



# TRACKER

## 2017

## MassDOT's Annual Performance Report

Stephanie Pollack | Secretary and CEO

**massDOT**  
Massachusetts Department of Transportation

Prepared by the Office of Performance Management and Innovation  
November 2017

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## A Message From The Secretary

I am pleased to file the enclosed report to comply with Section 6.0 of Chapter 25 of the Acts of 2009, which requires that the Massachusetts Department of Transportation (MassDOT) submit a yearly Performance Management Report to the General Court's House and Senate Ways and Means Committees and the Joint Committee on Transportation.

The MassDOT *Tracker*, MassDOT's seventh Annual Performance Management Report, summarizes the Department's performance for Fiscal Year 2017 (July 2016 through June 2017). Organized by division (Aeronautics, Highway, Rail and Transit, and Registry of Motor Vehicles) as well as the MBTA, the report explains how the divisions' performance measures relate to MassDOT's performance goals. This year's *Tracker* is released as a companion document with the Annual Report of the Performance and Asset Management Advisory Council.

In 2015, *Tracker* established a baseline of performance measures. The next year, *Tracker* presented targets (two-year, four-year, and long-term) to measure that performance. This year's report represents the first annual milestone point for those targets. A range of external factors, internal processes, investment decisions, and policy choices help explain why MassDOT succeeds or falls short of meeting targets. In this first year out from target setting, MassDOT is able to isolate the areas where we are not trending in the desired direction, where performance has exceeded our expectations, or where we need to dig in deeper to understand the root causes of the outcomes.

Across the divisions and the MBTA, the performance for some measures has approached, hit or even surpassed targets. The E-ZPass transponder use rate, for example, is already close to the goal of 90 for 2018. Similarly, interstate pavement condition in good or excellent condition increased by 5 percent over last year and is already nearing the 2020 goal of 88 percent.

But just as the Department intends to build upon such success, it is analyzing why other targets were not achieved and how to improve its performance in those areas. Only 51% of non-interstate pavement is in good or excellent condition, short of the 62% target for 2018. And the average number of structurally deficient bridges increased by 14% to a total of 462. MassDOT will use such data as it updates its Capital Investment Plan to reflect such maintenance and modernization needs.

Our work in the coming months will be informed by the trends documented in *Tracker* and will include a biennial target-setting process to revisit the 2020 targets (and adjust as needed), set 2022 targets, and if needed, adjust the long-term targets to align with related efforts, or new forecasts based on improved

data or funding expectations. Among others, the following highlights are found on the following pages.

- > *The percent of Highway Division contracts completed on or under budget increased 12% (to 82%), surpassing the long-term goal of 80%.*
- > *The Complete Streets program is resulting in the approval of actual projects that will make a tangible difference in communities across the Commonwealth.*
- > *The Aeronautics Division disbursed 100% of its capital budget, as planned, making important upgrades to airports around the Commonwealth.*
- > *The Aeronautics Division is on track to complete all 12 safety inspections by the end of the year.*
- > *The Registry of Motor Vehicles (RMV) met the target of serving 80% of Service Center customers within 30 minutes.*
- > *The RMV experienced meaningful increase in the following areas, reducing demand on Service Centers:*
  - > *% of license renewals conducted online*
  - > *% of registration renewals conducted online*
  - > *% of system-wide transactions conducted outside of Service Centers*
  - > *% of system-wide transactions conducted online*
- > *The Regional Transit Authorities are moving toward improved documentation and accountability regarding their assets per requirements from FTA. This will result in standardized facility and vehicle condition measures and reporting.*
- > *The percentage of residents with access to transit increased by 1.4%.*
- > *The Rail Division inspected 100% of the railroad bridges.*
- > *All heavy rail subway (Blue, Orange and Red Lines) exceeded the 2018 target in subway reliability (90%).*

We look forward to building on these successes while focusing on the areas where we have not experienced the hoped-for performance. FY18 presents an opportunity to revisit our targets, identify our areas of challenge, and re-establish and reaffirm our strategies to better serve our customers.

Respectfully submitted,

## **Stephanie Pollack**

Secretary & Chief Executive Officer of the Massachusetts Department of Transportation



# INTRODUCTION

## > Purpose of this report

*Tracker* responds to Chapter 25 of the Acts of 2009 requiring that “a report of the project information system and performance measurements shall be published annually and made available to the public.”

The Massachusetts Department of Transportation’s Office of Performance Management and Innovation (OPMI) is charged with:

- > *Evaluating the goals and measures established by the Department and its divisions and monitoring reported results;*
- > *Recommending changes to proposed goals and measures as are appropriate to align them with the strategic priorities of the Secretary; and*
- > *Reporting regularly to the public on the progress the Department and its divisions are making to achieve stated goals.*

This report provides a high-level summary – expressed in performance measures – of the work that MassDOT employees are managing day in and day out. The targets and measures included in this report paint a picture of the agency’s Fiscal Year 2017 offering our stakeholders and legislators a transparent overview of where we’ve been, what’s been accomplished, and where we plan to go. In addition to serving as a communication tool to an external audience, *Tracker* provides internal benefits through the process of reporting. The identification of representative measures and selection of appropriate targets help each operating division isolate key activities and data that are crucial to tracking progress that is aligned with MassDOT’s goals. The report helps the executive leadership team make strategic decisions, management-level staff to best allocate personnel resources on a daily basis, and front-line employees view the impact their work on our transportation system and the experience of our customers.

Moving Ahead for Progress in the 21st Century (MAP-21), the federal transportation legislation enacted in 2012, embraced performance-based management and the reliance on performance measures as a core principle for recipients of federal transportation funding. Subsequent legislation – Fixing America’s Surface

Transportation (FAST) Act – signed in December, 2015, supports the performance management aspects of MAP-21, with small reporting adjustments. As rule-making has been finalized for this legislation, MassDOT has been working actively to set the mandated targets and prepare for the reporting requirements. MassDOT’s established commitment to performance management provides a good foundation from which to engage and collaborate with transportation partners (transit agencies, metropolitan planning organizations, etc.) to meet the new federal requirements. Where appropriate, the content presented in *Tracker* aligns with federal performance measures reporting requirements (as noted throughout the document).

This report provides an overview of performance across MassDOT for Fiscal Year 2017 (July 2016 through June 2017). Instances where the time period is different are noted. It presents trends tracked through selected performance measures. This report is descriptive; it is not intended to solve problems but instead to identify areas of both successes and weaknesses. Those problems are addressed through many other related processes and plans throughout the Department. *Tracker* is organized by five operational divisions (Highway, Aeronautics, the Registry of Motor Vehicles, Rail & Transit, and the MBTA). Each division section is organized by the five MassDOT performance goals described on the following page.

## ➤ Relationship to the Performance and Asset Management Advisory Council Report

*Tracker 2017* is being released as a companion to the 2017 Annual Report of the Performance & Asset Management Advisory Council (the PAMAC Report). Per Chapter 46, Section 12 of the Acts of 2013 and as referenced in Chapter 6C, The Performance & Asset Management Advisory Council is mandated to release a report that provides progress on the development of a mature asset management system. These two reports, while overlapping in some aspects, provide different perspectives and intents. *Tracker* includes asset performance but also captures the performance of other elements of MassDOT, such as operations, project delivery, customer experience, etc. While these elements can be directly impacted by the condition and performance of our assets, they are also a function of other factors. The PAMAC Report details the condition and performance of MassDOT assets, but also includes forecasting of future trend lines of this performance, based upon current status and projected investment levels. The two reports, released in tandem this year, provide a robust overview of MassDOT.

## > MassDOT performance goals

The Secretary of Transportation established five overarching goals for MassDOT and the MBTA. The purpose of these goals is to articulate the critical drivers for the agency's programs and processes and to provide a framework for the interrelated activities that occur across the operational divisions.

These performance goals, together, inform the work that MassDOT and MBTA employees conduct each day and provide a framework for prioritizing resources. Each operational division's performance measures have been organized by the performance goal categories.

### Customer Experience

Provide reliable and accessible services to MassDOT and MBTA customers and ensure that they are satisfied with the services provided.

### System Condition

Ensure that the transportation system is well maintained and follows best practices for maintaining, preserving, and modernizing assets.

### Budget & Capital Performance

Maximize capital investment effectively and efficiently by delivering programs and projects that produce the greatest benefits to the Commonwealth, its residents, and its visitors.

### Safety

Provide and support a multi-modal transportation network that is safe for our workers and all users.

### Healthy & Sustainable Transportation

Invest in and support a transportation system that promotes and protects the health of all users and the natural environment.

## > MassDOT performance measures

The performance measures selected for inclusion in this report are the result of a number of inputs. The publication of *Tracker* is grounded in the 2009 legislation (updated in 2013), which provides specific performance measures to be included in the report. In addition, OPMI has worked to add to, or align, these measures with those that are federally mandated in final rule-making through MAP-21. Along with those, each operating division has selected measures that provide the most accurate picture to legislators, partners and the public of performance on core practices.

Each year in producing *Tracker*, OPMI works in coordination with each operating division to reassess the performance measures. In some cases performance measures are no longer valid or valuable due to a lack of data, programmatic changes, or policy adjustments. In other cases, performance measures that were considered “in development” are mature enough to include. In many of these cases, the data may remain limited (e.g. only one year’s worth), but OPMI and division leadership believe that beginning to include them adds meaningful depth and breadth. During FY17, OPMI worked with each division to determine plans for performance measure adjustments. These changes are noted throughout the report.

## > MassDOT performance targets

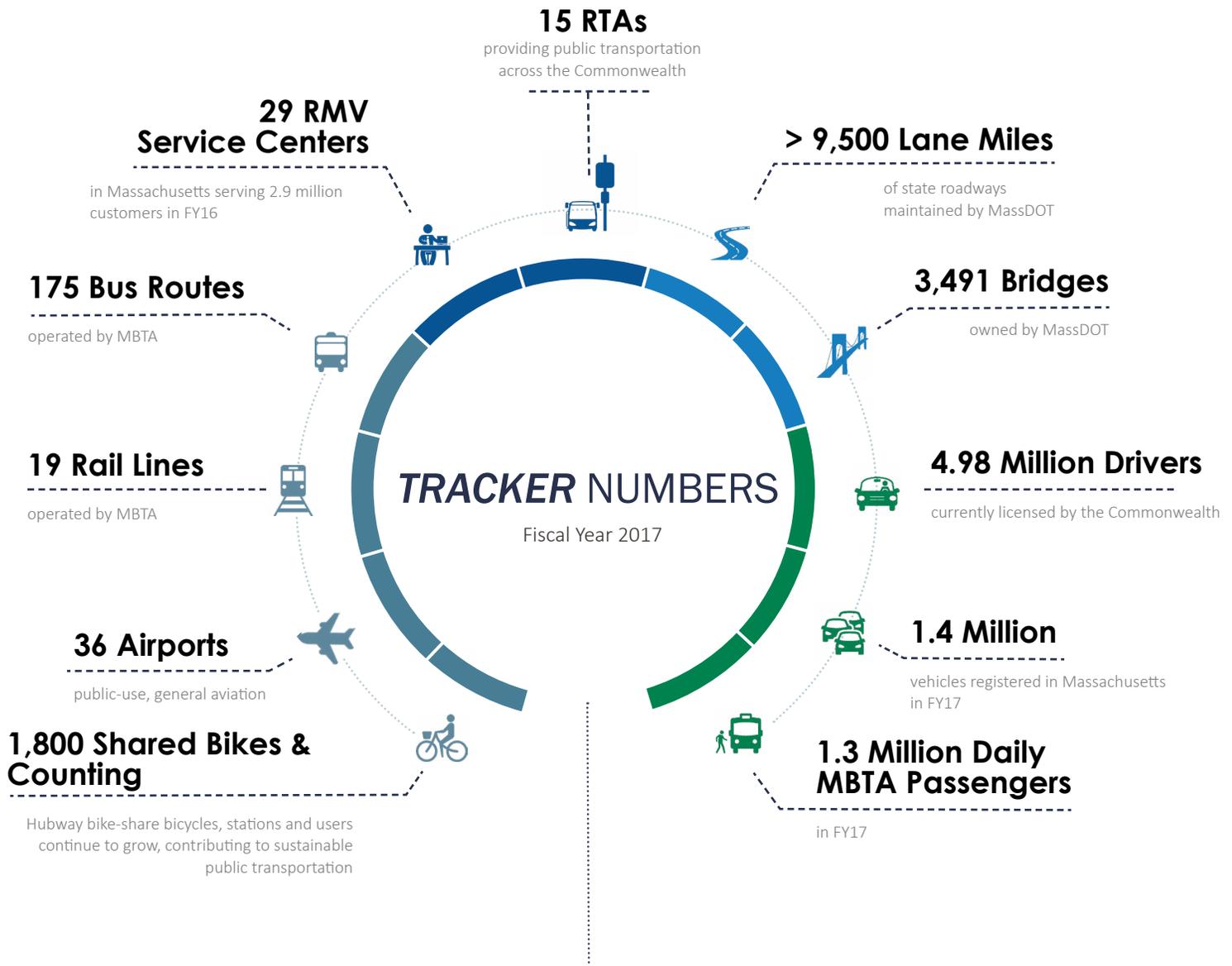
In 2016, MassDOT conducted a target-setting process to establish two-year (FY18) and four-year (FY20) targets for the measures included in *Tracker*. In addition, each measure has a long-term, or aspirational, target. These time horizons were adopted to maintain consistency with the MAP-21 target-setting timeframe. As such, the targets adopted in FY16 will hold until FY18 when the FY20 targets (becoming the new two-year targets) are revisited and adjusted if needed, and a new four-year target (for FY22) is set. The long-term targets will also be reconsidered and adjusted as necessary at this time. Any targets (2018, 2020 or long-term) that have been adjusted for this FY17 *Tracker* are noted in the report.

This biennial target-setting process is informed by historical trend analyses for each measure. These trends are considered within the context of Massachusetts-legislated targets, fiscal constraints and associated projections (e.g. the Planning for Performance tool used for the Capital Investment Plan (CIP)) and any other previous or existing targets identified by the division in related efforts (e.g. the MBTA’s updated Service Delivery Policy). The MBTA’s target setting process is on a different schedule in order to align it with the Authority’s Strategic Plan effort, finalized in April, 2017. Targets for 2020 and 2022 will be set for the MBTA in 2018, along with the other divisions.

## > Peer state comparisons

Tracking performance over time within an agency is fundamental to performance management. However, it is also instructive to understand how an agency performs within the context of its peers. To provide a backdrop for MassDOT’s performance within the nation, *Tracker* includes a comparison on select measures to six peer states. These peer states – Connecticut, Maryland, New Hampshire, New Jersey, Rhode Island, and Washington – were selected as a group in a study conducted by Dr. Patricia Hendren and Dr. Debbie A. Niemeier. Published in 2008, their research is presented in a paper titled “Identifying peer states for transportation system evaluation and policy analyses.”<sup>1</sup> The peer states were grouped based on historical data for 42 variables (including population, geographic location, transportation infrastructure, economic factors, etc.). The peer measures presented in *Tracker* are those for which data are easily available to MassDOT.

1 Hendren, P. & Niemeier, D.A. Transportation (2008) 35: 445. doi:10.1007/s11116-008-9158-8



## ➤ The data behind performance

MassDOT and the MBTA collect large amounts of data, across a diverse set of activities and programs. These data are collected in many time increments – annually, monthly, daily, hourly, etc. - depending upon what they measure. OPMI works closely with the many divisions to leverage these data to provide the most useful outputs and resources to understand performance trends, provide accountability and transparency, analyze the impacts of interventions, inform policy decisions, and guide resource allocation. To provide the best possible data resource, OPMI and its partners throughout the agency are continually striving to improve data sources, data collection, and data analysis. The outcome of this work is often improved reporting, but it can also lead to a disconnect between one year and another (where the data collection or measure changed), or to a lack of historical data. Despite this, the ongoing work allows MassDOT and the MBTA to improve the performance of our operations through more accurate information and better tools.



# HIGHWAY DIVISION

## Overview

The Highway Division's 2,800 employees work to maintain a safe and durable highway network for people and goods. Efficient movement throughout the state is key to our quality of life, economy, and environment. The Division's core responsibilities are to: ensure highway safety; design, construct, and preserve highway infrastructure; and maintain and operate the highway network.

The Highway Division is comprised of six districts spanning the Commonwealth. The Division owns 9,578 lane miles of roadways, including all interstates and limited-access freeways. The Division is responsible for over 5,000 bridges, of which it owns 3,491. Additionally, MassDOT oversees the design and construction of municipal projects that are federally funded. As such, the Highway Division plays a key role in coordinating across all levels of roadway design, construction, maintenance, and operation in the Commonwealth.

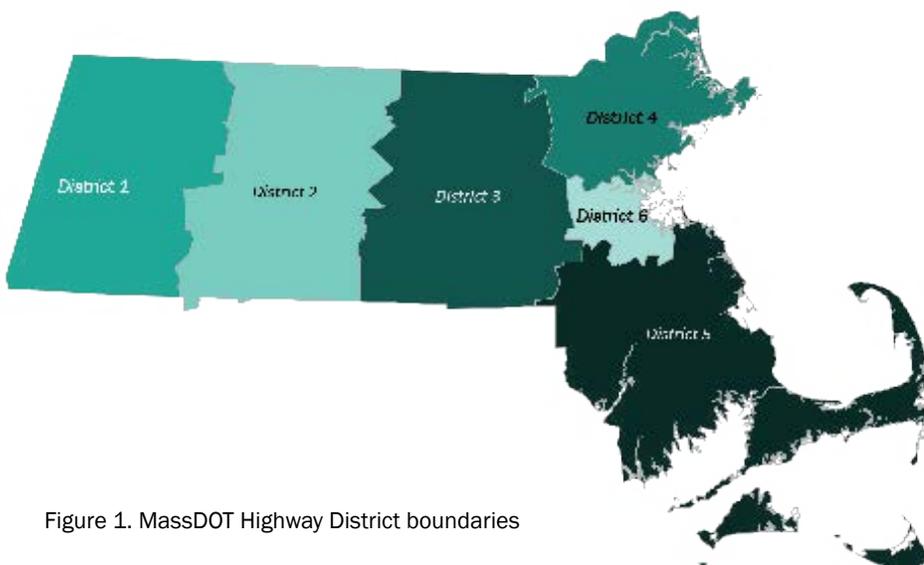
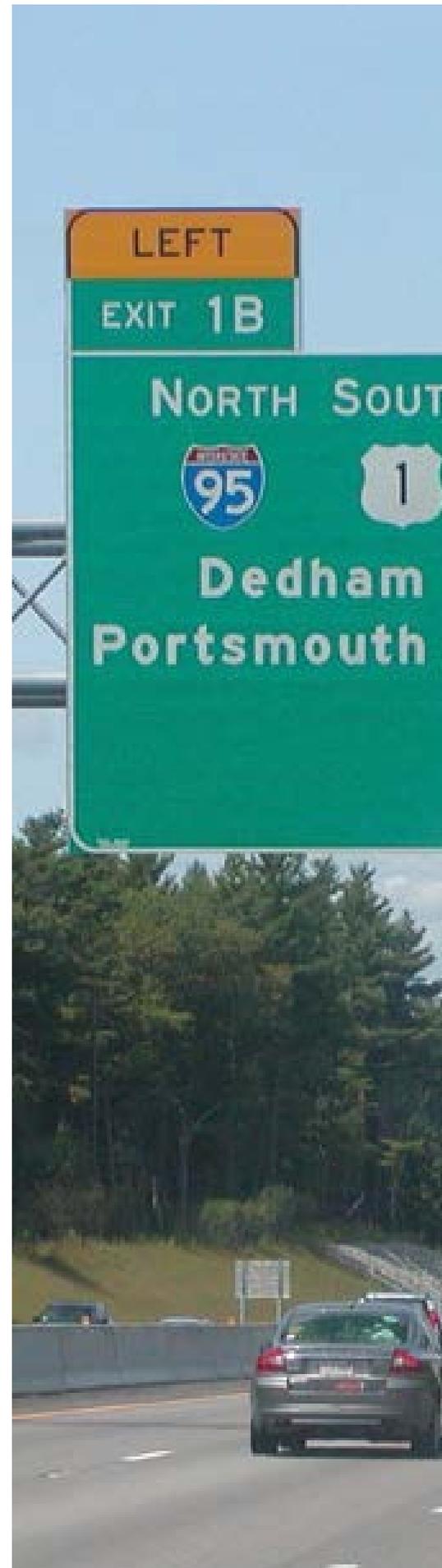


Figure 1. MassDOT Highway District boundaries



## HIGHWAY DIVISION - 2017 SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	2018 TARGET	2020 TARGET	LONG-TERM TARGET
	E-ZPass payment rate (vs pay-by-plate)	<b>87%</b>	n/a	90%	92%	95%
	Average commute time <sup>1</sup> (5-year ACS estimate)	<b>28.7</b> minutes	+0.4 minutes	Context only - no targets set		
	PSI - Interstate (% good and excellent condition)	<b>87.8%</b> (FFY16)	+5.6% (FFY15)	85%	88%	90%
	PSI - Non-interstate (% good and excellent condition)	<b>59.9%</b> (FFY16)	-2.3% (FFY15)	62%	62%	62%
	PSI - Interstate (% poor)	<b>2.3%</b> (FFY16)	-0.3% (FFY15)	5%	No more than 5%	Less than 5%
	PSI - Non-interstate (% poor)	<b>14.6%</b> (FFY16)	-2.3% (FFY15)	12.6%	12.6%	12.6%
	Pavement repair backlog	<b>3,449 lane miles</b> (FFY16)	+174 lane miles (FFY15)	Context only - no targets set		
	Structurally deficient bridge count	<b>462</b>	+14	300	300	300
	Structurally deficient deck area (NHS only) <sup>2</sup>	<b>17%</b>	+1%	14%	13%	Less than 10%
	Bridge Health Index	<b>85.2</b>	+0.1	88	92	95
	Failed or missing curb ramps	<b>5,200</b>	-1,500 (FY12)	40% reduction from FY12	60% reduction from FY12	Move towards 100% reduction from FY12
	Number of contracts in construction phase	<b>240</b>	-80	Context only - no targets set		
	Number of contracts planned for next year <sup>3</sup>	<b>120</b>	+70	Context only - no targets set		
	Number of construction contracts completed in year	<b>153</b>	-38	Context only - no targets set		
	Percent of STIP projects advertised in year	<b>97%</b>	+11%	80%	90%	95%
	Percent of contracts completed on or under budget	<b>82%</b>	+12%	n/a <sup>4</sup>	75%	80%
	Percent of contracts completed on time	<b>55%</b>	+14%	n/a <sup>4</sup>	75%	80%
	Number of fatalities <sup>5</sup>	<b>361</b> (CY11-CY15 rolling average)	+0 (CY10-CY14 rolling average)	354	347	Move Towards Zero
	Rate of fatalities per 100 million VMT <sup>5</sup>	<b>0.64</b> (CY11-CY15 rolling average)	-0.01 (CY10-CY14 rolling average)	0.63	0.62	Move Towards Zero
	Number of pedestrian fatalities	<b>76</b> (CY11-CY15 rolling average)	+2 (CY10-CY14 rolling average)	73	71	Move Towards Zero
Number of motorcycle fatalities <sup>6</sup>	<b>49</b> (CY11-CY15 rolling average)	0 (CY10-CY14 rolling average)	48	47	Move Towards Zero	

## HIGHWAY DIVISION - 2017 SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	2018 TARGET	2020 TARGET	LONG-TERM TARGET
	Number of bicycle fatalities	<b>9.4</b> (CY11-CY15 rolling average)	+1( CY10-CY14 rolling average)	8	8	Move Towards Zero
	Number of serious injuries <sup>5,6</sup>	<b>3,252</b> (CY11-CY15 rolling average)	-114 (CY10-CY14 rolling average)	3299	3231	Move Towards Zero
	Rate of serious injuries per 100 million VMT <sup>5,6</sup>	<b>5.78</b> (CY11-CY15 rolling average)	-0.35 (CY10-CY14 rolling average)	5.9	5.8	Move Towards Zero
	Number of non-motorized fatalities and serious injuries <sup>5,6</sup>	<b>541</b> (CY11-CY15 rolling average)	+6 (CY10-CY14 rolling average)	525	514	Move Towards Zero
	Fatalities in roadway work zones	<b>3</b> (CY11-CY15 rolling average)	-2 (CY10-CY14 rolling average)	5	5	Move Towards Zero
	Daily vehicle miles traveled per capita	<b>24.8</b> (CY16)	+0.1 (CY15)	23.0 (2008 levels)		
	Number of municipalities registered for Complete Streets <sup>7</sup>	<b>167</b>	n/a	200	300	351
	Number of Complete Streets policies approved <sup>7</sup>	<b>130</b>	n/a	TBD	TBD	TBD
	Number of Complete Streets projects approved <sup>7</sup>	<b>26</b>	n/a	TBD	TBD	TBD
	New miles of sidewalk paved or created	<b>66</b>	-23	TBD	TBD	TBD

1. Based on US Census American Community Survey (ACS)

2. As of the November 1, 2017 the SD bridge deck area is 15%.

3. These projects are in addition to the 240 active projects going into 2018.

4. Due to the multi-year process associated with construction contracts, a 2018 target was not set.

5. Required by MAP-21.

6. A data source adjustment (as required for MAP-21 reporting) between FY16 and FY17 result in a different number or rate in these categories. The reporting has been adjusted historically for the period of time reported in Tracker 2017.

