

FMCB Commuter Rail Update

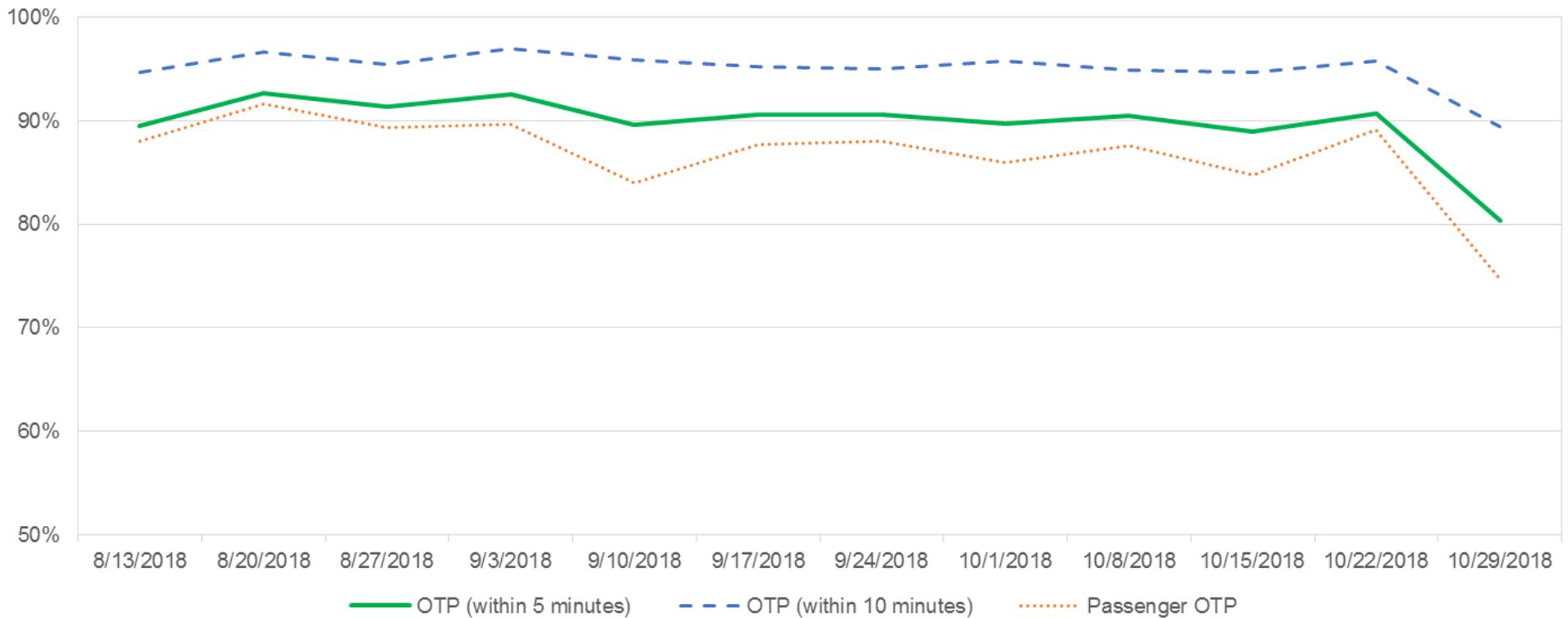
November 19, 2018



On Time Performance: Currently affected by slippery rail season



On Time Performance (OTP) by Week



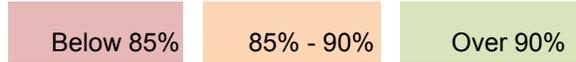
0 *October data not yet finalized

OTP Within 5 Minutes



	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018	June 2018	July 2018	August 2018	September 2018	October 2018	Trailing Year Average
Fairmount	98.0%	96.6%	97.9%	92.9%	96.8%	96.4%	97.9%	97.9%	95.3%	96.8%	95.2%	94.1%	97.2%	96.4%
Fitchburg	79.9%	70.8%	84.6%	76.0%	91.7%	87.5%	86.7%	84.9%	87.0%	85.5%	88.0%	88.1%	87.1%	84.4%
Franklin	82.5%	85.4%	87.3%	82.5%	91.8%	88.6%	89.2%	82.5%	84.9%	77.8%	80.2%	84.8%	82.8%	84.5%
Greenbush	85.3%	95.2%	95.3%	90.7%	94.5%	85.7%	98.0%	94.6%	95.4%	93.5%	93.7%	94.7%	94.6%	93.1%
Haverhill	74.7%	78.3%	86.9%	82.7%	88.9%	82.4%	90.6%	93.9%	93.0%	92.3%	92.6%	92.5%	92.6%	88.0%
Kingston/Plymouth	84.2%	91.8%	95.0%	88.7%	93.8%	84.8%	94.0%	93.0%	90.1%	90.2%	91.6%	92.7%	90.6%	90.8%
Lowell	88.1%	85.7%	89.9%	80.1%	91.4%	84.9%	90.9%	89.2%	92.7%	91.8%	93.0%	90.6%	89.6%	89.0%
Middleboro	83.2%	88.9%	91.9%	91.3%	89.7%	85.6%	95.7%	90.3%	89.4%	88.1%	88.5%	91.8%	91.3%	89.6%
Needham	90.0%	91.0%	91.4%	87.6%	95.3%	90.0%	91.4%	90.2%	92.0%	88.8%	91.6%	94.6%	89.9%	91.0%
Newburyport	88.5%	89.3%	88.7%	76.1%	93.1%	85.8%	92.2%	92.7%	92.7%	91.9%	89.8%	92.6%	86.8%	89.2%
Providence	86.6%	87.7%	88.9%	83.0%	92.2%	88.1%	86.5%	87.8%	87.1%	81.4%	86.6%	84.0%	82.5%	86.3%
Rockport	86.7%	88.5%	87.5%	76.6%	92.4%	85.5%	92.7%	93.8%	92.2%	93.4%	90.1%	93.4%	86.4%	89.1%
Stoughton	84.8%	85.9%	86.9%	83.0%	89.7%	86.5%	86.9%	87.1%	88.7%	81.1%	82.7%	84.3%	82.4%	85.3%
Worcester	79.5%	89.5%	93.9%	86.7%	92.0%	89.6%	90.8%	88.0%	83.0%	78.9%	88.5%	93.3%	85.7%	87.6%
Grand Total	85.1%	87.3%	90.4%	83.9%	92.4%	87.5%	91.4%	90.3%	90.0%	87.8%	89.4%	90.8%	88.4%	88.8%

