Commuter Rail Executive Director

Introduction

- Started September 25th

- Initial Observations
  - Challenges
  - Relationship with Keolis
  - Safety
  - Customer Service

- Initial Action Items
  - People
  - Processes
  - Equipment – SGR
Equipment Availability: Generally stable over last 12 weeks

**Locomotive Availability**
(last 12 weeks)

Target: 67 Locomotives Available

**Coach Availability**
(last 12 weeks)

Target: 369 Coaches Available
Cancellations

2017 cancellations trending lower than 2015 and 2016, but still too many

Cancellations YTD
(through Nov. 15 of 2015, 2016, 2017)

Cancellations by Week

Note: 1403 total cancellations in 2015 and 561 in 2016
Causes of Cancellations – 2017 year to date

Cancellations are typically caused by mechanical failures

Top 10 Cancellation Causes (Frequency)

- Equipment issues: 159
- Residual Mechanical Delay: 58
- Residual Extraordinary Delay: 23
- Staffing issues: 15
- Obstruction in Right of Way: 9
- Engine (Prime mover): 7
- Brake System: 7
- Other Mechanical Failure: 6
- Other Engineering Delay: 3
- Other Transportation Delay: 3

Staffing remains a challenge, but significant improvement over 2016 (48)
On Time Performance (of trains that run)

On Time Performance (OTP) by Week

- **OTP**
- **OTP (within 10 minutes of schedule)**
- **OTP Target**
## OTP (Within 5 Minutes) Trends by Month

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### Trends by Month

- Greater than 90%
- 85% - 90%
- Less than 85%
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Commuter Rail Delay Matrix - Process

November Launch

- **Goal:** Identify root causes of delays and corrective actions

- **Process:**
  - Develop monthly Delay Overview by the 5th of each month;
  - MBTA and Keolis managers will meet by the 7th of each month to review delays and develop corrective actions;
  - Commuter Rail Executive Director will receive a report of the month’s action items by the 10th of each month; and
  - In addition, review the previous month’s action items and identify if they have been closed out, are in process, etc.
Commuter Rail Delay Matrix Prototype – September 2017

Minutes of Delay
(excludes residual delays)

- Engineering
- Mechanical
- Transportation/Operations
- Other

Categories: Cab Electronics, Other Mechanical, Locomotive, Servicing, Other Railroad Conflict, Operation/Mechanical, Transportation, Missing Report, Infrastructure Maintenance, Other Engineering, Signals, Passengers, Emergency, Weather, MBTA
## Noteworthy Causes of Delay

### Insufficient Staffing
- Too few conductors, resulting in slow boarding and alighting. 78% were on South Side, including 42% on Worcester Line.
- Total Delays: **88**
  - Average Delay: **7** minutes
  - Longest Delay: **15** minutes

### Other Transportation Delays
- 21% were due to a revised trap and door procedure, with average of 4 minutes per delay.
- 13% might be better categorized as Amtrak – Intercity Conflict. These had average delay time of 13 minutes.
- Total Delays: **80**
  - Average Delay: **7** minutes
  - Longest Delay: **23** minutes

### Signals
- Half of these occurred over 5 days. 44% were on Worcester Line, largely between MP 42 and 40.3.
- 12% on Gloucester Branch, many involve Gloucester Drawbridge, and/or MP 32.
- Total Delays: **154**
  - Average Delay: **9** minutes
  - Longest Delay: **49** minutes

**New Approach:** Renewed focus. Joint review and corrective action planning.
# Other Actions to Address Largest OTP Issues

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| Network restrictions (Vic retaining wall, GLX work, Haverhill restrictions) | • Vic retaining wall repaired October 28th returning track to 60 mph line speed from 10 mph on Old Colony lines  
• Haverhill double track opened Monday November 6th  
• GLX work impact mitigated to 3 trains; examining longer term schedule change for project                                                                                                           | ✓      |
| Heavy ridership                           | • **Class of 32 additional ACs starts November 27th**                                                                                                                                                                                                                                                                                  | ✓      |
| Slippery Rail                             | • See separate action update                                                                                                                                                                                                                                                                                                         |        |
| Amtrak conflicts                           | • Haverhill Line double track operational  
• Working group with Amtrak to reduce delay patterns                                                                                                                                                                                                                     | ✓      |
| Signal failures                            | • **Recurring Worcester line failure resolved**                                                                                                                                                                                                                                                                                    | ✓      |
| Mechanical failures                        | • See separate action update                                                                                                                                                                                                                                                                                                         |        |
Fall Preparedness Measures

Brush clearing and test of the power wash train
Recent Performance - Slippery Rail Losses