7. This report was updated on March 15, 2018 to correct a reporting error.



# Customer Experience

## > E-ZPass payment rate (vs pay-by-plate)

E-ZPass, MassDOT's electronic toll collection program, allows users to pay tolls via a transponder attached to a windshield. All tolls statewide are completely automated through either E-ZPass or Image Based Tolling, with no in-lane toll payment accepted. Customers who pass through the tolls without a transponder receive a bill in the mail, based on their license plate. The use of E-ZPass can be tracked by the E-ZPass payment rate, which is the percentage of all toll transactions that are completed by a transponder. This metric is especially critical with the launch of the All Electronic Tolling System (AET) in October 2016. Between that launch and the end of FY17, the E-ZPass payment monthly rate was 87% on all tolled roadways.

## > Average commute time

The time that it takes residents of the Commonwealth to travel to work is an indicator of a number of factors:

- > The congestion on the roadways (which can increase as the economy improves and is a function of capacity on the roadway network);
- > Land use patterns that influence where residents live and work; and
- > The available travel modes that residents choose to utilize.

While the extent of some of these factors are not directly impacted by MassDOT's work, average commute time is a useful context performance measure to gauge system efficiency. Therefore, MassDOT does not have a target for this measure. However, a downward trend is desirable (from the standpoint of the health of the environment and quality of life for residents). Figure 2 shows that there has been a general upward trend in commute time since CY07.

### Average commute time by mode

This measure provides a picture of how mode choice impacts commute time. On average, public transportation commuters spend the greatest amount of time traveling to work. Of course mode choice is frequently a function of distance, accessibility (to transit, pedestrian infrastructure, etc.), safety and other conditions. MassDOT has, within its control, the opportunity to impact some of these factors. For example, decreasing the average commute time on public transit (e.g. by offering additional express transit service in key locations) could result in both more commuters choosing public transit and reduction in the commute times of those who continue to drive to work. As OPMI works to identify more advanced performance measures that can target the cause of commute times (e.g. reliability, congestion), MassDOT will have additional information about how to make investments that will effectively improve these outcomes and the experience of our customers.



## E-ZPass payment rate (vs pay-by-plate)

This measure is calculated as the percentage of customers paying tolls using a transponder. Customers who do not have a transponder and therefore do not pay the toll automatically are identified via their license plate and mailed a request for payment.

This is the basis for the AET program. While there will always be some tolls paid via the license plate identification system, a higher E-ZPass payment rate reduces the administrative burden.

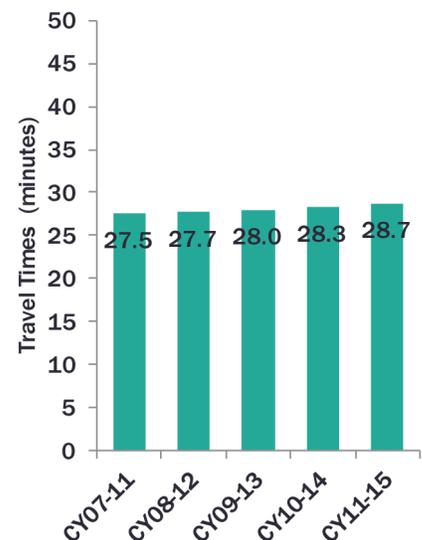
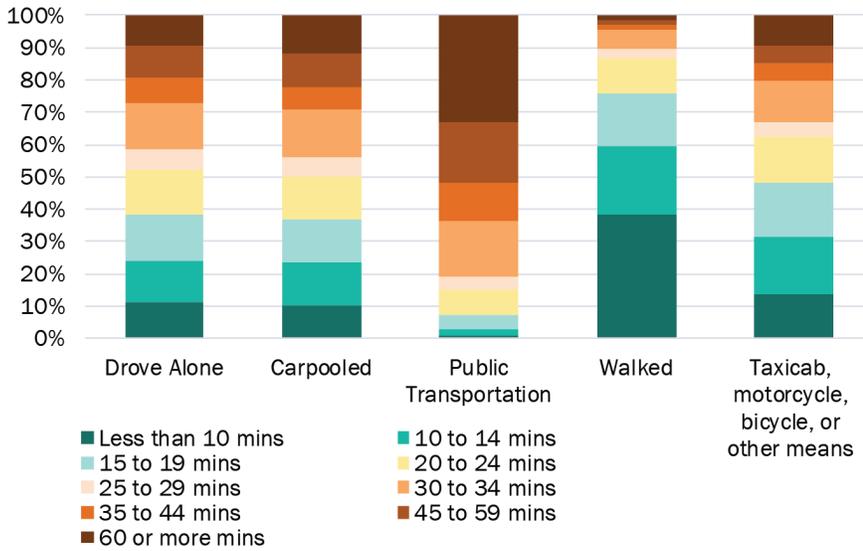


Figure 2. Mean travel time to work of workers 16 years and over who did not work at home (Source: ACS)



**Average commute time/by mode**

The US Census' American Community Survey (ACS) is the best annually updated data source available for average commute time. The ACS surveys a sample of the US population on a range of topics each year, including average commute time overall and by mode. These data, reported by calendar year, allow us to track annual trends and compare peer states.

Figure 3. Commute time by mode (Source: ACS CY11-CY15 5-year estimate)

*Average commute time (peer comparison)*

Among the group of peer states, Massachusetts currently ranks third out of seven peer states for longest average commute time; residents of New Jersey and Maryland both have longer average commutes. While all seven states have experienced an increase in average commute time from the CY07-CY11 period, Massachusetts has increased 4.4% since that time.

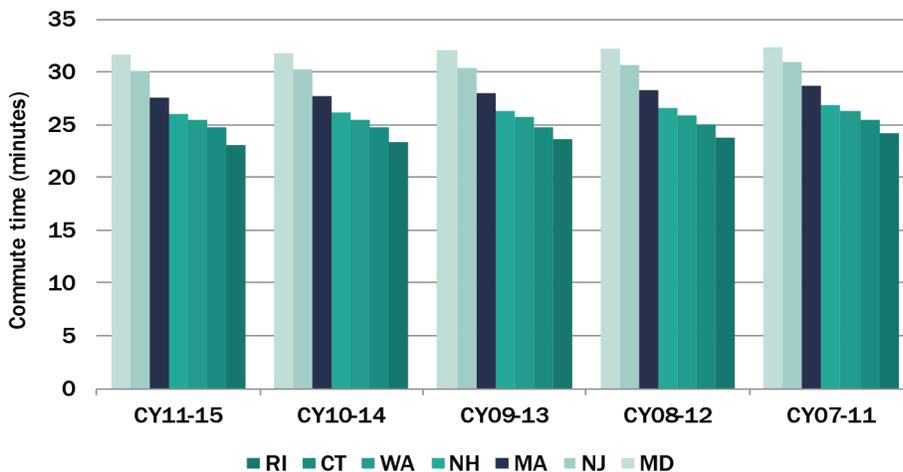


Figure 4. Average commute time estimate per calendar year, peer state comparison (Source: ACS)

# System Condition

## > PSI (Non-interstate and interstate pavement condition)

A pavement condition measure is required by both MAP-21 and MA 2009 legislation, although the categories of roadway type for reporting requirements vary. Here, we are reporting Pavement Serviceability Index (PSI) on interstate and non-interstate (MassDOT-owned) pavement conditions. PSI is measured on the federal fiscal year (FFY) calendar. The proposed targets are based on current conditions, apply to state-owned roadways, and consider both the percentage of roadway in “good” or “excellent” condition and the percentage of roadway in “poor” condition.

Over the past five FFYs the percentage of interstate pavement in “good” or “excellent” condition has increased from 82.2% in FFY12 to 87.8% in FFY16. In that same time period, the percentage of interstate pavement in “poor” condition has decreased slightly from 2.6% to 2.3%, which is still well below the FHWA threshold of no more than 5%.

The percentage of MassDOT-owned non-interstate pavement in “good” or “excellent” condition has declined from 62.2% in FFY12 to 59.9% in FFY16. In that same time period, the percentage of non-interstate pavement in “poor” condition decreased from 16.9% to 14.6% in FFY16. The 2018-2022 CIP process, finalized in 2017, considered the impacts of funding across program areas using the Planning for Performance Tool. Given current funding levels approved by the MassDOT Board, the condition of MassDOT-owned non-interstate pavements is expected to deteriorate over the next 10 years from the current condition of 59.9% “good/excellent,” to 32% “good/excellent” and 66% “poor.” As a result, MassDOT has set a target to maintain current pavement condition levels over both the near and long-term.

The Highway Division will be exploring strategies to improve performance while keeping the investment level consistent with the CIP. The *2017 Annual Report of the Performance and Asset Management Advisory Council* provides details on the pavement condition targets and forecasts.

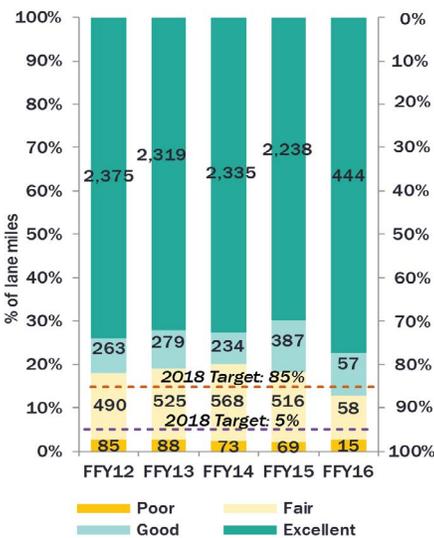


Figure 5. Interstate (lane miles) pavement condition

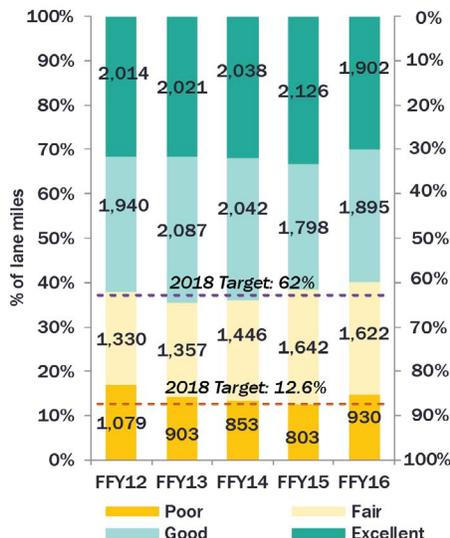


Figure 6. MassDOT (lane miles) pavement condition

### PSI (Non-interstate and interstate pavement condition)

Pavement Serviceability Index (PSI) is a composite pavement condition index that considers the severity and extent of cracking, rutting, and raveling on surfaces as well as ride quality. It measures the conditions of the pavement from impassable to perfectly smooth. The PSI thresholds “excellent,” “good,” “fair,” and “poor” are different for interstate highways vs other state highways and are fully developed within MassDOT’s Pavement Management System. The condition thresholds for interstate highways are more stringent to support the higher speeds and volumes present on those facilities. Interstate pavement inspections are conducted annually and the remaining NHS inspection data is collected on a biennial basis.

## > Estimated pavement repair backlog in lane miles

The pavement repair backlog articulates the need for pavement repairs as defined by lane miles which are not in “good” or “excellent” condition. Out of 9,727 lane miles, there are currently 3,449 (35%) lane miles of pavement in “fair” and “poor” condition (inclusive of state-owned interstate and non-interstate roadways).

The backlog has remained relatively consistent since FFY12 all the way through FFY16.

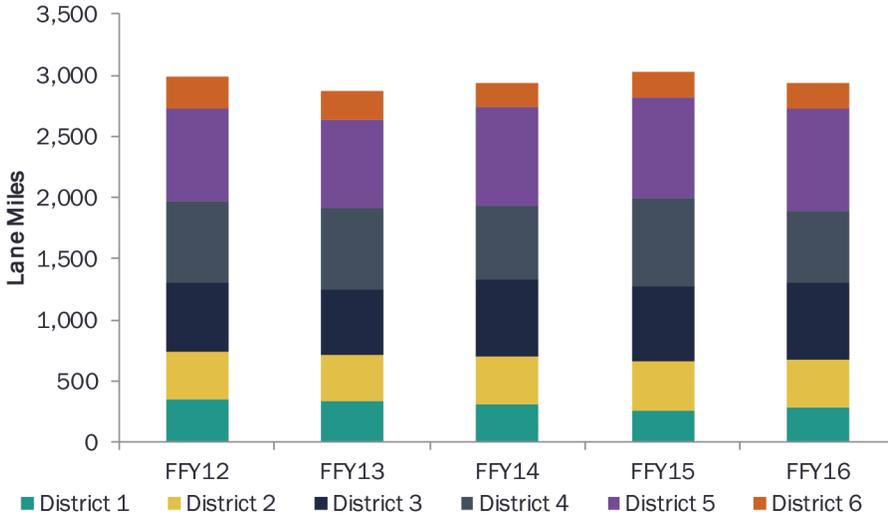


Figure 7. Pavement backlog lane miles by Highway District

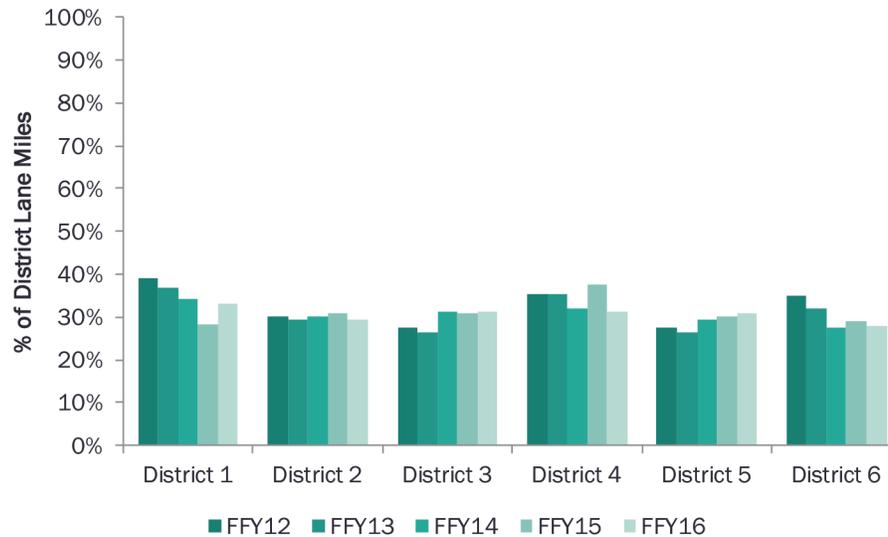


Figure 8. Pavement repair backlog (%) by Highway District

## > Structurally deficient bridges

MassDOT presents bridge condition using three different measures to provide a complete picture and to meet all reporting requirements. Historically, the primary Highway Division measure for bridge performance has been the number of structurally deficient bridges (SD) within the state. Bridge Health Index has been presented as an additional, more relatable, measure for the public. MAP-21 requires that states now report the condition of National Highway System (NHS) bridges by the percentage of deck area on structurally deficient structures compared with deck area of the full system, with a target not to exceed 10% of all deck area. This measure incorporates structure size in the analysis of bridge performance. To inform the investment plan required to achieve the target, the Highway Division is developing a model to predict performance by deck area. The new model will replace previous analysis, and improve reporting accuracy of bridge condition. Until this revised analysis is complete, the number of structurally deficient bridges is provided for context only.

The average number of structurally deficient bridges increased by 14 to a total of 462. This continued the trend begun by an increase in structurally deficient bridges between FY15 and FY16.

## > Structurally deficient deck area (NHS only)

All DOTs are required to report this measure, per the National Performance Program outlined in the MAP-21 federal transportation legislation. States reporting more than 10% of bridge deck area associated with a structurally deficient NHS bridge will be required to allocate a certain percentage of funds to the Highway Bridge Program until the standard is met. The targets proposed for this measure are based upon this threshold.

Structurally deficient deck area was consistent at 16% between FY14 and FY16. As of the close of FY17, that percentage had increased to 17%. However, as of October 1, 2017, the number has declined to 15%. This change will be reflected in the FY18 Tracker.

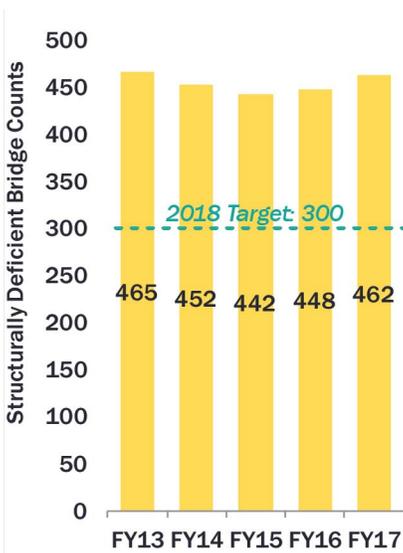


Figure 10. Structurally deficient bridge count, FY13-FY17

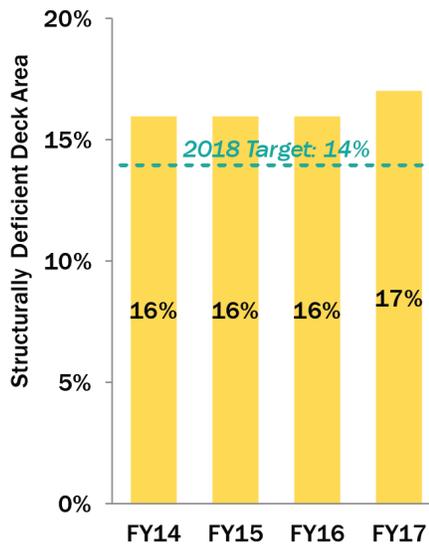


Figure 9. Structurally deficient deck area, FY14-FY17



### Structurally deficient bridges

A bridge is rated as structurally deficient (SD) when the deck (driving surface), the superstructure (supports immediately beneath the surface), or the substructure (foundation and supporting posts and piers) are rated at condition 4 or less on a scale of 0-9. Structural deficiency does not necessarily imply that a bridge is unsafe. It does, however, mean that a structure is deteriorated to the point of needing repairs to prevent restrictions on the bridge.



### Structurally deficient deck area (NHS only)

This provides a different SD bridge measure by taking into consideration the size of the bridge spans. This measure is calculated by comparing the amount of deck area that is associated with a structurally deficient bridge to the total area of bridge deck in the Commonwealth. For example, the traditional SD bridge measure assigns the same significance to the Longfellow Bridge as any other. In reality, the bridge is 15 times greater than an average NHS bridge in the Commonwealth.

## > Bridge Health Index

Bridge Health Index (BHI) provides an additional measure of the condition of our bridge assets. BHI has increased slightly from 81 to 85, over the past five fiscal years. The 2018 target seeks to increase this rate by an additional 3 points.

OPMI has worked with Highway Division staff to produce targets that will lead MassDOT toward bridges in better condition, with the understanding that some elements will always be in need of repair (and therefore the BHI will never reach 100).

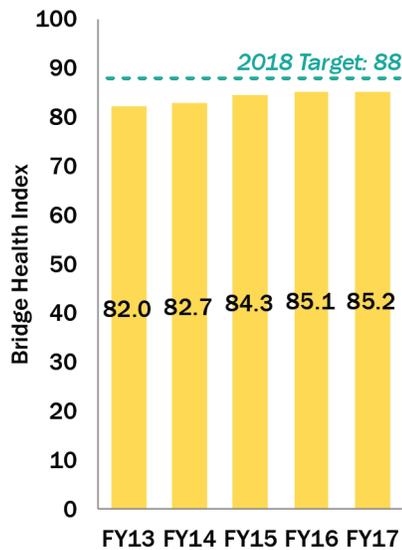


Figure 11. Bridge Health Index, FY13-FY17

## > Failed or missing curb ramps (MassDOT-owned curb ramp condition)

To meet the obligation of the development of an ADA Transition Plan, MassDOT has implemented a program to reconstruct substandard curb ramps statewide. In 2012 an inventory was created to look at all 26,000 curb ramps throughout the Commonwealth, where almost 6,300 were found to be failing or missing. For FY17, the number of failed or missing curb ramps was 5,200. The targets for this measure are based upon that planned scope of work. These targets will be revisited in 2018 and will incorporate a more sophisticated inventory currently under development by the Highway Division.

### Bridge Health Index

*The Bridge Health Index (BHI) provides a comprehensive overview of the condition of all bridge elements across the network. This measure, reported on a scale of 0 to 100, reflects element inspection data in relation to the asset value of a bridge or network of bridges. A value of zero indicates all of a bridge's elements to be in the worst condition.*

### Failed or missing curb ramps

*Failed or missing curb ramps is calculated using the baseline inventory conducted in 2012. Each year, the number is reduced as a result of the curb ramps that are added or updated.*



# Budget & Capital Performance

## > Number of contracts in construction phase, planned for next year, and construction contracts completed annually

These measures are required by Massachusetts legislation and are considered context measures important for understanding the scope of work handled by the Highway Division across each fiscal year. The number of construction contracts considered reaching full beneficial use in FY17 was 153. This was an decrease of 38 contracts over FY16.

At the start of FY18, the Highway Division had 240 active construction contracts. A total of 120 contracts are expected to become active during FY18.

## > Percent of STIP projects advertised in year

The State Transportation Improvement Program (STIP) outlines all projects funded with federal funds in the federal fiscal year. Tracking the percentage of projects listed on the STIP that were advertised is a useful lens into the execution of the work that was planned. The percentage of planned projects advertised was 97%.



### Percent of STIP projects advertised in year

The measure tracks the percentage of projects actually advertised on the STIP against the plan. It is an indicator of how well the Highway Division and Office of Transportation Planning is working with regional partners in the MPOs (Metropolitan Planning Organizations) to plan and prioritize projects using federal dollars.

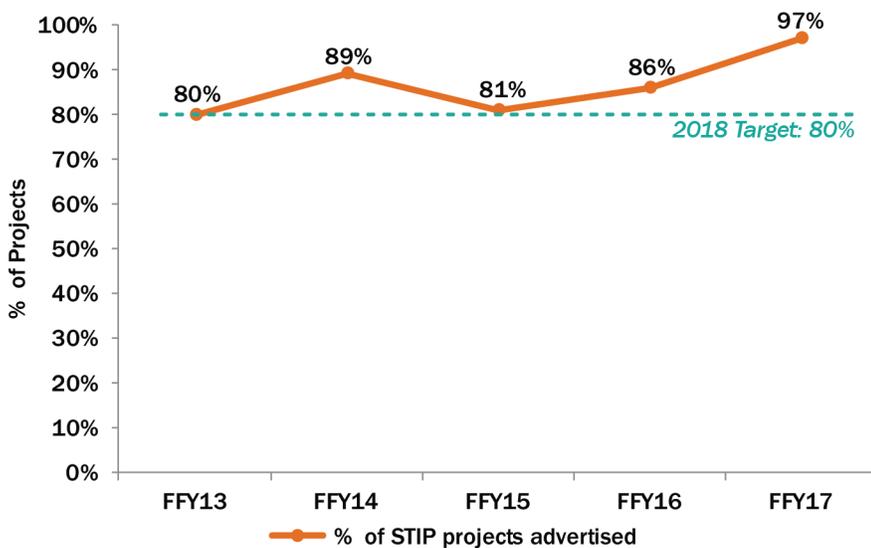


Figure 12. STIP projects advertised

### > Percent of contracts completed on or under budget

During FY17, 90% of all construction contracts were completed within 10% of the original budget. The Highway Division is in the process of taking a closer look at the types of projects that more often exceed planned budgets, and the typical causes for the variance.

