



**Safety and Operations Committee**

**Board Action Item III-A**

**March 12, 2020**

**Preventive Maintenance  
and  
Metrorail Span of Service**

Washington Metropolitan Area Transit Authority  
**Board Action/Information Summary**

☒ Action ☐ Information

MEAD Number:  
202162

Resolution:  
☐ Yes ☒ No

**TITLE:**

Metrorail Span of Service

**PRESENTATION SUMMARY:**

Staff has prepared an analysis of the work completed when the Metrorail system is closed and developed service improvements for FY21 for the Board's consideration.

**PURPOSE:**

To present service improvements for the committee's consideration for FY21 Metrorail service hours, with consideration of impacts to ridership, net jurisdictional costs and ability to complete capital projects and maintenance work.

**DESCRIPTION:**

This presentation will provide further explanation of the maintenance work completed in the Metrorail system during the overnight hours; highlight efforts to improve productivity, efficiency and effectiveness of wayside work; and review the impact that different service hours would have on ridership, net jurisdictional costs and maintenance work.

The following vendors are our top non-personnel multi-year contractors through FY20 and to date (\$500m). They have contracts spanning through FY21 as well. The change to service hours could potentially impact these vendors.

- Transdev Services, Inc.
- First Transit, Inc.
- Diamond Transportation Service, Inc.
- Direct Energy Business
- Kawasaki Rail Car Inc
- PEPCO
- DOMINION ENERGY VIRGINIA
- Washington Gas Energy Services
- UnitedHealthcare Insurance Co
- Dell Marketing LP
- MV Transportation
- Challenger Transportation, Inc.
- Mott MacDonald I&E, LLC
- Kaiser Foundation Health Plan
- Carefirst BlueCross BlueShield
- Sonny Merryman Inc.
- LTK Engineering Services
- Giesecke & Devrient Mobile
- AECOM, USA, INC.
- Kiewit Infrastructure

WMATA has labor agreements with the following collective bargaining units:

- Fraternal Order of Police/Metro Transit Police Labor Committee, Inc. (FOP)
- The Office and Professional Employees International Union Local No.2, AFL-CIO (Local 2)
- Local 639, International Brotherhood of Teamsters Law Enforcement Division (Local 639)
- Local Union 689 of the Amalgamated Transit Union, AFL-CIO (Local 689)
- Local 922, International Brotherhood of Teamsters (Local 922)

**Key Highlights:**

- Under the current service hours adopted in FY18, capital renewal and preventive maintenance work has contributed to a seven-year high customer on time performance.
- Significant progress has been made to shift from reactive to proactive maintenance work in the Metrorail system, including investments in new technology and processes that reduce the amount of work required and increase efficiency of track access. These improvements reduce demand for track time and enable Metro to expand service hours without impacting safety or service reliability.
- Based on progress made to date, Metro is proposing extending service by four hours a week: Monday through Thursday closing times extended to midnight; and Friday and Saturday extended to 2AM. On Sunday, in lieu of extending the service hours, Metro is proposing increasing the frequency of service to 12-minute headways with 6-minute headways on the Red Line, matching Saturday service.

**Background and History:**

In November 2016, the Board's Customer Service, Operations and Safety Committee was briefed regarding the rationale for changing the Metrorail operating hours so there would be more time to establish preventive maintenance (PM) programs. In total, eight hours of service were reduced; the hours were selected based on minimizing impact to customers, resulting in an impact to <1% of trips. PM programs would drive sustained improvements to the reliability of the Metrorail infrastructure and improve service for customers by cutting delays in half in two years. In December 2016, the Board passed Resolution 2016-52 to implement a change to the service hours for FY18; required staff to provide a comprehensive progress report to the Board in May 2018; and unless the Board takes affirmative action, return the service hours to the FY16 levels on July 1, 2019. The board took such action and extended the service hours through FY20 (June 30, 2020).

In November of 2019, the Board was given a presentation updating them on Metro's overnight maintenance programs and a proposal to restore late night service hours starting in FY21. The service hours included in the November presentation were included as part of the FY21 budget. In January, the Board approved a public hearing docket, which included changes to late night service hours, for input in February and March. Input from the public and the results of the equity analysis will be included as part of the summary materials that will accompany the FY2021 budget action in April.

