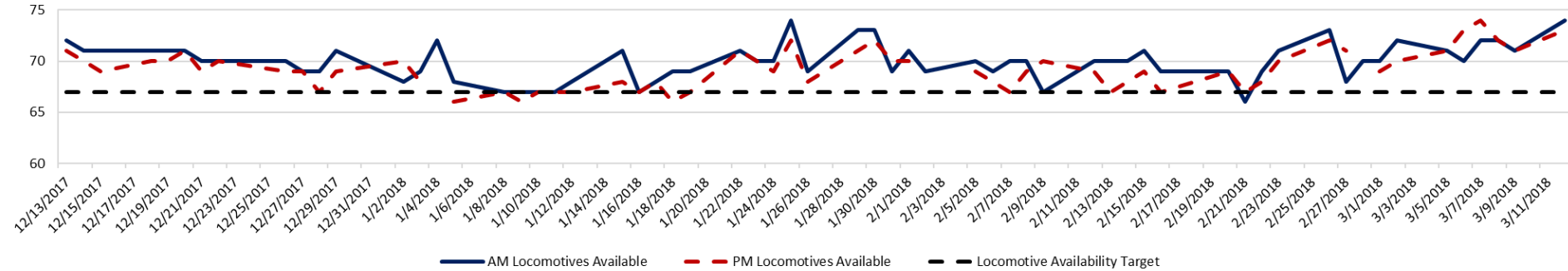# FMCB Commuter Rail Update

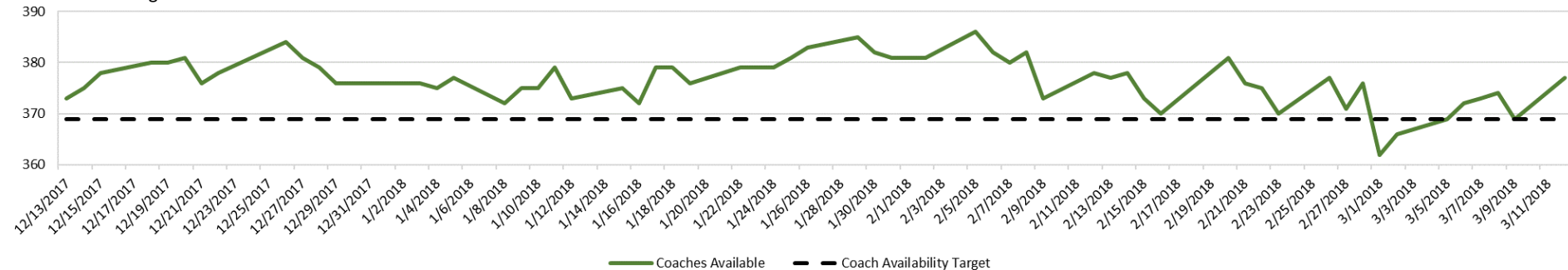March 19, 2018

Equipment Availability

Locomotive Availability
(last 12 weeks)

Target: 67 Locomotives Available

Coach Availability
(last 12 weeks)