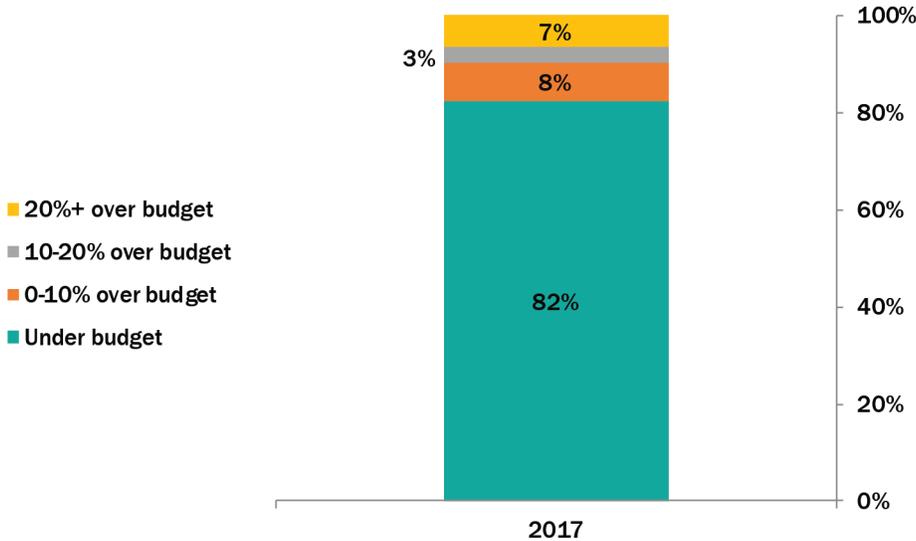


Figure 13. Contracts completed on or under budget



### Percent of contracts completed on time/on budget

These measures present the percentage of construction projects that were completed within threshold ranges of the estimated completion date and budget. Contracts are considered complete when the project has reached full beneficial use.

### > Percent of contracts completed on time

The on time performance of construction contracts is one measure used by the Highway Division to evaluate delivery of the capital program. During FY17, 55% of completed construction projects did so within their initial estimated delivery date. Seventy percent were completed within 120 days of that date, or what is typically considered one construction season.

Delay can be for many reasons, but the typical causes are utility relocations and unanticipated field conditions. The Highway Division is in the process of looking closely at the causes for significant delay, and will be identifying ways to measure those to aid in better project delivery performance.

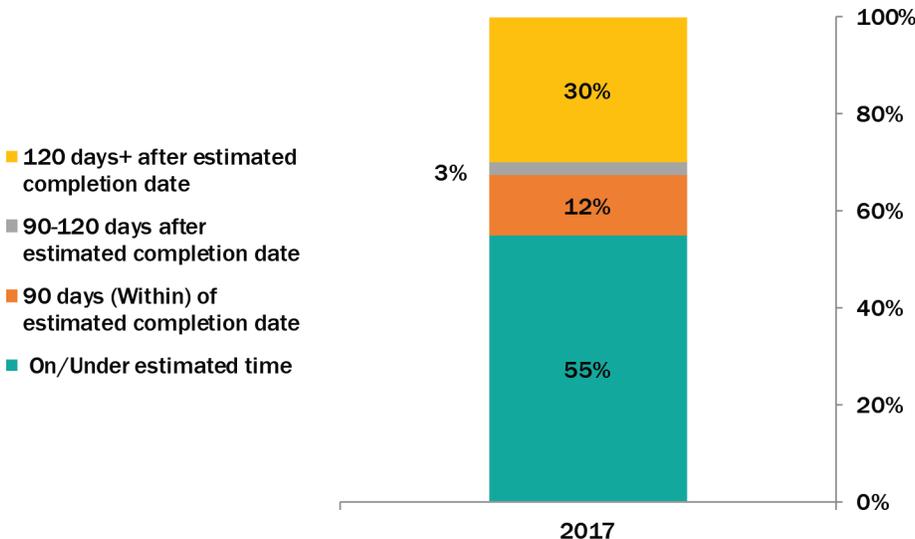


Figure 14. Contracts completed on time



# Safety

MAP-21 and the FAST Act require reporting of safety measures. These measures were the first performance measures to be made final, and so MassDOT has already submitted initial targets as required. In July 2017, MassDOT’s Highway Division submitted trend line projections as targets for the safety performance measures required by MAP-21 and the FAST Act. For these measures, FHWA’s guidance instructed a use of the historical trends with a consideration of external factors to establish targets. Due to rising crash rates in recent years, each trend line target is less aggressive than the targets set previously through MassDOT’s internal process completed for FY16 Tracker. While important to consider the trend data, MassDOT will continue to hold the initial targets (2% reduction by 2018 and 4% reduction by 2020) as those to work toward. Similarly, the long-term target – Toward Zero Deaths (TZD) - remains on the agency’s horizon.

## > Number and rate of fatalities

The number and the rate of fatalities continues to decrease in the time period between CY07 and CY15. (The data for this measure lag due to the reporting and collection process and therefore more recent numbers are not available.) Massachusetts continues to have the lowest fatality rate among its peers. The long-term target – Toward Zero Deaths (TZD) – has been established through adoption of the federal program with that name. Short term targets of 2% and 4% reduction in fatalities have been set for the two year and four year target horizon.



### Number and rate of fatalities

*The number and rate of fatalities is measured in a five year rolling average to eliminate outliers and provide a more accurate picture of trends over time. The rate is calculated per 100 million VMT.*

*The number and rate of fatalities are critical performance measures to illustrate the safety of our roadway network. The rate provides the context to show how the change in number of fatalities is partially a factor of an increase or decrease in the aggregate number of miles being driven during that time frame.*

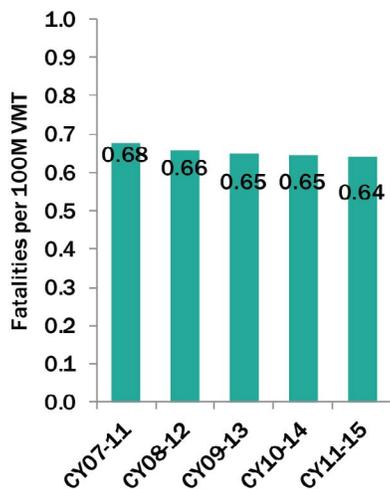


Figure 15. Rate of fatalities per 100M VMT

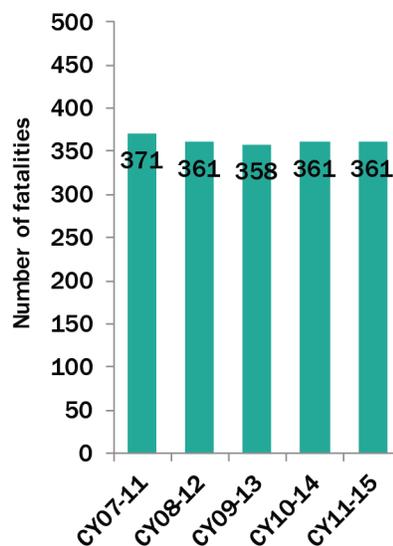


Figure 16. Number of fatalities

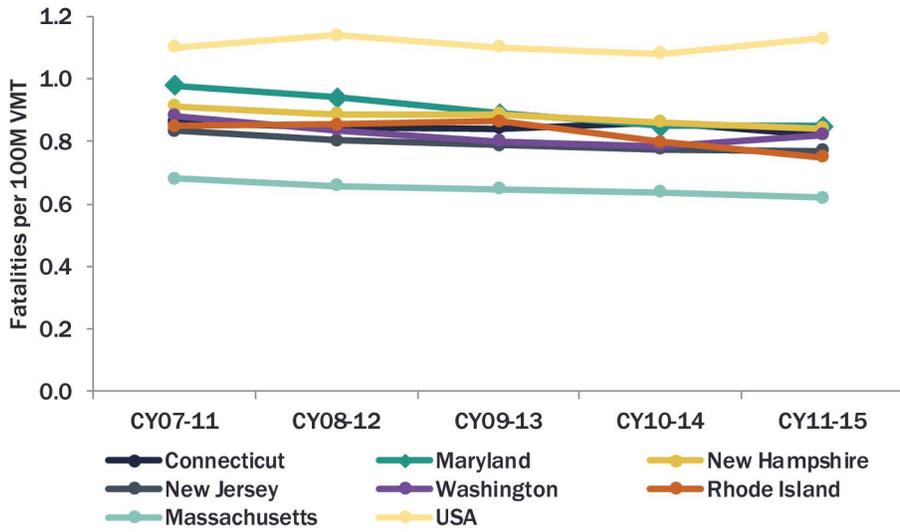


Figure 17. Fatalities per 100M VMT (peer state comparison)

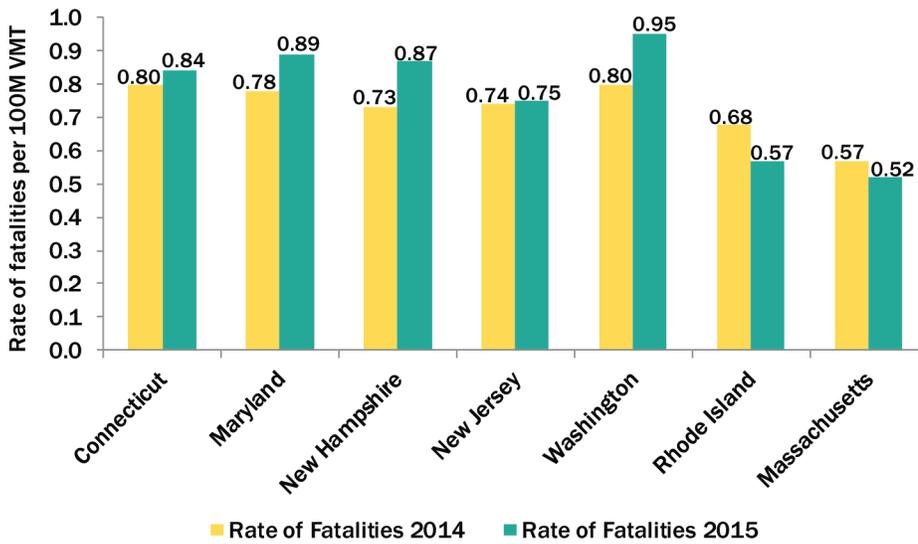


Figure 18. Rate of fatalities per 100M VMT, (CY14-CY15 peer state comparison)

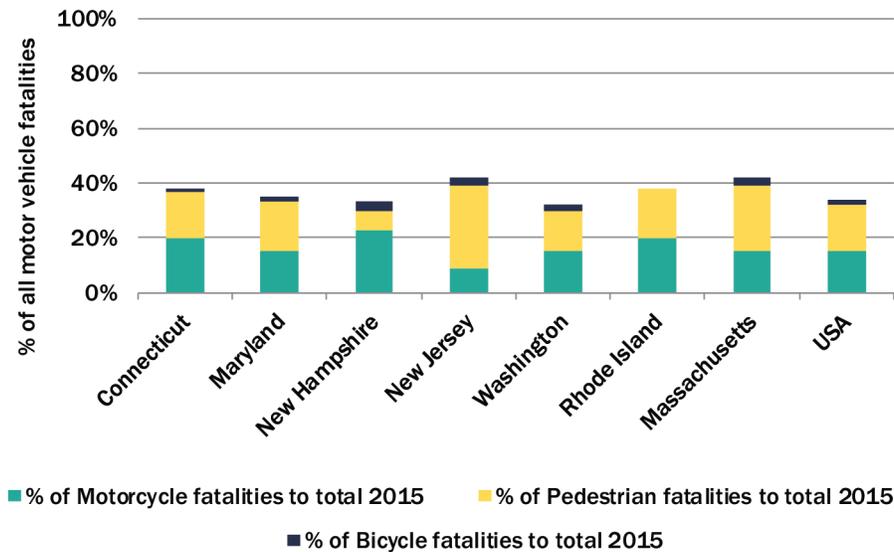


Figure 19. % of all motor vehicle fatalities, (CY15 peer state comparison)

### Rate of fatalities (peer comparison)

For only two out of six peer states, including Massachusetts, the rate of fatalities dropped between CY14 and CY15; there was also a slight increase in the rate of fatalities on the national level during that time. Among the peer states, Massachusetts had the second highest reduction in the rate of fatalities from CY14 to CY15. Massachusetts still reports the lowest rate of fatalities in comparison to the seven peer states. (Figure 18)

### > Number of pedestrian fatalities

The number of pedestrian fatalities has been trending upwards since the CY07-11 to CY11-15 (rolling average). The rolling average has increased by 10 since CY07-11. Massachusetts had a total of 328 motor vehicle crash deaths in CY14, of which 21% (70) were pedestrian fatalities. In CY15, this number jumped to 72 pedestrian deaths which is 24% of the total 306 motor vehicle crash fatalities. MassDOT is working proactively with its MPO partners and has initiated programs (e.g. Complete Streets) to address this trend. The Strategic Highway Safety Plan will be updated in 2018, in which pedestrians will be an emphasis area.

### Pedestrian fatalities (peer comparison)

Massachusetts had the fourth lowest percentages in CY14 and second highest percentages in CY15 in terms of pedestrian deaths to total motor vehicle fatalities.

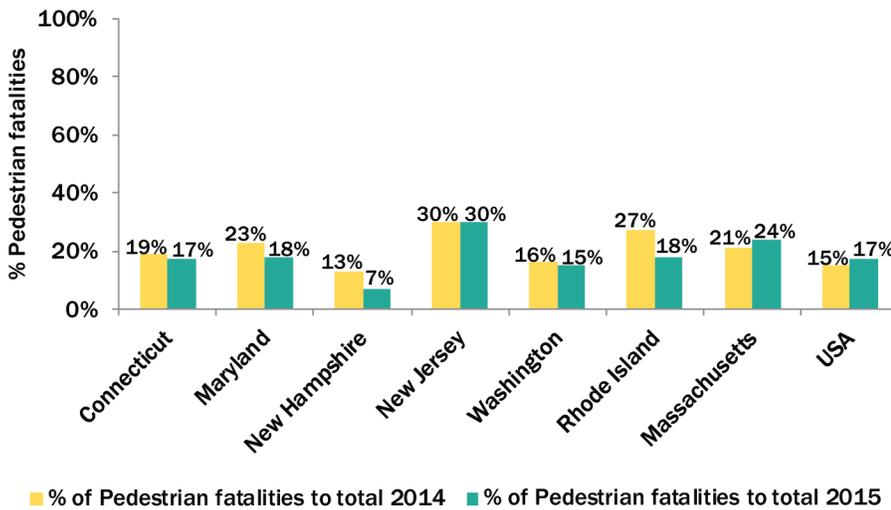


Figure 20. % of pedestrian fatalities, peer state comparison CY14-CY15

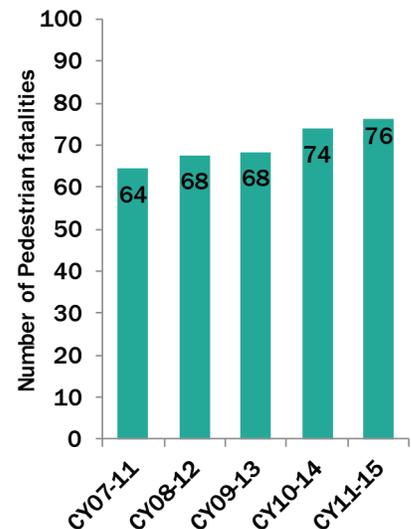


Figure 21. Number of pedestrian fatalities

### > Number of motorcycle fatalities

When motorcycles crash, riders lack the protection of an enclosed vehicle. Therefore, they're more likely to be injured or killed. The federal government estimates that per mile traveled in CY14, the number of deaths on motorcycles was over 27 times the number in cars (IIHS Fatalities Facts). Motorcycle fatalities had been slowly trending down on average in Massachusetts since the CY07 to CY11 rolling average year, but remained the same this past year. (Figure 23)

### Motorcycle fatalities (peer comparison)

Massachusetts had a total of 328 motor vehicle crash deaths in CY14, of which 12% (41) were motorcycle fatalities. In CY15, motorcycle fatalities were 14% (44) of the 306 total motor vehicle fatalities. Among the states analyzed, Massachusetts is on par with Washington and Maryland as the state with the second lowest percentage of motorcycle fatalities.

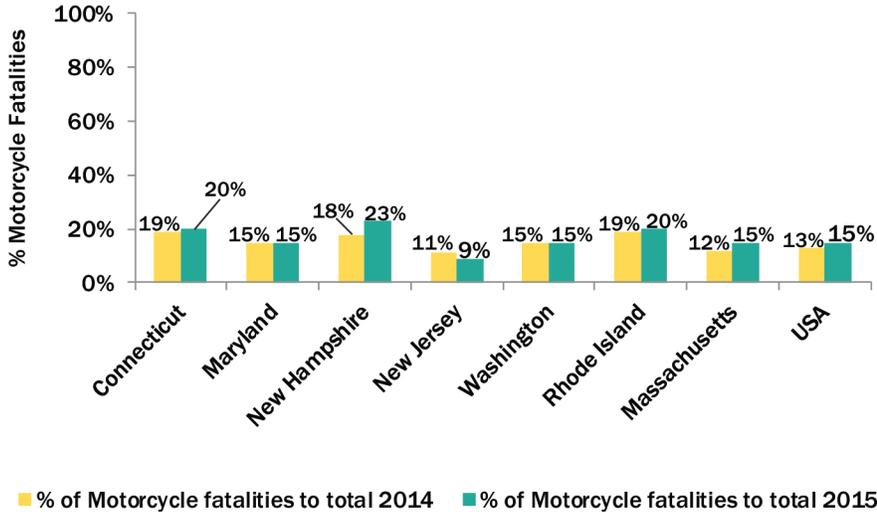


Figure 22. % of motorcycle fatalities, CY14-CY15 peer state comparison

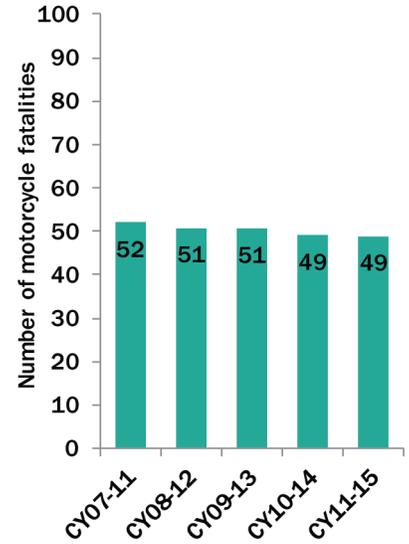


Figure 23. Number of motorcycle fatalities

### > Number of bicycle fatalities

The number of bicyclist fatalities has remained consistent since CY07. Though reliable data is not available, the number of bicycle VMT is believed to have increased during the past decade and therefore the rate of bicyclist fatalities (with more people riding more miles) is likely trending downward.

### Bicyclist fatalities (peer comparison)

Massachusetts had a total of 328 motor vehicle crash deaths in CY14, of which 2% (8) were bicyclist fatalities. There was a slight increase in CY15 with 3% (9) bicyclist fatalities of the 306 total motor vehicle fatalities. Among the states analyzed, Massachusetts, along with two other states, had the second highest percentage of bicyclist fatalities in CY14. In CY15, Massachusetts, along with New Hampshire and New Jersey, had the highest percentage (3%) of bicyclist fatalities.

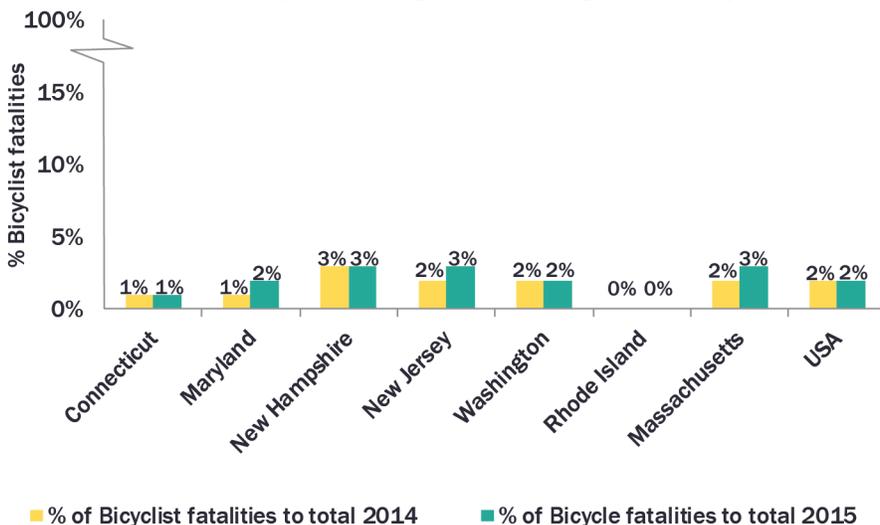


Figure 24. % of bicyclist fatalities, CY14-CY15 peer state comparison

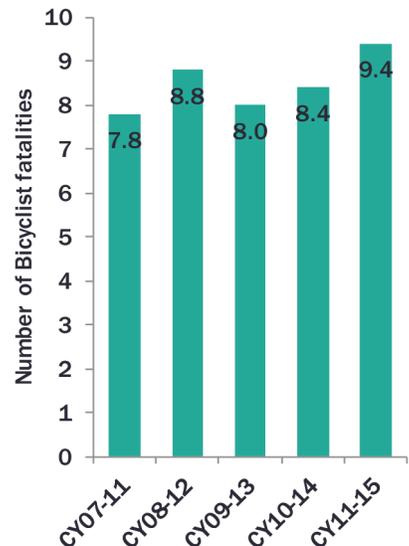


Figure 25. Number of bicycle fatalities

### > Number and rate of serious injuries

Serious injuries have been trending downwards since the CY07-11 rolling average year.

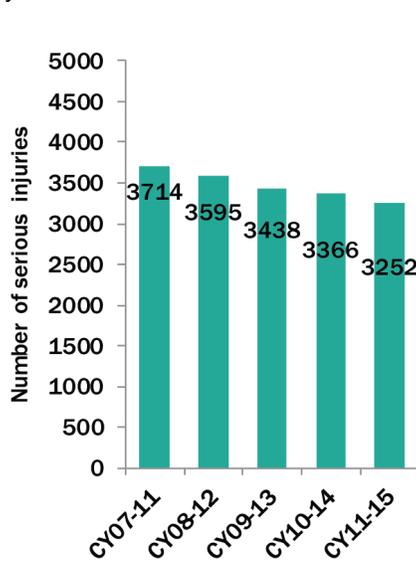


Figure 26. Number of serious injuries

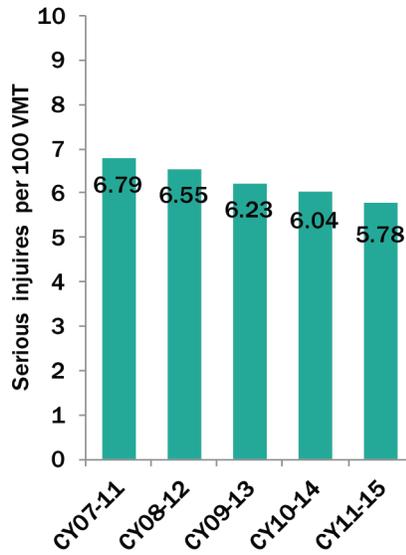


Figure 27. Serious injuries per 100VMT

### > Non-motorized fatalities and serious injuries

The number of non-motorized serious injuries and fatalities has been trending upwards since the CY07-CY11 rolling average year.

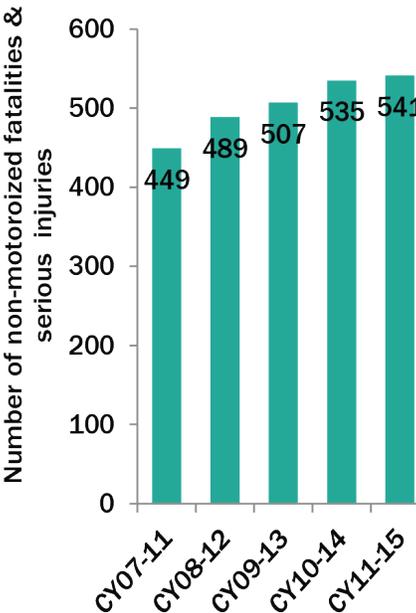


Figure 29. Non-motorized Fatalities and Serious Injuries

### > Fatalities in roadway workzones

The number of driver fatalities occurring in highway work zones has been trending downwards since the CY07-11 rolling average year. MassDOT continues to explore opportunities to improve work zone safety elements with the goal of having zero deaths.



#### Non-motorized fatalities and serious injuries

This is the count of Non-motorized transportation (e.g. biking, walking, equestrian) fatalities and injuries.

This measure is a composite of the pedestrian and bicycle measures. Reporting this way is required per MAP-21.

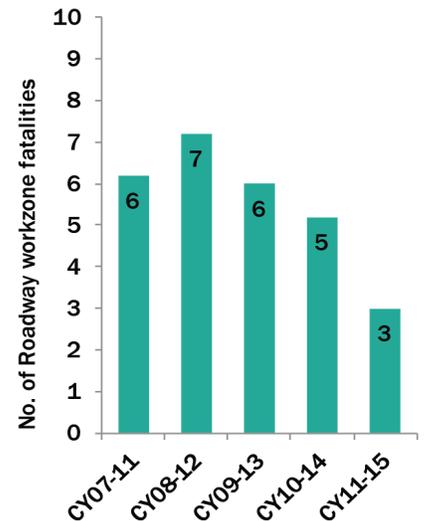


Figure 28. Roadway workzone fatalities



# Healthy & Sustainable Transportation

## > Daily vehicle miles traveled (VMT)

Massachusetts ranks fifth among its peer states for lowest daily VMTs per capita statewide. While annual VMTs are increasing, so is population in the state (US Census Bureau, CY10-16 estimates). Since the Global Warming Solutions Act of 2008, daily VMT per capita has increased by almost 8% (approximately 1.8 daily VMT per capita), and total annual VMT has increased by almost 9% (about 4.8 billion VMT). While MassDOT cannot directly control the number of miles that people in the Commonwealth drive, the DOT helps to provide public transportation options and promote carpooling and car sharing options that can reduce the amount of VMT, and the associated emissions.