0 * October data not yet finalized

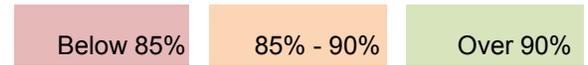


OTP Within 10 Minutes



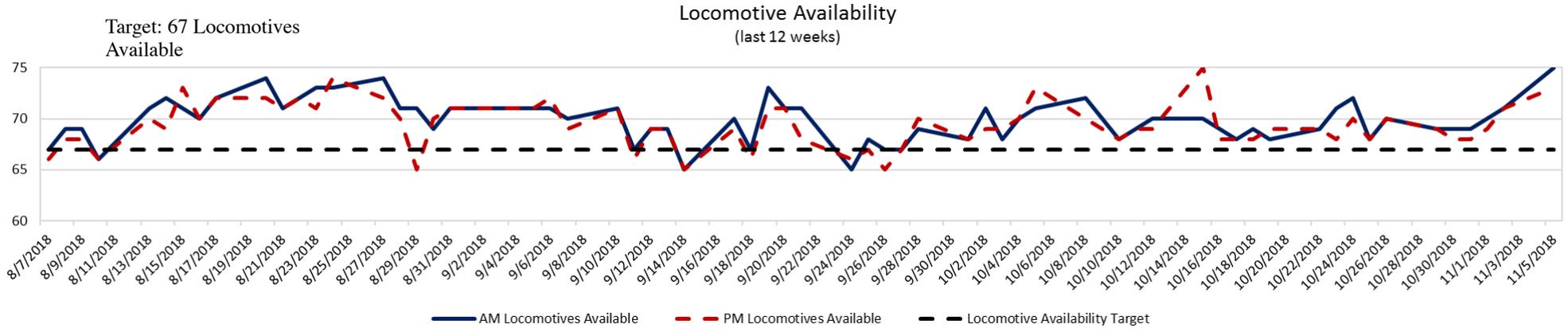
	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018	June 2018	July 2018	August 2018	September 2018	October 2018	Trailing Year Average
Fairmount	98.8%	98.6%	99.3%	95.1%	98.8%	98.4%	99.3%	99.5%	97.8%	98.8%	97.2%	97.2%	98.6%	98.3%
Fitchburg	90.7%	85.7%	91.9%	84.2%	96.2%	93.1%	93.1%	93.2%	92.9%	93.0%	94.4%	93.7%	93.6%	91.9%
Franklin	91.4%	92.4%	94.8%	89.6%	96.2%	94.4%	95.5%	91.9%	93.1%	87.5%	89.2%	92.2%	91.0%	92.2%
Greenbush	95.4%	97.5%	97.6%	93.8%	97.3%	89.5%	98.9%	97.3%	97.8%	95.8%	96.8%	96.5%	96.9%	96.2%
Haverhill	87.1%	88.4%	92.7%	89.1%	95.3%	89.8%	96.2%	96.5%	97.0%	96.5%	96.0%	96.5%	97.0%	93.8%
Kingston/Plymouth	95.4%	96.5%	98.8%	92.5%	97.8%	89.3%	98.0%	96.6%	96.0%	95.8%	96.0%	96.2%	94.7%	95.6%
Lowell	95.3%	95.4%	95.4%	90.0%	97.4%	92.1%	96.9%	96.7%	97.4%	97.0%	97.4%	96.5%	95.5%	95.6%
Middleboro	96.3%	96.0%	95.4%	94.3%	95.3%	91.1%	98.3%	95.4%	95.2%	94.0%	92.2%	95.1%	94.7%	94.9%
Needham	96.4%	94.6%	96.8%	93.5%	98.9%	96.2%	96.8%	95.1%	96.7%	94.9%	96.6%	98.7%	95.3%	96.1%
Newburyport	95.0%	96.3%	96.2%	82.6%	97.3%	91.2%	97.1%	97.2%	96.2%	98.2%	96.1%	97.6%	93.5%	94.9%
Providence	93.4%	94.5%	93.7%	89.4%	96.9%	92.9%	94.0%	94.1%	94.3%	90.8%	93.9%	92.5%	91.9%	93.2%
Rockport	92.6%	94.4%	94.3%	81.5%	96.1%	90.6%	96.4%	97.2%	97.4%	97.0%	94.6%	98.1%	93.8%	94.1%
Stoughton	92.9%	95.9%	94.3%	90.9%	94.9%	94.0%	94.7%	94.4%	94.2%	89.9%	90.3%	92.8%	89.8%	93.0%
Worcester	90.8%	95.3%	97.3%	91.8%	96.1%	93.9%	96.2%	94.7%	90.2%	88.1%	93.7%	96.5%	91.9%	93.6%
Grand Total	93.5%	94.3%	95.5%	89.8%	96.8%	92.8%	96.4%	95.7%	95.3%	94.0%	94.6%	95.7%	94.1%	94.5%

