Washington Metropolitan Area Transit Authority

Board Action/Information Summary

◉ Action ○ Information	MEAD Number: 201923	Resolution: ○ Yes ◉ No

TITLE:

Safety Report for First Quarter Fiscal Year 2018

PRESENTATION SUMMARY:

The Department of Safety & Environmental Management (SAFE) Quarterly Report publicly communicates safety-related information and statistics.

PURPOSE:

The Metro Safety Quarterly Report informs the Safety Committee regarding the ongoing safety culture in the Metro system and indicates performance measurement in accordance with the Authority goals. Further, the public report increases communication to enhance safety of WMATA's employees, customers and surrounding Washington metropolitan area community. The Quarterly Report summarizes and highlights progress in the first fiscal quarter of 2018 (1QFY18) and other relevant safety actions.

DESCRIPTION:

Two measures of an improving safety culture are the customer and employee injury rates. As such, both performance measures are included as part of Metro's Strategic Plan. The FY18 target for the Customer Injury Rate (CIR) is less than 1.75 injuries per million passenger trips; the Employee Injury Rate (EIR) target is less than 5.1 injuries per 200,000 work hours. Additional metrics that will be reviewed for statistical purposes are highlighted below and actions taken will be covered in the discussion. These metrics include rail fires, derailments, red signal overruns, pedestrian strikes, rail collisions and bus collisions.

Note that the reporting period has changed from Calendar Year to Fiscal Year, which aligns the safety report with the other reporting sections (e.g., finance, performance).

Key Highlights:

• Customer Injury Rate (CIR) – The CIR for Bus was 2.78; this is a 22% increase over 1QFY17's rate of 2.28 and did not meet the target of 1.75. The CIR for Rail was 1.24; this is a 5% increase over 1QFY17's rate of 1.18. However, this rate is below the target of 1.75. The CIR for Metro Access was 1.88; this is a 37% decrease over 1QFY17's CIR of 2.99, well below the target of 3.0. There was a combined total of 149 NTD reportable customer injuries for 1QFY18.

• Employee Injury Rate (EIR) – The EIR was 7.22; this is a 24% increase over 1QFY17's EIR of 5.8 injuries per 200,000 hours worked (equivalent to 100 employees

working for a year), and 8% above the Bureau of Labor Statistics (BLS) average for transit industries (i.e., 6.7). There were 205 OSHA recordable employee injuries for 1QFY18.

• Fires – Through 1QFY18, there were 32 fires internally recorded, 14% higher than through 1QFY17. The area of greatest increase involved arcing insulators which more than doubled from last year. The increase in arcing insulator incidents is primarily attributed to increases in rainfall during the quarter. Arcing incidents were concentrated in the areas of Woodley Park, Medical Center and Rosslyn.

• Derailments – Through 1QFY18, there were five derailments compared to seven in 1QFY17. All five derailments involved Roadway Maintenance Machines (RMMs), three of which were contractor-owned hi-rail vehicles travelling through guarded switches.

• Red Signal Overruns – Through 1QFY18, there was one red signal overrun, 85% less than the seven that occurred during the 1QFY17.

• Rail Collisions – Through 1QFY18, there were three low-speed operational collisions in rail yards. The number is the same as 1QFY17.

• Bus Pedestrian Strikes – Through 1QFY18, there were three incidents, 40% less than the five through 1QFY17.

• Bus Collision Rate – Through 1QFY18, there were 16 fewer collisions contributing to a rate of 59.1 collisions per million miles. This rate is 2.2% below last 1QFY17's.

Background and History:

The Quarterly Safety Report is required by the Board of Directors system safety policy statement as part of the approved System Safety Program Plan (SSPP). The SSPP is required under FTA Final Rule Code of Federal Regulations 49, part 659; Rail Fixed Guideway Systems: State Safety Oversight.

The Department of Safety and Environmental Management utilizes multiple datasets to monitor safety activities that impact employees and the riding public. Daily review of incidents, systematic inspections of facilities and regulatory programs, and employee/contractor training are effective uses of resources which ensure a safer workplace and environment for our passengers. The following discussion highlights some of the metrics and incidents used to gauge system safety.

Discussion:

Through 1QFY18, the CIR is 2.0, which is above the target of <1.75, and above the CIR through 1QFY17 (1.9). While the CIR did not meet the established target, there was a noticeable reduction in customer injuries with MetroAccess and MetroRail. The primary drivers behind the CIR are non-preventable collisions and customer slip/trip/falls for Bus, and slip/trip/fall injuries on rail station platforms.

MetroBus – CIR
Through 1QFY18, the MetroBus CIR was 2.8 per 1,000,000 passenger trips, up 22%

from 1QFY17. There were 82 customer injuries for the quarter. The primary injury type was collision-related, which included three significant collisions that injured nearly 20 passengers. This includes a collision in Chinatown that was a result of a failed ditch cover in a work zone. Hard braking and pull-off incidents were also leading factors that contributed to customer falls.

MetroBus and SAFE have several initiatives to reduce customer injuries. MetroBus established an initiative to reduce Fixed Object collisions, such as those that occur at or near bus stops due to improper approach angles. SAFE conducted an initiative to observe bus operations on high-incident routes, observe and correct improper operations or at-risk behaviors.

MetroAccess – CIR
Through 1QFY18, the CIR for MetroAccess (MACS) was 1.9 injuries per 100,000 passenger trips, 37% lower than through 1QFY17. There were 11 customer injuries for the quarter. As with MetroBus, the primary driver was non-preventable collision related injuries. Non-collision related injuries were mainly the result of a passenger being struck by an object in the vehicle while it was in motion (e.g., another customer mobility or medical device).

MetroRail – CIR
Through 1QFY18, the CIR for MetroRail was 1.2 injuries per 1,000,000 passenger trips, up 5% from 1QFY17. There were 56 customer injuries for the quarter. Slip/trip/fall injuries in the station is the leading injury type, followed by slips/trips/falls on escalators. These falls primarily occurred while passengers were running through the station, intoxicated, or trip on uneven or wet platform surfaces. In addition, the office of Elevator and Escalator is identifying additional locations to install automated safety messaging devices at targeted stations after a successful pilot at the Gallery Place/Chinatown station.

Employee Injuries – EIR
The overall EIR was 7.2 per 200,000 hours worked through 1QFY18; up 24% from 1QFY17 and above the target of <5.1. There were 205 OSHA-recordable employee injuries through 1QFY18, 28 more than through 1QFY17. The primary driver for the increase in EIR is Bus Transportation, which accounts for more than half of the injuries overall. The main injury types across all departments are: collision-related (20%); stress/assault (15%); and slip/trip/fall (13%). The departments that had the most injuries include: Bus Transportation (55%); Rail Transportation (13%); and Metro Transit Police Department (10%).

In addition to the initiatives previously discussed, other initiatives in progress include targeted training/coaching sessions with bus operators conducted by the Metro Transit Police Department, with a focus on assault prevention. WMATA is working with the Union to increase penalties for assaulting transit employees. Job Hazard Analyses are being instituted in the bus and railcar maintenance shops, and the track and power departments.