FTA regulations require WMATA to conduct a Title VI equity analysis for any major service change, including adding service and changing rail service hours. In addition, Title VI requires that Metro conduct public outreach and that the results be used to inform the Board's decision.

#### Discussion:

Maintenance work conducted when the Metrorail system is closed and trains are not running, known as the Overnight Maintenance Window, is critical to the delivery of safe and reliable rail service. This time is used for inspection, preventive maintenance and capital projects to replace aging assets and add new functionality and/or capacity. A significant portion of the Overnight Maintenance Window cannot be used for work because trains must first be cleared from the system and work areas must be safely set up. Thus, increasing service hours without compromising safety and reliability will require increasing: (1) the productivity of crews, (2) the efficiency of accessing the work zones after trains have cleared and (3) the effectiveness of work by achieving State of Good Repair and right-sizing maintenance plans through Reliability Centered Maintenance. Metro has made tangible progress on improving the utilization of maintenance hours. Investments in technology and better planning and coordination has resulted in a 75% increase in productive "wrench" hours since the start of FY2018. Better utilization of overnight maintenance hours creates opportunity to increase service hours for customers starting in FY21.

Starting in FY21, Service Hours can be increased by four hours a week, restoring 50% of the hours cut in 2016. Service would be extended to midnight Monday through Thursday and to 2AM on Friday and Saturday nights. Sunday service hours will not be changed; instead rail service will be increased to match Saturday service (12 min headway from terminals).

Safety and reliability remain the priority; all necessary maintenance and State of Good Repair programs will be completed as planned. In order to expand late night service, Metro will use late night bus-bridges and single tracking as needed; target Customer OTP may be adjusted to reflect the impact of increased late night and weekend work required to sustain maintenance programs.

The table below shows the proposed hours compared to current hours as well as the impact of reverting to the FY16 hours:

	<b>Current Service Hours</b>	<b>Proposed Service Hours with Increased Sunday Frequency</b>	<b>Revert to FY16 Hours</b>
Service Hours	M-Th: 5am-11:30pm F: 5am-1am Sa: 7am-1am Su: 8am-11pm	M-Th: 5am- <b>Mid</b> F: 5am- <b>2am</b> Sa: 7am- <b>2am</b> Su: 8am-11pm	M-Th: 5am- <b>Mid</b> F: 5am- <b>3am</b> Sa: 7am- <b>3am</b> Su: <b>7am-Midnight</b>
Hrs Returned to Service	0	4	8
Efficiency or Recovery of	0	53,604 hours (22%)	82,590 hours (35%)

Maintenance Hours Needed			
Required Rail Service Adjustments	None	Additional Weekday Single Tracking and Shutdowns (After 10pm). Increase Sunday peak to 12 min. frequency	Additional Mid-day Single Tracking and Weekday and Weekend Single Tracking and Shutdowns
Impact to Customer OTP Target	0%	-1%	-5% and cancel Rush Hour Promise
Ridership Impact (in M)	0	0.9	0.9
Revenue Impact (in M)	\$0	\$2.3	\$2.3
Operating Cost	\$0	\$8.6	\$9.8
Net Cost to Jurisdictions	\$0	\$6.3	\$7.5

#### **FUNDING IMPACT:**

The previous table explains the financial impact	
Project Manager:	Michael Burke
Project Department/Office:	RAIL/Wayside Work Planning

#### **TIMELINE:**

<b>Previous Actions</b>	<p>November 2016 – Resolution 2016-52 - Approval of Metrorail Span of Service and Supplemental Bus Service Recommendations and Title VI Equity Analysis</p> <p>May 2018 – Resolution 2018-18 - Continuation of Reduced Metrorail Span of Service and Supplemental Bus Service</p> <p>February 2019 – Resolution 2019-06 - Continuation of Reduced Metrorail Span of Service and Supplemental Bus Service</p> <p>November 2019 – Board Presentation on Overnight Maintenance and Proposed Hours of Service for FY21</p>
<b>Anticipated actions after presentation</b>	April 2020 – Action on service hours

#### **RECOMMENDATION:**

Staff recommends that the Safety and Operations Committee review the proposed Metrorail service changes.

