Washington Metropolitan Area Transit Authority

Board Action/Information Summary

Action	Information	MEAD Number:	Resolution:
◉	○	201985	◉ Yes ○ No

TITLE:

Preventive Maintenance Mid-Program Report

PRESENTATION SUMMARY:

Present the Washington Metropolitan Area Transit Authority (Metro's) update to the plan for establishing sustainable preventive maintenance to the Board's Safety and Service Delivery Committee. Request Board re-affirmation of current operating hours to allow additional time for preventive maintenance activities.

PURPOSE:

To brief the Board's Safety and Service Delivery Committee regarding the status of the preventive maintenance plans and the impact on operations. Additionally, to obtain committee and subsequent Board re-affirmation of the current hours of service to allow for additional time for preventive maintenance activities.

DESCRIPTION:

In order to sustain the gains made under SafeTrack, WMATA has engaged in more preventive maintenance along with maintaining a robust capital program. Six Preventive Maintenance programs have been implemented, with targets set for 50% reduction of incidents by the end of FY19.

Key Highlights:

- Six preventive maintenance programs that are carried out during non-passenger service hours overnight.
- Resultant improvements in operations, as measured through reduction in Electrical Fires, Track Delays and Emergency Requests for track work.

Background and History:

In November 2016 Metro's board reviewed the need for an increase in the time allocated for maintenance crews nightly work window. To improve maintenance and service reliability, the Board approved a reduction of passenger service hours to implement a preventive maintenance program. This increase would allow for a more productive work window. The increase in the maintenance work windows coupled with the generation of six new preventive maintenance

programs would ensure that WMATA could sustain a state of good repair for its infrastructure. and reduce the amount of unscheduled delays targeted by the six new PM programs by 50% (FY17 compared to FY19 incident data).

Discussion:

New Preventive Maintenance Programs (PM): The six PM programs that Metro initiated after SafeTrack were presented to the Board in June 2016. The list of defined PM programs is:

- Traction Power Cable Meggering
- Earth to Ground Stray Current Testing
- Switch Maintenance
- Torqueing
- Track Geometry
- Track Bed Cleaning

These PM programs have been planned for non-passenger service hours (the overnight maintenance window). A well-resourced PM program, in addition to a robust capital program, is essential to delivering reliable Metrorail service. Below please find the status of each program and its impact, as of March 31, 2018. It should be noted that the report is for 9 of 24 months of programs that require one to five years to complete systemwide.

Traction Power Cable Meggering: The program is based on meggering cables seven years after installation and then every four years thereafter. In FY18, WMATA plans to megger 2,107 cables. It will take approximately four years to complete one full pass of the system. The goal of the program is zero cable fires per year.

FY18 YTD = 1,618 cables meggered, against plan of 1,580 cables through March 31, 2018. Program is on schedule, at 103% of plan for the year.

Earth to Ground Stray Current Testing: This PM program is intended to identify components that are no longer providing sufficient electrical isolation and allowing stray current to escape and degrade track components such as direct fixation fasteners along with their rail clips and anchor bolts. Stray current is also a primary cause of track circuit failures and direct fixation fastener fires. The goal of this program is to reduce risk of fire incidents and extend the life of track components by reducing corrosion. The goal of the program is to get to zero stray current incidents per year. As described in the December 15, 2017 Board Memo for PM Program Update, this program was re-adjusted in November, with the FY18 plan set to test 22 segments.

FY18 YTD = 17 segments completed, against plan of 14 segments through March 31, 2018. Program is ahead of schedule for this year, at 124% of plan.

Switch Maintenance: This PM has evolved from focusing primarily on switch

point and frog grinding and welding to include all the track components within the interlocking.

The planned goals for this program have been adjusted from number of frogs welded to assessing the health and condition of the entire interlocking.

FY18 plan was originally to complete two complete inspections of the system and repair the 88 frogs associated with 12 critical Interlockings.