2017 YTD has seen a 20% improvement in lost OTP compared with 2016 YTD

Cumulative Minutes Lost due to Slippery Rail

Cumulative Time Lost (Minutes)

Week Number

Slippery Rail Mitigation Actions for 2017 Season

- KCS commissioned Network Rail for slippery rail study in March 2017 & implemented all possible improvement actions for this season
- Appointment of slippery rail program director
- Established goal of 20% reduction in delay minutes from the previous year
- Tree removal
  - Tree removal along Newburyport and Rockport Lines, yielding **63% reduction in delays to date** *
  - Continuing tree removal on Fitchburg Line
- Inspection program for locomotive sanding systems
- Improved deployment of wash train
  - Leasing of four spare locomotives
  - Early testing of wash trains and stockpiling of spare parts
  - Improved effectiveness of wash train by targeting biggest issue lines

Slippery Rail 2017: Lessons Learned for 2018

- Improve Sanding Management: New Equipment
  - NEW: Recommended to purchase additional mobile sanding truck(s) which can refill sand hoppers at layover facilities.

- Adjust Annual Fall Schedule
  - NEW: Move the annual Fall schedule adjustment date earlier to incorporate Slippery Rail Season.

- Locomotive Modification: Reduce Axle Lock Threshold
  - NEW: Adjust MPI axle lock threshold from 3 seconds to 6 or more seconds

- Issue Special Operating Instructions
  - Require use of blended brake and add more training and instruction on braking

- Increase Rail Head Cleaning and Treatment
  - NEW: Purchase a minimum of 2 new spray machines

- Increase Targeted Tree and Vegetation Removal
  - NEW: Recommended to increase the capital request to continue catch up with decades of deferred work.

- Install Leaf Control Fences
  - NEW: Strategically position fences to catch leaves blowing out of the woods
Legacy Locomotive Fleet Performance

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<td><strong>MP36-3C</strong></td>
<td>430</td>
<td>420</td>
<td>5,313</td>
<td>947</td>
<td>1,492</td>
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<tr>
<td><strong>F40's</strong></td>
<td>9067</td>
<td>5747</td>
<td>9957</td>
<td>6686</td>
<td>7613</td>
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</tbody>
</table>

Mean Miles Between Failures
HSP-46 (MPI) Locomotive Fleet Performance

FMCB Commuter Rail Update
Mechanical Reliability Actions
Increasing reliability by replacing key components and improving root cause analysis

Legacy fleet improvement
- Identifying locomotives with worst performance for root cause analysis
- Introducing diagnostic equipment to identify root cause of failures
- Near-term Fleet Plan: UTEX and MBTA locomotive overhauls

MPI fleet improvement
- Turbocharger replacement program is progressing to plan with 30/40 locomotives completed; remaining 10 to be completed by end of 2017
- Replacement of Guru valves to improve winter freeze protection – 36/40 completed to date; remaining 4 to be completed by end of 2017
- Additional training on MPI fleet for mechanical team
- Target is to achieve 40k mean miles between failures (MMBF)
Near-Term Fleet Plan – Moving Forward

- The plan consists of locomotive repair and overhaul programs designed to keep the legacy fleet operating reliably until the next locomotive procurement.

- Programs Underway:
  - Short-term recovery program (14 locos): $2M
  - UTEX Phase I: $6M
  - UTEX Phase II: $6M
  - F-40 Overhaul: $27M
  - GP-40 Overhaul: $6M
  - MP-36 Top Deck Overhaul: $2M

- Potential Additional Initiatives:
  - UTEX Phase III: $9.6M
## Near-Term Fleet Plan – Moving Forward

<table>
<thead>
<tr>
<th>Program</th>
<th># of Locos</th>
<th>Cost</th>
<th>Anticipated Completion</th>
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<tbody>
<tr>
<td>Short-term Recovery</td>
<td>14 to date</td>
<td>$2M to date</td>
<td>Ongoing</td>
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<tr>
<td>UTEX Phase I</td>
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<td>$6M</td>
<td>December 2017</td>
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<tr>
<td>UTEX Phase II</td>
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<td>$6M</td>
<td>December 2018</td>
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<tr>
<td>F40 Overhaul</td>
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<td>GP40 Overhaul</td>
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<tr>
<td>MP36 Top Deck Overhaul</td>
<td>2</td>
<td>$2M</td>
<td>January 2019</td>
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</table>
Looking Ahead

Areas of Focus:
- Reorganization
- Fleet Recommendations
- Winter Service Delivery
- Coordination with major projects (e.g., PTC, GLX, AFC 2.0) to increase OTP
- Commuter Rail Vision

New Approach:
- Use better data in management to improve service today
- Invest in fleet and design next contract to improve service in the future