0 * October data not yet finalized



Equipment Availability

Record 386 coaches in service for the Red Sox parade on 10/31

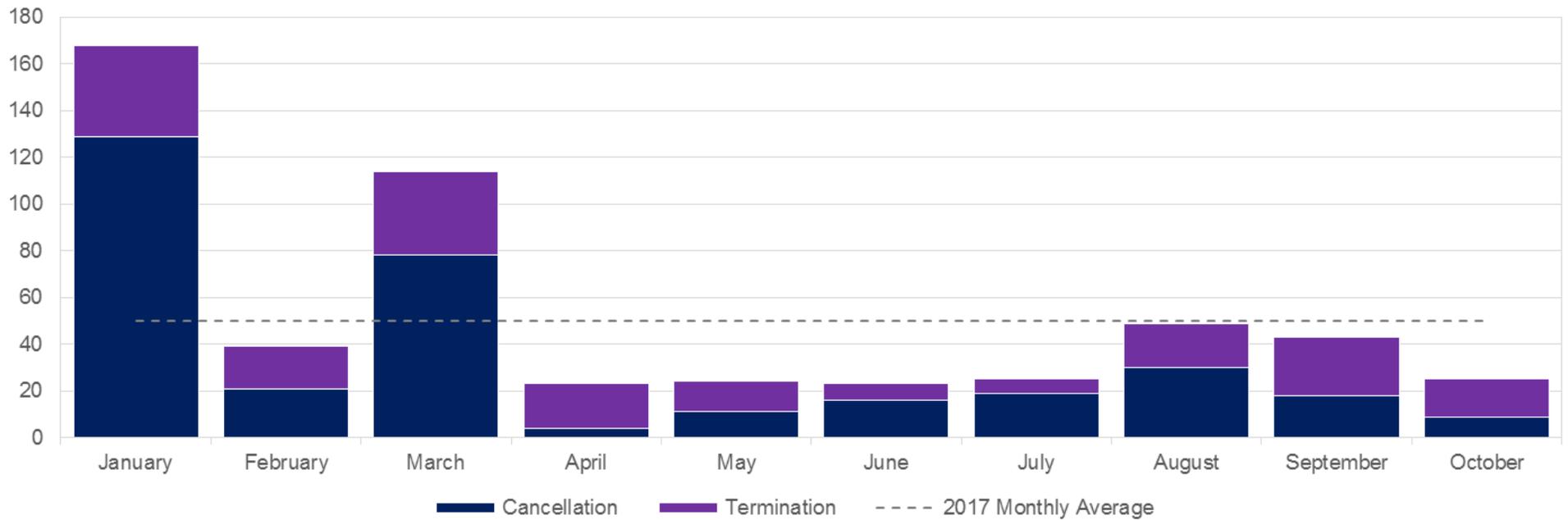


0

Cancellations and Terminations

Winter storms significantly impacted early 2018 total cancellations and terminations

2018 Cancellations and Terminations



0

Slippery Rail Investments & Early Results



0

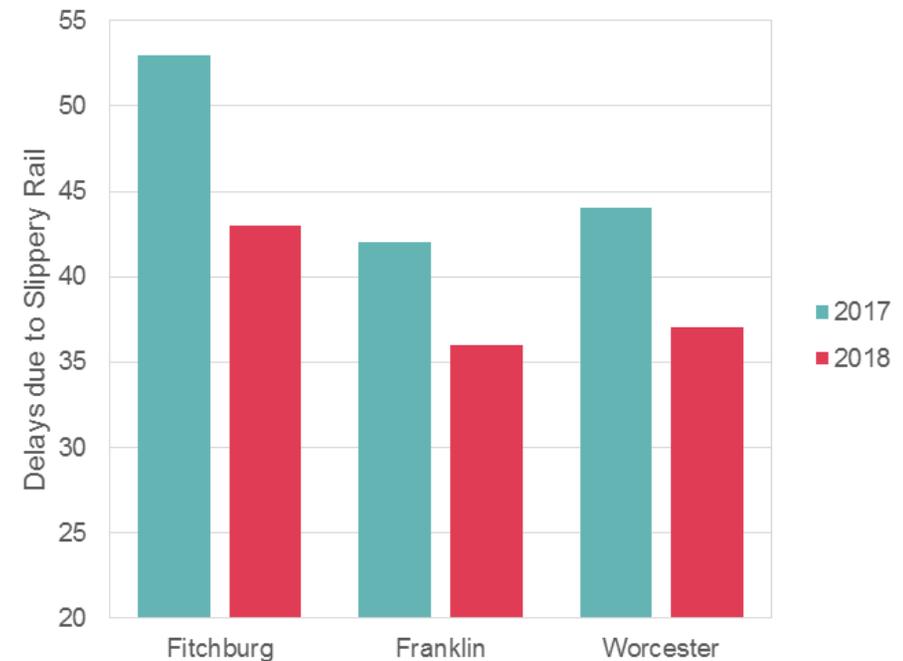
KEOLIS



Slippery Rail Investments & Early Results

- New, faster wash train has dramatically improved railhead treatment
- Able to cover 3 – 4 times more distance per shift
- Enables midday washing when necessary
- Allows improved application of traction gel in targeted areas
- Vegetation management in key historical hotspots is showing improvements on critical slippery rail lines
- From October 10 – November 6, only six days under 85% OTP in 2018, versus 11 in 2017
- One challenging weekday on November 5th due to excessive leaf fall and wet conditions

Number of Slippery Rail Delays on Key Vegetation Management Lines
(October 10 - November 5)





