,862		12,862	\$10,718			13,961
10 04 Guideway Aerial structure	0.46	67,018		67,018	\$145,692			73,222
10 05 Guideway Built-up fill	0.00	0		0				0
10 06 Guideway Underground cut & cover	0.00	0		0	\$0			0
10 07 Guideway Underground tunnel	0.36	58,344		58,344	\$162,068			62,735
10 08 Guideway Retained cut or fill	1.25	20,805		20,805	\$16,644			22,693
10 09 Track Direct fixation		6,948		6,948				7,570
10 10 Track Embedded		29,159		29,159				30,811
10 11 Track Ballasted		30,012		30,012				32,575
10 12 Track Special (switches, turnouts)		19,141		19,141				20,606
10 13 Track Vibration and noise dampening		0		0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	21	103,521	0	103,521	\$4,930	9%	5%	114,857
20 01 At-grade station stop shelter mall terminal platform	16	23,884		23,884	\$1,493			26,295
20 02 Aerial station stop shelter mall terminal platform	3	45,703		45,703	\$15,234			51,031
20 03 Underground station stop shelter mall terminal platform	2	30,698		30,698	\$15,349			33,933
20 04 Other stations landings terminals Intermodal ferry trolley etc	0	0		0				0
20 05 Joint development		0		0				0
20 06 Automobile parking multi-story structure		0		0				0
20 07 Elevators escalators		3,236		3,236				3,599
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	16.20	87,590	0	87,590	\$5,407	7%	4%	94,156
30 01 Administration Building Office sales storage revenue counting		29,571		29,571				31,894
30 02 Light Maintenance Facility		951		951				1,062
30 03 Heavy Maintenance Facility		44,357		44,357				47,842
30 04 Storage or Maintenance of Way Building		0		0				0
30 05 Yard and Yard Track		12,710		12,710				13,358
40 SITEWORK & SPECIAL CONDITIONS	16.20	481,579	2,405	483,984	\$29,876	41%	22%	521,969
40 01 Demolition Clearing Earthwork		45,651		45,651				48,789
40 02 Site Utilities Utility Relocation		143,356	1,596	144,952				154,044
40 03 Haz mat/ contam'd soil removal/mitigation ground water treatments		17,099		17,099				18,439
40 04 Environmental mitigation e.g wetlands historic/archeologic parks		24,936	808	25,744				27,716
40 05 Site structures including retaining walls sound walls		64,172		64,172				70,248
40 06 Pedestrian / bike access and accommodation landscaping		22,662		22,662				24,399
40 07 Automobile bus van accessways including roads parking lots		135,633		135,633				148,189
40 08 Temporary Facilities and other indirect costs during construction		28,072		28,072				30,145
50 SYSTEMS	16.20	225,424	10,376	235,800	\$14,556	20%	11%	263,887
50 01 Train control and signals		53,515		53,515				60,164
50 02 Traffic signals and crossing protection		32,772		32,772				36,580
50 03 Traction power supply substations		29,992		29,992				32,849
50 04 Traction power distribution catenary and third rail		42,788		42,788				47,710
50 05 Communications		33,620		33,620				37,775
50 06 Fare collection system and equipment		2,918	10,376	13,294				15,568
50 07 Central Control		29,819		29,819				33,240
Construction Subtotal (10 - 50)	16.20	1,157,880	12,781	1,170,661	\$72,263	100%	52%	1,275,490
60 ROW, LAND, EXISTING IMPROVEMENTS	16.20	186,092	37,187	223,279	\$13,783		10%	229,600
60 01 Purchase or lease of real estate		166,132	32,483	198,615				203,143
60 02 Relocation of existing households and businesses		19,959	4,704	24,664				26,457
70 VEHICLES (number)	25	192,691	0	192,691	\$7,708		9%	212,941
70 01 Light Rail	25	186,771		186,771	\$7,471			206,351
70 02 Heavy Rail	0			0				0
70 03 Commuter Rail	0			0				0
70 04 Bus	0			0				0
70 05 Other	0	5,920		5,920				6,590
70 06 Non-revenue vehicles	0			0				0
70 07 Spare parts	0			0				0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	16.20	535,369	6,032	541,401	\$33,420	46%	24%	571,658
80 01 Project Development		87,150		87,150				87,150
80 02 Engineering		136,688		136,688				139,766
80 03 Project Management for Design and Construction		131,594	5,872	137,466				148,555
80 04 Construction Administration & Management		76,410		76,410				83,269
80 05 Professional Liability and other Non-Construction Insurance		32,697		32,697				34,535
80 06 Legal Permits Review Fees by other agencies cities etc		5,530	88	5,618				5,805
80 07 Surveys Testing Investigation Inspection		14,214	73	14,287				15,164
80 08 Start up		51,086		51,086				57,413
Subtotal (10 - 80)	16.20	2,072,032	56,000	2,128,032	\$131,360		95%	2,289,689
90 UNALLOCATED CONTINGENCY				81,652			4%	90,536
Subtotal (10 - 90)	16.20			2,209,684	\$136,400		99%	2,380,224
100 FINANCE CHARGES				24,128			1%	26,806
Total Project Cost (10 - 100)	16.20			2,233,812	\$137,890		100%	2,407,030
Allocated Contingency as % of Base Yr Dollars w/o Contingency				2.70%				\$78,734
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				3.94%				\$135,438
Total Contingency as % of Base Yr Dollars w/o Contingency				6.64%				\$148,582
Unallocated Contingency as % of Subtotal (10 - 80)				3.84%				
YOE Construction Cost per Mile (X000)								
YOE Total Project Cost per Mile Not Including Vehicles (X000)								
YOE Total Project Cost per Mile (X000)								

Appendix 8 Project Schedule

The following is the Purple Line project Critical Path (Longest Path) Schedule, based on MTA's preliminary updated Integrated Master Project Schedule progressed through June 15, 2019, but for which final agreement with the P3 Concessionaire has not yet been reached. As noted in the body of the report, the schedule as reflected here is subject to change as the fully mitigated schedule is developed and agreed to by PLTP and MTA.



Maryland National Capital Purple Line Project

Appendix 9 Vehicle Status Report

Purple Line Project Light Rail Vehicles

Vendor: Construcciones y Auxiliar de Ferrocarriles (CAF)

Model: Multiple-section 136-foot articulated vehicle, used in single-car consist (vehicle total length is 142 feet coupler-to-coupler)

Year: First vehicle delivery is currently scheduled for January 21, 2020

Quantity: 25

Identification: The LRVs will be numbered from 101 through 126

New Technologies:
None planned (all major suppliers have service proven equipment)

Upcoming Significant Events:

- Commence dynamic testing of the first vehicle on the test track in Elmira, NY, planned for October 2019
- Continue final assembly of the second, third, fourth and fifth vehicles in Elmira, NY
- Continue to manufacture carshells for additional vehicles in Spain and ship them to the US for final assembly

Bus Vehicle Testing: Not Applicable

Appendix 10 Construction Photographs



(photo: MTA)

Photo 1: Drilling shafts for piers of the LRT aerial structure at the Silver Spring Transit Center



(photo: MTA)

Photo 2: Placement of embedded track in Ellin Road near Veterans Highway