



Safety and Operations Committee

Board Information Item IV-A

October 14, 2021

Silver Line Phase 2 Update

Washington Metropolitan Area Transit Authority

Board Action/Information Summary

☐ Action ☒ Information

MEAD Number:
202305

Resolution:
☐ Yes ☒ No

TITLE:

Silver Line Phase 2 Update

PRESENTATION SUMMARY:

Staff will present the Board with an update on the status of Silver Line Phase 2 open issues, an outline of key activities to be completed prior to Acceptance, and WMATA's progress on hiring.

PURPOSE:

To provide the Safety and Operations Committee with an update on the status of open issues on Silver Line Phase 2 and progress on hiring of employees.

DESCRIPTION:

Capital Rail Constructors, a joint venture of **Clark Construction Group, LLC** and **Kiewit Infrastructure South Co.**, is the design-build contractor for Package A of the Silver Line Phase 2 (mainline and stations), and **Hensel Phelps Construction Company** is the design-build contractor for Package B (Dulles Rail Yard). Major subcontractors and consultants under these entities include **Mass. Electric Construction Company**, **Parsons Corporation**, **Dewberry**, **Systra**, and **M.C. Dean**.

Major consultants and contractors supporting Metro's efforts on the project include **Mott MacDonald**, **Gannett Fleming**, **HNTB**, and **Cubic Transportation Systems**.

Key Highlights:

- As part of Metro's ongoing review of the Silver Line Phase 2 project, two issues have been resolved (Damaged Direct Fixation Fasteners and the Malfunctioning UPS Fans in the Mainline); 11 issues are currently being remediated ("Underway"), and two issues (Non-Compliant Clearance in Yard Elevator Machine Room and Turntable Deficiencies in the Yard) remain "Unresolved".
- Concurrent with remediation on several issues based on an agreed upon path forward, discussions are continuing with the Airports Authority

on funding future maintenance/replacement costs on issues where accepting "as is" or remediation is not fully compliant with the approved design specifications/performance requirements.

- As the project approaches Substantial Completion (SSCD now projected by the Airports Authority to be in the fourth quarter of 2021) satisfactory resolution of all issues must occur prior to SSCD, Operational Testing, or at the very latest prior to acceptance/start of revenue service. The current status of the open issues is included in the attached presentation.
- As the intended future owner and operator, Metro determines when all the conditions necessary for Metro acceptance have been satisfied, and whether Phase 2 of the project is accepted into the Adopted Regional System (ARS).
- Metro will establish a revenue service date after all identified deficiencies have been resolved to meet acceptance standards.

Background and History:

Silver Line Phase 2 will extend the Metrorail system into Loudoun County, Virginia, and provide 11.4 miles of new track from the interim terminus at Wiehle-Reston East Station, through the Washington Dulles International Airport, to a terminus in Loudoun County. It includes six new Metrorail stations (Reston Town Center, Herndon, Innovation Center, Washington Dulles International Airport, Loudoun Gateway, and Ashburn), and a new service & inspection yard.

Metro's role and responsibilities for the design-build phase of the Silver Line Phase 2 project are as defined in the Cooperative Agreement executed between the Airports Authority and Metro on August 7, 2013.

The Board of Directors amended the Adopted Regional System (ARS) to incorporate the Dulles Metrorail Extension (Silver Line) subject to the fulfillment of certain "ARS Contingencies" adopted in Resolution 2012-24. Additional conditions precedent for acceptance are established in Article 6 of the Cooperative Agreement.

Discussion:

Construction of the Silver Line Phase 2 is nearing completion. Facility construction is complete, and systems installations and testing are well advanced.

In addition to Dynamic Testing Readiness, the project will advance through several milestones moving towards the start of revenue service. The milestones are defined and summarized as follows:

- Dynamic Testing Readiness – determination that the contractor has completed the work in accordance with the contract documents which renders the project safe and capable of supporting dynamic testing. This determination is supported by documentation of the following: final alignment and track configuration; operational traction and third rail power; completion of prerequisite automatic train control static testing; activation of contractor start-up railroad safety procedures; and verification of train, track and structure clearances.
- Substantial Completion (SC) – the work is substantially complete. System Performance Demonstration is complete. All conditions of substantial completion have been met, and the project is ready for operational readiness testing. Conditions to substantial completion include performance of contractor inspections and tests, delivery of record documents and spare parts, completion of training and contractor safety certification, correction of all defects that materially adversely impact the operations of the Project, and provision of Operations and Maintenance (O & M) manuals and punch list completion schedule.
- Operational Readiness Date (ORD) – the date on which Metro determines that the Project is sufficiently complete for Metro to commence simulated rail service. A key condition of operational readiness is the successful completion of operational readiness testing conducted by Metro.