Fires
There are three main types of fires that occur within the rail system: non-electrical (e.g., debris/rubbish), electrical cables, and arcing insulators.

Non-electrical fires typically consist of material on the roadway that ignites for various reasons, but the source is not electrically-related. This includes leaves or newspapers coming to rest on heated components (e.g., switch heaters or lighting equipment) or debris in street-accessible shafts that start due to discarded cigarettes. Through 1QFY18, there were 11 of these fires; 39% less than through 1QFY17. Efforts to reduce these fires include regular track cleaning and shaft debris/leaf cleaning.

Cable fires are generally the result of either unsecured cables or degraded insulation. In most cases, the cables involved are those that provide power to the third rail. Through 1QFY18, there were two incidents; one more than through 1QFY17. One incident involved a defective third rail expansion cable; the second involved a feeder cable that was improperly connected to the third rail. Actions to reduce these fires include the cable replacement and securement program, which involves a team of inspectors whose primary role is to inspect and repair these cables. Additional efforts include tunnel cleaning, which includes unclogging drains, and tunnel leak repairs.

Arcing insulators events occur when stray current from the third rail finds an alternative path to the ground, primarily as a result of prolonged or sudden saturation of the roadway. Through 1QFY18, there were 19 of these events; 10 more than through1QFY17. The main causes behind these events are wet/muddy conditions and insulator contamination and degradation. The average amount of July rainfall in the area is 3.5 inches; this past July recorded over 9 inches of rain.

To resolve these aspects, proactive drain cleaning and mud/debris removal in at-risk areas (e.g., Red Line) is occurring, and improvements to the insulator inspection process have been made, both in the field and prior to field replacement. In addition, WMATA is exploring alternative insulator designs that allow for more efficient insulator replacement. WMATA is also installing a waterproof membrane along the Red Line to reduce the amount of water infiltration into the system.

Derailments

There were five derailments through 1QFY18, all of which were RMMs. This a reduction when compared to 1QFY17, which had seven derailments. RMMs vary in size and weight, but include some small and light pieces of equipment that are used to repair and/or build the railway. Pieces include hi-rail pickup trucks, tampers, prime movers, etc.

One common factor of these events are low speed movements through guarded switches by hi-rail equipment. To reduce RMM hi-rail derailments, the Track and Structures department, along with SAFE, are reviewing contractor vehicle inspection and approval process and revising procedures for traveling through switches with hi-rail equipment.

Red Signal Overruns

There was one red signal overrun through 1QFY18; six less than 1QFY17. The red signal violation occurred during a turnback operation on the red line in which the operator failed to verify that she had a lunar signal before proceeding which resulted in a red signal overrun. Actions to reduce these incidents include retraining of train operators, replacing signal lights with light emitting diodes (LEDs) to improve visibility, and rail vehicle modifications for stop and proceed modes (e.g., requiring the operator

to perform several tactile functions to move the train when a red signal is encountered).

Rail Collisions
Through 1QFY18, there have been three incidents where rail vehicles came in contact with other rail vehicles and a bump posts. Through 1QFY17, there were two incidents of operational rail collisions. The three collisions in this quarter all involved trains in rail yards/maintenance shops and occurred at low speeds.

One collision occurred when a train, piloted from the third car with a flag person in the lead car, contacted a stationary train in a maintenance shop. The second incident involved one train that was found in contact with a bump post and had damage. The third incident occurred when a train was attempting to move and rolled back due to a loss of power into another consist,

Bus Pedestrian Strikes
Through 1QFY18, there have been three pedestrian strikes; two less than 1QFY17. Common factors surrounding these incidents include pedestrians walking outside of established crosswalks and bicyclist sideswipes.

Bus Collision Rate
The bus collision rate through 1QFY18 is 59 collisions per million miles; 2% lower than the 1QFY17 rate and 16 fewer collisions. The primary collision causes are non-preventable rear-end collisions, improper bus positions (e.g., angle of approach at stops), and operator inattention. Efforts to reduce bus collisions include a Fixed Object collision reduction committee and SAFE-led observations of bus operations on high-incident bus routes.

FUNDING IMPACT:

Necessary funding is within approved annual budget.	
Project Manager:	Patrick Lavin
Project Department/Office:	SAFE

TIMELINE:

Previous Actions	• Safety Report for Fourth Quarter on July 27, 2017
Anticipated actions after presentation	• Continue to fully implement all NTSB and FTA CAPs • Continue to implement programs and activities to strengthen safety culture • Continue to fully investigate accidents and incidents

RECOMMENDATION:

To inform the Board's Safety Committee of the positive and proactive safety foundation status being implemented and accomplishments through 1QFY18.

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Washington Metropolitan Area Transit Authority

FY18 1st Quarter Safety Review

Safety Committee
October 26, 2017

Injury Rates

Employee and Customer Injuries

Customer Injury Rate (Target: 1.75)

1QFY (Jul-Sept)	Rate (per 1million trips)	Injuries
1QFY18	**2.0**	**149**
1QFY17	1.9	145
1QFY16	1.7	143
1QFY15	2.0	185

Employee Injury Rate (Target: 5.1)

1QFY (Jul-Sept)	Rate (per 100 employees)	Injuries
1QFY18	**7.22**	**205**
1QFY17	5.81	177
1QFY16	4.96	148
1QFY15	4.42	131