### Daily vehicle miles traveled (VMT)

Vehicle Miles Traveled (VMT) is the number of miles traveled by motor vehicles in the Commonwealth, calculated per capita, on an average daily basis. This measure is to give context to other measures and therefore will not be given targets. The data is obtained from the Office of Transportation Planning (OTP), which derives the information from FHWA Annual Highway Statistics Reports (part of the federal Highway Performance Monitoring System - HPMS), various HPMS state reports, and U.S. Census Bureau population estimates. Projected figures are based on modeled traffic growth, state population projections, and state and national VMT growth trends.

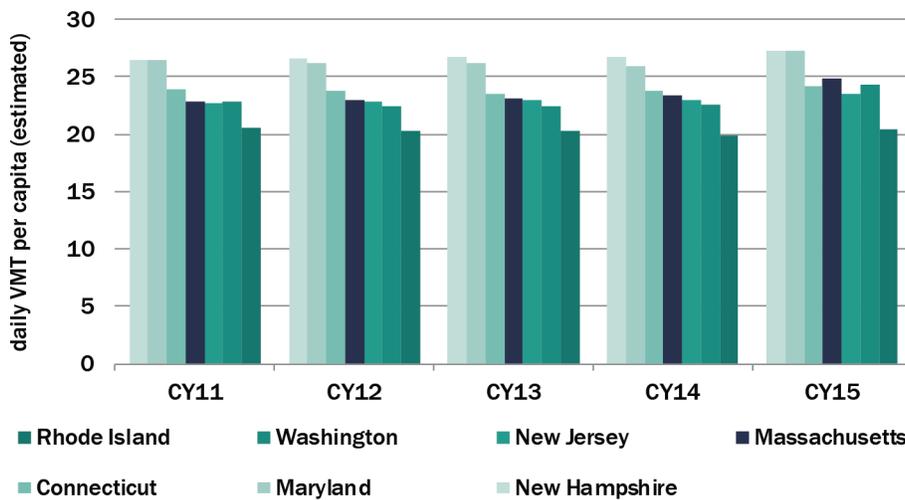


Figure 30. Daily vehicle miles traveled, peer state comparison

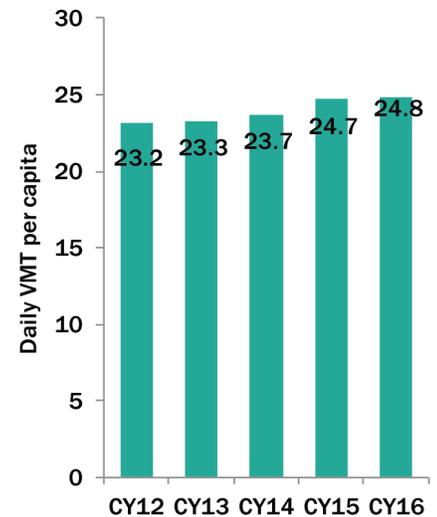


Figure 31. Daily vehicle miles traveled

## > New miles of sidewalk paved or created

Sidewalks are a critical part of MassDOT’s multi-modal transportation network. The miles of new sidewalk paved or created is an indicator for the growth of this part of the network. The number of miles of sidewalk paved or created has increased annually over the past four years. So far in CY17, 66 miles of new sidewalk have been paved with more miles projected to be created by the end of the year.

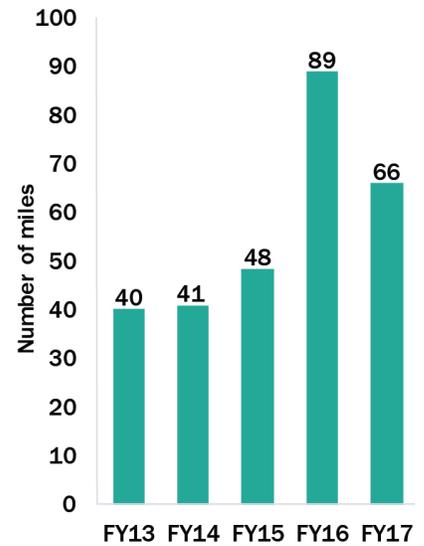


Figure 32. Miles of sidewalk paved or created

## > Complete Streets

MassDOT has launched a Complete Streets program (authorized by the 2014 Transportation Bond Bill), the intent of which is to reward municipalities that demonstrate a commitment to embedding Complete Streets in policy and practice. A Complete Street is one that provides safe and accessible options for all travel modes - walking, biking, transit, and motorized vehicles - for people of all ages and abilities. In addition to funding, the program provides planning and design resources, a training program in best practices, benefits, requirements, and implementation, as well as other resources for municipalities. In Tier 1 of this program, municipalities must create and submit a Complete Streets Policy. Once submitted, these policies are approved by MassDOT. Municipalities with approved policies can then submit actual projects to be funded through the program. As the program continues to mature and actual projects move through the pipeline, *Tracker* is measuring each of the three stages of this program.

By the end of FY17, 167 municipalities throughout the Commonwealth had registered for Complete Streets, 130 Complete Streets policies had been approved, and 26 Complete Streets projects had been approved.<sup>1</sup>

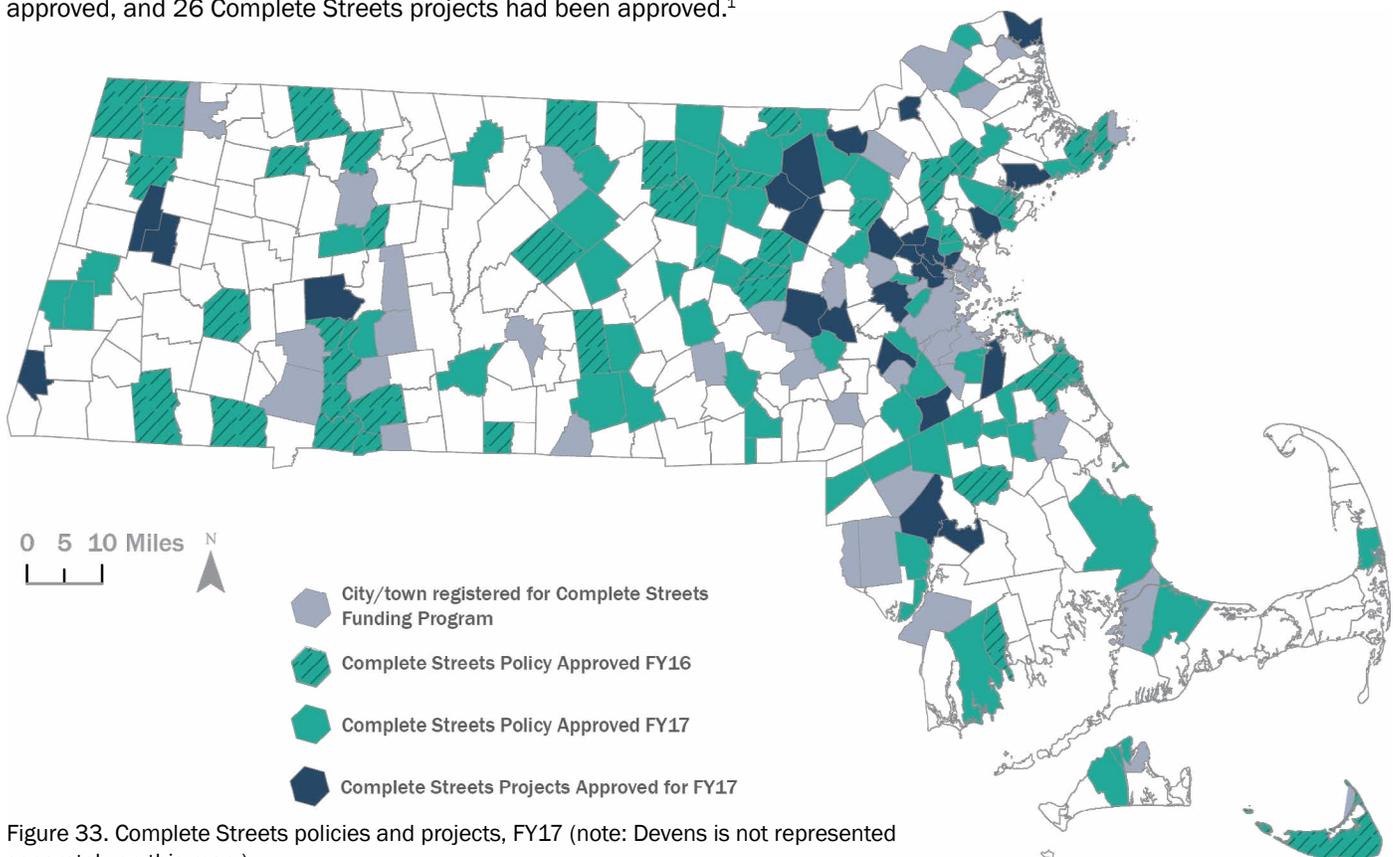


Figure 33. Complete Streets policies and projects, FY17 (note: Devens is not represented separately on this map.)

<sup>1</sup> This report was updated on March 15, 2018 to correct a reporting error.

# AERONAUTICS DIVISION

## Overview

The mission of the Aeronautics Division is to promote aviation throughout the Commonwealth while establishing an efficient integrated airport system that will enhance airport safety, economic development, and environmental stewardship.

The Aeronautics Division has jurisdiction over the Commonwealth's public use airports and heliports, private restricted landing areas and seaplane bases. It certifies airports and heliports, licenses airport managers, conducts annual airport inspections, and enforces safety and security regulations.

In addition, its responsibilities include:

- > *Overseeing the statewide Airport Capital Projects Program;*
- > *Developing statewide aviation safety programs;*
- > *Overseeing state-owned navigational aids;*
- > *Conducting statewide aviation planning studies;*
- > *Implementing statewide airport security initiatives; and*
- > *Promoting statewide aviation education.*



## AERONAUTICS DIVISION - 2017 SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	2018 TARGET	2020 TARGET	LONG-TERM TARGET
	Percent of aircraft registrations registered	<b>84%</b> (1,935 of 2,290)	+2%	85%	85%	85%
	Pavement condition (PCI)	<b>68</b>	-2 (from FY12)	72	74	75
	Capital budget disbursement	<b>100%</b>	+9%	90%	92%	95%
	Contracts completed on budget	<b>90%</b>	+8%	85%	90%	95%
	Contracts completed on time	<b>81%</b>	+8%	90%	90%	90%
	Airport safety and emergency management training attendance rate	<b>89%</b>	+12%	75%	75%	75%
	Airport safety inspections completed (CY17)	<b>6</b> to date (12 projected)	-13	12	12	12



# Customer Experience

## > Percent of aircraft registered

The Aeronautics Division serves a range of customers, primarily aircraft owners. The aircraft registration program provides the Division with data about the aircraft located at their facilities, and their owners. All airworthy aircraft based in Massachusetts or temporarily located in Massachusetts for 60 or more days (per calendar year), must be registered with the Aeronautics Division and the airport on which they are based.

In FY17, airport managers did a complete review of all entries in the database and removed files for all duplicate records, sold or transferred aircraft and reported 2,290 aircraft, for which 1,935 aircraft registrations were processed. This number represents 84% of the eligible civil aircraft to be registered. The Division has set a 2018 target of 85% and is expecting to achieve this target with the implementation of Aurigo Software Technologies, Inc. Masterworks platform which will automate, modernize and standardize the registration process.



### Percent of aircraft registered

*This is the total number of aircraft registered with the Aeronautics Division. This metric impacts the customer experience as the Division communicates with the aircraft owners on the airworthiness of their aircraft. It also provides insight into the economic impact that the airports are having on the surrounding communities.*



# System Condition

## > Pavement condition index (PCI)

Pavements represent one of the largest capital investments in the Massachusetts aviation system, and maintaining the condition of these pavements is important for both cost-effectiveness and safety. Airport pavement weaknesses, such as cracks and loose debris, pose a significant safety risk to aircraft. Timely airport pavement preventative maintenance is essential because once the condition deteriorates to require rehabilitation or reconstruction, the costs increase significantly. Recognizing a need to protect this significant investment, the Aeronautics Division established a statewide airport pavement management system (APMS) in 2012 to monitor the condition of the Massachusetts airport infrastructure and to proactively plan for its preservation. The APMS system provides the airports, MassDOT Aeronautics, and the Federal Aviation Administration (FAA) with the pavement information and analytical tools that help them to identify pavement-related needs, optimize the selection of projects and treatments over a multi-year period, and evaluate the long-term impacts of project priorities.

In FY12, the average Pavement Condition Index (PCI) of all runway was measured at 70. Airport pavements rated at a PCI of 65 or higher are considered to be in “good” condition. In FY17 the runway was measured again and the average PCI decreased from 70 to 68. Additionally, the FY17 update found that more of the pavement in need of repair will require rehabilitation or reconstruction. This change shows a need for additional near-term investment in airport pavement in order to achieve the 2018 target of average PCI 72, and to reduce the risk of the investment needs increasing dramatically.



### Pavement condition index (PCI)

*Runway pavement condition is monitored using a statewide airport pavement management system.*

*The condition of these pavements is important from both cost-effectiveness and safety standpoints. Airport pavement weaknesses, such as cracks and loose debris, pose a significant safety risk. Pavement rehabilitation costs increase as conditions deteriorate.*

*The PCI scale ranges from a value of 0 (representing a pavement in a failed condition) to a value of 100 (representing a pavement in excellent condition).*



# Budget & Capital Performance

## > Capital budget disbursement

The Aeronautics Division sets a goal to spend at least 90% of the funds budgeted for airport capital improvements each year. In FY17, the Aeronautics Division met and exceeded its 2018 target by disbursing 100% of its \$8.9 million bond cap of the FY17 capital budget allocation. This is a 9% improvement from FY16 when the Division spent 91% of its budget allocation.

## > Number/value of projects completed on/under budget

The Aeronautics Division is developing Airport Information Resource Portal (AIR-PORT) software, which will provide staff with a tool to measure and track activities related to planning and prioritizing within this goal area. In FY17, the Aeronautics Division awarded a total of 62 contracts. Fifty-six contracts were completed on budget and 6 exceeded the original budget, resulting in 90% of contracts completed on budget. The Division exceeded its 2018 target of 85% and improved performance by 8% over FY16.

## > Number/value of projects completed on/under time

In FY17, the Aeronautics Division awarded a total of 62 contracts. Fifty contracts were completed on time and 12 were delayed, resulting in 81% of contracts completed on time. Although the division did not meet its 2018 target of 90%, it had an 8% increase over the FY16 performance.

### Capital budget disbursement

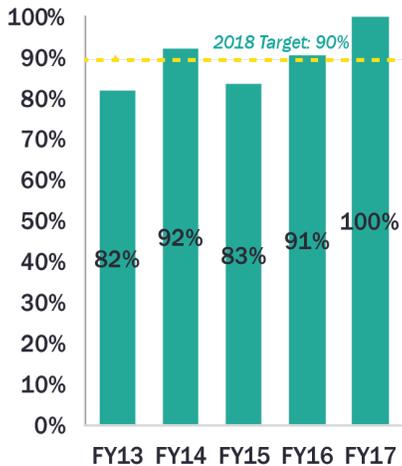
*This is the percentage of total allocated capital budget that is dispersed to contractors, vendors, etc. by the end of the fiscal year.*

*This measure is an indicator of how well the Aeronautics Division is executing its planned expenditures.*

### Number of projects completed on/under budget

*These measures compare the number of projects completed on or under budget against all projects.*

*The Aeronautics Division manages projects through extensive project and internal controls. These metrics, along with other factors, provide an indication of the effectiveness of those strategies.*



■ % Capital Budget Disbursement

Figure 34. Capital budget disbursement

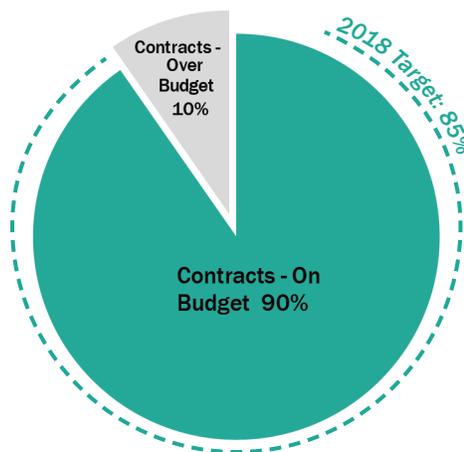


Figure 35. Contracts completed on budget in FY17

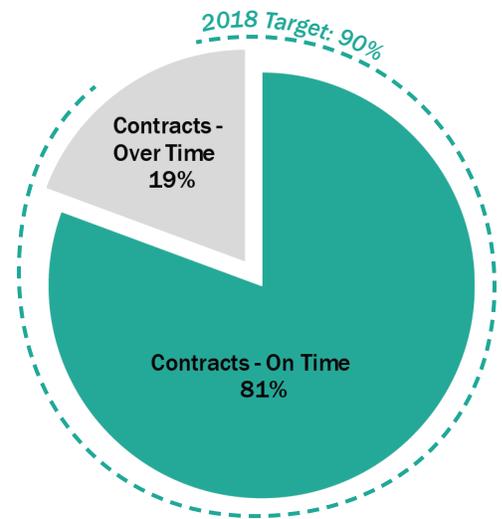


Figure 36. Contracts completed on time in FY17



# Safety

## > Airport safety and emergency management training attendance rate

The Aeronautics Division is the air operations lead coordinating agency for the Massachusetts Emergency Management Agency, a partner in the MassDOT Emergency Management Committee, and participates in various emergency planning exercises across the Commonwealth (e.g. with municipal airports, local first responders, Civil Air Patrol, State Police, and other state and federal agencies such as Massport and Joint Base Cape Cod). During these events, exercises are conducted to validate plans, policies, and procedures, test equipment, identify gaps in training, and establish best practices. A tabletop exercise uses a hypothetical, simulated emergency to validate plans and procedures, rehearse concepts, and assess the level of preparedness through an interactive discussion.

Aeronautics staff attended 31 of 35 emergency training events and exercises they were invited to in FY17 resulting in an 89% participation rate, achieving their 2018 target of 75%.

## > Airport safety inspections completed

The Aeronautics Division performs all airport inspections by the calendar year as directed in the FAA contract, and is on schedule to complete all inspections by the end of CY17. To date, the Division has completed 6 comprehensive airport inspections which include the following areas: paved and unpaved aprons, runways, taxiways, safety areas, markings and lightings, navigable airspace, navigational aids, traffic and weather indicators, fueling operations, construction safety, wildlife hazard management, airport operations, and compliance with MassDOT Aeronautics Regulations. MassDOT oversees 36 airports and is required to complete a minimum of 12 inspections per the calendar year (set as a target). The Division is on track to complete or exceed the minimum standard of 12.

### Airport safety and emergency management training attendance rate

*The percentage of training events attended by Aeronautics Division personnel, out of the total number to which they were invited. The emergency trainings provide personnel with fundamental elements of emergency management knowledge and protocols, while bringing together and strengthening the community of providers and emergency responders.*

### Airport safety inspections completed

*This measure reflects the number of airports inspected by the Aeronautics Department in a one year period.*

*Airport safety inspections are required by the FAA, and are a key element of maintaining safe airports for users.*



Figure 37. Airport safety inspections completed per year

# REGISTRY OF MOTOR VEHICLES

## Overview

The mission of the Registry of Motor Vehicles (RMV) is to provide a safe transportation environment for the Commonwealth that is customer-centric and transformative. The RMV is committed to personalizing the customer experience and enabling customer mobility and consumer safety across the Commonwealth.

The RMV credentials and delivers driver, non-driver, and vehicle services through multiple service channels for customer convenience. In FY17 the RMV:

- > Issued 150,000 new licenses and converted 76,000 out of state licenses to ensure that only qualified individuals operate motor vehicles in the Commonwealth. An estimated 4.98 million drivers are currently licensed by the Commonwealth, compared to over 5 million in the previous year;
- > Registered and titled over 1.4 million vehicles, protecting drivers and providing a database of motor vehicle assets;
- > Inspected more than 28,000 school buses to protect the safety of student riders;
- > Oversaw more than 1,900 commercial, non-commercial, and fleet inspection stations;
- > Oversaw annual safety and emission checks on vehicles to ensure the safety of vehicles traveling on Massachusetts roadways and to protect air quality and the environment for the public benefit;
- > Maintained, through the Merit Rating Board (MRB), operator driving records consisting of traffic law violations, at-fault and comprehensive insurance claim records, and out-of-state driving records;
- > Certified over 500 driving schools and more than 1,600 driving instructors to ensure that Massachusetts motorists receive proper education and training;
- > Maintained and operated 29 service center locations throughout the Commonwealth to provide these services.

The following indicators of performance inform leaders and staff to ensure that processes are effective, efficient, and secure and continuously improve the RMV customers' experience.



RMV - 2017 SCORECARD

PERFORMANCE GOAL	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	2018 YEAR TARGET	2020 YEAR TARGET	LONG-TERM TARGET
	Service Center customer wait time (systemwide): Percent of total customers waiting less than 30 minutes	80%	17%	80%	80%	80%
	Service Center customer wait time (systemwide): Percent of total customers waiting one hour or more	4%	-10%	10%	4%	0%
	Contact Center wait time	18:54	15:20	3:30	2:50	1:00
	% of license renewals conducted online (as a percentage of eligible transaction volume)	71%	21%	80% of eligible transaction volume	85% of eligible transaction volume	95% of eligible transaction volume
	% of registration renewals conducted online (as a percentage of eligible transaction volume)	67%	9%	92% of eligible transaction volume	95% of eligible transaction volume	97% of eligible transaction volume
	% of systemwide transactions conducted outside of service center	63%	1%	65%	70%	75%
	% of systemwide transactions conducted online	32%	4%	35%	40%	50%
	Class D, M-F, Road test availability (Offered supply/demand ratio)	0.17	no data	n/a	TBD	TBD

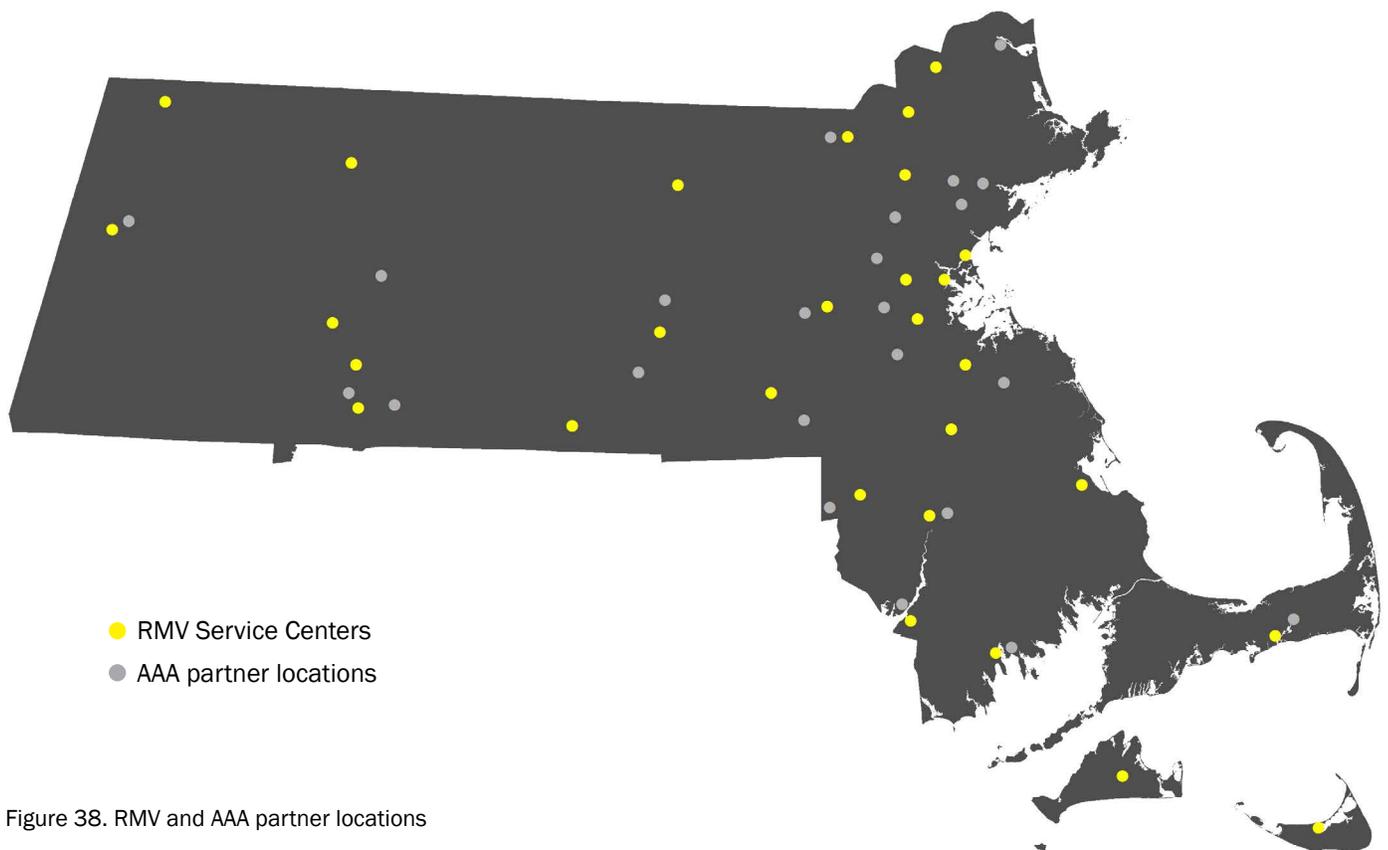


Figure 38. RMV and AAA partner locations



# Customer Experience

## > Service Center customer wait time

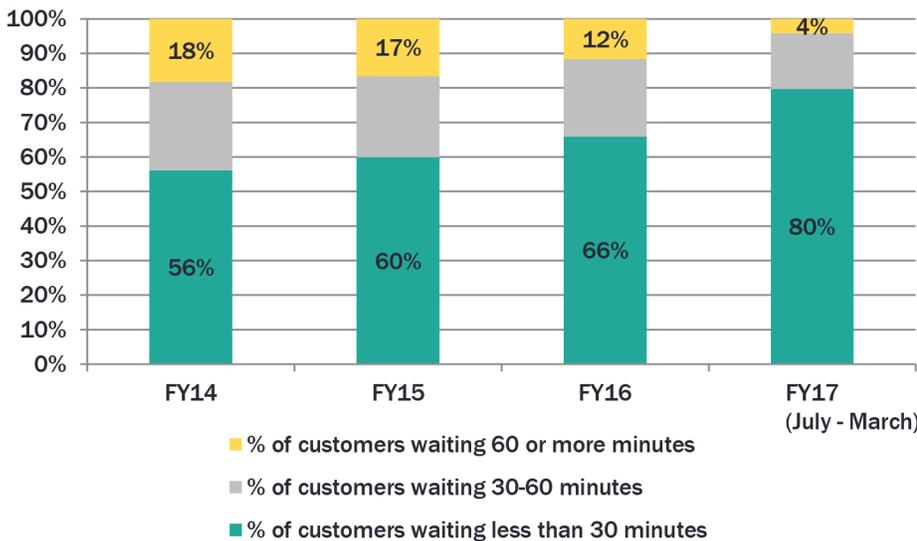
Service Centers conducted 37% of all RMV transactions in FY17. The 29 Service Centers throughout the Commonwealth vary in services offered and the number of customers they serve.