HSP46 Locomotive Reliability Improvement

- HSP46 fleet modifications
 - FMI Phase 1 and 2 complete
 - FMI Turbocharger replacement program complete
 - FMI Guru valve replacement program complete
- FMI phase 3 program underway
 - Planned as the final FMI program, resolving outstanding issues with the fleet – 2/40 complete
- Water/ snow ingress risk
 - Containment modification underway to reduce risk of failure - 20/40 completed (planned to complete within 3 weeks)
 - Major modification to reseal the auxiliary cabinets and replace damaged electronic components (Part of FMI 3)

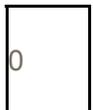
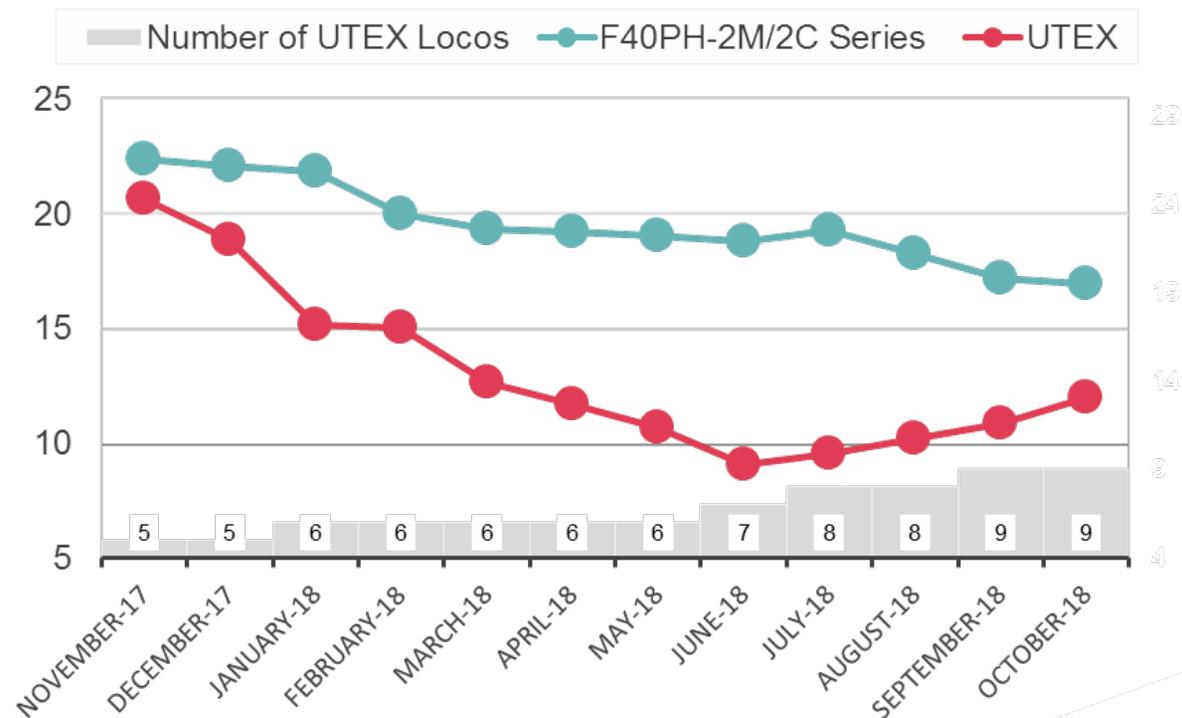




UTEX Performance

- UTEX fulfills two functions:
- Returned 5 non-functioning locomotives to service
- Replaced 'life expired' major components, extending the life of the locomotive by 5-7 years
- UTEX locos (previously the worst performing locomotives) are experiencing fewer failures per 100,000 miles than the rest of the F40 fleet

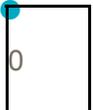
UTEX vs F40PH-2M/2C Performance
Failures per 100,000 miles





Legacy Locomotive Fleet Investment Programs

- F40 Overhaul in Boise, ID
 - 10 of the worst performing F40 locomotives being fully rebuilt
 - Extends the life of the locomotive up to 20 years
 - First completed unit to be shipped in January 2019; tenth unit complete by September 2019
- GP40 Overhaul in Rochester, MA
 - 4 of the oldest locomotives being fully rebuilt
 - Extends the life of the locomotive up to 20 years
 - When eventually retired from revenue service, these 4 locos will become “work trains”
 - First completed unit expected January 2019; fourth unit complete by December 2019
- Engine replacement program
 - Plan to replace main engines on the most at risk locomotives not receiving an overhaul
- UTEX phase 3 under consideration
 - Focused on the GP40 fleet
 - Scope modified to build on lessons from phases 1 and 2