Target: 369 Coaches Available

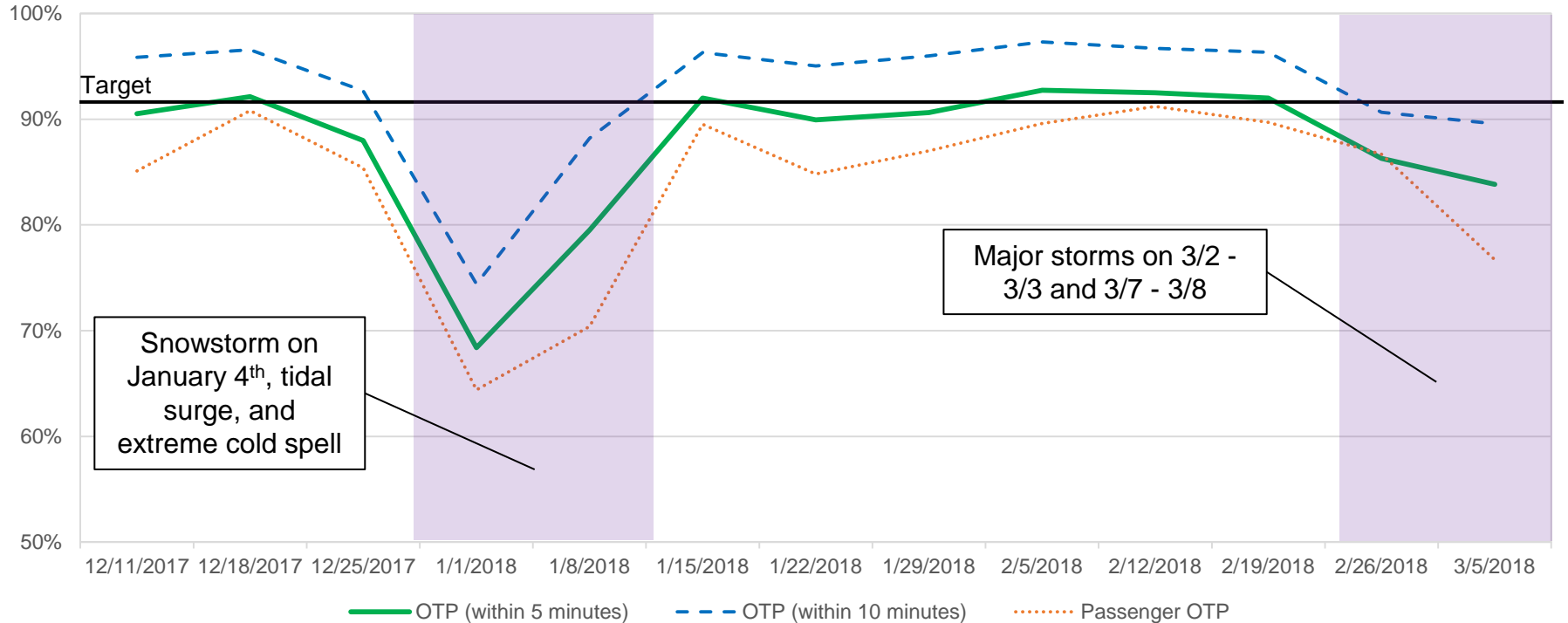# On Time Performance

On Time Performance (OTP) by Week

Snowstorm on January 4th, tidal surge, and extreme cold spell

Major storms on 3/2 - 3/3 and 3/7 - 3/8

Target

Legend:
- OTP (within 5 minutes)
- OTP (within 10 minutes)
- Passenger OTP

OTP Within 5 Minutes

	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017	September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	Trailing Year Average
Fairmount	96.4%	97.6%	95.8%	97.3%	98.3%	97.3%	97.5%	98.0%	96.6%	97.9%	92.9%	96.8%	96.8%
Fitchburg	80.9%	88.1%	91.1%	85.7%	88.9%	89.7%	91.3%	79.8%	70.8%	84.6%	75.9%	91.7%	84.8%
Franklin	89.0%	88.7%	91.0%	88.7%	88.2%	86.6%	88.6%	82.5%	85.4%	87.3%	82.5%	91.8%	87.5%
Greenbush	94.8%	93.9%	94.6%	95.0%	97.4%	95.3%	95.6%	85.3%	95.2%	95.3%	90.7%	94.5%	93.9%
Haverhill	85.1%	91.9%	90.4%	80.6%	79.0%	88.8%	81.3%	74.7%	78.3%	87.0%	82.7%	88.9%	84.2%
Kingston/Plymouth	91.7%	95.0%	94.0%	92.4%	94.7%	95.1%	95.3%	84.2%	91.8%	95.0%	88.7%	93.8%	92.6%
Lowell	90.2%	94.6%	96.8%	94.8%	95.2%	94.5%	89.1%	88.2%	85.7%	89.9%	80.1%	91.4%	90.9%
Middleboro	92.6%	90.2%	93.0%	88.7%	92.4%	91.2%	90.8%	83.2%	88.9%	91.9%	91.3%	89.7%	90.3%
Needham	92.6%	92.7%	94.7%	91.6%	94.1%	92.3%	92.0%	90.0%	91.0%	91.4%	87.6%	95.3%	92.1%
Newburyport	85.0%	90.5%	94.1%	87.1%	92.5%	87.5%	89.1%	88.5%	89.3%	88.8%	76.1%	93.1%	88.4%
Providence	87.8%	92.2%	89.6%	86.4%	89.0%	89.3%	89.2%	86.6%	87.7%	88.9%	83.0%	92.2%	88.4%
Rockport	87.7%	91.4%	94.1%	89.1%	92.6%	89.1%	83.6%	86.6%	88.5%	87.5%	76.6%	92.4%	88.2%
Stoughton	87.1%	87.6%	87.8%	87.1%	91.0%	89.1%	89.8%	84.8%	85.9%	86.9%	83.0%	89.7%	87.4%
Worcester	81.3%	74.5%	79.3%	69.1%	80.2%	82.5%	74.5%	79.4%	89.5%	93.9%	86.7%	92.0%	81.8%