In FY17, the Service Centers converted to a new queuing system to replace the system that had been in place since FY14 (QMATIC). The new queuing system, QFLOW, will provide more detailed insight into the number of customers, customer transactions, service types, and other aspects of Service Center operations. This information will be assessed in FY18. The conversion to the new queuing system began in March 2017 and continued through May 2017. Data quality and assurance processes are underway to standardize operations and reporting across the Service Centers. Due to the conversion midway through FY17, and the disparities between how the queuing systems report customers/tickets, only data from QMATIC is presented here.

Other factors that impact customer wait times continue to be relevant to interpreting this measure, such as:

- > Seasonal fluctuations in customer volume and transaction type;
- > Staffing trends, including vacations and intern availability;
- > Differences among Service Centers in demand and demographics served; and
- > Differences among Service Centers in services offered, size, and configuration/technology.

Between July 2016 and March 2017 (pre-QFLOW conversion), the RMV met its 2018 and 2020 targets for the customer wait time thresholds of over one hour and under 30 minutes. Service Centers continued to see improvements from FY16 and from the efforts of the “War on Wait Times” initiative which began in 2015.



### Service Center customer wait time

Customer wait time at Service Centers is defined as the elapsed time between when a customer receives a queue ticket and when a Customer Service Representative (CSR) calls their ticket. The wait times are extracted from the Qmatic database (a product of the queuing vendor). By grouping customers together, for example by Service Center or by month, we calculate the percent of customers who wait less than 30 minutes or more than 1 hour. Detailed information on this measure is provided daily on an interactive online dashboard for RMV staff and leadership. Qmatic went offline beginning March 2017, and has been replaced by a new queuing system and vendor.

Figure 39. Service center wait times

## > Percentage of systemwide transactions conducted outside of Service Centers

The percentage of systemwide transactions conducted outside of Service Centers indicates two important aspects of the customer experience: 1) Access to the RMV through a variety of service channels, and 2) efficiency of the RMV in reaching customers by distributing customer demand across multiple channels.

In FY17 more than half (63%) of all RMV transactions occurred outside of Service Centers. This represents an increase of 1% since FY16, trending towards the 2018 target of 65%.

## > Percentage of systemwide transactions conducted online

The percentage of systemwide transactions conducted online in FY17 was 32%, an increase of nearly 4% since FY16. This is trending towards the 2018 target of 35%.

As business rules change and upgrades are made to the website, the number and type of transactions which can be conducted online by customers is expected to increase, allowing a greater percentage of systemwide transactions to be conducted online (although there will remain an upper limit to this percentage).

## > Percentage of license and registration renewals eligible to be done online

Some transactions must be done in person in a Service Center due to certain regulations and restrictions, therefore this is an important context measure for the percentage of out-of-service-center transactions. There are currently 31 types of work items that are available for customers to perform online, which include transactions and requests for information. The percentage of customers eligible to renew their licenses online varied monthly between 45% and 55%, while the percentage of customers eligible to renew their registration online varied monthly between 71% and 89%. The percentage of customers eligible to renew their licenses online has continued to drop annually, from nearly 63% in FY15 to 49% in FY17. This is mostly due to the recurrence rate of needing to update photo

Percentage of systemwide transactions conducted outside of Service Centers, online, and percentage of renewals conducted online



The RMV system includes a number of different service channels where customers can complete transactions. Service channel volume is measured through the ALARS database, which tracks transaction-level and customer-level information. Percentage of systemwide transactions conducted outside of Service Centers, online, and percentage of renewals conducted online are calculated based on a count of "core" ALARS transactions. In FY16 an interdepartmental group met to review the types of transactions represented in ALARS compared to customer counts in other databases at the RMV. In order to compare volumes across databases, a list of "core" transactions that most closely represent customer goals (such as getting a new license, renewing a registration, etc.) was compiled and is used as a sample of ALARS data to represent customer volume across all service channels at the RMV.

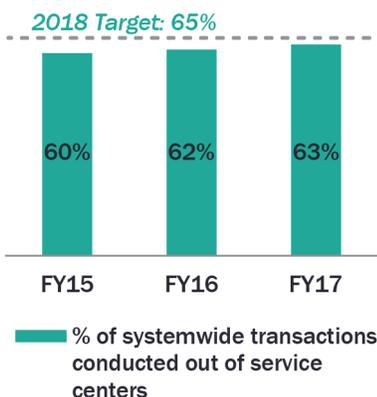


Figure 40. Percentage of systemwide transactions conducted out-of-service centers

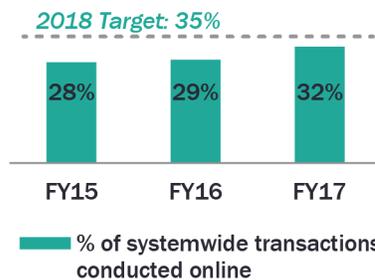


Figure 41. Percentage of systemwide transactions conducted online



% of license and registration renewals eligible to be conducted online

There are several regulatory factors that prevent customers from renewing their license or registration online. In order to calculate the percentage of renewals that are eligible for online renewal, customer records are sorted based on the due date of their renewal and any limiting factors that apply to their record at that point in time. This data is reported by IT staff on a monthly basis. It is important to note that the percentage of renewals eligible to be done online does not describe the percentage of customers who actually choose to conduct their business online, nor does it reflect restrictions in payment types/preferences.

identification in-person in a Service Center. For example, approximately 69% of customers ineligible to conduct their renewal online in FY17 needed a new picture taken. Online-eligibility for registration renewals has also dropped from nearly 90% in FY15 and FY16 to 84% in FY17. 93% of customers due to renew in FY17 were not eligible to renew online, but were eligible to renew via mail, with an insurance stamp.

### > Percentage of license renewals conducted online

As a percentage of eligible transaction volume, the percentage of license renewals conducted online varied monthly over FY17, ranging between 62% and 76%. Performance in this area has increased since last fiscal year where license renewals conducted online (as a percentage of eligible transaction volume) has gone from 50% in FY16 to nearly 71% in FY17, an increase of 21%. This is trending towards the 2018 target of 80%.

### > Percentage of registration renewals conducted online

As a percentage of eligible transaction volume, the percentage of registration renewals conducted online varied monthly over FY17, ranging between 51% and 75%. Performance in this area has increased since last fiscal year where registration renewals conducted online (as a percentage of eligible transaction volume) has gone from 58% in FY16 to nearly 67% in FY17, an increase of 9%. This is trending towards the 2018 target of 92%.

### % of license and registration renewals conducted online

Percentage of renewals conducted online is shown in two ways: 1) as a percentage of systemwide renewals conducted and 2) as a percentage of eligible transaction volume. The first representation uses ALARS core transaction volumes to compare online renewals to all renewals conducted in the fiscal year. The second representation, by which the targets are set for this measure, adjusts the total volume of all renewals by the online eligibility percentage (this adjustment is applied monthly, and then aggregated for the fiscal year).

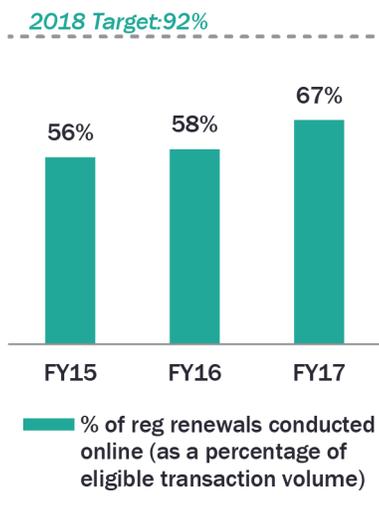


Figure 42. Percentage of registration renewals conducted online

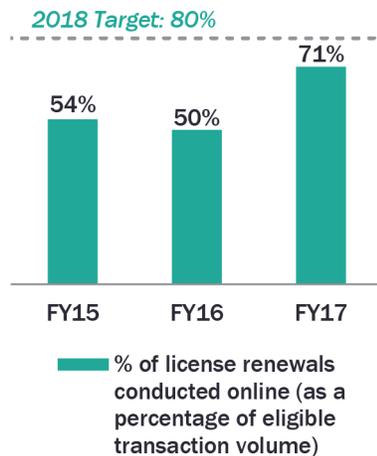


Figure 43. Percentage of license renewals conducted online

## > Contact Center wait time

The Contact Center processed 2.6% (176,000) of RMV transactions in FY17 and handled over 876,000 calls. In FY17 the average wait time was 18 minutes and 54 seconds. Monthly wait times ranged from 8:23 to nearly 26 minutes in FY17.

Virtual hold technology provides estimated wait times to callers to help them decide whether to wait on hold or call back later. In addition, when call volumes and wait times are too high, the technology gives customers the option to schedule a same day call back or an appointment call up to 5 days in advance. In July 2016, the virtual hold system was turned off to assess the performance of the Contact Center without the technology and to address some customer complaints linked to the features of virtual queuing. Virtual hold was reinstated and made available to customers in October of 2016.

Additionally process, management, and technology improvements commenced in May 2017 to begin preparing for the phased implementation of a new core license, ID, and registration system for the state.



### Contact Center wait time

*In FY16 the Contact Center directed most calls through the virtual hold system, meaning that callers scheduled a callback time before being connected to an agent. Wait times reported in FY16 were reflective of the elapsed time from the point where the caller confirms that they are ready to be connected to an agent, to when an agent answers the call (i.e. wait time after virtual hold).*

*In July 2016 (the start of FY17) virtual hold was turned off until October 2016. Throughout the remainder of FY17 business changes at the Contact Center were tested to help enhance reporting capability and drive continuous improvement across technologies and processes at the Contact Center. Because of this, Contact Center wait time is now reported as an average wait time, regardless of virtual hold treatment. This is similar to how this metric was reported prior to FY16.*

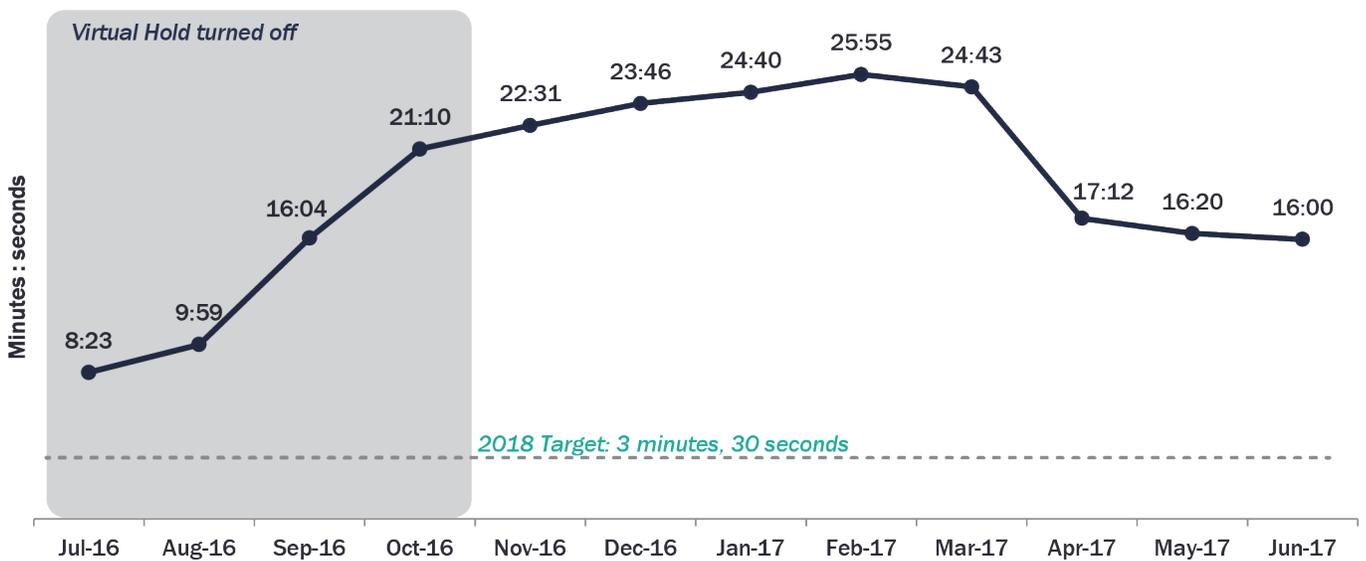


Figure 44. Average speed of answer (call wait times)

## > Road test availability (supply/demand)

A new measure, road test availability, measures the offered and actual supply of Class D, Monday-Friday road tests (the majority of road tests conducted through the RMV) against the estimated demand for these tests. The purpose of this metric is to gauge at a systemwide level, monthly and annually, if customer demand for these services are being met consistently. It also provides insight into the performance and/or limitations of staffing resources and the scheduling system used to offer the supply of road tests to customers.

In FY17, the ratio of offered supply to cumulative demand ranged monthly between 0.14 (in February) and 0.19 (in August). The ratio of actual supply to cumulative demand ranged monthly between 0.12 (February) and 0.16 (August and March). Values close to 1 indicate a balance of supply to demand. The low values here are due to the backlog of demand that carries over month to month. Factoring new monthly demand, ratios range between 1.64 (in December) and 1 (in February) for offered supply and between 1.42 (December) and 0.86 (February) for actual supply.



Figure 45. Comparison of supply and demand; the difference between total and monthly M-F, Class D demand indicates a backlog in service.

### Road test availability

Road test availability measures offered and actual supply of Class D, Monday-Friday road tests (the majority of road tests conducted through the RMV) against the estimated demand for these tests. Data collection for this new metric began at the start of FY17. Road test availability is reported in several ways comparing actual and offered supply to cumulative or new monthly demand.

“Actual supply” considers all class D exams which were conducted during the Monday through Friday program at RMV locations. “Offered supply” considers all class D exams which were scheduled during the Monday through Friday program including no shows and rejections.

“Demand” was estimated by comparing active permit holders to license issuance month to month and considers retake rates (i.e. what percentage of permit holders will have to take a road test more than once), usage rates (i.e. what percentage of permit holders are likely to use the Monday through Friday program), and the likelihood of permit holders never scheduling a road test while their permit is active. This calculation is done separately for junior operators and adults, based on the different requirements each population has for obtaining a road test. This is likely an underestimate of demand due to the limitations of the current scheduling system which inherently has an effect on customer behavior in choosing if, where, and when to schedule a road test.

# RAIL & TRANSIT DIVISION

## Overview

The Rail and Transit Division provides oversight and funding for all 15 Regional Transit Authorities (RTAs), owns 358 miles of track (294 miles of which is active) and 163 bridges, and works cooperatively with Amtrak and private railroad companies to provide intercity rail and freight rail service to residents and business.

This section is organized into two distinct categories: transit and rail. The transit section provides data on the 15 RTAs, and the CapeFLYER (a seasonal rail service sponsored by MassDOT). The 15 RTAs are:

- > Berkshire Regional Transit Authority (BRTA)
- > Brockton Area Transit Authority (BAT)
- > Cape Ann Transportation Authority (CATA)
- > Cape Cod Regional Transit Authority (CCRTA)
- > Franklin Regional Transit Authority (FRTA)
- > Greater Attleboro-Taunton Regional Transit Authority (GATRA)
- > Lowell Regional Transit Authority (LRTA)
- > Martha's Vineyard Transit Authority (VTA)
- > Merrimack Valley Regional Transit Authority (MVRTA)
- > MetroWest Regional Transit Authority (MWRTA)
- > Montachusett Regional Transit Authority (MART)
- > Nantucket Regional Transit Authority/THE WAVE (NRTA)
- > Pioneer Valley Transit Authority (PVTA)
- > Southeastern Regional Transit Authority (SRTA)
- > Worcester Regional Transit Authority (WRTA)

RTAs in Massachusetts operate two main types of service. Bus service includes regularly scheduled local routes and commuter routes which operate on fixed schedules. Demand response service includes federally mandated paratransit service and other dial-a-ride services, whether using dedicated vehicles or taxi vouchers. Measures relating to RTA operations are separated into bus and demand response in order to reflect differences in their costs and operational characteristics.

The rail section provides measures that relate to safety and condition of the railroad infrastructure assets throughout the Commonwealth. Where appropriate, these measures are presented along with a set of peer states.<sup>1</sup> However, it is important to note that these compared measures include assets that are not exclusively owned by MassDOT (as noted).

Neither of these sub-sections contain targets this year. MassDOT oversees operations of the RTAs, but does not set performance targets for them. Once the RTAs set targets through their asset management plan process, *Tracker* will include those. As rail data collection and quality matures, relevant targets will be set and published in future versions of *Tracker*.

<sup>1</sup>Peer state group defined by "Identifying peer states for transportation system evaluation and policy analyses," by Dr. Patricia Hendren and Dr. Debbie A. Niemeier.



## RAIL &amp; TRANSIT DIVISION- 2017 TRANSIT SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	SERVICE TYPE
	% of scheduled trips operated	98.4%-100%	5 out of 15 RTAs increased	Fixed-route bus
	Fleet age	1.8-8.1 years	n/a	Fixed-route bus
		1.5-5.7 years	n/a	Demand response
	Revenue vehicle condition <sup>1</sup>	2.8-4.8	n/a	Fixed-route bus
		2.6-5.0	n/a	Demand response
	Facility condition <sup>1</sup>	3.0-5.0	14 increased or remained the same	Fixed-route bus
	% of capital dollars spent by year's end	<b>100%</b> (FY16)	n/a	All
	Operating expense per vehicle revenue mile	<b>\$3.61 - \$9.57</b> (FY15)	12 of 15 increased from FY14	Fixed-route bus
		<b>\$3.08 - \$15.70</b> (FY15)	10 of 15 increased from FY14	Demand response
	Farebox recovery ratio	<b>7.8% - 35.2%</b> (FY15)	3 of 15 increased from FY14	Fixed-route bus
		<b>2.8% - 56.0%</b> (FY15)	8 of 15 increased from FY14	Demand response
	All injuries as a result of transit accidents (injuries per 100k UPT)	<b>0-1.03</b> (FY12-16 rolling avg)	6 of 12 decreased or remained the same (from average FY11-15)	Fixed-route bus
		<b>0-2.61</b> (FY12-16 rolling avg)	5 of 12 decreased or remained the same (from FY11-15)	Demand response
	Preventable accidents (per 100k UPT)	<b>0.1-4.2</b> (FY13-17 rolling avg)	9 of 15 decreased or remained the same (from FY12-16)	Fixed-route bus
		<b>0-36.9</b> (FY13-17 rolling avg)	10 of 15 decreased or remained the same (from FY12-16)	Demand response
	Annual ridership <sup>2</sup>	<b>0.119M - 11.467M</b> (Statewide: 29.326M)	8 out of 15 RTAs decreased (from FY12-16)	Fixed-route bus
		<b>8k - 580k</b> (Statewide: 2.464M)	9 out of 15 RTAs increased (from FY12-16)	Demand response
	% of MA residents with access to transit	52.8%	+1.4%	Fixed-route bus
	Ridership in CapeFLYER	<b>13,555</b> (CY17)	-0.3%	Rail

Note: Current (FY17 unless otherwise noted) is listed as a range where applicable (minimum and maximum value per RTA). Change from FY16 (or the most recent year prior as noted) is listed as the number of RTAs showing a change in the desired direction. Where noted as n/a, presenting an aggregate change is not feasible.

1. Ranges on a scale from 1 to 5. These measures are an average rating per each RTA.
2. Total trips

## RAIL &amp; TRANSIT DIVISION- 2017 TRANSIT SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16
	Percentage of bridges inspected	100%	n/a
	Number of railroad ties repaired per year	26,000	+1,000
	Capital budget spent to date vs. planned	94%	-59%
	Number of derailments	4.40 / 1000 track miles (FY13-17 rolling avg)	-12.8%
	Number of reported hazmat incidents	1.82 / 1000 track miles	+0.43
	Number of highway-rail incidents	1.79 / 1000 grade crossings	-43.0%

Note: Current includes FY17 unless otherwise noted; Change from FY16 includes the amount of change from FY16 to FY17 or change from the most recent year prior as noted.



# Customer Experience

## > Transit

### > Percent of scheduled trips operated

The percent of scheduled trips operated directly impacts the perceived and real reliability of a system. In FY17, each Massachusetts RTA operated between 98.4% and 100% of regularly scheduled bus trips. Of the 15 RTAs, 3 improved by 0.1% or more, 7 declined by -0.1% or more, and the other 5 were within 0.1% of their FY16 performance.



#### Percent of scheduled trips operated

The percent of scheduled trips operated refers to how reliably the buses in each RTA complete their scheduled routes. For example, if out of 100 scheduled fixed-route bus trips, one did not run at all, the percent of scheduled trips operated measure would be 99%.

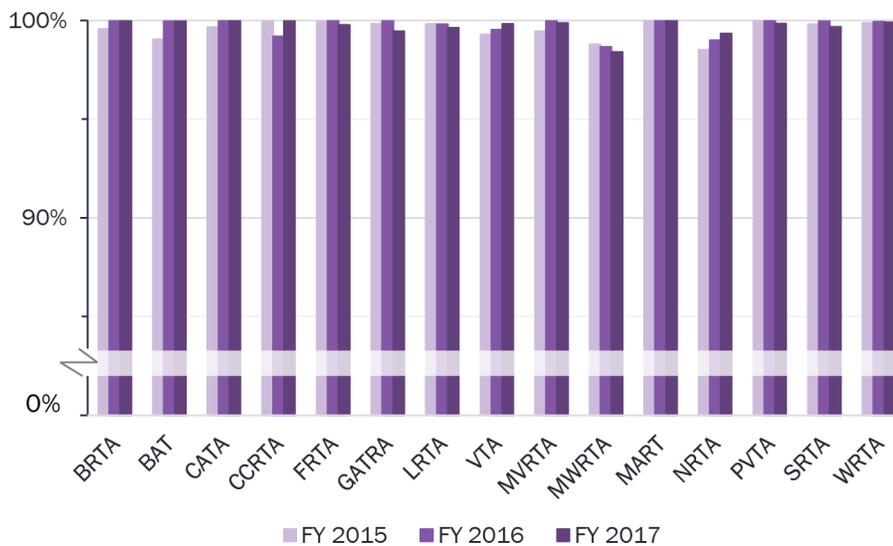


Figure 46. Percent of scheduled trips operated, All RTAs, FY 2015-16

# System Condition

## > Transit

Modern and well-functioning equipment allows an RTA to provide efficient, comfortable, and safe transit services to its users. The measures in this section describe the age and condition of vehicles that RTAs use to provide revenue service to transit customers, and the facilities used to maintain vehicles and serve customers.