Customer Injury Rate

Rail, per million passenger trips

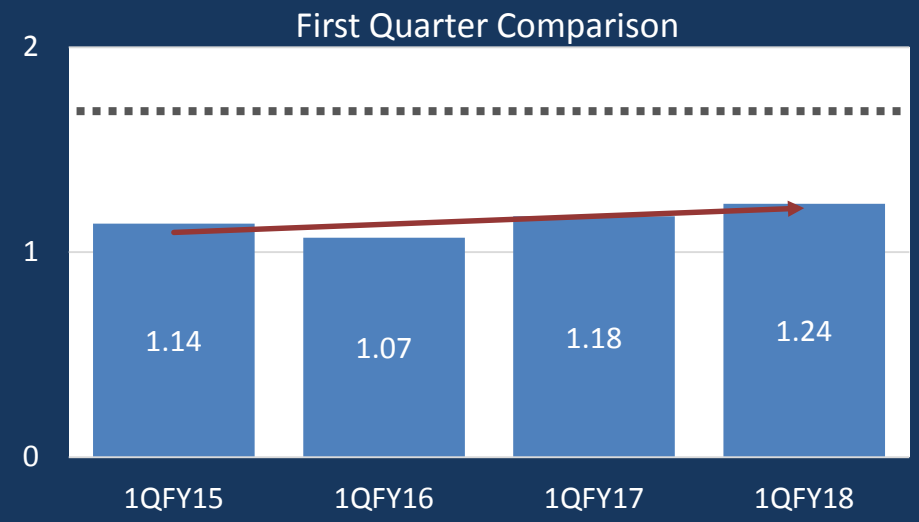
Benchmark

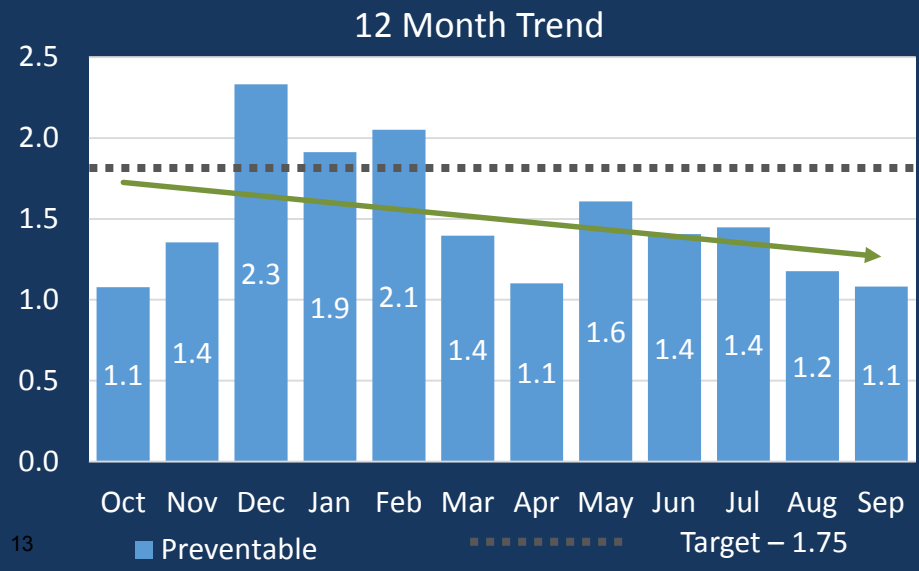
Status

- 5% increase, compared to 1QFY17
- Primary injury types are Slips/Trips/Falls and Caught In/By
- Primary causes are customer inattention/distraction and intoxication
- Top Three Stations: Gallery Place, Metro Center, and Union Station

Mitigations include:

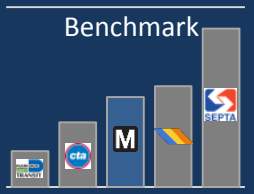
- Expansion of automated safety messages on escalators
- Platform visibility enhancement
- Optimal boarding location signage installation





Customer Injury Rate

Bus, per million passenger trips

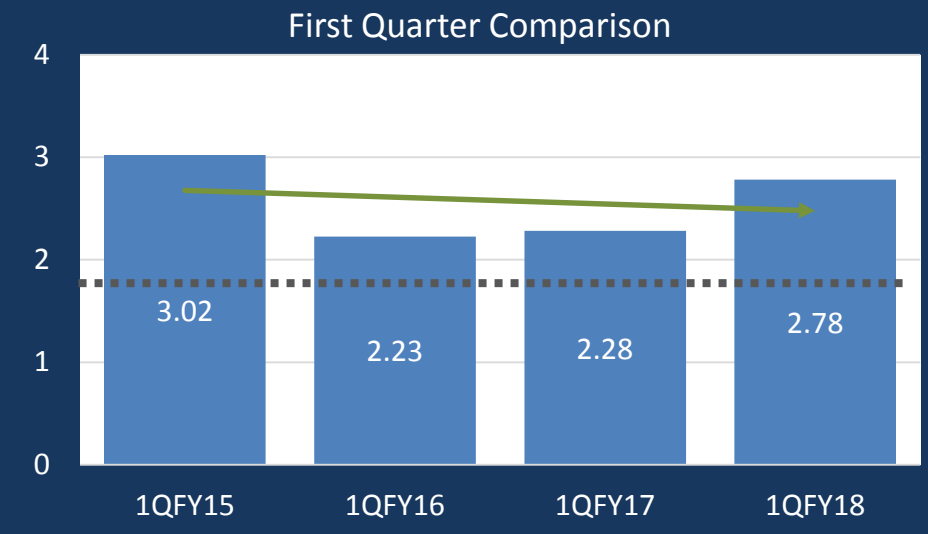


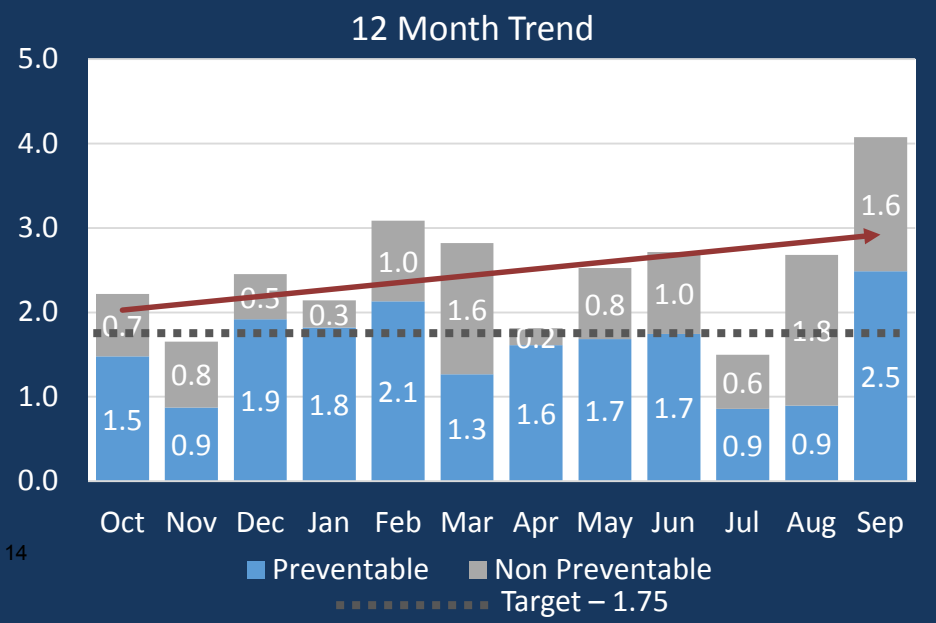
Status

- 22% increase, compared to 1QFY17
- Primary injury types are Motor Vehicle Collision-related and Slips/Trips/Falls
- Primary causes are hit while stopped collisions; falling while bus is in motion
- Top Three Lines: A4 (Anacostia-Fort-Drum), X2 (Benning Rd-H Street), and 80 (North Capitol Street)
- September spike due to an increase in hard braking, and an incident where a street-side construction metal plate buckled under a bus

Mitigations include:

- Bus operator coaching
- Bus berthing review
- Customer communication campaign





Customer Injury Rate

MetroAccess, per 100k passenger trips

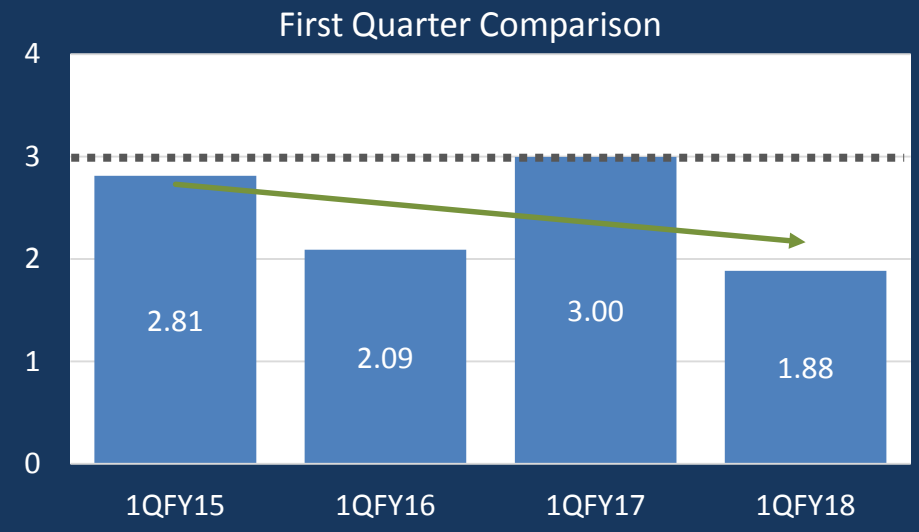
Benchmark

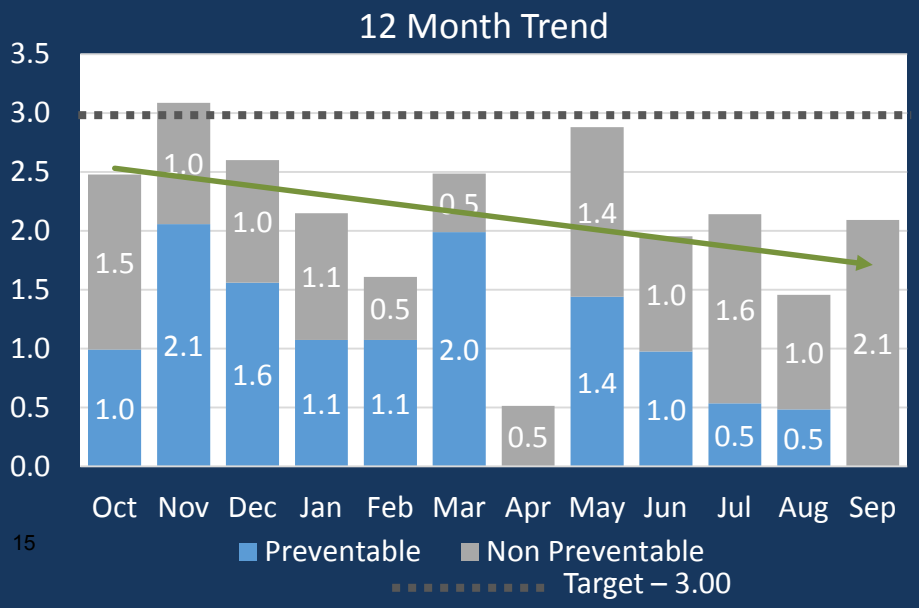
Status

- 37% decrease, compared to 1Q FY17
- Primary injury types are Vehicular Collision-related and Struck By/Against
- Primary causes are non- preventable collisions and being struck by objects while in the vehicle

Mitigations include:

- Operator training
- Occupational Therapist





Employee Injury Rate

Rail, per 100 employees

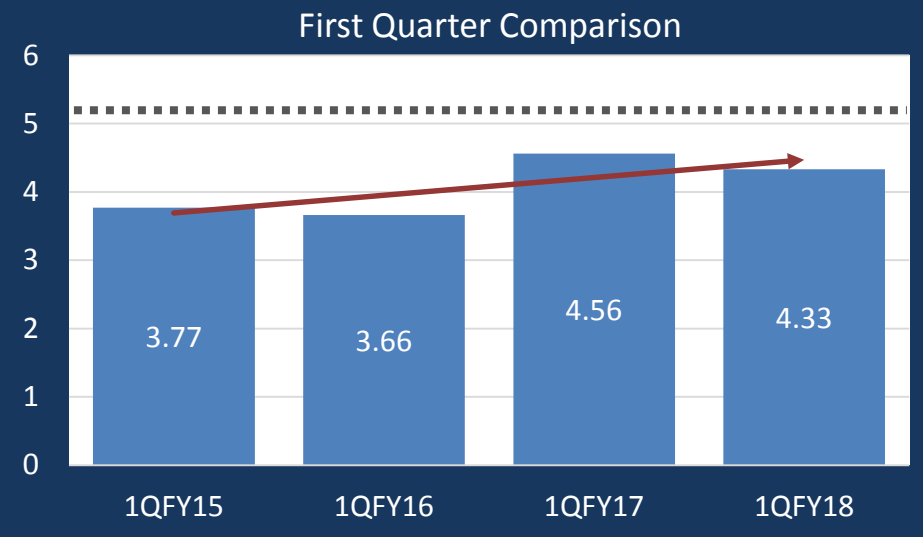
Benchmark

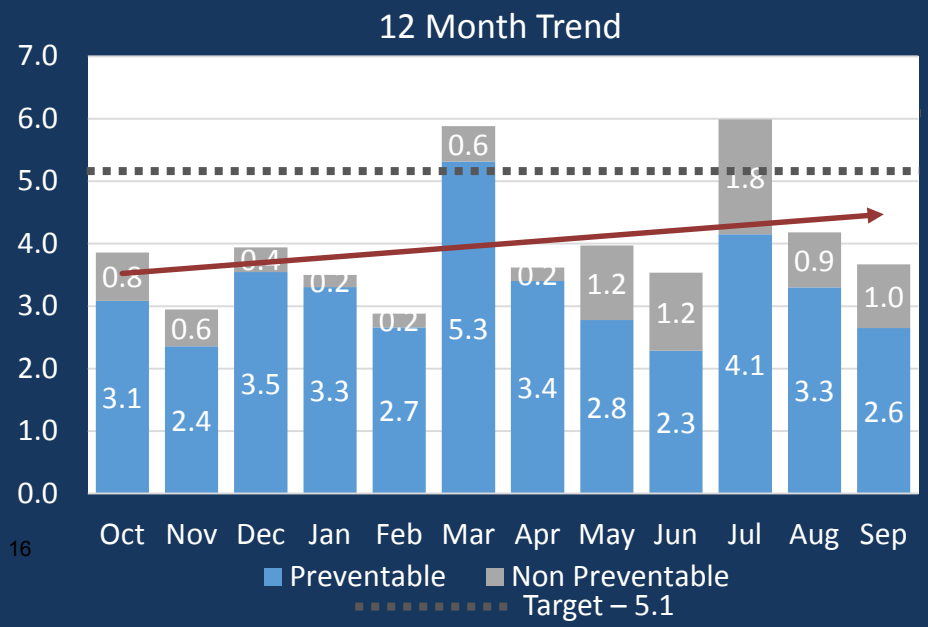
Status

- 27% of injuries were non preventable
- 5% reduction, compared to 1QFY17
- Primary injury types are Lifting/Lowering
- And Slip/Trip/Falls
- Primary causes body mechanics and employee inattention