F40 Locomotive Overhaul – First Completed Unit in Boise, ID



BEFORE



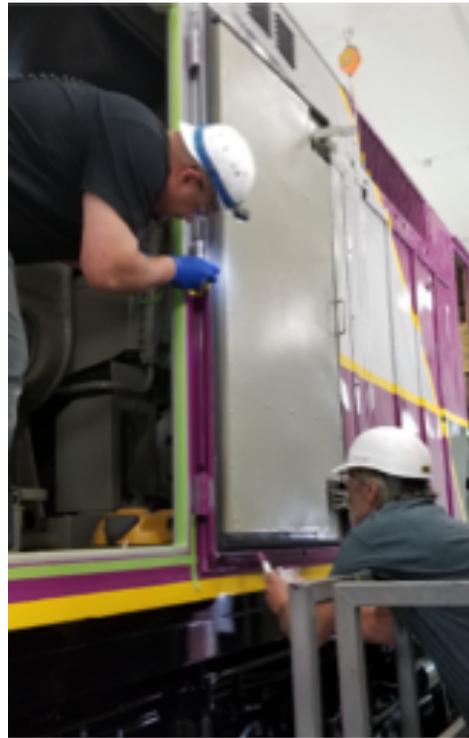
AFTER



F40 Locomotive Overhaul – Production Schedule



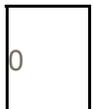
Locomotive	Projected Ship Date
Unit 1 - #1054	Jan. 2019
Unit 2 - #1050	Mar. 2019
Unit 3 - #1032	Apr. 2019
Unit 4 - #1061	May 2019
Unit 5 - #1028	May 2019
Unit 6 - #1068	Jun. 2019
Unit 7 - #1063	Jul. 2019
Unit 8 - #1075	Jul. 2019
Unit 9 - #1035	Aug. 2019
Unit 10 - #1031	Sept. 2019



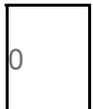
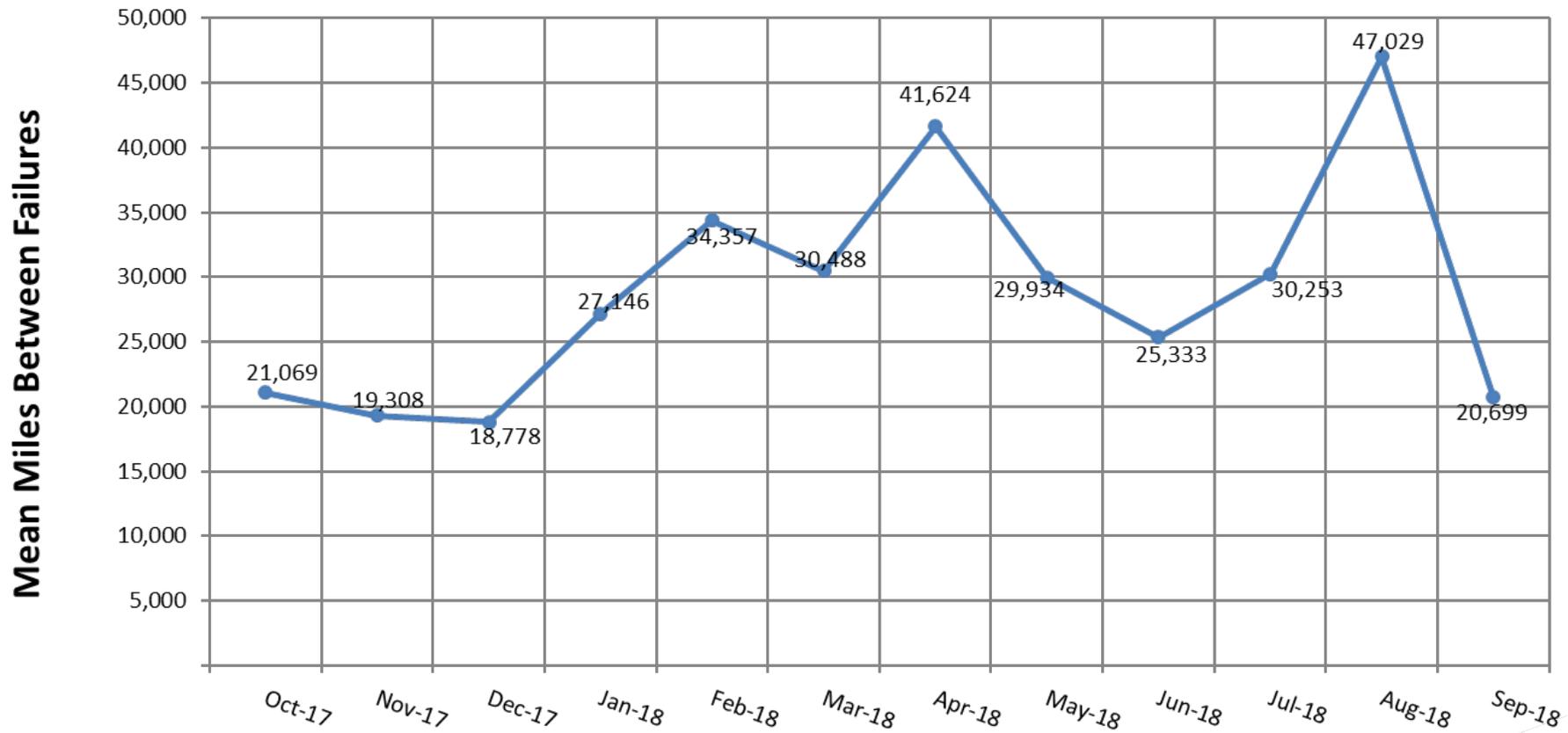
GP40 Locomotive Overhaul at MBTA Rochester Facility