Grand Total	**88.3%**	**90.3%**	**91.5%**	**87.4%**	**90.3%**	**90.2%**	**88.4%**	**85.1%**	**87.2%**	**90.4%**	**83.9%**	**92.4%**	**88.7%**

Below 85%   85% - 90%   Over 90%

OTP Within 10 Minutes

	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017	September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	Trailing Year Average
Fairmount	98.2%	98.5%	98.2%	98.6%	98.9%	98.2%	99.0%	98.8%	98.6%	99.3%	95.1%	98.8%	**98.3%**
Fitchburg	90.4%	94.3%	96.9%	93.2%	94.3%	94.3%	96.4%	90.6%	85.7%	91.9%	84.1%	96.2%	**92.3%**
Franklin	96.1%	92.9%	96.2%	96.2%	93.9%	94.0%	95.5%	91.4%	92.4%	94.8%	89.6%	96.2%	**94.1%**
Greenbush	97.8%	97.2%	97.5%	97.1%	98.9%	97.6%	98.1%	95.4%	97.5%	97.6%	93.8%	97.3%	**97.2%**
Haverhill	92.1%	95.8%	96.0%	90.4%	90.4%	95.7%	90.0%	87.1%	88.4%	92.7%	89.1%	95.3%	**92.0%**
Kingston/Plymouth	95.8%	97.2%	97.6%	96.2%	97.4%	97.9%	98.8%	95.4%	96.5%	98.8%	92.5%	97.8%	**96.8%**
Lowell	97.0%	97.6%	99.0%	97.4%	98.7%	98.7%	97.5%	95.3%	95.4%	95.4%	90.0%	97.4%	**96.6%**
Middleboro	95.5%	94.4%	96.9%	95.0%	97.6%	96.8%	95.0%	96.3%	96.0%	95.4%	94.3%	95.3%	**95.7%**
Needham	98.5%	97.9%	98.2%	95.9%	97.2%	95.9%	96.6%	96.4%	94.6%	96.8%	93.5%	98.9%	**96.7%**
Newburyport	91.1%	95.1%	98.2%	93.6%	96.5%	95.5%	95.0%	95.0%	96.3%	96.2%	82.5%	97.3%	**94.3%**
Providence	93.2%	95.1%	94.0%	92.6%	94.0%	93.8%	95.1%	93.4%	94.5%	93.7%	89.4%	96.9%	**93.8%**
Rockport	92.5%	96.0%	97.2%	94.6%	96.6%	95.7%	92.4%	92.6%	94.4%	94.3%	81.5%	96.1%	**93.6%**
Stoughton	93.2%	95.2%	94.8%	94.4%	96.0%	95.8%	95.3%	92.9%	95.9%	94.3%	90.9%	94.9%	**94.4%**
Worcester	90.2%	89.2%	88.1%	84.4%	90.4%	91.3%	87.7%	90.7%	95.3%	97.3%	91.8%	96.1%	**91.0%**
Grand Total	**94.2%**	**95.3%**	**96.1%**	**93.9%**	**95.4%**	**95.6%**	**94.9%**	**93.5%**	**94.3%**	**95.5%**	**89.8%**	**96.8%**	**94.6%**