# Preventive Maintenance and Metrorail Span of Service

Safety and Operations Committee  
March 12, 2020



# Purpose

- Seek committee input on the levels of service proposed in the FY21 budget
- Reaffirm commitment to safety and the importance of overnight work to State of Good Repair (SOGR) and Capital Program
- Review Preventive Maintenance (PM) progress
- Report efficiency and productivity gains in overnight maintenance

# History of Current PM Program & Service Hours

Pre-SafeTrack (FY98-16):

- Doubled service & cut work hours to **33 hours/week**
- **Lowest Customer On-time Performance (OTP): 68.9% – May 2016** (Excludes SafeTrack)

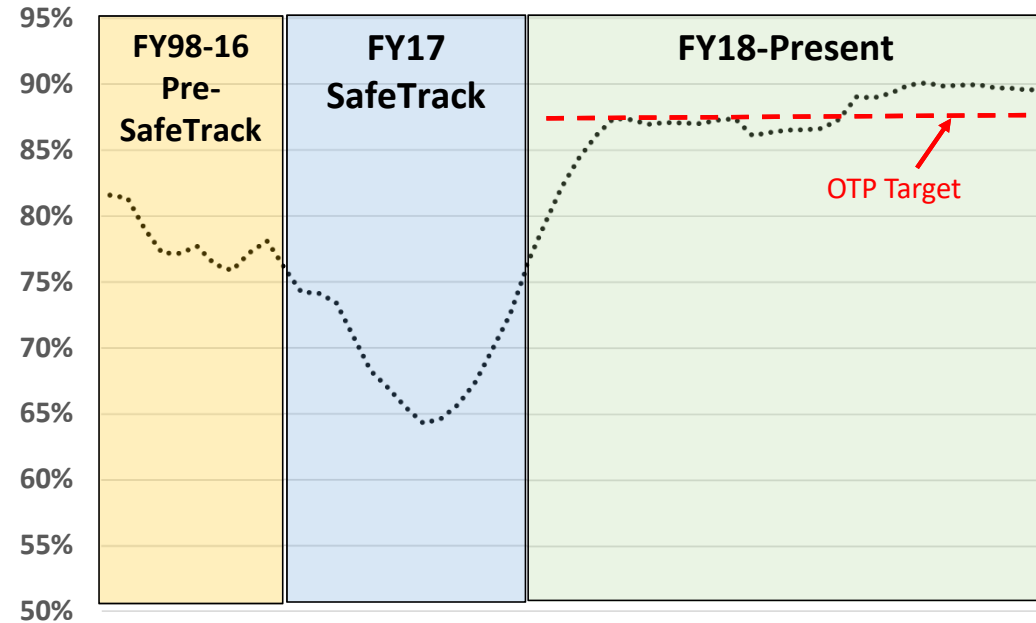
FY17: WMATA conducted SafeTrack and developed comprehensive maintenance programs

- Low OTP during SafeTrack: 61.2%

FY18-Present: Investing in Capital Renewal & Preventive Maintenance

- **7-year high for Customer OTP**
- **90% OTP through Q2 of FY20**

OTP Six Month Rolling Average





# More maintenance time means “more on-time”

Increased Maintenance and SOGR is Leading to Improved Service and Reliability

- On-Time Performance **improved to a 7-year high** 90% in Q2 FY20
- Service disruptions are **down more than 50%**
- Track Infrastructure incidents are **down more than 85%** from FY2017
- Track Electrical Fires are **down 30%** over the same period

# Overnight Window is critical for many purposes

## Capital

- Cellular Network & Radio Infrastructure Project (5 CAPs)
- Traction Power Renewal (2 CAPs)
- Tunnel Ventilation & Smoke Detection (7 CAPs)
- Tunnel Lighting

## Power Infrastructure

- State of Good Repair Cable Replacement (4 CAPs)
- Emergency Trip Station PM (1 CAP)
- Heat Tape PM (2 CAPs)