### > Fleet age

The RTAs had average fleet ages of between 2.2 and 8.3 years old for fixed-route buses and 1.0 to 5.7 years old for demand-response vehicles. The average useful life of a single fixed-route bus in a fleet is 10 to 12 years. The average useful life of a single demand-response van in a fleet is 5 to 7 years.

### Vehicle and facility condition

Vehicle and facility conditions are assessed using a standardized scale ranging from 1 (poor) to 5 (excellent) which reflects the age of the vehicle or facility, its current operating condition, and the quality of maintenance it received. The ideal vehicle condition rating for a fleet is at the midpoint of its useful life. This implies a planned approach to vehicle replacement and rehabilitation.

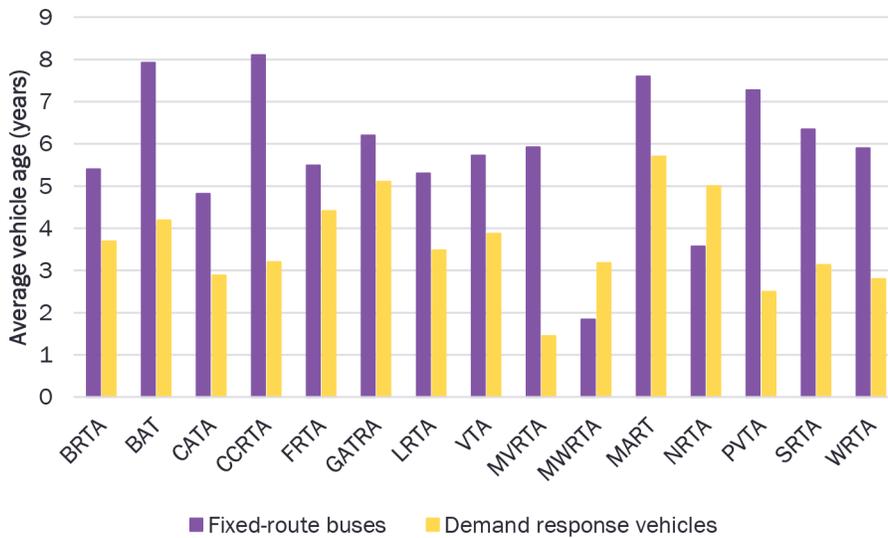


Figure 47. Fleet age

### > Revenue vehicle condition

Vehicle condition is rated on a scale from 1.0 to 5.0. The RTAs had condition ratings between 2.8 and 4.7 for fixed-route buses and between 2.0 and 5.0 for demand response vehicles. Most fixed-route bus fleets were rated close to 3.0 or “fair,” with MVRTA, CCRTA, and three others rated closer to “excellent” or “good.” Four demand-response fleets were rated “good” or above, but three were also rated below “good.”

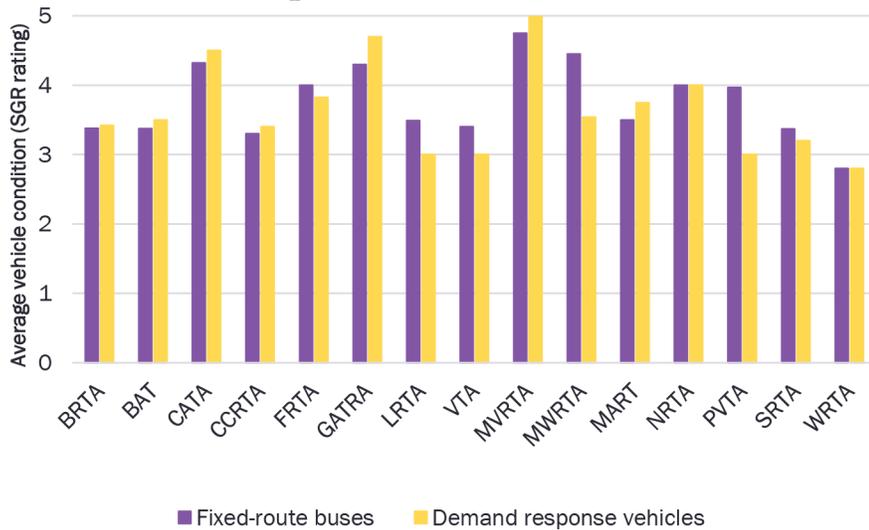


Figure 48. Revenue vehicle condition

### > Facility condition

The RTAs had facility condition ratings between 1.0 and 5.0. Figure 49 shows the average condition rating for facilities at each RTA.

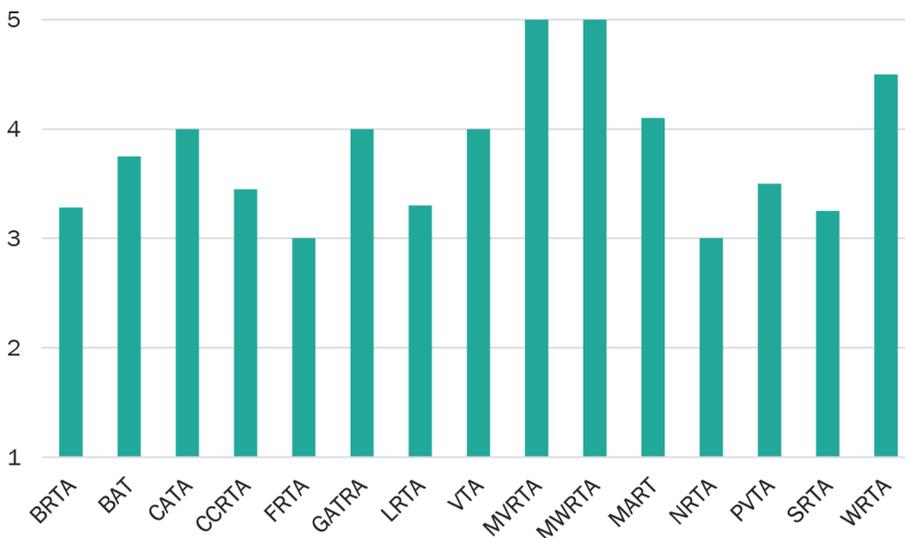


Figure 49. Facility condition; showing the average condition rating for the facilities owned by each RTA.

## > Rail

### > Percentage of bridges inspected

The FRA requires that MassDOT inspect all 163 bridges on MassDOT owned track each year, on a calendar year schedule. All bridges were inspected before the end of the 2016 calendar year. 2017 progress will be reported in a midyear update of *Tracker*.

### > Number of rail ties repaired

Track condition relies on rail tie maintenance. The number of rail ties replaced or repaired provides an indication of the extent of the work needed to maintain the track at current class level. In FY17 the Rail and Transit Division replaced or repaired approximately 26,000 rail ties.



# Budget & Capital Performance

## > Transit

### > Operating expense per vehicle revenue mile

Financial information is reported via the National Transit Database (NTD), which reports data a year and a half after the close of the fiscal year. Currently, the most recent data available for operating expenses and fare recovery ratio is from FY15. These will be updated for FY16 in a midyear update to *Tracker*.

In FY15, Massachusetts RTAs spent between \$3.61 and \$9.57 per mile to operate a vehicle in fixed-route bus service.

In FY15, Massachusetts RTAs spent between \$3.08 and \$15.70 per mile to operate a vehicle in demand-response service.

### > Farebox recovery ratio

In FY15, fare revenue from Massachusetts RTAs covered between 7.8% and 35.2% of operating expenses for fixed- route bus service. Three RTAs - BRTA, LRTA, and VTA - had a higher farebox recovery ratio in FY15 than in FY14.

In FY15, fare revenue from Massachusetts RTAs covered between 2.8% and 56.0% of operating expenses for demand-response service. Eight RTAs - CATA, CCRTA, FRTA, VTA, MART, NRTA, PVTA, and SRTA - had a higher farebox recovery ratio in FY15 than in FY14.

### > Percent of capital dollars spent by year's end

This measure indicates the ability of the RTAs to spend the state capital funds that they have budgeted. An annual percentage close to 100 indicates that an RTA is able to anticipate need accurately and execute programs effectively. In FY16, all RTAs spent 100% of their state- funded capital budget with the exception of GATRA and MVRTA (99%), FRTA (98%), and NRTA (70%). All of the RTAs spent more of their budget in FY16 than they did on average in FY15. FY17 capital dollar spending will be updated in a midyear update to *Tracker*.

## Rail

### > Budget spent to date vs. planned

The FY17-FY21 Capital Improvement Plan calls for \$180,506,855 to be spent by MassDOT on rail projects in the Commonwealth. In FY17 the rail programs, combined, spent 94% of the original amount budgeted in the CIP.



### Operating expense per vehicle revenue mile and farebox recovery ratio

*These measures describe the efficiency with which RTAs commit operating expenses to serve their transit routes, geographies, and populations. Operating expenses are the ongoing annual costs of operating a transit agency, including staff time, maintenance, and fuel.*

*Bus service includes regularly scheduled local routes and commuter routes which operate on fixed schedules. Demand response service includes federally mandated paratransit service and other dial-a-ride services, whether using dedicated vehicles or taxi vouchers. Data was obtained from the National Transit Database (NTD) which includes federally audited data through FY15.*

*Operating expense per vehicle revenue mile describes how expensive it is for an RTA to operate a bus or van for one mile of revenue service. Revenue service includes trips that accept passengers and excludes, for example, moving a vehicle back to the garage after the last trip of the day. Smaller values indicate more efficient performance.*

*Farebox recovery is the ratio of the revenue from fares and passes to operating expenses. It shows how much of the agency's operating budget is covered by fares, and, inversely, how much is covered by other sources (tax assessments, federal grants, etc.).*



### Percent of capital dollars spent by year's end

*The percent of capital dollars spent by the year's end refers to the portion of the capital budget that was utilized within the fiscal year. For example, if an agency only spent \$10,000,000 of its \$20,000,000 budget, it would have spent 50% of its budget by year's end.*



## > Transit

### > All transit injuries

The rate of transit injuries per 100,000 passengers decreased or stayed the same for most RTAs over the five-year rolling averages covering FY10 to FY16. At 7 out of the 12 RTAs that report separately for bus and demand response, the injury rate for fixed-route bus service declined or stayed the same over the past three 5-year periods.

### All transit injuries

All transit injuries represents the annual number of injuries that resulted from unintentional contact with transit vehicles or property. An injury is recorded for each person who received medical attention on the premises, or was transported away to receive medical care. These are reported for each RTA for each fiscal year and normalized per 100,000 unlinked passenger trips (UPT).

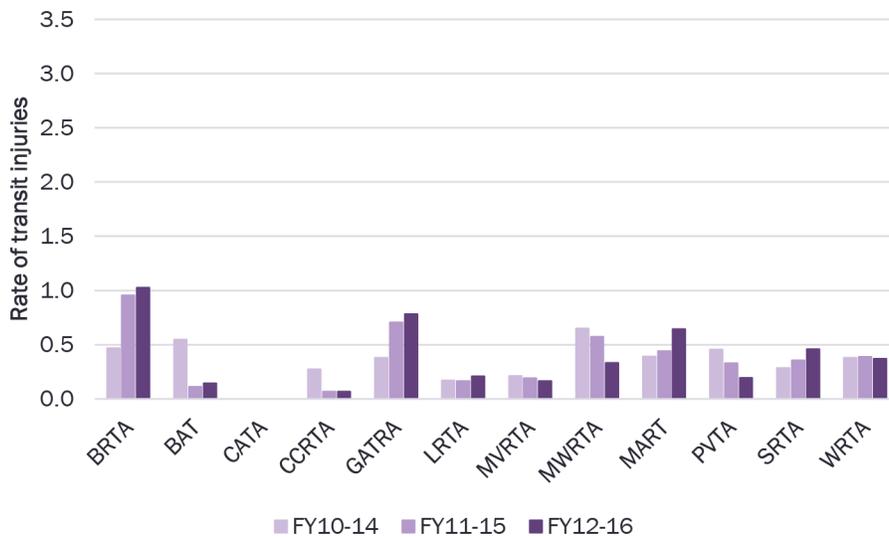


Figure 50. Transit injuries per 100,000 passengers – bus service, 12 RTAs, FY 2010-2016 (rolling averages)\*

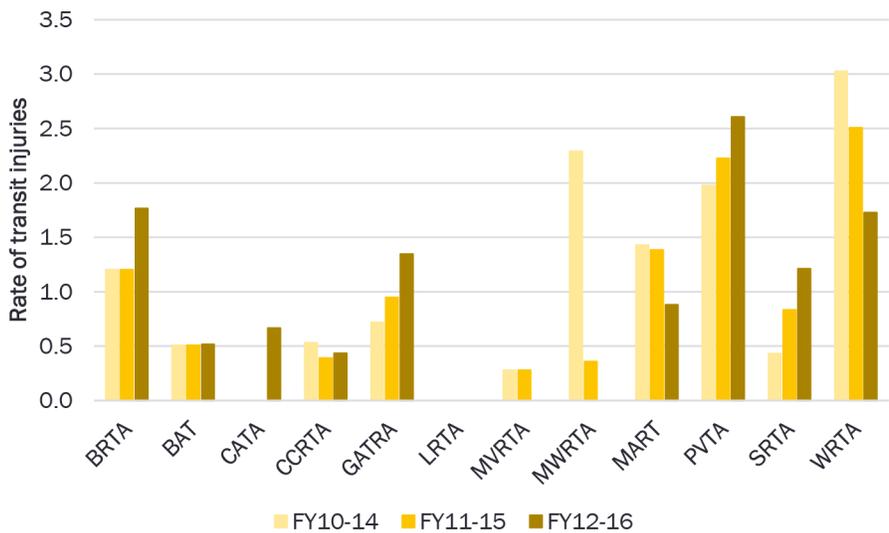


Figure 51. Transit injuries per 100,000 passengers – demand response service, 12 RTAs, FY 2010-2016 (rolling averages)\*

\*VTA, FRTA, and NRTA are not included because they do not report injuries by mode.

## > Preventable accidents

The rate of preventable transit accidents per 100,000 passengers decreased for 7 RTAs between the rolling period from FY14-16 and FY15-17. Four RTAs remained at nearly the same rate (within .05% up or down). The other 4 RTAs had an increase in the rate of accidents.

### Preventable accidents

Preventable accidents are defined as those accidents in which the transit driver is normally deemed responsible or partly responsible for the occurrence of the accident. These are reported for each RTA for each fiscal year and normalized per 100,000 unlinked passenger trips (UPT). Data are shown here for the three year periods FY14-16 and FY15-17. Fiscal years 16 and 17 have not yet gone through auditing by the NTD.

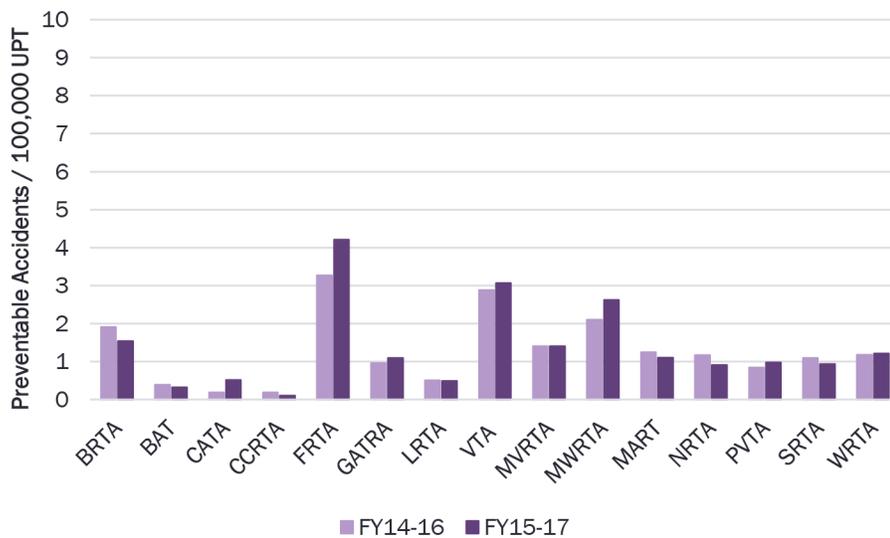


Figure 52. Preventable accidents per 100,000 passengers - bus service, FY14-17 (rolling averages)

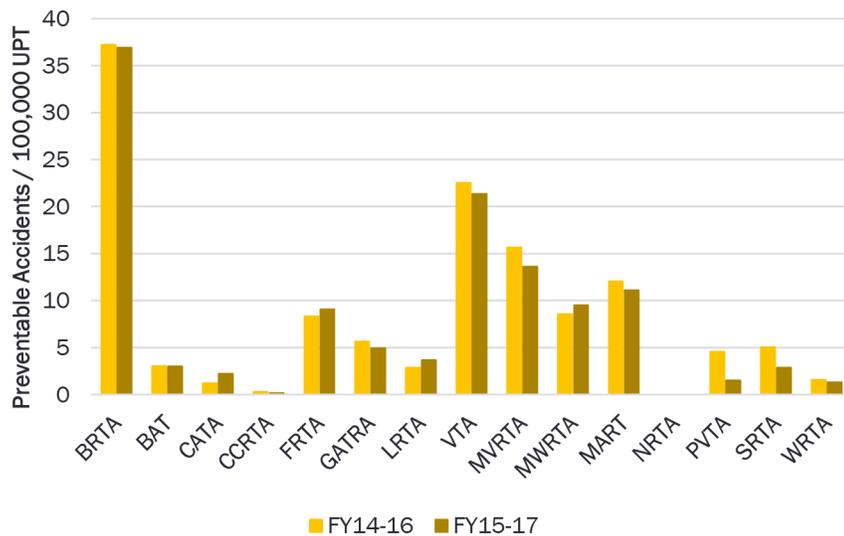


Figure 53. Preventable accidents per 100,000 passengers - demand response service, FY14-17 (rolling averages)

# > Rail

## > Number of derailments

The number of rail derailments in Massachusetts have declined overall since FY13 (using the 5-year rolling average).

### Peer state comparison

Derailments have declined over the last four years, both among peer states and nationwide. Note that there are a relatively small number of derailments in some peer states.



### Number of derailments

A derailment occurs when on-track equipment leaves the rail for a reason other than a collision, explosion, highway-rail crossing impact, etc. These can be reduced by inspection and maintenance of the rail and rolling stock and by operators following the speed limits. This measure is reported using a 5-year rolling average. For the peer comparison chart, incidents are shown per 1,000 miles of rail located within the state.

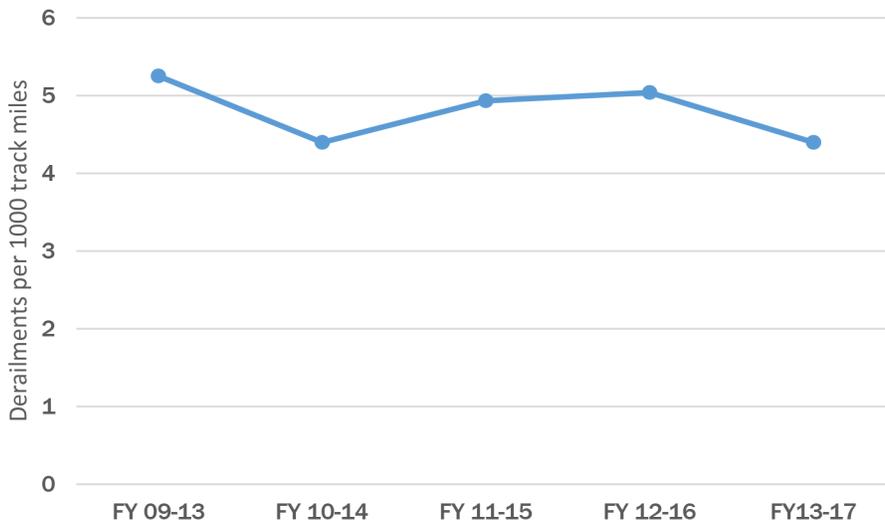


Figure 54. Number of rail derailments, 5 year rolling average FY13-17; Source: FRA; state-wide data

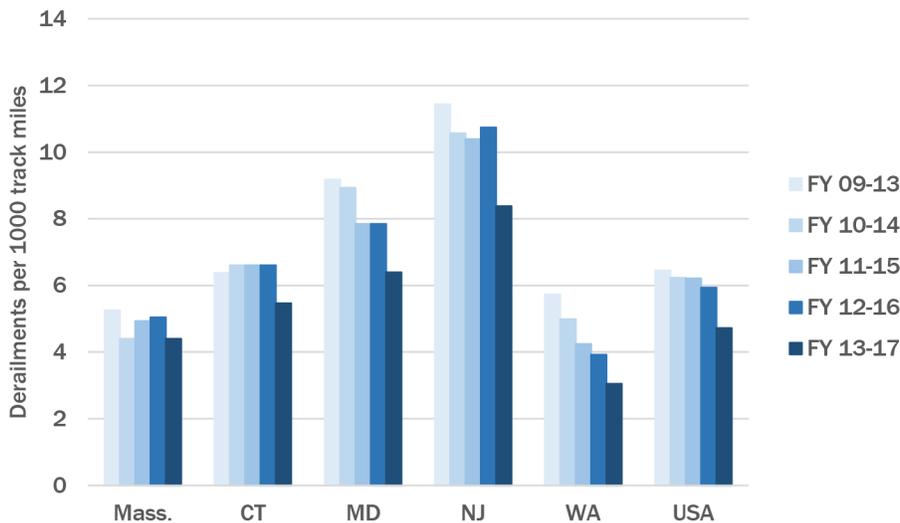


Figure 55. Number of rail derailments per 1000 track miles in peer states, 5 year rolling average FY13-17; Source: FRA; state-wide data

## > Number of reported hazmat incidents

Reported hazmat incidents have increased each of the past four years (using a rolling 5-year average).

### Peer state comparison

Adjusted for track miles, Massachusetts has a lower hazmat incident rate than most of its peer states.

### Number of hazmat incidents

This measure tracks the reported incidents involving hazardous material transported via rail. For the peer comparison chart, incidents are shown per 1,000 miles of rail located within the state (including track owned by MassDOT and other entities).

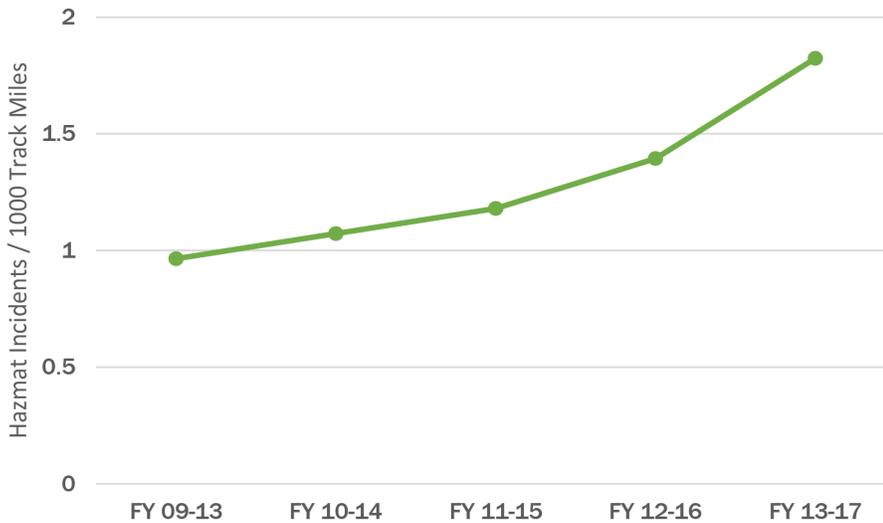


Figure 56. Number of reported hazmat incidents, 5 year rolling average FY13-17; Source: FRA; state-wide data

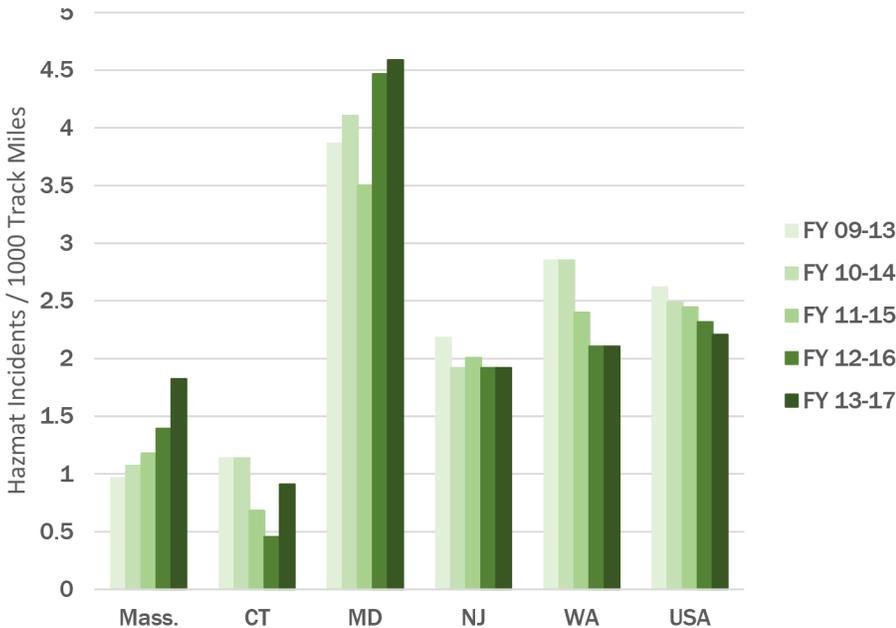


Figure 57. Number of reported hazmat incidents per 1000 track miles in peer states, 5 year rolling average FY13-17; Source: FRA; state-wide data

## > Number of highway-rail incidents

After increasing over the three rolling average periods ending in FY13 through FY16, the number of highway-rail incidents dropped in the FY13-17 period.

