



Moving from “You’re Only as Good as Your Last Rush Hour” to “Strategic Data is My Friend”

Yvonne Carney, Senior Performance Analyst
Washington Metropolitan Area Transit Authority

TRB 5th International Transportation Systems
Performance Measurement and Data Conference
June 2, 2015



Enhancing Tools for Decision Makers: Key Drivers of On-Time Performance Results

Goal: Build and maintain a premier safety culture and system

Goal: Meet or exceed customer expectations by consistently delivering quality service

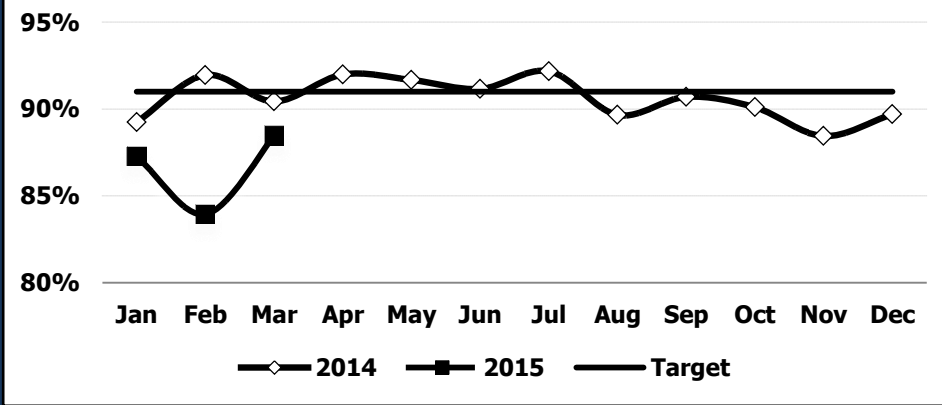
Goal: Ensure financial stability and invest in our people and assets

Goal: Improve regional mobility and connect communities



Vital Signs

Rail On-Time Performance



Delays: LOTS of Data, But What's Important?

Daily Service Report for Thursday, May 14, 2015

5:17 a.m. A Huntington-bound Yellow Line train outside Huntington Station was delayed 5 minutes due to a signal problem.

5:22 a.m. A Mt. Vernon Square-bound Yellow Line train at Huntington was delayed 5 minutes due to a signal problem.

5:38 a.m. A Franconia-Springfield-bound Blue Line train at Federal Center was delayed 5 minutes due to late clearing track equipment.

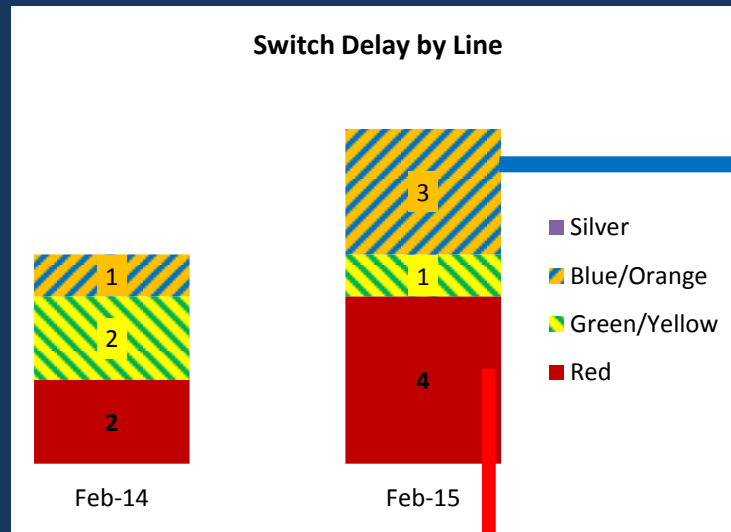
6:04 a.m. A Largo Town Center-bound Blue Line train at King Street did not operate, resulting in an 8-minute gap in service.

6:13 a.m. A Greenbelt-bound Green Line train at Branch Avenue did not operate, resulting in a 6-minute gap in service.

6:16 a.m. A Largo Town Center-bound Blue Line train at King Street did not operate, resulting in an 8-minute gap in service.

6:55 a.m. A Glenmont-bound Red Line train at Shay Grove was delayed 4 minutes due to a door problem.