## Track Infrastructure

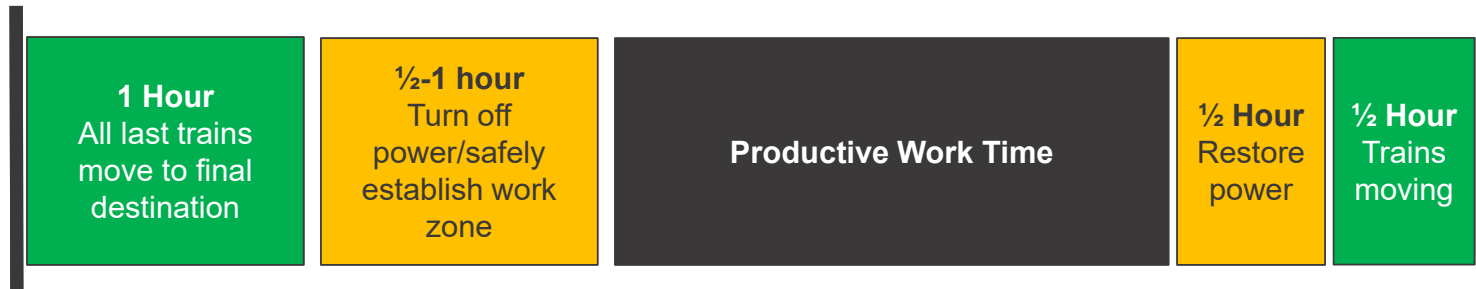
- State of Good Repair Fastener & Rail renewal (1 CAP)
- Drain Rodding (2 CAPs)
- Rail Grinding (1 CAP)
- Joint Elimination (2 CAPs)
- Leak Mitigation (2 CAPs)

## CAP & PM Programs Update

- Closed 47 of 64 Corrective Action Plans (CAPs) related to Maintenance and Inspection Programs
  - Seven more submitted for closure (currently under review); 10 are open
- Efficacy of PM programs are evaluated annually

Targeted Issue	Program	% Complete Q2 FY2020
Electrical Fires	Track Bed Cleaning (annual)	48%
	Cable Megger Testing (4-year)	70%
	Stray Current Testing (5-year)	31%
Track Defects	Switch Maintenance	100%

Maximizing efficiency and productivity of overnight track access is key to restoring late-night service hours



**Increasing service** without compromising safety and reliability **requires:**

1. Increasing **productivity** of crews
2. Increasing **efficiency** of ROW access
3. Increasing **effectiveness** of work: Achieving SOGR and right-sizing maintenance plans through Reliability Centered Maintenance

# Proposed Service Hours

- Monday-Saturday: Add 4 hours of service per week
  - Extend weekday closing to midnight
  - Extend Friday & Saturday to 2AM
- Sunday:
  - Keep current Sunday hours to maintain time for maintenance
  - Improve service provided to 12 min headway, 6 min on Red Line (same as Saturday)
- May require late night bus bridges, single tracking and OTP adjustments

	Current Service Hours	Proposed Service Hours
<b>Monday-Thursday</b>	5AM-11:30PM	5AM-midnight
<b>Friday</b>	5AM-1AM	5AM-2AM
<b>Saturday</b>	7AM-1AM	7AM-2AM
<b>Sunday</b>	8AM-11PM	8AM-11PM

# Improving Sunday Service

Increase ridership on Sunday by increasing frequency of trains

- Improve from 15- to 12-minute frequency on Sat/Sun, all lines except Red Line with six-minute headways (trains every 4-6 minutes in the core)
- Goal: 10% improvement in customer travel time
- Estimated to add 0.5 million trips annually; \$1.1 million fare revenue
- Operating cost of \$3.6 million; Net Cost to Jurisdictions \$2.5 million

## Impact of Proposed Service Improvements

	Extend Weekday and Weekend Late Night	Sunday Increased Frequency	Combined Proposal
Service Hours	M-Th:5AM - <b>Mid</b> ; F:5AM - <b>2AM</b> Sa:7AM - <b>2AM</b> ; Su:8AM - 11PM	n/a	M-Th:5AM - <b>Mid</b> ; F:5AM - <b>2AM</b> Sa:7AM - <b>2AM</b> ; Su:8AM - 11PM
Hours Returned to Service	4	n/a	4
Efficiency or Recovery of Maintenance Hours Needed	53,604 hours (22%)	n/a	53,604 hours (22%)
Impact to Regular Service	Additional Single Tracking and Bus Bridges after 10p (all nights)	Increase Sunday peak HW to 12 min; 6 min on Red Line	Improved Sunday daytime, degraded service after 10p
Customer OTP Target	-1%	0%	-1%
Ridership Impact	0.4 m	0.5 m	0.9 m
Revenue Impact	\$1.2 m	\$1.1 m	\$2.3 m
Operating Cost	\$5.0 m	\$3.6 m	\$8.6 m
Net Cost to Jurisdictions	\$3.8 m	\$2.5 m	\$6.3 m