### Peer state comparison

Adjusted for number of crossings, Massachusetts has a lower highway-rail incident rate than most of its peer states.

### Number of highway-rail incidents

This measure tracks the total number of reported incidents at highway-rail grade crossings (including pedestrians, bicyclists, etc.). Highway-rail grade crossing means a location where a public highway, road, street, or private roadway, including associated sidewalks and pathways, crosses one or more railroad tracks at grade. For the peer comparison chart, incidents are shown per 1,000 highway-rail crossings located within the state.

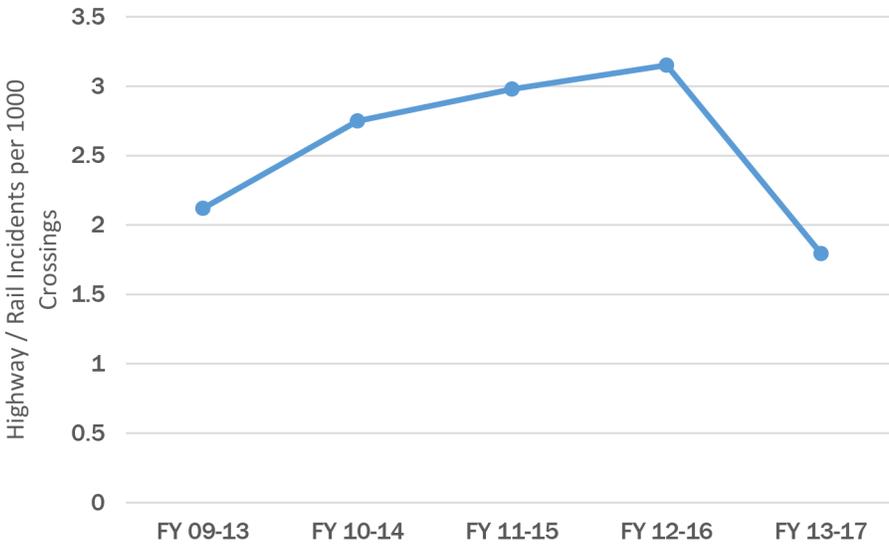


Figure 58. Number of highway-rail incidents, 5 year rolling average FY13-17; Source: FRA; state-wide data

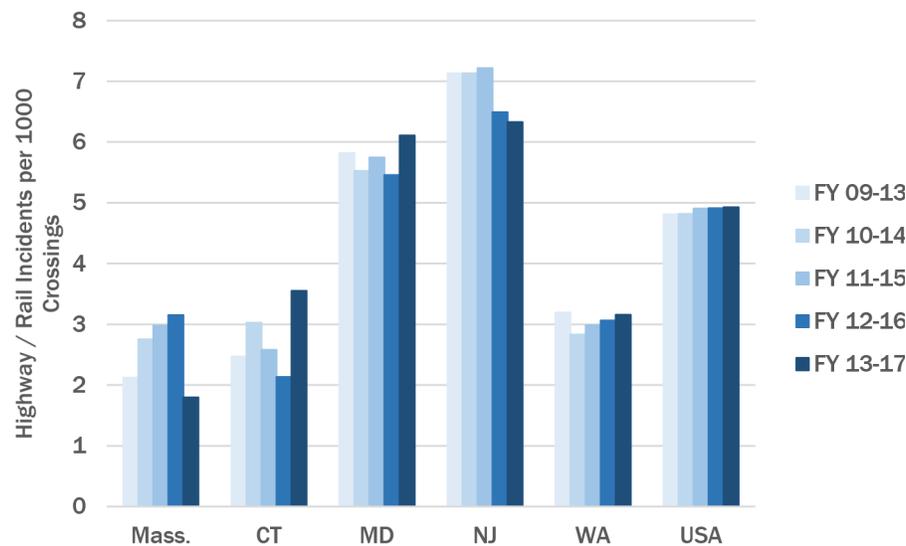


Figure 59. Number of highway-rail incidents per 1000 crossings in peer states, 5 year rolling average FY13-17; Source: FRA; state- wide data



# Healthy & Sustainable Transportation

## > Transit

### > Annual ridership on fixed-route passenger service

In FY17, Massachusetts RTAs carried a total of 29 million passengers on fixed-route bus service, a statewide decrease of 5.4% from FY16.



#### Ridership

Annual ridership is the number of one-way passenger trips taken. Customers transferring between buses are counted once per bus that they ride. This method of counting ensures that data can be reliably compared between RTAs and across years.

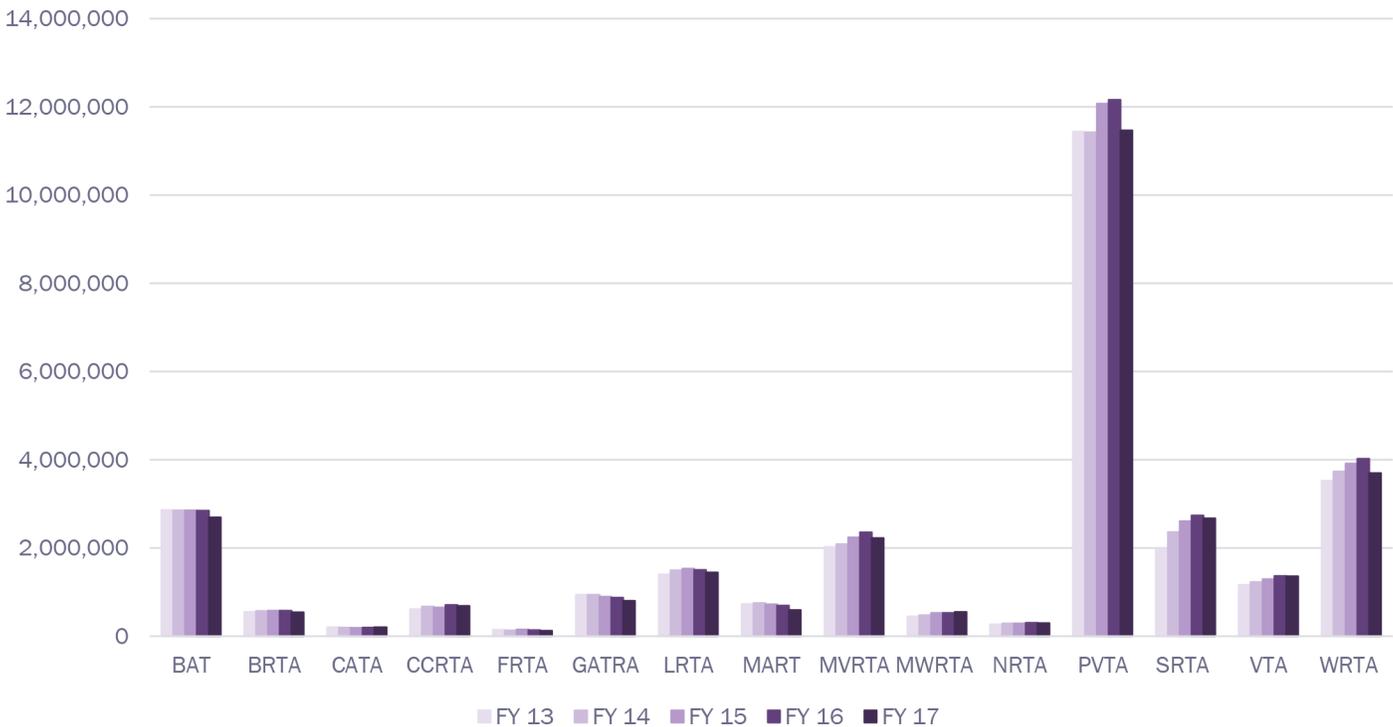


Figure 60. Ridership – bus service, FY 2013-17; Source: National Transit Database and MassDOT.

## > Annual ridership on demand response passenger service

In FY17, Massachusetts RTAs carried a total of 2.5 million passengers on demand-response service, a statewide increase of 0.3% from FY16.

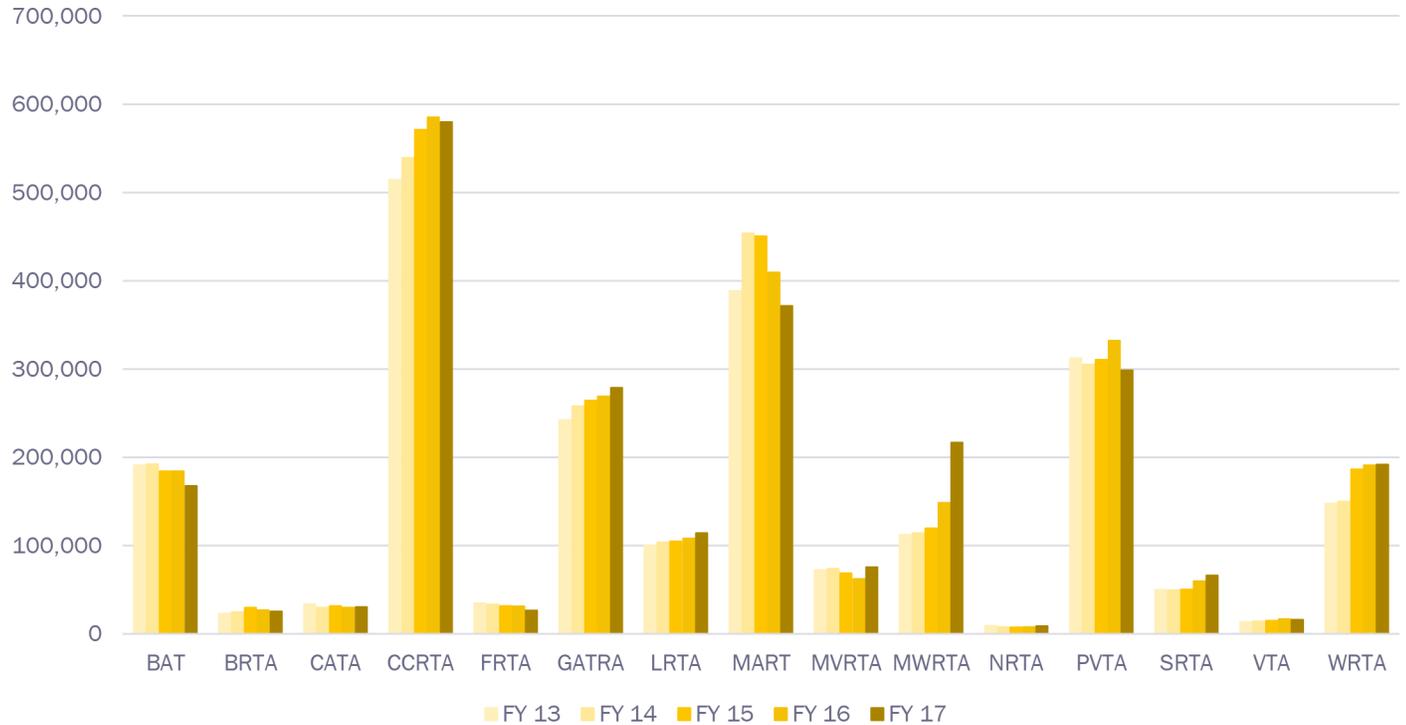


Figure 61. Ridership – demand response, FY13-17; Source: NTD and MassDOT.

## > Ridership on CapeFLYER

CapeFLYER is passenger rail service between Boston and Hyannis operated on weekends from Memorial Day to Labor Day. It is a cooperative effort between CCRTA, MassDOT, and the MBTA. CapeFLYER reports ridership on a calendar year basis to match its seasonal service.

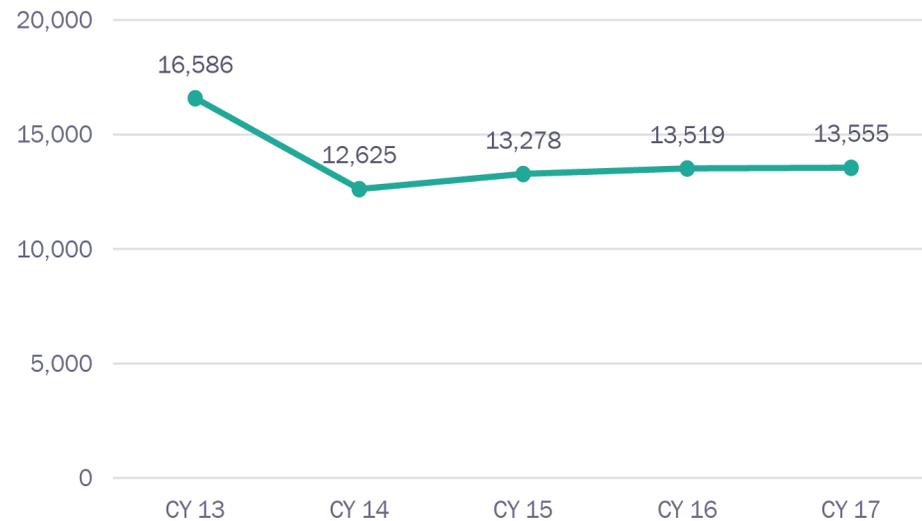


Figure 62. Ridership on CapeFLYER

In the 2017 season, CapeFLYER carried 13,555 one-way passengers, an increase of 0.3% from 2016. CapeFLYER operated service into the early fall in 2013, its first season, resulting in higher ridership. Ridership has steadily increased in the subsequent years, when its season has consistently ended at Labor Day.

### > Percent of Massachusetts residents with access to transit

At the end of FY17, the 15 RTAs and all MBTA bus, train, and boat service combined to provide 52.8% of Massachusetts residents access to transit service (stops served by fixed-route bus service), or about 3.5 million out of 6.7 million residents.

#### Percent of Massachusetts residents with access to transit

*This measure is the proportion of the State's population who lives within one-half mile of transit service. Thus, it represents one measure of accessibility to transit service statewide. Calculations are based on walking distances from transit stops that one or more agencies served at the end of FY17 with population data from 2012-2016 American Community Survey 5-year estimates.*

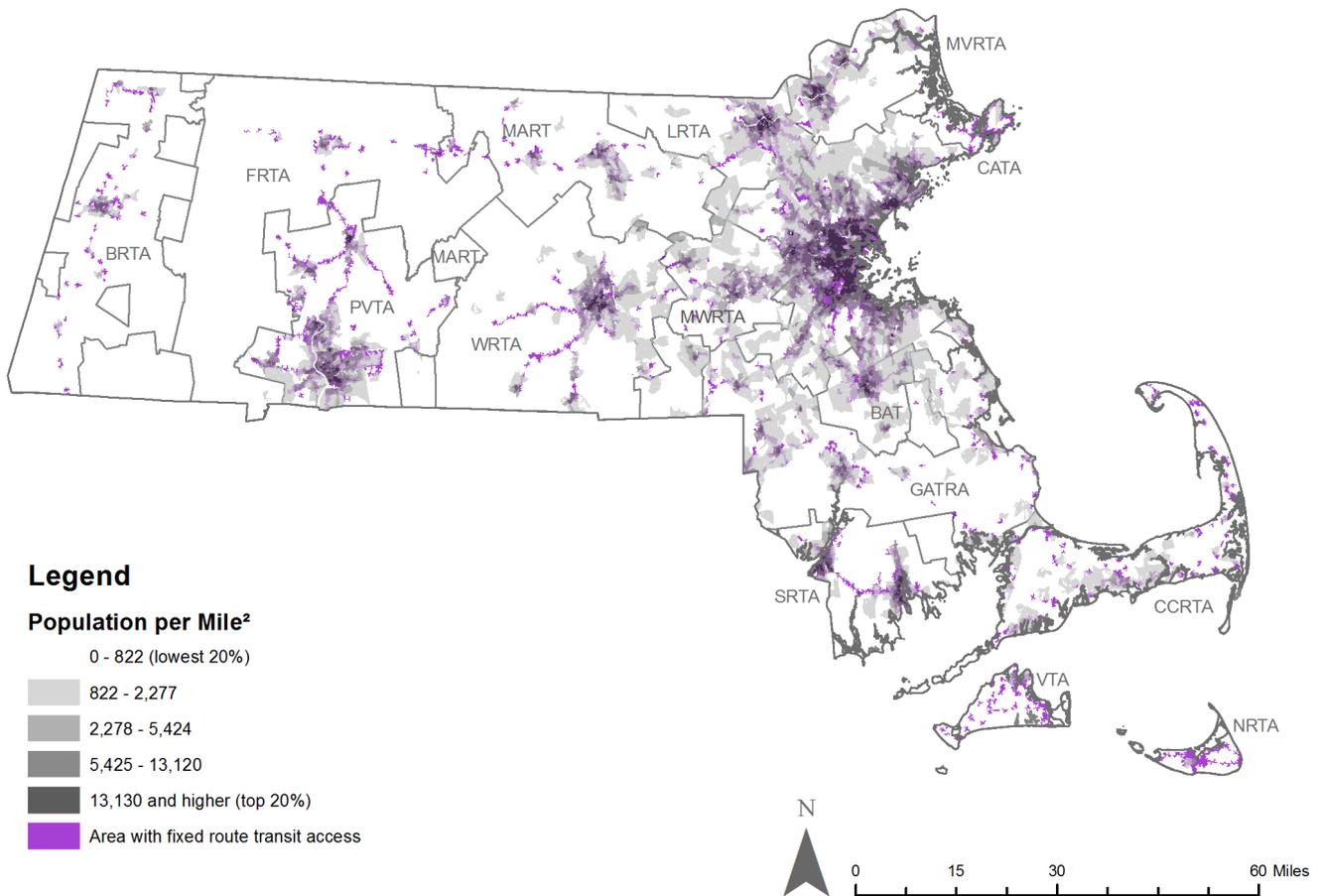
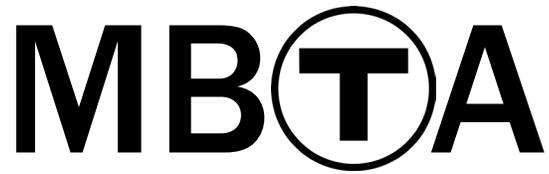


Figure 63. FY17 access to transit



## Overview

The MBTA owns and operates one of the oldest and largest public transportation agencies in the US, transporting more than 3.1 million passengers daily. The MBTA's services, or modes, include:

- > *Bus - The MBTA operates 175 bus routes directly or via contract, including 116 local routes, 19 key routes (i.e. serving corridors with higher ridership), 28 commuter or express routes, 1 community route, and 11 supplemental routes.*
- > *Light rail - The MBTA's primary light rail system, the Green Line, provides service to outlying areas and subway service through the center of the city. The MBTA also operates the Mattapan High Speed Line, which serves as an extension of the Red Line from Ashmont to Mattapan.*
- > *Heavy rail - The MBTA operates three heavy rail lines, the Red Line, Blue Line, and Orange Line. Collectively, these lines provide core subway service.*
- > *Commuter Rail - The MBTA's 14 Commuter Rail lines link cities and towns around the state with downtown Boston. Since July 2014, the Commuter Rail has been operated by Keolis Commuter Services.*
- > *Boat - The MBTA provides ferry service between downtown Boston, the South Shore, Logan Airport, and Charlestown.*
- > *Paratransit - The MBTA provides paratransit service via THE RIDE to eligible customers in 58 cities and towns in eastern Massachusetts.*



## > Related Processes

The MBTA uses performance measures to track progress toward goals, provide accountability and transparency, and plan for investments and programs in the future. There are a number of current initiatives and plans that include goals and performance measures that match or overlap with those included in *Tracker*. To ensure alignment among these efforts, OPMI has worked closely with MBTA and MassDOT staff and MBTA Fiscal and Management Control Board (FMCB) members in the development and presentation of these performance measures and 2018 targets. The MBTA welcomed a new General Manager and senior leadership team in September 2017. In 2018 OPMI will be working with this team and the FMCB to establish 2020, 2022 and long-term performance targets. In the meantime, the following existing plans and performance tools are related to *Tracker*.

- > *MBTA Service Delivery Policy (SDP)* – defines the services provided by the MBTA, and the associated service objectives. The service quality standards included in the SDP are the same as the customer service performance measures included in *Tracker*.
- > *MBTA Strategic Plan* – The MBTA FMCB adopted a strategic plan in April, 2017. The plan’s objectives relate directly to many of the *Tracker* performance goals and measures. These cover the areas of safety, customer service, infrastructure condition, accessibility, and environmental stewardship.
- > *Focus40* – the 25-year investment plan focused on how to position the MBTA to meet the needs of the Greater Boston region in 2040. When finished in early 2018, this plan will include long-term goals and packages of investment strategies based on public feedback. The Focus40 goals were developed based on a review of the *Tracker* performance goals, the MBTA’s strategic plan, and public input.
- > *MBTA Dashboard* ([mbtabackontrack.com](http://mbtabackontrack.com)) – In March 2016 the MBTA launched its online performance dashboard. The automated website presents MBTA performance in the areas of reliability, ridership, financial, and customer satisfaction. The data is updated daily or monthly, depending on the measure. Some of these measures include targets, and these align with the targets presented in *Tracker*.

### MBTA - 2017 SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	2018 TARGET
	Subway reliability - Blue Line	95%	-2.5%	90%
	Subway reliability - Orange Line	94%	+3.2%	90%
	Subway reliability - Red Line	92%	+4.9%	90%
	Subway reliability - Green Line <sup>1</sup>	77%	+5.5% <sup>1</sup>	90%
	Subway passenger travel time - Blue Line	98%	-0.3%	Context only
	Subway passenger travel time - Orange Line	93%	+4.9%	Context only
	Subway passenger travel time - Red Line	96%	+0.8%	Context only
	Subway passenger travel time - Green Line	96%	+5.2% <sup>1</sup>	Context only
	Bus reliability - Key Bus routes	77%	+0.7%	80%
	Bus reliability - Other routes	63%	-4.6%	75%
	Bus service operated	98.3%	-0.3%	99.5%
	Commuter Rail reliability (adjusted)	93%	-0.4%	92%
	Commuter Rail service operated	99.6%	-0.2%	100%
	Boat reliability	98%	-0.5%	95%
THE RIDE reliability	92%	no change	90%	
Platform accessibility (all rapid transit stations with elevators)	92.6%	+0.1%	100%	

## MBTA - 2017 SCORECARD

PURPOSE	PERFORMANCE MEASURE	CURRENT (FY17)	CHANGE FROM FY16	2018 TARGET
	Vehicle accessibility (Green Line)	98.6%	no change	100%
	Bus passenger comfort	94.9%	+0.8%	96%
	Customer satisfaction <sup>2</sup>	4.6	no change	In development
	Revenue vehicle condition <sup>3</sup> - Bus	3%	no data	For vehicle condition, higher percentages indicate an older vehicle fleet and imply a greater need for repairs or replacements.  For facility condition, higher percentages indicate more facilities in need of repair or rehabilitation.  For FY18 targets, see the System Condition section.
	Revenue vehicle condition <sup>3</sup> - Light Rail	45%		
	Revenue vehicle condition <sup>3</sup> - Heavy Rail	45%		
	Revenue vehicle condition <sup>3</sup> - Commuter Rail	15%		
	Revenue vehicle condition <sup>3</sup> - The RIDE	29%		
	Revenue vehicle condition <sup>3</sup> - Boat	0%		
	Non-revenue vehicle condition <sup>3</sup>	35%		
	Facility condition - Stations	54%		
	Facility condition - Parking Facilities	65%		
	Facility condition - Other Facilities	46%		
Track condition - Rapid transit	6.7%			
	Fare recovery ratio	43.2%	+2.0%	50%
	Projects completed in FY17	19	no data	Context only
	Projects ongoing into FY18	54	no data	Context only
	Projects planned for next year	48	no data	Context only
	Fatalities as a result of transit incidents	26	+14	Move towards zero
	Base coverage (residents within one half mile of transit)	80%	no change	Over 75%
	Ridership (unlinked passenger trips)	398m	-1%	Context only

Note: The facility and revenue condition targets have been established through the FTA's performance measures established through MAP-21, and submitted (as required) to FTA in August, 2017. Per FTA's guidance, these targets are set for 2018 and based on the expected condition of all assets given current conditions. For all other MBTA measures, 4-year and long term targets will be developed after the transition of the new MBTA General Manager and leadership in September 2017.