Below 85%   85% - 90%   Over 90%

KEOLIS

March 2 – 3 Storm

- ⊙ Situation
  - In addition to 3- 5 inches of rain this was the third highest sea level since 1825, causing flooding across the north and south shores, knocking out the signal system
  - Hurricane strength winds in some areas
  - 75 trees down across network on storm day, blocking tracks and damaging 25 crossings and 8 trainsets
- ⊙ Actions
  - 100 extra contractors brought in across the railway to assist with tree clearance and platform salting and sanding
  - Put generators in place at multiple locations to protect service
  - Crews deployed across railway to clear trees from tracks
  - Repaired comms and signal issues along entire Greenbush Line
  - Joint command center fully functioning through storm and recovery
- ⊙ Results
  - Recovered to 96% OTP three days after storm

March 7 – 8 Storm

⊙ Situation

- Service started with 76 locomotives available (versus 67 required)
- Over 100 downed trees
- Power outages for several days in many communities and commuter rail locations across network

March 7 – 8 Storm

⊙ Actions

- Over 60 generators deployed, maintaining signal and gates at the vast majority of affected locations
- Nearly entire Greenbush line operated on backup power
- Cleared trees from tracks, and removed an additional 75 trees that were at risk of falling onto the tracks
- Eight trainsets damaged; rapidly repaired and achieved 71 locomotives available on March 9th

⊙ Results

- Recovered to 87% OTP day after storm and 90% two days after

March 13 Storm

⊙ **Situation**
- Service started with 75 locomotives available (versus 67 required)
- Snowfall across entire network (up to 24" in places), gale force winds
- Power outages at several points across network, several trees down, extremely low visibility

⊙ **Actions**
- Reduced service schedule successfully implemented
- Generators pre-positioned, several deployed
- Cleared all snow from platforms, signaling systems, switches,
- Eighteen trainsets with issues (none catastrophic) during extreme storm, all repaired for service next morning
- Flanger, snowfighters and plow used to clear right of way

⊙ **Results**
- OTP day of storm 67%, ZERO train cancellations, T-15 85%, full service operated following day, OTP at 91% on March 15th