## Recommendation

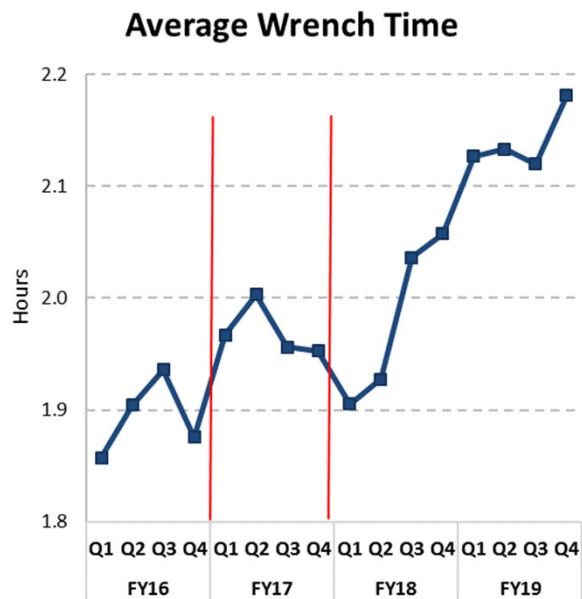
Staff recommends that the Safety and Operations Committee review the proposed Metrorail service changes



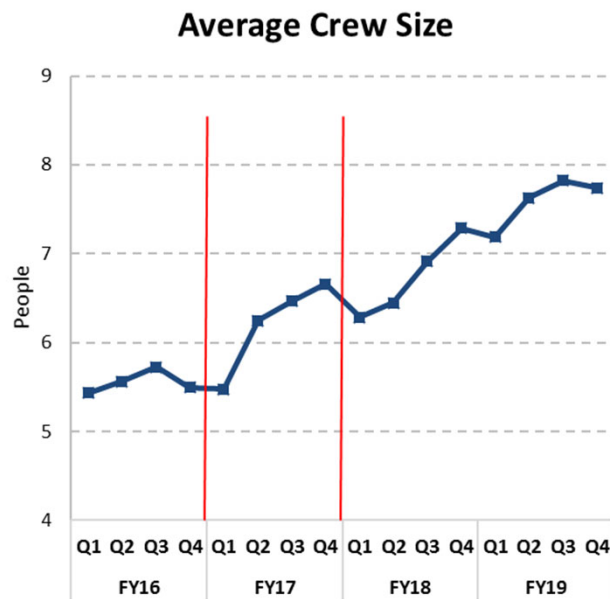
# Appendix

# Factors Contributing to Increased Production

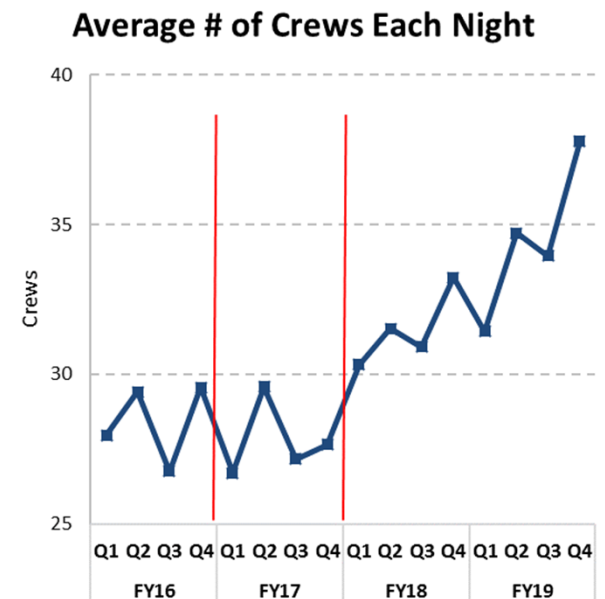
## Longer Wrench Times



## Larger Crews

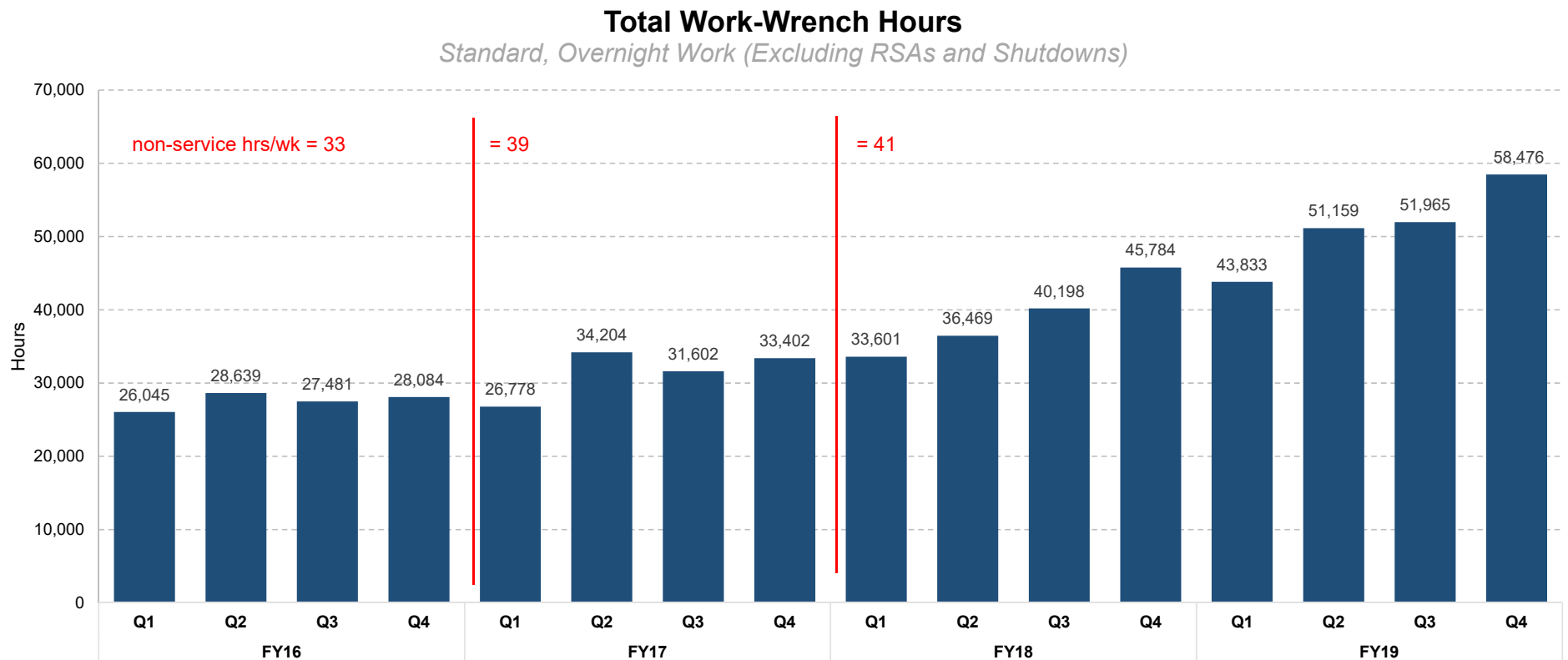


## More Crews each Night



## Metrorail Service Hours

WMATA has increased production by 75% since the service hours change in Q1 FY18

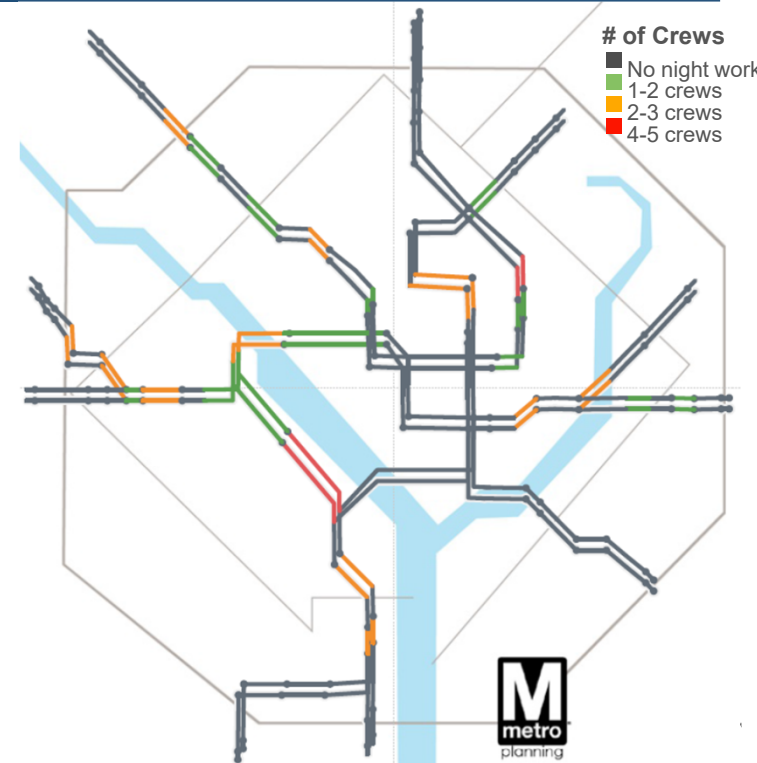


# Reverting to FY16 Hours Will Reduce Maintenance Time

No amount of single-tracking can make up for losing maintenance windows

- Reverting to FY16 Service hours will cut productive track time significantly as Friday and Saturday nights will be too short to be productive
- Single tracking cannot replace the work wrench hours lost
  - Typical weeknight: 38 crews work system wide
  - 1 single track can safely and efficiently support ~3 crews, if their access needs align

→ 3 RSAs per day X 3 crews each = 9 crews/day