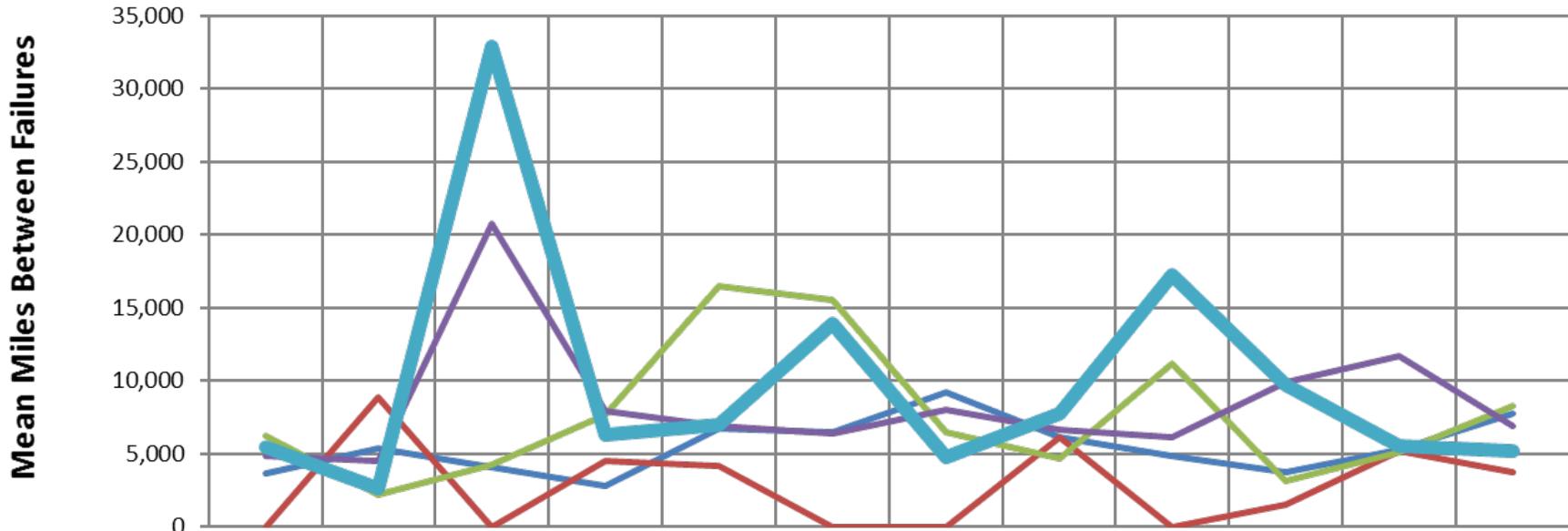
Locomotive	Projected Completion Date
Unit 1 - #1136	Jan 2019
Unit 2 - #1137	Apr 2019
Unit 3 - #1118	Aug 2019
Unit 4 - #1132	Dec 2019



HSP-46 (MPI) Locomotive Fleet Performance



Legacy Locomotive Fleet Performance



	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
GP40MC	3,611	5,318	4,022	2,743	6,710	6,412	9,167	6,137	4,795	3,703	5,237	7,776
MP36-3C		8,874		4,524	4,122			6,073		1,503	5,213	3,689
F40PH-2C	6,196	2,198	4,268	7,613	16,431	15,556	6,413	4,629	11,144	3,091	5,062	8,254
F40PH-2M	4,871	4,490	20,696	7,909	6,907	6,342	7,976	6,659	6,142	9,876	11,710	6,881
UTEX	5,458	2,621	32,834	6,271	6,949	13,928	4,724	7,714	17,231	9,671	5,534	5,172