Between ORD and acceptance, Metro has provisional care, custody and control of the project, and performs activities in preparation for revenue service. These activities include verification that conditions precedent for acceptance have been met; simulated service; emergency drills; safety certification; mobilization of stations and yard; rekeying all facilities; providing escorts to support contractor punch list completion; control right-of-way operations; and performance of preventive maintenance inspections. An outline of these activities is included in the attached presentation.

Metro's acceptance determination is supported by the completion of certain ARS Acceptance Tasks, verification that all conditions precedent for acceptance have been met, and Metro's determination that Phase 2 is eligible and ready for Metro Acceptance.

The conditions precedent for acceptance of Phase 2 into the ARS as established in the Cooperative Agreement are summarized as follows:

- Condition 1. Punch List – all punch list work completed to Metro's satisfaction. If not completed, Metro has the right to complete punch list items at the Airport Authority's expense.
- Condition 2. Property Transfers – the Airports Authority shall have transferred to Metro the appropriate property interests as indicated in the

approved Right-of-Ways plans.

- Condition 3. Spare Parts and Training – Metro shall have received all spare parts, O&M manuals, and necessary training.
- Condition 4. Record Deliverables – record deliverables have been received by Metro.
- Condition 5. Assignment of Warranties – all warranties have been assigned to Metro, and all documentation necessary to enforce the warranties has been provided to Metro.
- Condition 6. Permits – the Airports Authority shall have obtained for Metro all land use and permitting approvals necessary for Metro's operations.
- Condition 7. Payments – the Airports Authority shall have paid Metro all funds due and owing.
- Condition 8. Safety and Security – project has achieved certification by the Metro Chief Safety Officer.
- Condition 9. Insurance – Metro shall have received all certificates of insurance.
- Condition 10. Storm Water Management – the Airports Authority shall have obtained maintenance agreements as required.

The update on status of currently open issues is as follows:

Resolved

- Damaged Direct Fixation Fasteners
- Malfunctioning UPS Fans (Mainline)

Underway

- Malfunctioning UPS Fans (Yard)
- Rail Car Hoists
- Surge Arrestor Failures
- Precast Panels in Yard
- Fuel Center Slabs
- Tight Gauge at Switches in Yard
- Cracked Impedance Bonds
- Cracked Third Rail Insulators
- Cracked Third Rail Cover Brackets
- Incorrect Distance between Insulated Joints (IJ's) and Signals at Dulles Yard

- Station Platform Paver Installation

Unresolved

- Non-Compliant Clearance at Yard Elevator Machine Rooms
- Turntable Deficiencies at Service & Inspection Building at Dulles Yard

In summary, since the September 9, 2021 briefing to the Safety & Operations Committee:

- Two Issues have been Resolved (UPS Fan issue has been resolved for Mainline only)
- 11 are Underway (being resolved or have agreed upon path forward), and
- Two are Unresolved

While remediation is underway on several issues based on an agreed upon path forward, discussions with Airports Authority are continuing regarding funding of future maintenance/replacement costs on issues where accepting "as is" or remediation is not fully compliant with the approved design specifications/performance requirements.

Hiring of staff is underway and proceeding on schedule.

Updates on the status of the project are further detailed in the attached presentation.