FY18 YTD = 31 Interlockings completed along with the first system-wide inspection, against plan of nine interlockings through March 31, 2018. Program is ahead of schedule for this year, at 344% of plan.

This PM is ahead of schedule despite being broadened to include more components based on a change in strategy regarding resource allocation; the regional crews are responsible for inspections and scheduling specialty welding work as required rather than using the welders to also inspect.

Torqueing: Torqueing involves tightening the nuts and bolts that hold the rail fasteners in place in direct fixation track. Torqueing regularly will extend the useful life of track components by reducing movement and vibration within the track components. In addition, this program includes joint maintenance for rail joints on direct fixation track.
The plan for FY18 is to torque all 135 miles of direct fixation track annually, with additional quarterly torqueing of tight curves.

FY18 YTD = 878,069LF against year-end plan of 1,303,569LF through March 31, 2018. Program is behind schedule at 67% of plan.

The torqueing PM plan is behind schedule but production rates are improving and we expect to complete the planned program by end of FY18.

Track Geometry: This PM involves tamping, surfacing and joint maintenance for all ballasted track. It improves the track geometry (horizontal and vertical alignment of the rails) which will improve ride quality and extend the life of ties or other components. The WMATA system has 99 miles of ballasted track and 200 ballasted mainline switches. As described in the December 15, 2017 Board Memo, the FY18 plan was revised in November to tamp 50 of the 99 miles of ballasted track, 264,000 linear feet (LF) per year, for a complete pass of the system every other year, plus the switches every year.

FY18 YTD: 165,569 LF completed, against a plan of 176,000 LF through March 31, 2018. Program is slightly behind schedule at 94% of plan.

Trackbed Cleaning: This PM has been planned to clean the underground portions of the Red Line to reduce risk of arcing insulators and other fire/smoke events as well as clean tracks in advance of the stray current PM program to improve its quality of testing results.

The FY18 plan is to prepare track for the 22 planned segments in the stray current PM program (142,810 linear feet). One complete pass of the underground portions of the Red Line (162,512 linear feet). Total plan for FY18 is 305,322 LF.

FY18 YTD = 164,849 LF measured against a plan of 228,986 LF through March 31, 2018. Program is behind schedule at 72% of plan.

This PM is behind schedule for two reasons:

1. Track access for the Red Line cleaning crews has been limited by the priority given to the Red Line Leak Mitigation Pilot Project. If the curtain grouting technique being piloted is successful, it would significantly decrease the amount of trackbed cleaning required in future years for this PM program. Early results are promising in terms of leak mitigation and reduction of water and mud entering the tunnel section where the pilot was conducted.
2. Re-sequencing within the stray current testing program has changed the linear footage required to be cleaned through March 31, 2018, as testing segments vary significantly in length. Cleaning in support of the stray testing is on track, but crews can not clean farther in advance as it is not beneficial as water, mud and brake dust will accumlate again. Cleaning crews are prepared to support to the stray current testing program with longer testing segments through the end of the year.

Emergencies: Offices submit emergency requests for roadway access for work that needs to be complete in the next 48 hours. These requests are intended for urgent, corrective maintenance work that is required to repair a situation that could prevent Metro from operating the railroad safely and reliably in the near-term. In FY18 WMATA offices submitted significantly fewer emergency requests than in the previous two years, due in part to a stronger preventive maintenance program that keeps roadway assets in better repair. In FY16, 12.3 percent of all standard, overnight, mainline access requests were emergency requests. In FY17 the percent of emergency requests increased overall to 13.0 percent, although the month-by-month trend for the year was downward. Notably, so far in FY18, only 5.1 percent of requests were emergencies and the trend continues downward. In July 2017, 9.4 percent of requests were emergencies while only 2.4 percent were emergencies in March 2018.

Work Wrench Hours: WMATA has concentrated on productively using the extended non-passenger hours. When passenger service ends, WMATA must move passenger trains to their final destinations, turn off power to the third rail, and safely establish work zones before our crews can begin working. Similar steps (in reverse) must be taken before passenger service begins the next morning. These necessary actions cut into the maintenance window.