RECOMMENDATION BY THE SAFETY AND OPERATIONS COMMITTEE  
REGARDING METRORAIL SPAN OF SERVICE

WHEREAS, The Safety and Operations Committee provides continual oversight and recommends policies to assure that all facilities, equipment and operations of the transit system are safe and secure for passengers, employees, and the public affected by WMATA services; and

WHEREAS, The Board, through the Finance and Capital Committee, is reviewing the public hearing record developed in response to Docket 20-02 *Proposed FY2021 Operating Budget and Related Service and Fare Proposals*; and

WHEREAS, The Safety and Operations Committee has reviewed the proposal to establish a new span of service for Metrorail as shown on Attachment A and is satisfied that the proposed changes to Metrorail's operating hours will allow for sufficient time, in conjunction with planned, extended outages, to adequately address issues of system safety and to maintain a state of good repair;

NOW, THEREFORE, the Safety and Operations Committee

*RECOMMENDS* to the Finance and Capital Committee the proposed Metrorail service changes shown on Attachment A as the new Metrorail span of service for inclusion in its deliberations on the proposed Fiscal Year 2021 Operating Budget.

This recommendation is not a determination regarding compliance with Title VI nor an action of the Board on these matters.

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Michael Goldman  
Chair, Safety and Operations Committee

Attachment A

**Proposed Metrorail Service Changes**

<b>1</b>	<b>Better Weekend Metrorail Service: Operate Saturday Headways on Sundays</b>
	Reduce Orange/Silver/Yellow/Green/Blue Line Sunday Daytime headway from 15 minutes to 12 minutes
	Reduce Red Line Sunday Daytime headways from 8 minutes to 6 minutes
<b>2</b>	<b>Restore Rail Late Night Hours: Add Four Hours of Service Per Week</b>
	Trains would operate an additional four hours per week staying open 30 additional minutes Monday through Thursday (until midnight)
	One additional hour on Fridays and Saturdays (until 2:00 a.m.)
<b>3</b>	<b>Weekday Early Morning Right-sizing: Widen Weekday Headway before 6 a.m.</b>
	Increase Weekday headways on all Lines before 6:00 a.m. from 8 minutes to 12 minutes