FUNDING IMPACT:

There is no direct funding impact for presenting this update. The approved WMATA FY2022 Budget includes funding for a revenue start date of January 1, 2022.	
Project Manager:	Neil Nott
Project Department/Office:	Capital Delivery/Project Implementation and Planning (CAPD/PICO)

TIMELINE:

Previous Actions	August 2013 – Metro and the Airports Authority executed the negotiated Cooperative Agreement that provides for Metro support throughout the design-build phase of the Silver Line Phase 2 project.
Anticipated actions after presentation	Board approval of Service Plan and Title VI Equity Analysis and Acceptance of Silver Line Phase 2

Silver Line Phase 2 Update

Safety & Operations Committee
October 14, 2021



Purpose

1 Update on the Status of Open Issues

2 Information on Prerequisite Activities
& Milestones

3 Review Project Schedule

Open Issues by Status & Impact

*Impacts System Performance Demonstration
(Airports Authority Substantial Completion)*

*Impacts Operational Readiness
(WMATA ORD Declaration)*

Underway

- Malfunctioning UPS Fans (Yard)

- ~~Turnback Logic~~
- Rail Car Hoists
- Surge Arrestors
- ~~Precast Panels at Yard~~
- Fuel Center Slabs
- Tight Gauge at Switches in Yard
- Cracked Impedance Bonds
- ~~Cracked Third Rail Insulators~~
- ~~Cracked Third Rail Cover Brackets~~
- Incorrect Distance Between Insulated Joints and Signals at Yard
- Station Platform Pavers

Unresolved

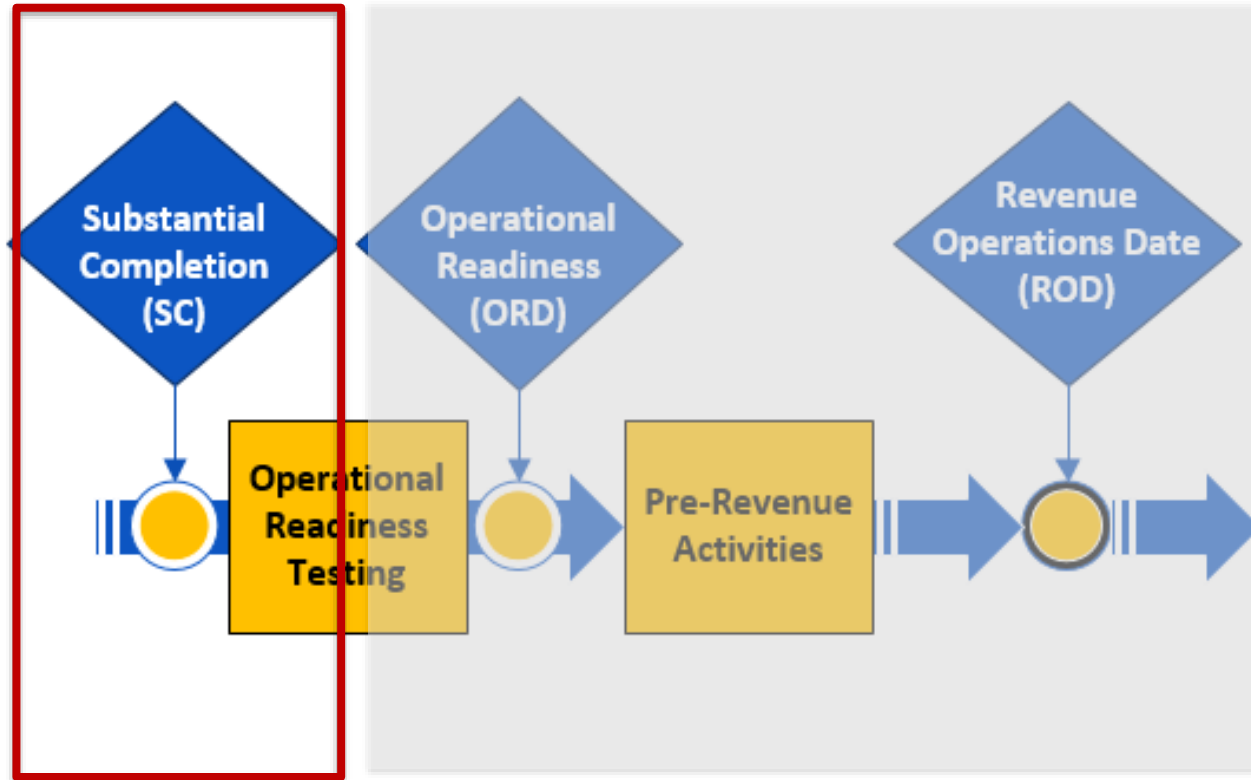
- [None]