<u>Mitigations include:</u>

- Job Hazard Analyses for the rail car and system maintenance groups
- Increased observation and SAFE support during overnight maintenance





Employee Injury Rate

Bus, per 100 employees

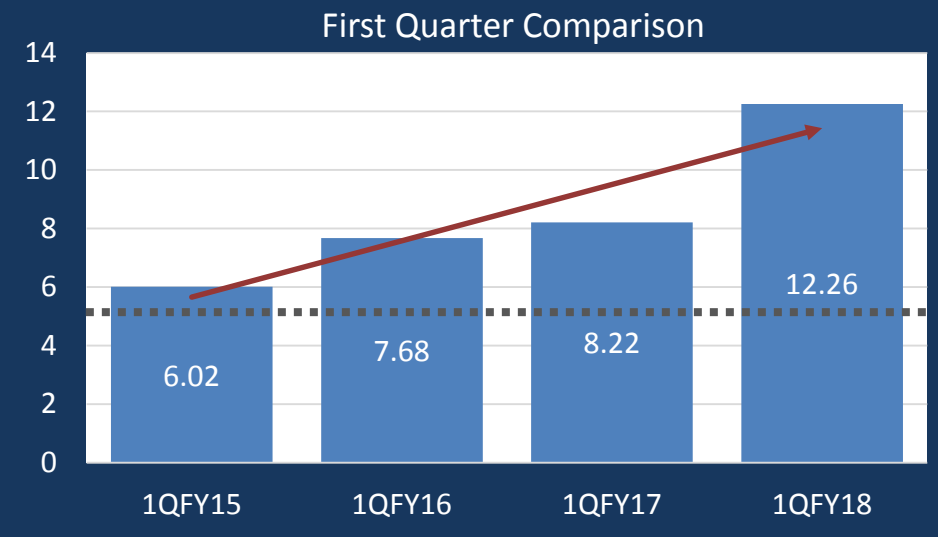
Benchmark

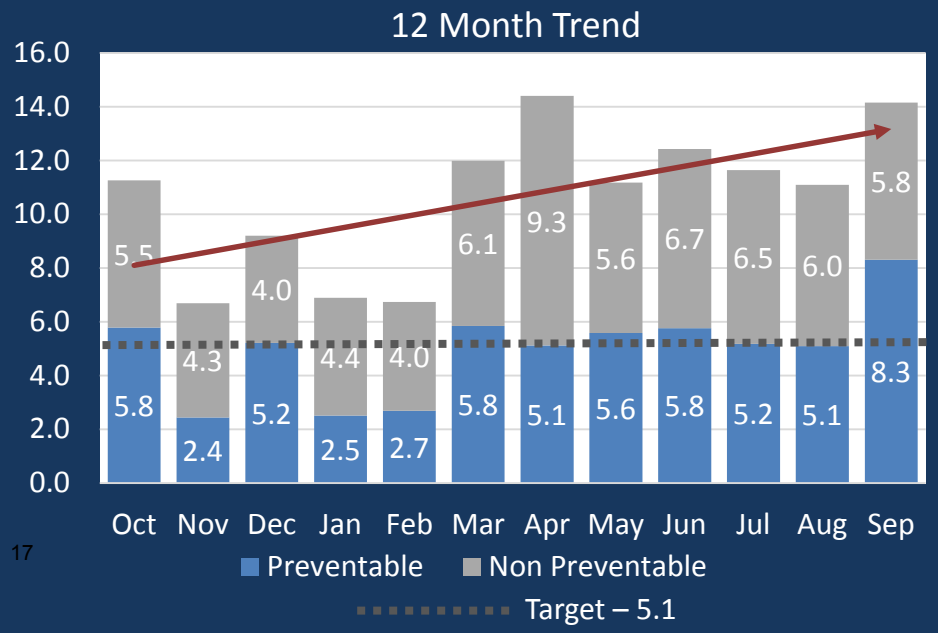
Status

- 50% of injuries were non preventable
- 49% increase, compared to 1Q FY17
- Primary types are Vehicular Collision-related, Pushing/Pulling, and Stress
- Primary factors are non preventable collisions, ergonomics and crime-related events (i.e., physical and verbal assaults, witnessing crime)

<u>Mitigations include:</u>

- MTPD partnering with Bus to support late night service
- Job Hazard Analyses for Bus Maintenance activities