Accordingly, WMATA uses work-wrench hours to evaluate the total time crews are accomplishing productive work on the roadway. Wrench time is total time that a technician has tools-in-hand and is directly conducting work. Wrench time does not include transportation, safety briefings, equipment preparations, and other necessary steps that are not directly conducting work. Work-wrench time is wrench time multiplied by the number of individuals conducting work. For example, if a crew of six people worked together and conducted three hours of wrench time, the total would be 18 hours.

In FY16, prior to SafeTrack, WMATA recorded 84,656 work-wrench hours during 33 non-passenger hours per week and worked from July 1, 2015 to March 31, 2016. In FY18, WMATA recorded 113,085 work-wrench hours during 41 non-passenger hours per week from July 1, 2011 to March 31, 2018. A 24 percent increase in the amount of non-passenger hours produced 34 percent more work-wrench hours. The bulk of these gains have been on the weekends, due to the extended non-passenger hours on Friday, Saturday, and Sunday nights. In FY18, WMATA increased work-wrench hours by 144% on these nights, as compared to FY16 (14,857 work-wrench hours in FY16 compared to 36,311 work-wrench hours in FY18).

FUNDING IMPACT:

As an existing program, there is no impact on funding.	
Project Manager:	Laura Mason
Project Department/Office:	Chief Operating Officer/Rail/Maintenance of Way Engineering

TIMELINE:

Previous Actions	June 2017 – SafeTrack Accomplishments and FY18 Preventive Maintenace Plan Presentation
Anticipated actions after presentation	Continue Preventive Maintenance Program

RECOMMENDATION:

Board appoval to extend the current operating hours of Monday - Thursday: 5 AM to 11:30 PM; Friday 5 AM to 1 AM; Saturday 7 AM to 1 AM; and Sunday 8 AM to 11 PM until on or about July 1, 2019.

PRESENTED AND ADOPTED: May 24, 2018

SUBJECT: CONTINUATION OF REDUCED METRORAIL SPAN OF SERVICE AND SUPPLEMENTAL BUS SERVICE

2018-18

RESOLUTION
OF THE
BOARD OF DIRECTORS
OF THE
WASHINGTON METROPLITAN AREA TRANSIT AUTHORITY

WHEREAS, In Resolution 2016-52, as amended by Resolution 2017-26, the Board of Directors approved the reduced Metrorail span of service and supplemental bus service, which became effective on June 25, 2017; and

WHEREAS, In Resolution 2016-52, as amended, the Board of Directors directed the General Manager/Chief Executive Officer (GM/CEO) to provide a comprehensive report of the Preventive Maintenance Program progress in May 2018, and the Board would then declare a continuation of the reduced span of service and supplemental bus service for Fiscal Year (FY) 2019; and

WHEREAS, The GM/CEO has provided a comprehensive report of the Preventive Maintenance Program progress; and

WHEREAS, The Board of Directors acknowledges that the report shows significant progress on the Preventive Maintenance Program, including a three percent reduction in fire incidents, a 35 percent reduction in track defect incidents, and a 59 percent reduction in emergency track requests; NOW, THEREFORE, be it

RESOLVED, That the Board of Directors declares the continuation of the reduced span of service and supplemental bus service for FY2019; and be it finally

RESOLVED, That this Resolution shall be effective 30 days after adoption in accordance with § 8(b) of the WMATA Compact.

Reviewed as to form and legal sufficiency,

Patricia Y. Lee
General Counsel

WMATA File Structure No.:
20.5.1 Rail Scheduling

Motioned by Mr. Crawford, seconded by Mr. McMillin
Ayes: 8 – Mr. Evans, Mr. Crawford, Mr. Corcoran, Mr. McMillin, Mr. Marootian, Mr. Goldman, Mrs. Hudgins, and Mr. Horner