- Non-Compliant Clearance in Yard Elevator Machine Room
- Turntable Deficiencies at Yard



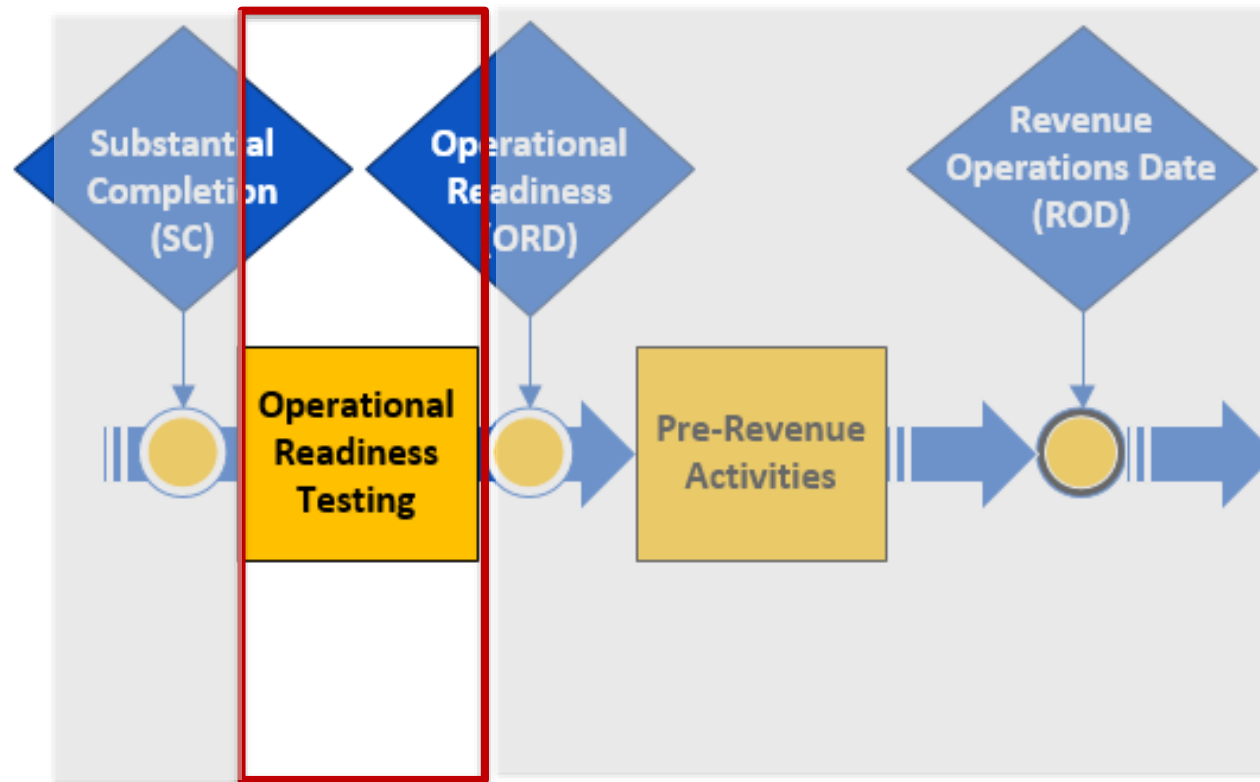
Project Schedule: Prerequisite Activities & Milestones