Rail Fires

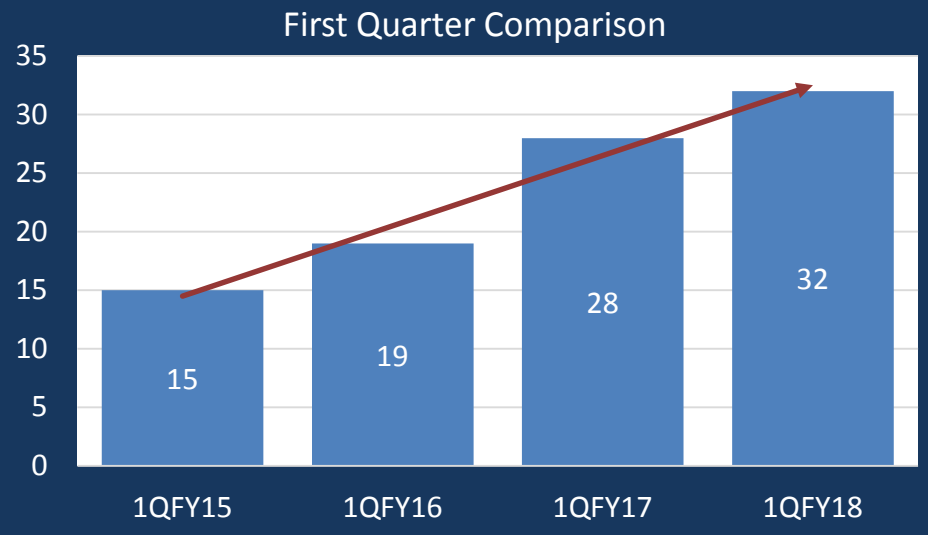
Benchmark

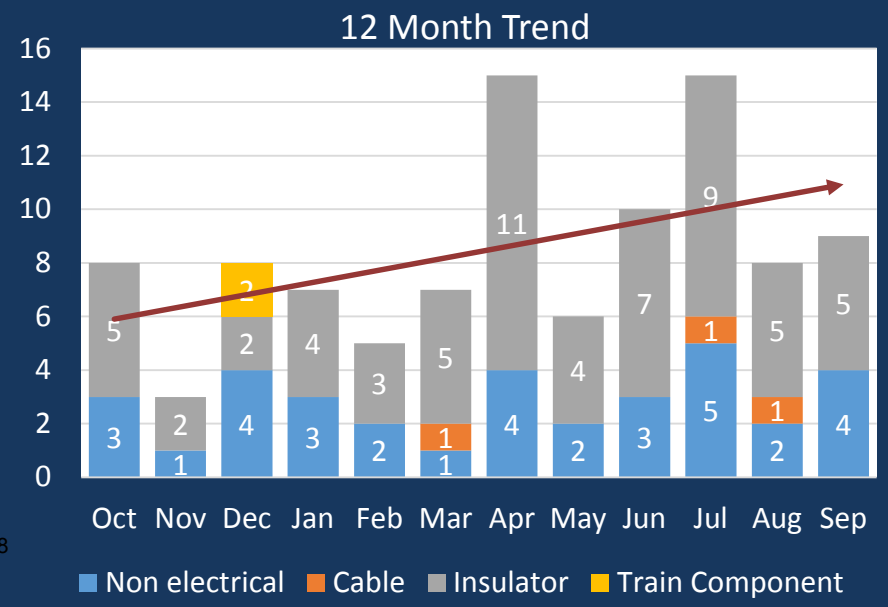
Status

- 14% increase overall
- Debris-related fires decreased nearly 40%
- Continued correlation between rainfall and arcing insulators in concentrated area
- Spikes July of insulator fires driven by a higher-than-average amount of rainfall (9 inches in July vs an average of 3.5 inches)
- Cable fire related to improperly secured cables

<u>Mitigations include:</u>

- Tunnel leak mitigation project
- Expansion cleaning
- Proactive replacing of insulators
- Additional inspections of power cable connections





Derailments

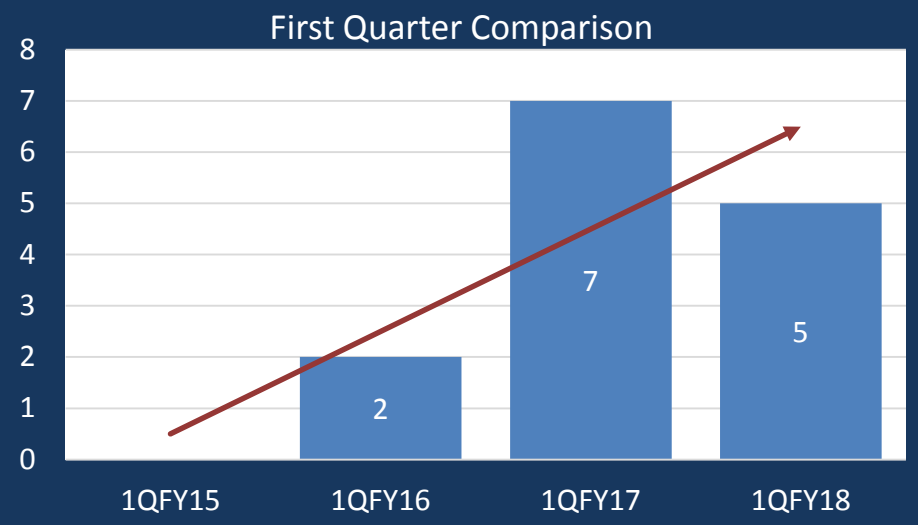
Benchmark

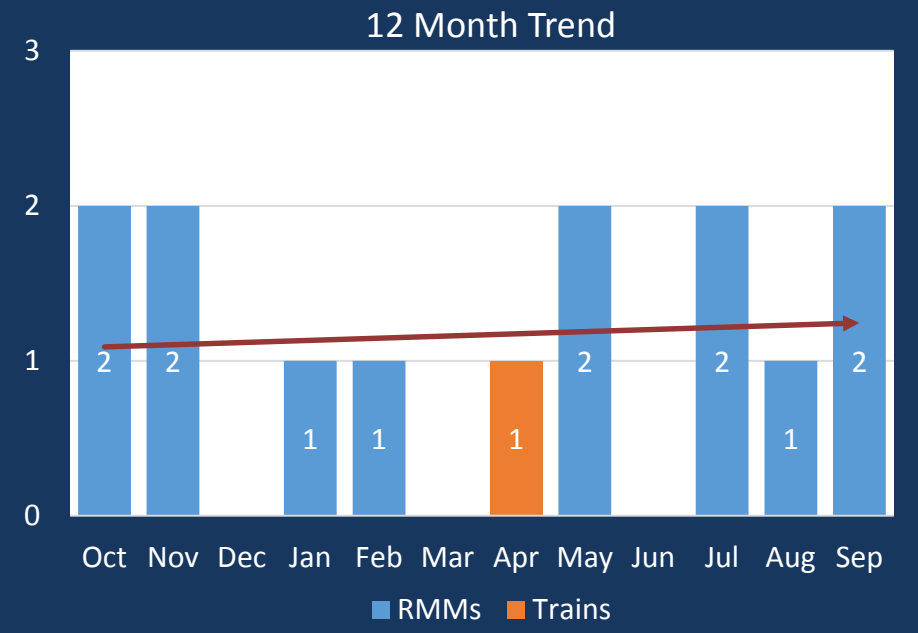
Status

- Two fewer incidents than 1QFY17
- Three of the five derailments involved hi-rail contractor vehicles traversing switch areas
- Two Roadway Maintenance Machines derailed in yards at low speed

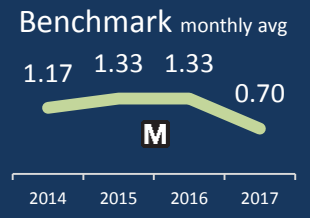
Mitigations include:

- Reviewing hi-rail vehicle inspection and approval process
- Identified height mismatch between guard rail vs running rail