Focusing on Things that Matter: Turning Delay Incident Data into Action



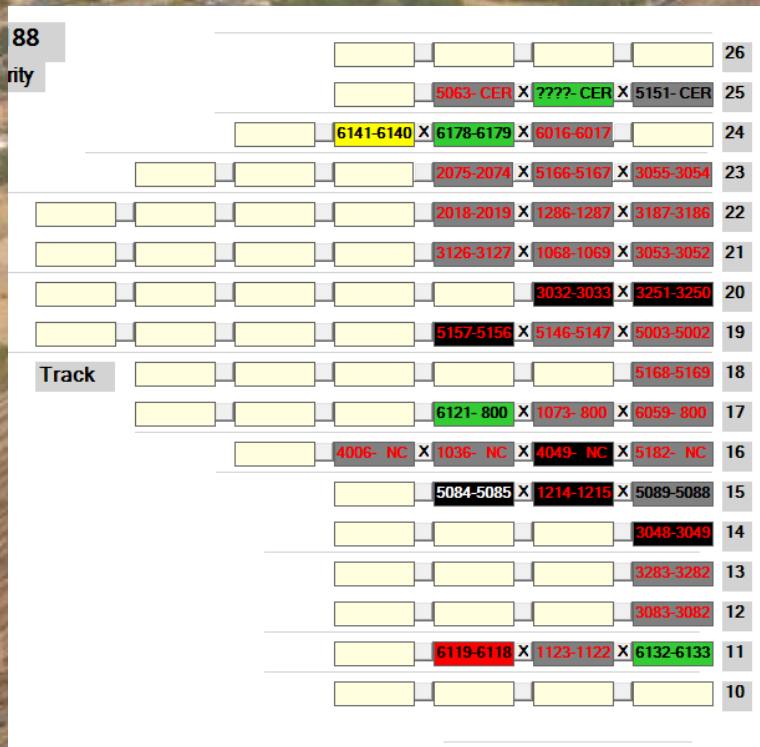
Aerial structure needs repair



Ballast contamination due to run-off from freight rail line

Railcars Available for On-Time Departure

The Existing Tool Works for Front-Line Yard Staff



Communication
between
maintenance &
operations

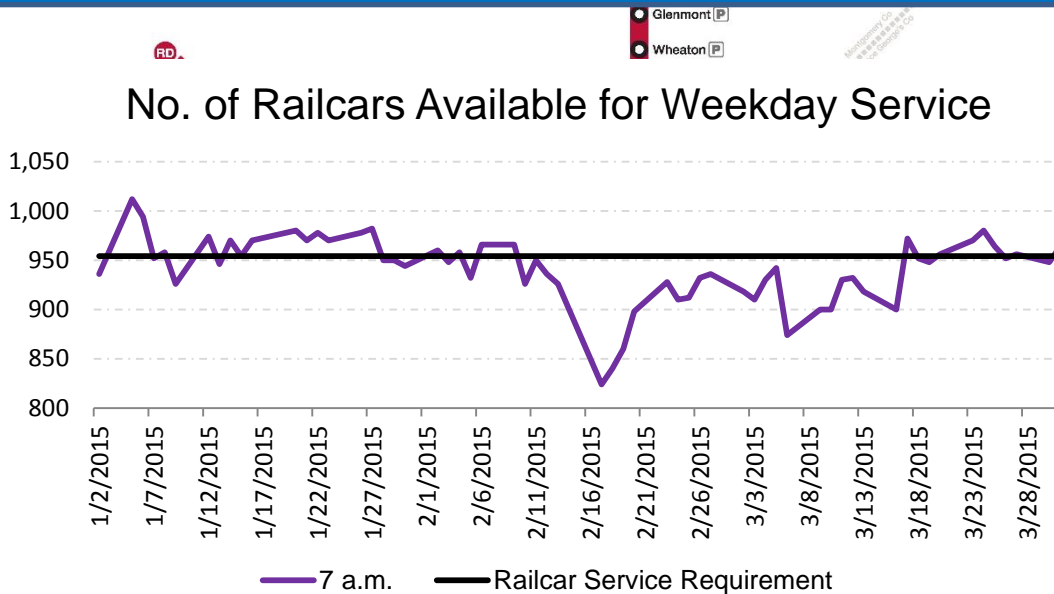
Used at each of
11 yards

Indicates car
ready/in repair

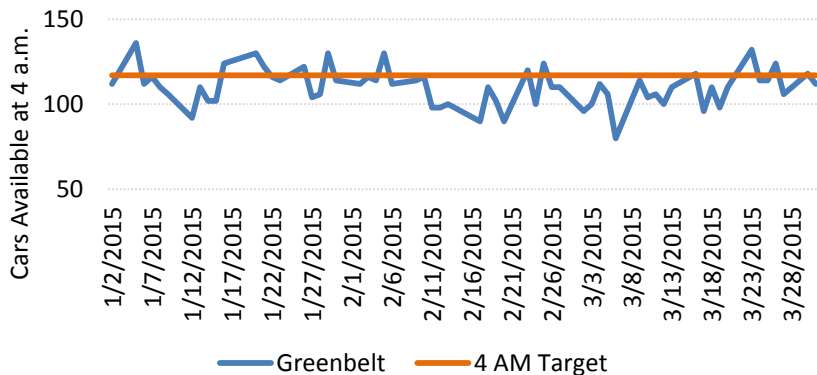


Our Existing Tool Can Do More: *Becoming a Management Tool for Senior Staff*

No. of Railcars Available for Weekday Service



Greenbelt Yard Railcars Available



Focuses on key challenges

Explore process changes

Understand impact to service

Metro rail Operating Times
 Mon-Thu 5am-midnight
 Fri 5am-3am
 Sat 7am-3am
 Sun 7am-midnight
 Times are approximate