Schedule: Projected Substantial Completion



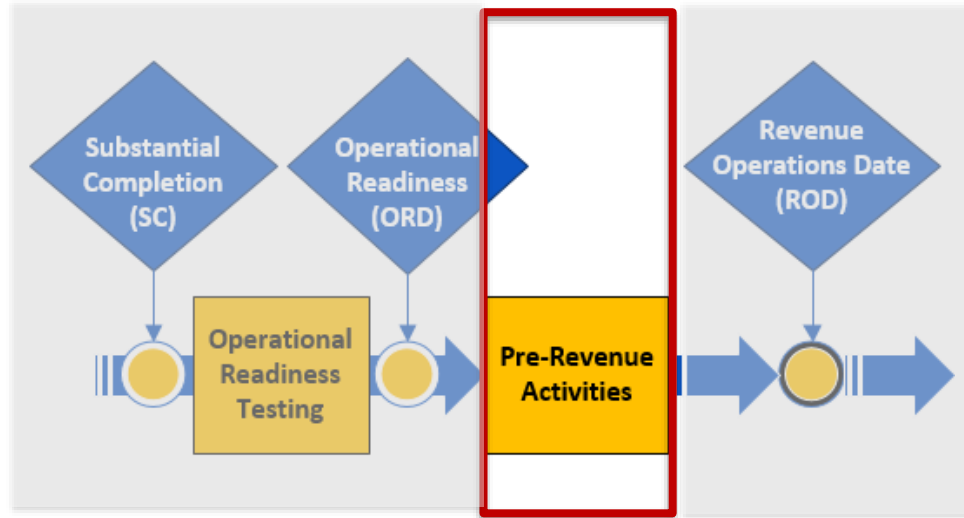
- Airports Authority projects Substantial Completion in fourth quarter CY2021
- “Level F” ATC testing completed; test reports being reviewed
- Shutdown of Wiehle-Reston Station scheduled for October 23-25 for final integration of Phase 2

Schedule: Operational Readiness Testing



- After MWAA determines SSCD, WMATA has a period of time for testing to determine Operational Readiness
- Until WMATA determines Operational Readiness, MWAA/Contractor retain project custody
- No fixed duration for ORT, as it depends on testing not completed prior to Substantial Completion.

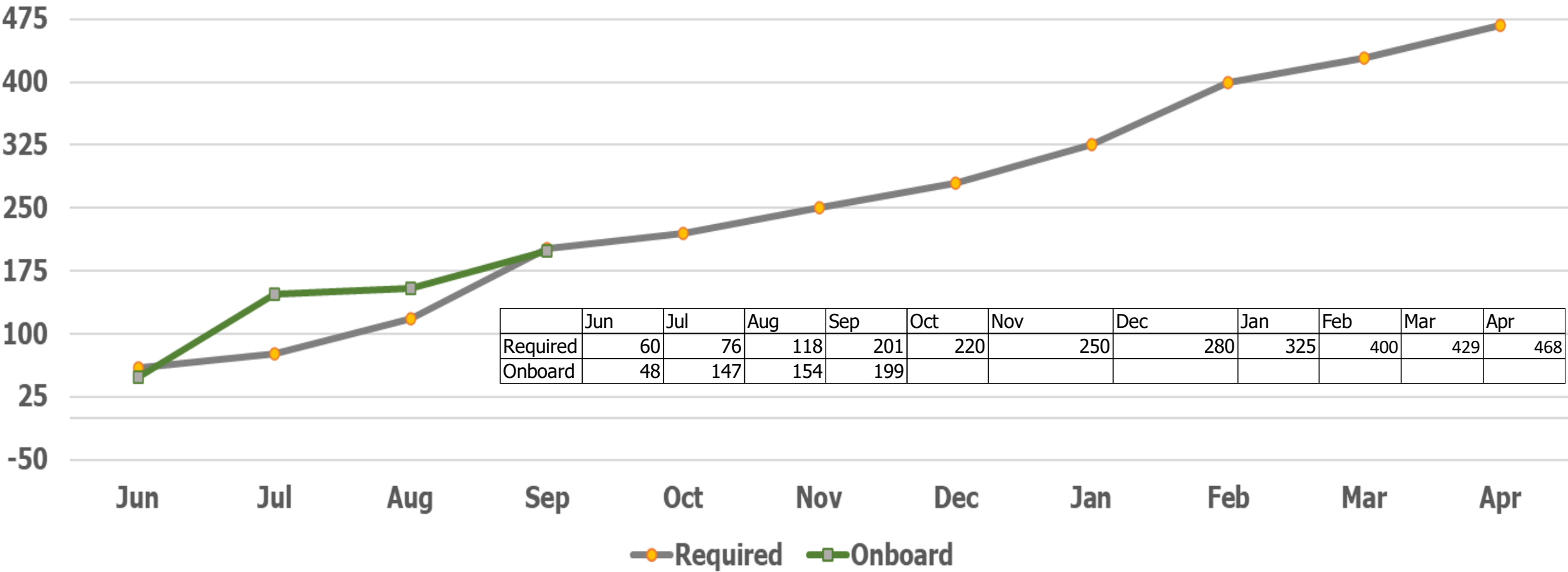
Schedule: Significant WMATA Work after ORD