0

Appendices



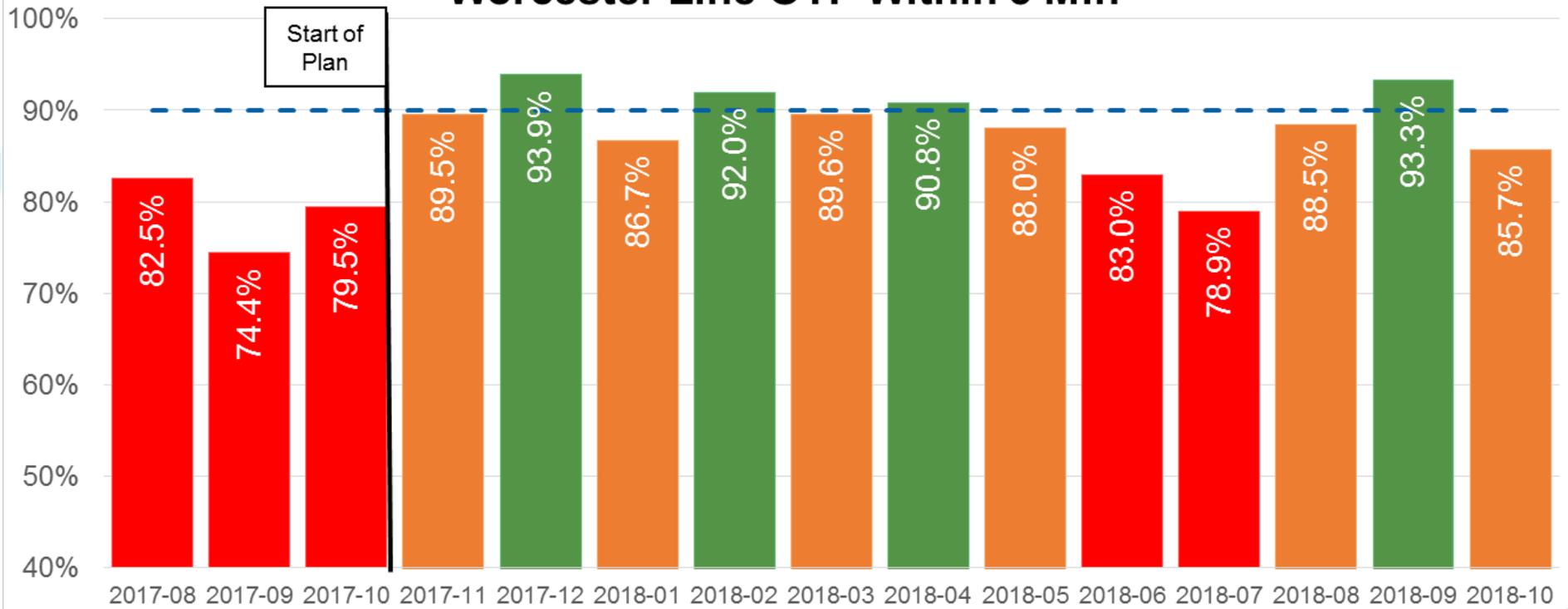
↑ EMERGENCY ENTRY ↑



Worcester Line Plan



Worcester Line OTP Within 5 Min



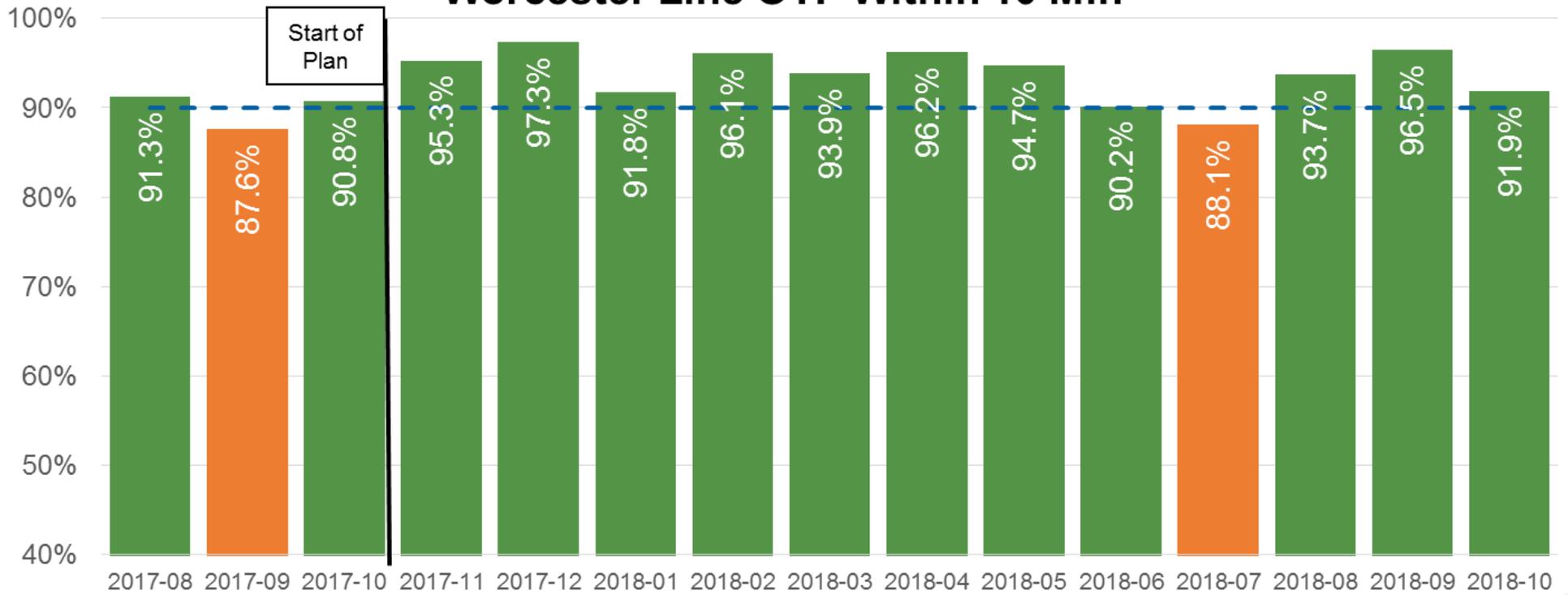
0

* October data not yet finalized

Worcester Line Plan



Worcester Line OTP Within 10 Min

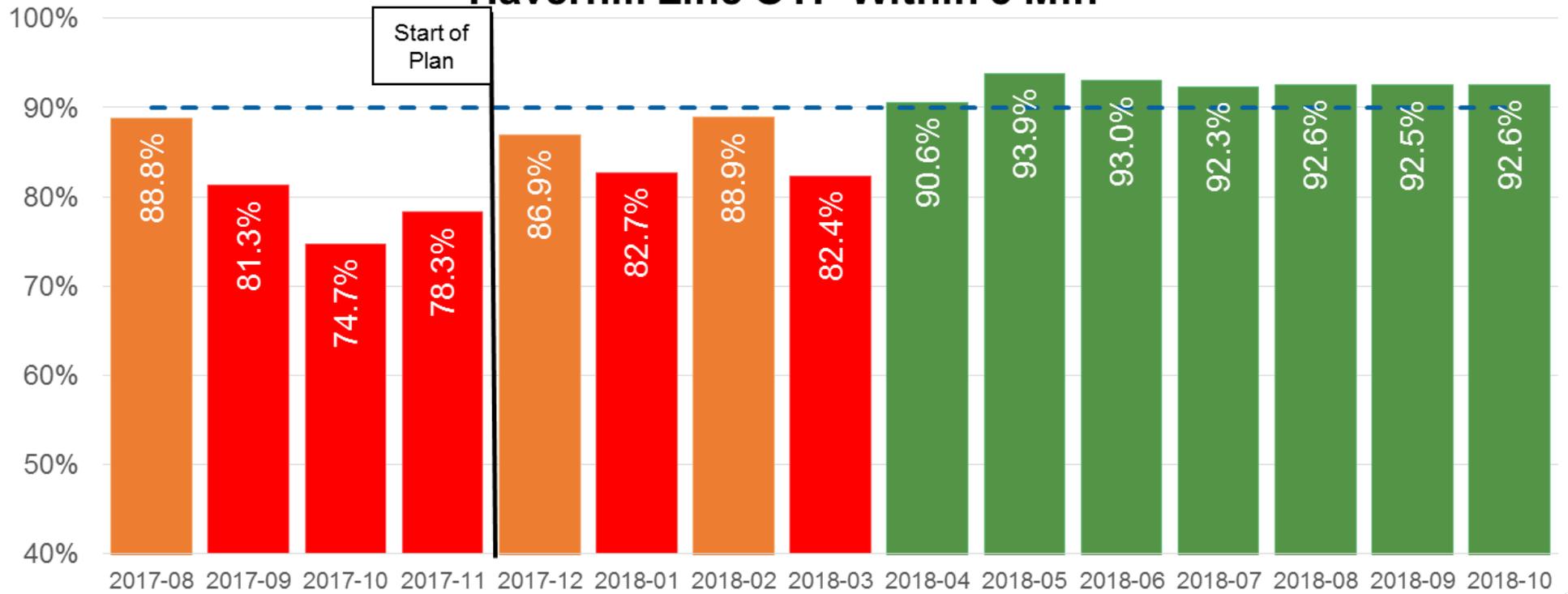


0 * October data not yet finalized

Haverhill Line Plan



Haverhill Line OTP Within 5 Min

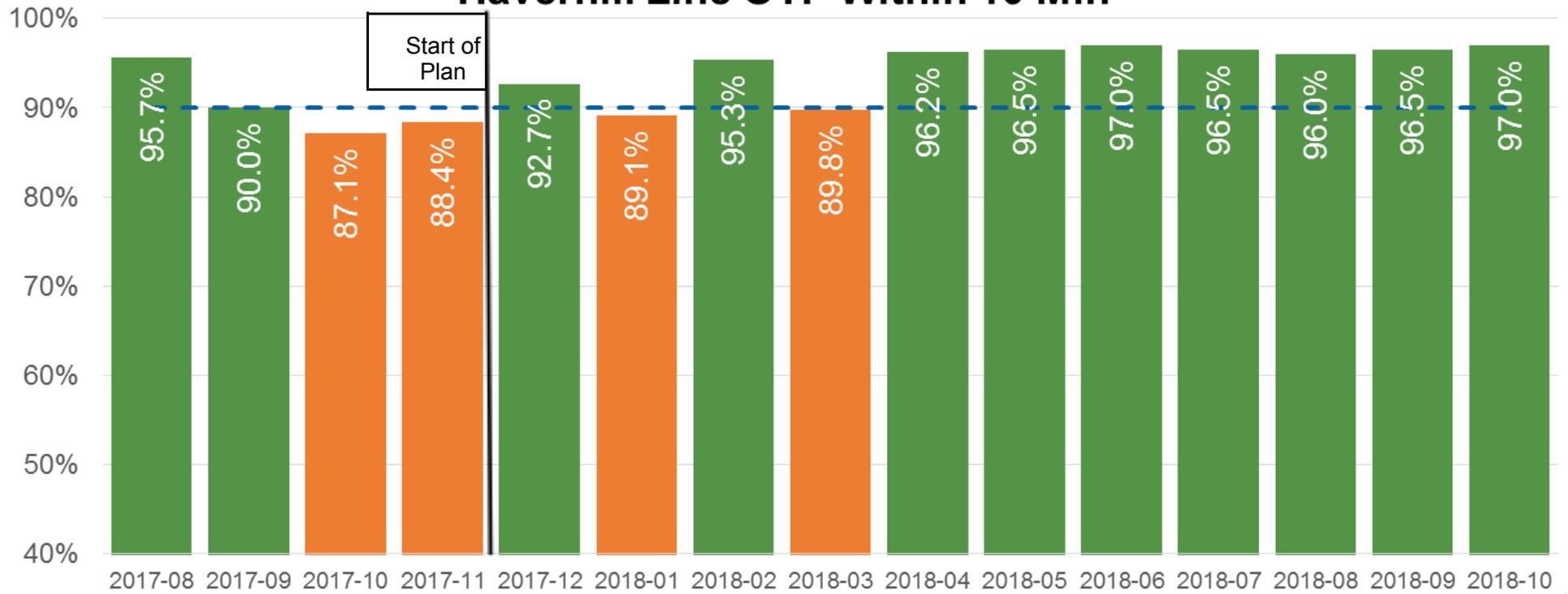


0 * October data not yet finalized

Haverhill Line Plan



Haverhill Line OTP Within 10 Min



0 * October data not yet finalized



Commuter Rail Heavy Maintenance Facility – Rochester, MA

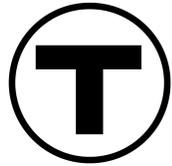
MBTA purchased the facility in May 2018

- Planned improvements include:
 - Shop interior lighting
 - Heat and ventilation
 - Extend interior track
 - Install wheel truing machine
 - Compressed air system
 - Locomotive work areas

- Projects underway and upcoming:
 - GP40 locomotive overhaul (4)
 - Create PTC test coaches
 - HSP46 fleet modification
 - MBB coach overhaul
 - Cape Flyer vehicle support
 - APC device installation



0



Fleet Investment Program Recap

Program	# of Locos	Cost	Anticipated Completion	Actual Completion	Service Life Extension
Short-term Recovery	14 to date	\$2M to date	Ongoing	Completed	Return to Service
UTEX Phase I	5	\$6M	Aug. 2017	Aug. 2017	6 years
UTEX Phase II	5	\$6M	Apr. 2018	Dec. 2018	6 years
F40 Overhaul	10	\$27M	Aug. 2018	Aug. 2019	Up to 20 years
GP40 Overhaul	4	\$6M	Sep. 2018	Dec. 2019	Up to 20 years
MP36 Top Deck Overhaul	2	\$2M	Feb. 2018	Under review	Up to 10 years