Snowstorm Results

OTP (within five minutes)
Recovery After Storms
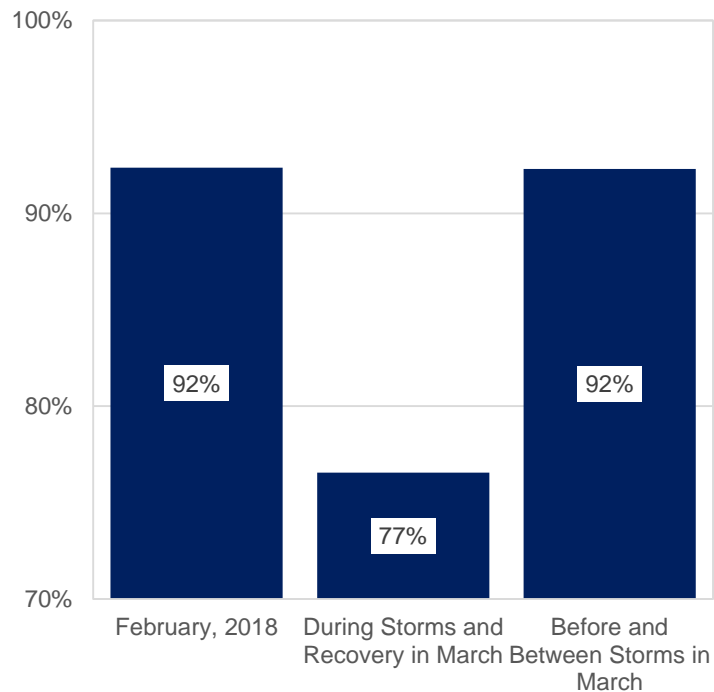
OTP (within five minutes)
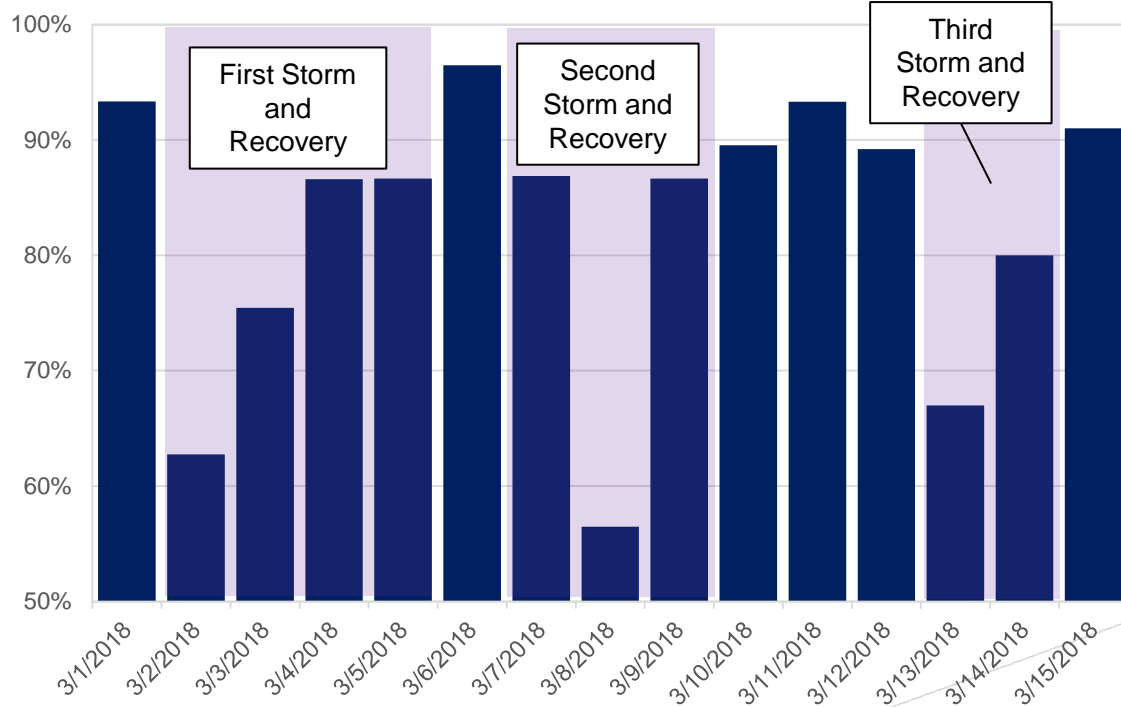
Nor'Easter storms: Learning Points

- Equipment notably more resilient in extreme weather than in 2015

- Pre-planned service reductions, in certain circumstances, helps provide greater certainty for passengers, protect equipment and allow time for network repairs to be made

- External power supply interruptions and downed trees the major impact on network performance

- EOC approach continues to improve storm preparation, management & recovery

- Network Resilience Program is necessary to counteract increasing impacts of extreme weather

* Engineer's view from driving cab during March 13th storm

Winter Storm Lessons Learned

- Purchased 30 additional generators and improved deployment plan to react rapidly to power outages
- Employment of custom built event management app allows tracking and rapid resolution of issues