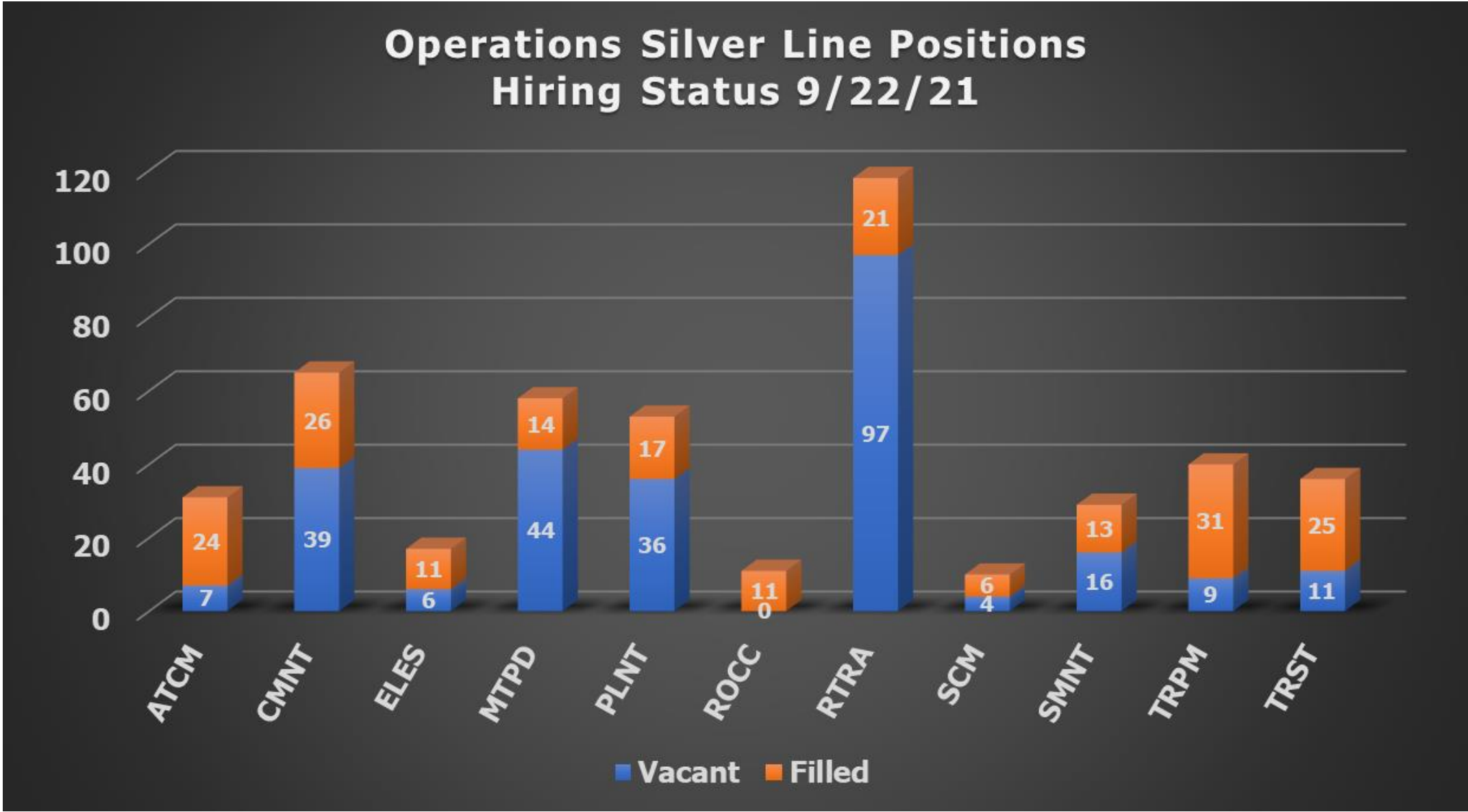


- *On boarding Assets*
- *Staff & First Responder Familiarization*
- *Final Documents*
- *Policy & Procedure Updates*
- *Final Station Mobilization*