Red Signal Overruns

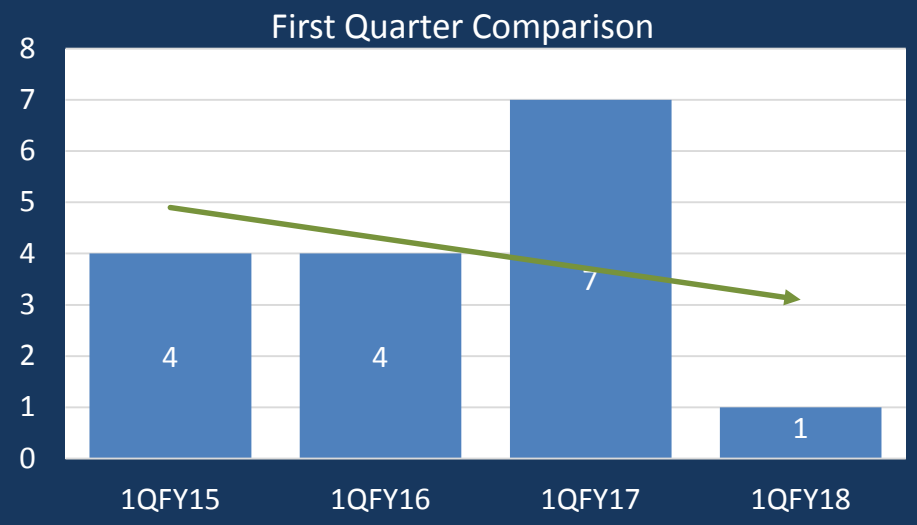


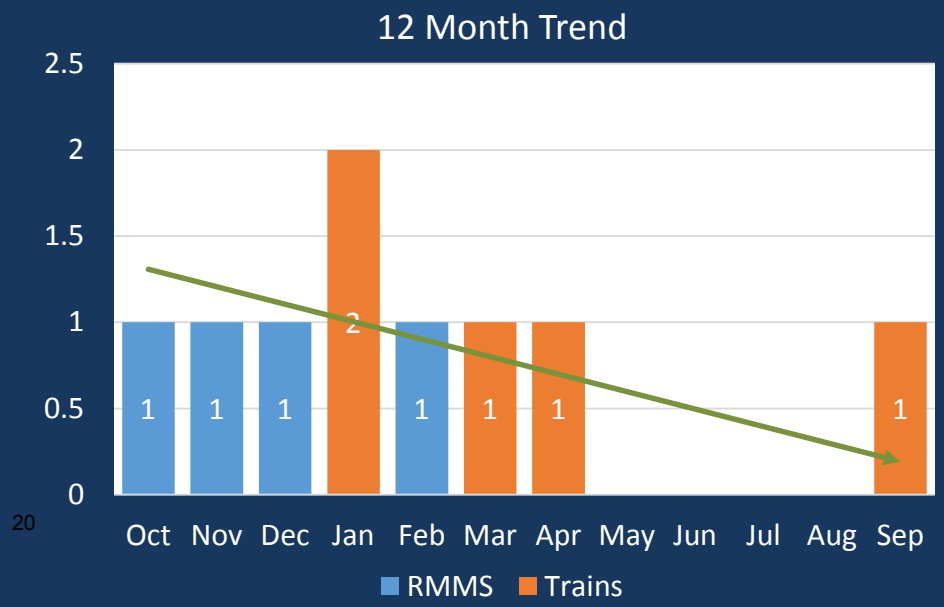
Status

- Lowest monthly average recorded (since 2012) at 0.70 per month
- 86% decrease, compared to 1QFY17
- Latest incident occurred during weekend single-tracking operations

Mitigations include:

- Inspection and reinstallation of turnback signage
- Installation of LED bulbs
- Developing multi-step “Stop and Proceed Operating Mode” solution





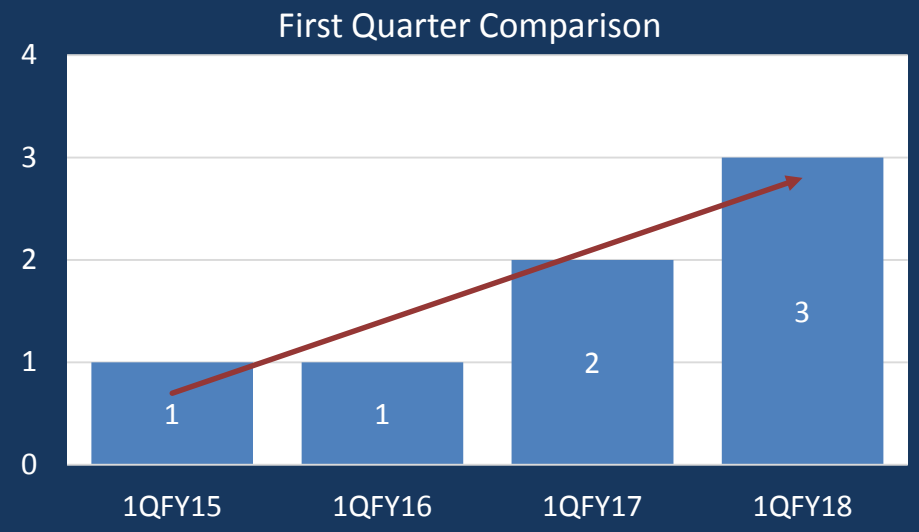
Rail Collisions

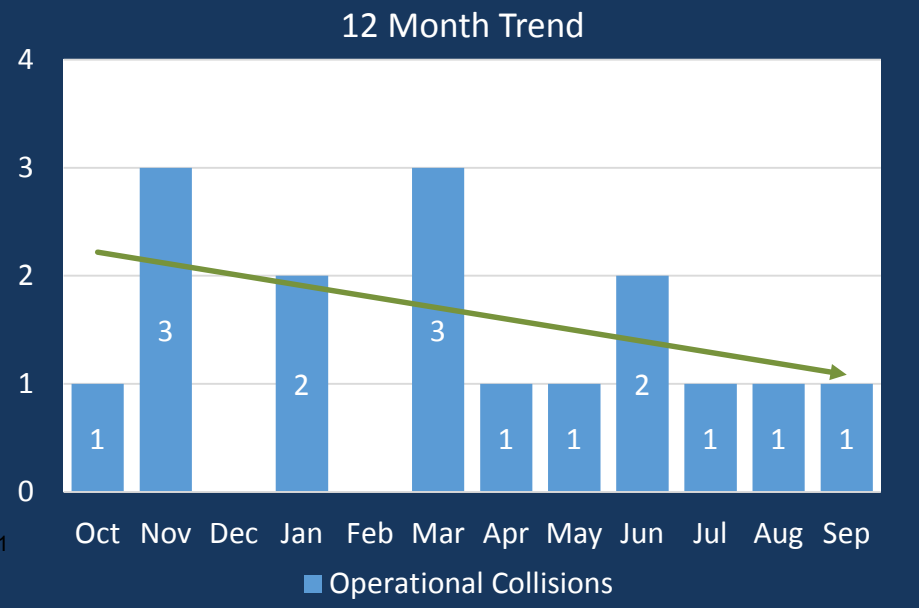
Status

- Increase of one, compared to 1Q FY17
- Three collisions, all at low speeds
- All collisions occurred in yards during planned movements
- Operational collisions include bump post contact, unintended couplings, and all vehicle-to-vehicle collisions regardless of damage

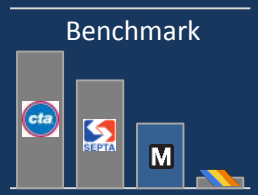
<u>Mitigations include:</u>

- Retraining of operators to reinforce safe train movement in yards.