Metro is accessible



....and Used to Explain Key Performance Indicator Results to Board of Directors

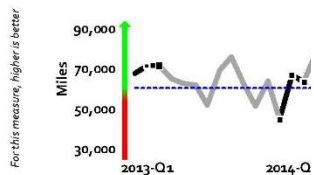
Quality Service

KPI: Rail Reliability

Rail fleet reliability declined as Metro was challenged to meet events led to railcars going out of service with door and propulsion

Why did performance change?

- Q1/2015 Rail Fleet Reliability was 7 percent worse than Q1 Metro was challenged to meet the higher car requirement and winter weather exacerbated existing reliability requirements
- The original Silver Line operating plan called for 64 additional series Kawasaki cars. Because the manufacturer's delivery was delayed due to the 2011 earthquake and tsunami in Japan, the Silver Line opened without the additional rail cars. The revised requirements of the Silver Line strained the maintenance, increasing usage of the cars (mileage increased 20 percent), diminishing flexibility to keep cars out of service for repair ("spare ratio" reduced from 20 percent to 14 percent of that resulted in a backlog of rail cars requiring repair).
- Multiple snow events in February led to electrical equipment on rail cars from snow sucked into propulsion systems and tracks. For example, on February 18 (7 inches at Ronald Reagan Washington National Airport the day before), more than 100 cars were out of service for repair. The service requirement of 954 cars met the remainder of February and early March as maintenance workers worked to return cars to service.
- As in Q1/2014, doors continued to be the leading cause of (31 percent) in Q1/2015. Other reliability challenges in Q1/2015 included brakes (23 percent), pneumatic systems (10 percent) and 10 percent).



Key Actions to Improve Performance

Maintain and improve reliability of existing rail fleet

- Conduct corrective maintenance as trains go out of service to return to the pre-Silver Line spare ratio, meeting the service

KPI: Rail On-Time Performance

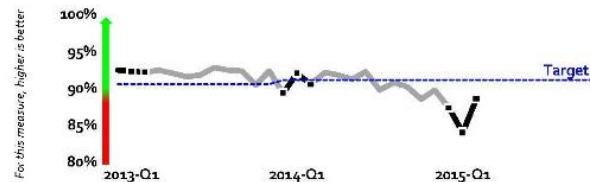
Performance declined, most notably this February, delaying customers as winter temperatures and snow led to strategically reduced service coupled with rail car and track problems that interrupted service.

Why did performance change?

- Q1/2015 was almost four percentage points below Q1/2014. Multiple snow events in February led to rail car electrical equipment damage from snow sucked into propulsion systems and frozen door tracks.
- The service requirement of 954 cars was met only four of 19 weekdays in February. With an insufficient number of trains to depart from end-of-line stations, the time between departures (headways) increased, reducing OTP and lengthening waits for customers.
- Extreme temperature fluctuations led to five cracked rails in January and two in February, such as a cracked rail near East Falls Church station on February 20 when the region's low temperature was five degrees Fahrenheit (lowest regional temperature recorded for that day in 120 years).
- OTP improved in March, most notably on the Red Line at 92.1 percent with only four rush periods experiencing less than 85 percent OTP.



This quarter's reduced performance is reflected in a customer satisfaction rating of 74%, the lowest since the measure began in 2013.



Key Actions to Improve Performance

Manage train spacing

- Return to automatic train operations for 8-car trains on the Red Line
- Placement of supervisors at key locations

Began: Q2/2014

Status: Completion Q2/2015

Maintain and improve reliability of rail infrastructure

- Utilize data on track geometry and track walker observations to prioritize segments of track for maintenance
- Continue capital rebuilding program to install new rail, ties, platforms, escalators, signals, lighting, communication systems, and more

Status: Contingent upon funding

Quality Service

Why did systemwide performance change?

Actions to improve performance

Making Data Useful to Decision Makers: Lessons Learned



Listen for
unanswered
questions

Remind why
important

Leadership
support



Yvonne Carney
Washington Metropolitan Area Transit Authority
Office of Performance
ycarney@wmata.com