Update on Hiring

Operations Silver Line Phase 2 Hiring
As of September 22, 2021





Appendix: Full List Open Issues

Open Issues: Component Failures

Issue	Date Identified	Description/Status
Surge Arrestor Failures	March 2016	Systemic positive surge arrestor failures experienced throughout project; Metro and Airports Authority working to resolve final comments on the root cause analysis
Malfunctioning UPS Fans (Yard & Mainline)	March 2018	UPS exhaust fans continually running at high speed, burning out fan motors; solution has been implemented on mainline and demonstration completed. Implementation at Yard and incident-free system performance demonstration will close issue
Cracked Impedance Bonds	October 2019	11 bonds significantly cracked, required replacement bonds; Metro remains concerned about 40 other locations identified with imperfections; Airports Authority and Metro discussing provision of extended warranty
Cracked 3 rd Rail Insulators	April 2020	Contractor has replaced insulators that were exhibiting cracks - root cause analysis identifies over-tightening as cause – contractor corrected torque and replacing cracked brackets – Contractor commissioned 3 rd party lab to perform structural testing/analysis which is under review by Metro
Damaged Direct Fixation Track Fasteners	May 2020	Approximately 10,000 damaged direct fixation track fasteners require replacement - Metro and Airports Authority analysis supports contractor root cause conclusion and replacement is substantially complete
Cracked Third Rail Cover Brackets	February 2021	5,000+/- brackets (of a total of approximately 50,000) are cracked; root cause analysis identifies over-tightening as cause – Contractor commissioned 3 rd party lab to perform structural testing/analysis which has not yet been provided to Metro

Open Issues: Stations & Systems

Issue	Date Identified	Status
Station Platform Paver Installation	November 2017	<p>Systemic joint failures at pavers, water penetrating setting bed, significant efflorescence deposits at the platform edges</p> <p>Airports Authority directed contractor to perform remedial work required to repair failing joint material</p> <p>Metro's concern remains that this work will not fully address system deficiencies; working with Airports Authority to identify comprehensive program to address the issues including escrow</p>
Incorrect Distance Between Insulated Joints (IJ) and Signals (Yard)	June 2019	<p>Metro concern is insufficient distance between the signals and related IJ's to ensure safe train movement</p> <p>Field review conducted to confirm locations where conditions would allow distance to be increased. Metro and Airports Authority have agreed on a path forward</p>

Open Issues: Yard

Issue	Date Identified	Status
Railcar Hoists at Dulles Yard	April 2016 / September 2020	During performance testing issues were identified with the control systems, auto chock systems, and others; Airports Authority, Metro and contractor continue to work through issues
Tight Gauge at Switches in Dulles Yard		Tight gauge identified at 39 switches in Dulles Yard; Mitigation acceptance pending verification of gauge following completion of Dynamic testing
Precast Concrete Wall panel Cracks at Dulles Yard Buildings		Airports Authority concluded cracking on surface of exterior wall panels due to panel connections restraining panel thermal and shrinkage movement; cracking has stabilized Metro OIG Sept. 2020 report concluded that sealer application is acceptable remediation; however, costs for future re-application of sealer should be considered – responsibility for cost of re-application not identified
Fuel Center Deficiencies at Dulles Yard	July 2018	Recommendation of Metro OIG March 2020 Interim Report was that contractor provide evidence that final construction complies with design requirements - acceptance request for nonconforming slab in progress

Open Issues: Yard (continued)

Issue	Date Identified	Status
Non-Compliant Clearance in Elevator Machine Room	May 2018	Metro assesses that elevator machine room equipment clearances do not meet code requirements; Metro 3 rd party elevator inspector concurs with Metro's assessment; Airports Authority and Metro continue to work towards resolution
Turntable Deficiencies at Service & Inspection Building	October 2020	Issues include excessive rocking, gaps and misalignment at flange way, undocumented modifications; Follow up inspection/demonstration on July 9 identified continuing issues that are being further examined