Bus Pedestrian Strikes

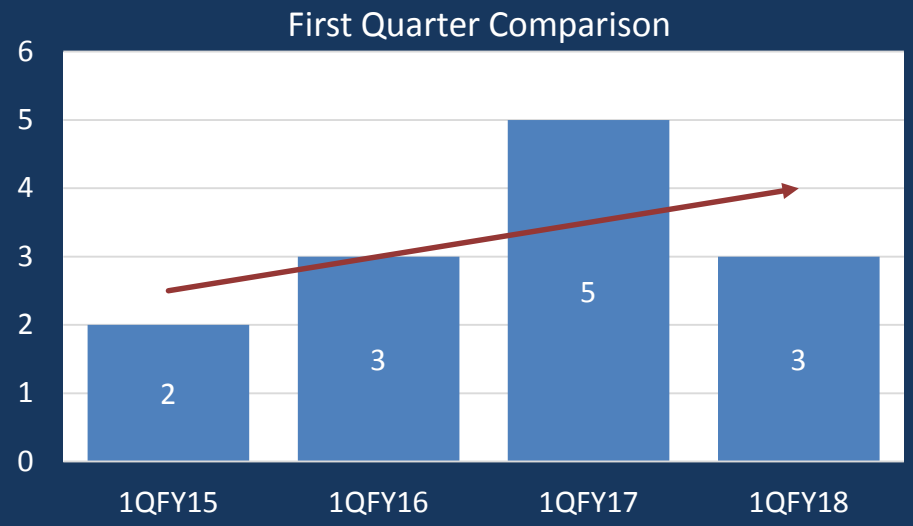


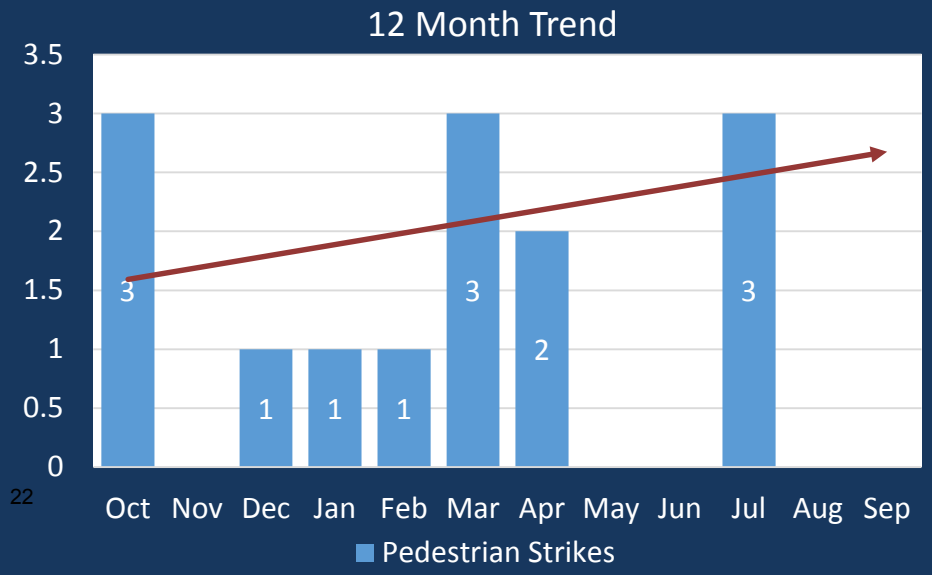
Status

- Decrease of two, compared to 1Q FY17
- Two of the three were cyclist
- Pedestrian strike was a person exiting a vehicle as the bus passed

Mitigations include:

- SAFE ride-alongs
- Bus pedestrian safety strobe lights





Bus Collision Rate

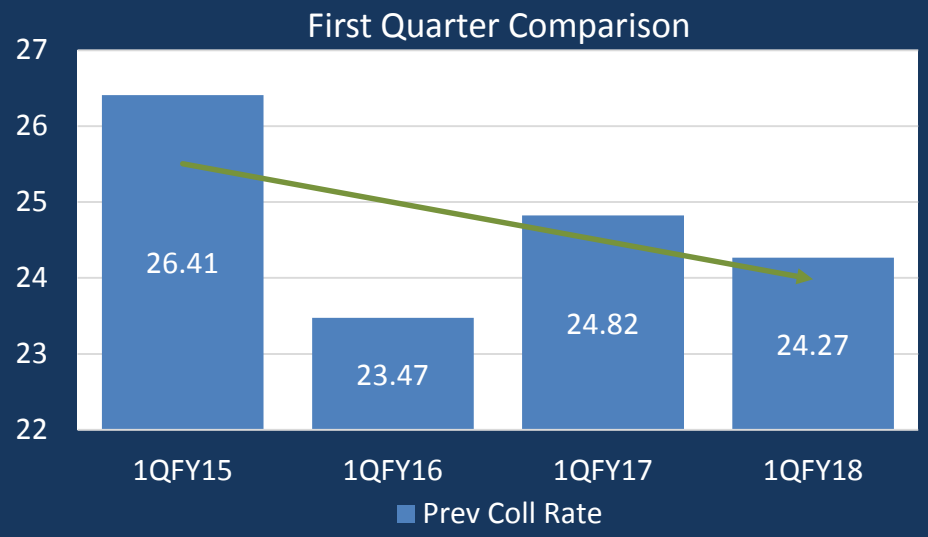
Benchmark

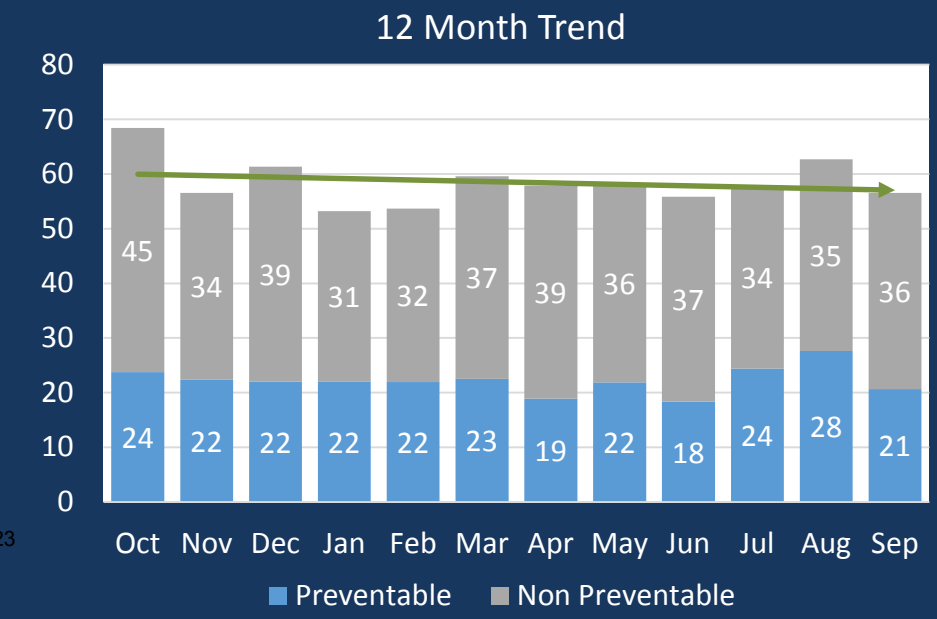
Status

- 59% of collisions were non preventable
- Slight decrease, compared to 1QFY17
- Primary collision types are bus striking a fixed/moving object and rear-ended collisions
- Primary causes are operator inattention and improper approach angle

Mitigations include:

- Fixed Object collision committee
- Onboard driving observations by safety officers





Questions