1. Comparison is from FY16 Q4 to FY17 Q4. Green Line reliability data became available in Spring FY16.
2. Scale from 1 to 7.
3. Measured as a % of vehicles that are beyond their Useful Life Benchmark (i.e. equal to or older than the age they are expected to last per industry standards).

# Customer Experience

MBTA customers are riders of public transit who share common experiences such as planning a trip, waiting at a stop or station, and riding a transit vehicle. The reliability measures describe how consistently customers can rely on published schedules, while the accessibility measures describe how consistently accessible service is available. Additional measures are under development which will assess the information communicated to customers.

## > Subway reliability

All four subway lines improved over last year’s annual reliability; the Blue Line improved about 2.5% from last year’s 92.5%, the Green Line improved about 5% from 71.6%, the Orange Line improved about 3% from 90.9%, and the Red Line improved about 5% from 87.3%. The Red Line raised its total reliability numbers over the target level of 90%, joining the Blue and Orange Lines. Even though the Green Line remains below the target, its reliability is trending toward the target.

## > Subway travel time

The Blue and Red line have remained relatively constant since the beginning of FY16 and through FY17, hovering around their respective 98.1% and 96.7% marks throughout. While the Orange Line’s travel time has remained constant throughout FY17, its performance increased by more than 10 percentage points to 98% since the beginning of FY16, reflecting the implementation of headway control efforts. Green Line travel time performance increased about 5 percentage points since the last quarter of FY16.

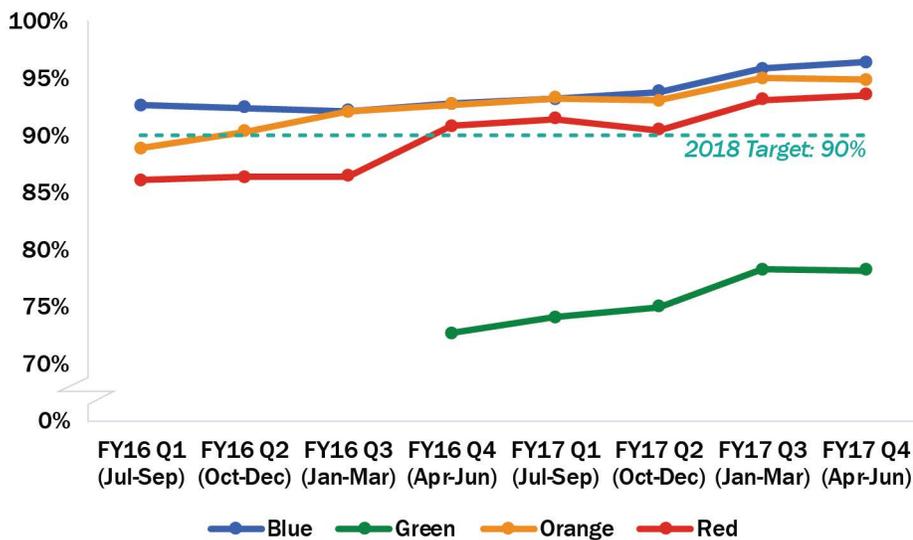


Figure 64. Subway reliability, quarterly, FY16-FY17

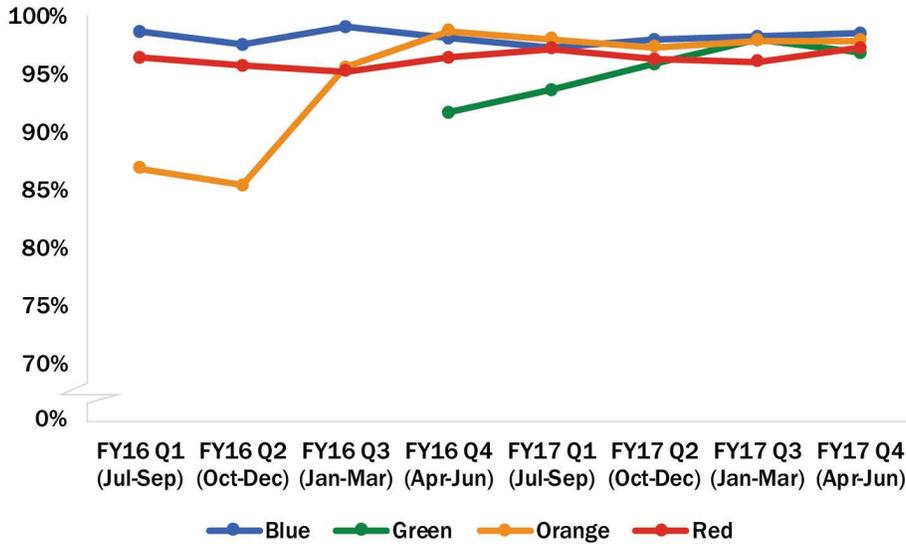


Figure 65. Subway Passenger Travel Time by Line, quarterly, FY16-FY17

### > Bus reliability

For key bus routes, FY17 reliability was 77%, below the 2018 target of 80%. Out of 20 Key Bus Routes, 3 of them (routes SL1, SL2, and 73) individually surpassed the 2018 target. For non-key bus routes, FY17 reliability was 63%, below the 2018 target of 75%. Out of 167 non-key bus routes, 14 of them individually surpassed the 2018 target.

Comparisons between FY17 and earlier years cannot be precisely measured, due to a change in methodology that occurred within FY16.

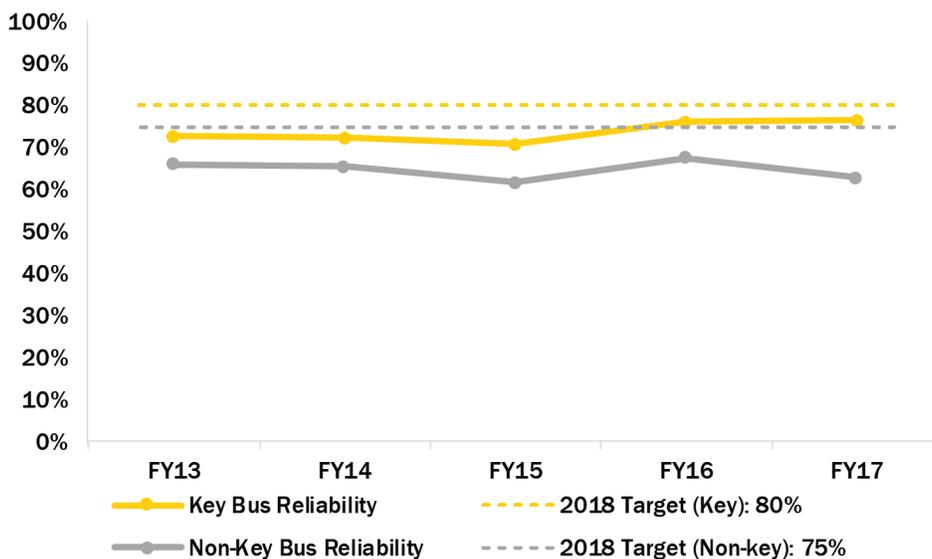


Figure 66. Bus reliability, FY13-FY17

### Reliability

These reliability measures describe how well the MBTA adheres to its published schedules and service frequencies so that MBTA customers can rely on consistent travel times.

Subway reliability is the percent of customers who wait no longer than the scheduled time between trains. Calculations do not yet account for the effects of overcrowding or bus shuttles.

Subway passenger travel time is a supplemental reliability measure and is the percent of customers whose time spent on board a train is within 3 minutes of the scheduled travel time.

Bus reliability is how often bus service arrives when it is expected. Service scheduled to arrive every 15 minutes or less should not have long gaps between buses. Other service should arrive within a few minutes of schedules.

(continued on next page)

## > Bus service operated

In FY17, out of all of the scheduled trips for the year, 98.3% were operated; this number is consistent with the previous two years. This year, the highest percentages were recorded in July and January (98.6%) and the lowest recorded was in March (97.7%).

## > Commuter Rail reliability

Commuter Rail reliability exceeded the 92% systemwide target for the past two years, decreasing slightly to 93.2% in FY17. Reliability also remains above the level of 84.7% seen in FY15, when severe winter storms impeded service. These figures include adjustments made to evaluate Keolis’s performance in operating Commuter Rail. Unadjusted reliability, which evaluates only the on-time status of every train, was 88.9% in FY17.

## > Commuter Rail service operated

In FY17, out of all the Commuter Rail trips scheduled for the year, 99.6% of them were operated, a 0.2% decrease from FY16.

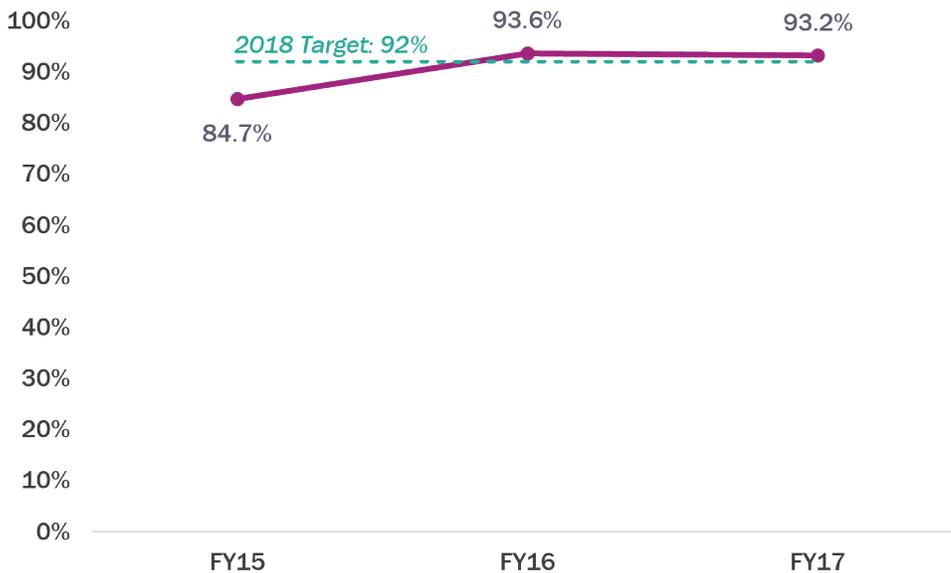


Figure 67. Commuter Rail reliability (adjusted), FY13-17.



### Reliability (continued)

*Bus service operated is a supplemental reliability measure and is the percentage of scheduled bus trips that completed their route. When a trip does not run, it lowers bus service operated but does not affect bus reliability.*

*Commuter Rail reliability is the percent of trains that arrive at their final stop no more than 5 minutes later than scheduled. This report displays adjusted performance, reflecting how well Keolis met its contractual requirements for operating Commuter Rail service. When delays are outside the control of Keolis, certain late trains are adjusted to on-time.*

*Commuter Rail service operated is a supplemental reliability measure and is the percentage of scheduled train trips that ran at least part of their route. When a trip does not run, it lowers both Commuter Rail reliability and Commuter Rail service operated.*

*Boat reliability is the percent of ferry and commuter boat trips that arrive at their final destination no more than 5 minutes later than scheduled.*

*THE RIDE reliability is measured by how promptly vehicles arrive at the starting point of each completed trip. It is the percent of trips that arrived to pick up the customer within 15 minutes of the scheduled reservation start.*

## > Boat reliability

Boat reliability in FY17 was 97.5%. Even though FY17's numbers are 0.5% lower than in FY16, overall performance is trending positively over the past five years. Performance for FY17 was about 5% better than it was in FY13.

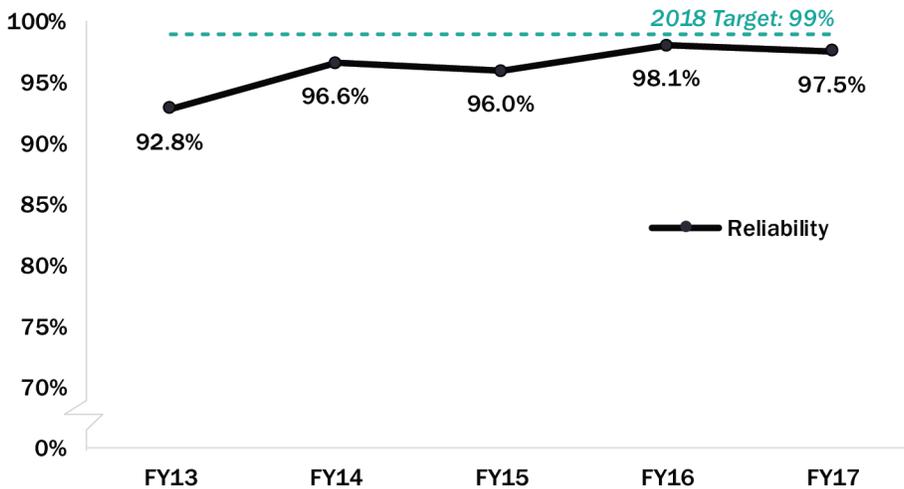


Figure 68. Boat reliability, FY13-17.

## > The RIDE reliability

In FY17, The RIDE's reliability was 91.9%, above the target of 90% and consistent with previous years. The only time in the past five years that performance fell below the target was in FY15, due to extreme winter storms.

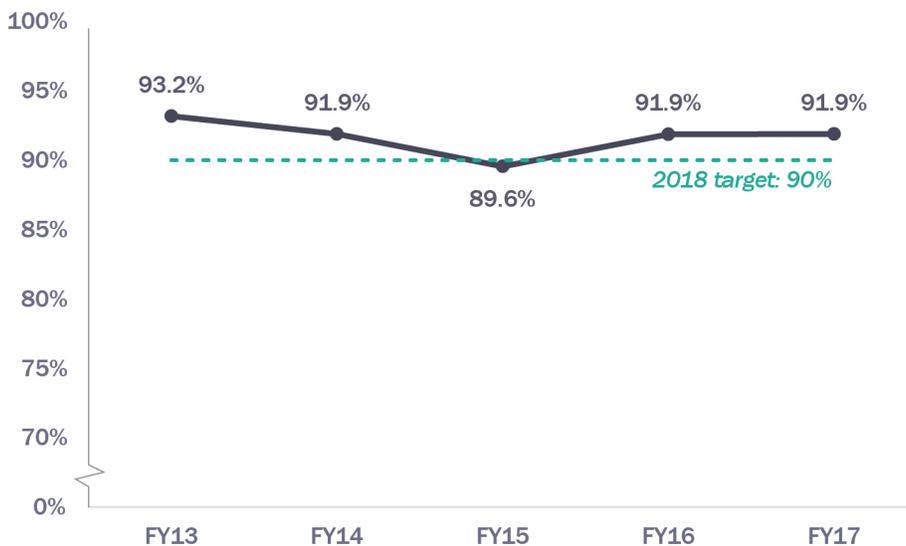


Figure 69. The RIDE reliability, annually, FY13-17.

## > Bus stop accessibility

Out of 7,685 MBTA bus stops, a comprehensive survey in FY17 rated 278 stops as “critical” for accessibility. The critical stops have significant barriers related to accessibility, safety, and operational concerns. The MBTA is coordinating with cities, towns, and the Highway Division to make plans for improvement. Solutions will include physical changes to a stop or roadway, stop relocations, and stop closures.

## > Subway platform accessibility

Taking into account elevator outages, redundant elevators, and available ramps, subway platforms were accessible 92.6% of service hours in FY17, up slightly from 92.5% in FY16. Elevator outages were responsible for platforms being inaccessible for 0.5% of service hours in each year, while stations without needed elevators were responsible for about 7% of platforms being permanently inaccessible.

While the MBTA did not meet its target of 100% subway platform accessibility, it maintained continued positive progress above the established minimum of 92%.

Subway platform accessibility improved when Government Center reopened in March 2016, following a two-year renovation that made the station accessible. Similar renovations are starting in FY18 for Wollaston. Platforms at Bowdoin, Boylston, Hynes, and Symphony remain reachable only by stairs, while the platforms at Suffolk Downs are always accessible using ramps.

## > Green Line vehicle accessibility

Throughout FY16-FY17, Green Line vehicle accessibility ranged between 97.7% and 99.2%. Vehicle accessibility peaked at 99.2% during Q3 of FY17, compared to the lowest point of 97.7% during Q1 of FY16.

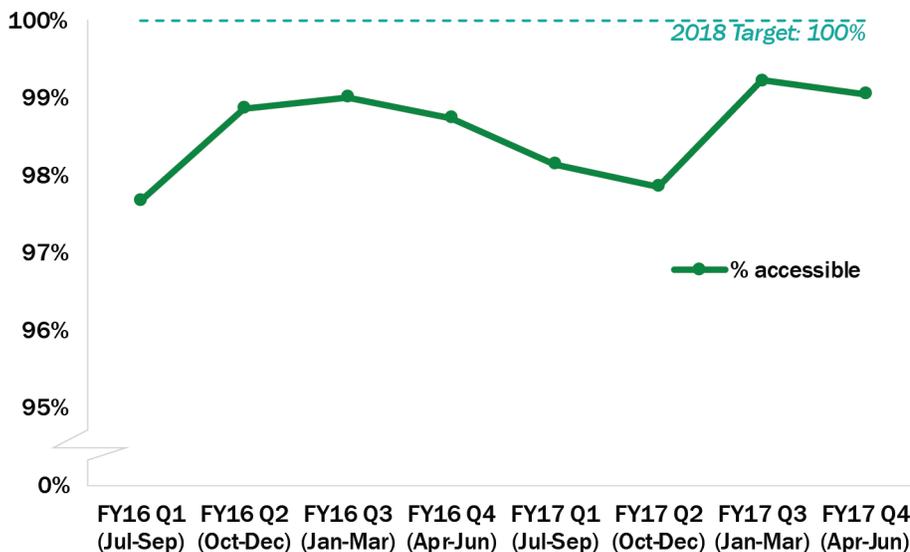


Figure 70. Green Line vehicle accessibility, quarterly, FY16-FY17.

## Accessibility

The accessibility measures indicate how many MBTA vehicles and locations can be accessed by customers with disabilities, and how consistently.

Critical stops (bus stop accessibility) are those bus stops posing “critical” barriers to accessibility. Data is from Department of System-Wide Accessibility surveys with updates as stop improvements are made.

Subway platform accessibility indicates whether elevators are available when customers need them to access platforms. Elevator outages cause some platforms to become temporarily inaccessible. A few platforms are not yet accessible at all. Platform accessibility is the percent of the total platform-hours that are accessible in a year. This measure is currently available for Red, Orange, Blue, Green, and Silver Line stations, excluding surface stops on the Green and Silver Line.

Once they reach a platform, many customers need or want to board only ADA-compliant vehicles. Vehicle accessibility is the percent of trips that include at least one ADA-compliant vehicle that a customer can access. This measure is available for the Green Line and is under development for Commuter Rail. Almost all other MBTA vehicles are ADA-compliant.

## > Bus passenger comfort

In FY17, 94.9% of passenger hours on buses were spent in comfortable conditions, an improvement of 0.8 percentage points from the previous year. Systemwide performance was below the target of 96% passenger hours comfortable, but above the established minimum of 92%. This year, 70% of routes met or exceeded the target, up from 62% of routes in FY16.

## > Customer satisfaction

Customer Satisfaction for the MBTA in FY17 was measured using a monthly panel survey. The survey is based on a 7-point scoring system. The average score for this year was 4.6, consistent with FY16. Out of the 4,603 survey responses, only 25% were either extremely dissatisfied (3%), very dissatisfied (7%), or somewhat dissatisfied (15%). Nine percent were neutral. Sixty-six percent of the customers surveyed were either somewhat satisfied (35%), very satisfied (27%), or extremely satisfied (4%).

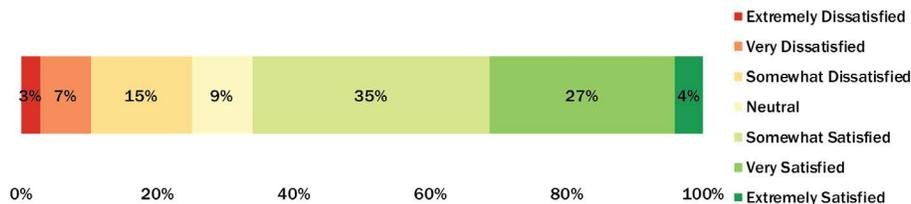


Figure 71. FY17 Customer satisfaction, 7 point scale



### Bus passenger comfort

*Bus passenger comfort measures how well the MBTA provides reasonable capacity to ensure that passengers are not experiencing crowded conditions more often than necessary. Depending on the number of passengers on a bus and time of day, the MBTA may consider no passengers, only standees, or all passengers to be uncomfortable. The duration of uncomfortable conditions, and time each passenger spends in them, is taken from automated passenger counters and trip modeling. Data is available for the Fall of each fiscal year, which the MBTA considers representative of year-round demand patterns.*



### Customer satisfaction

*The MBTA's monthly panel survey asks customers to rate various aspects of their most recent trip, as well as rating the MBTA overall. The panel includes riders of all modes: bus, subway, Commuter Rail, and ferry. This measure is based on the question, "How would you rate the MBTA Overall?" Possible responses range from 1 for "Extremely Dissatisfied" to 7 for "Extremely Satisfied."*

*This measure appears, condensed to a 5-point scale, on the MBTA Performance Dashboard at [www.mbtbackontrack.com](http://www.mbtbackontrack.com).*

# System Condition

The MBTA sets targets for the condition of capital assets including vehicles, facilities, and rail infrastructure based on the FTA's Transit Asset Management guidelines. These guidelines require that transit agencies set one-year targets based on current conditions and expected financial investment. As a result, targets reflect realistic expectations for FY18 performance, based on funded plans for maintenance and procurement. As with the MBTA's other performance measures, 4-year and long-term targets will be developed for *Tracker 2018*, after the transition of the new MBTA General Manager and leadership is complete.

## > Revenue Vehicle Condition

At the end of FY17, 45% of light and heavy rail vehicles were at or older than their Useful Life Benchmark (ULB). This percentage was lower for The RIDE, Commuter Rail, bus, and boat fleets. The MBTA is currently funding multiple vehicle

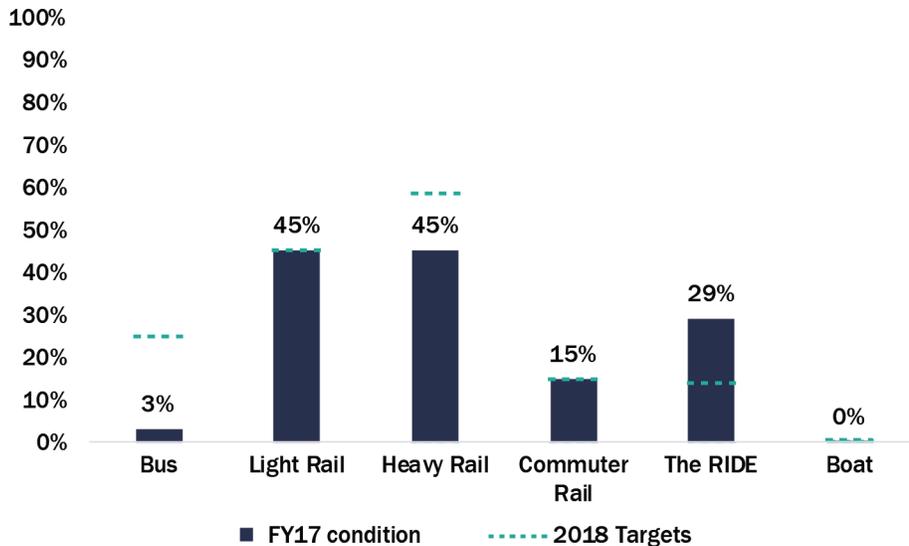


Figure 72. Percent of revenue vehicle condition at or older than ULB by line/mode

replacement and maintenance initiatives, which will reduce the age of the fleets while extending their useful life. However, many new and overhauled vehicles will not be in service until FY19 or later, as the remaining vehicles continue to age. For example, heavy rail revenue vehicle condition is expected to deteriorate to 58% greater than ULB in FY18 before decreasing to 35% by FY20 and 0% in FY22.

### > Non-revenue vehicle condition

At the end of FY17, 35% of non-revenue vehicles were at or older than their ULB. For vehicles supporting Commuter Rail, the figure was 25%; for vehicles supporting all other modes, 47%. FY18 targets are under development.

### > Facility condition

Facility condition is measured on a 1-to-5 scale assessment. At the end of FY17, roughly half of rapid transit and Commuter Rail stations were rated below 3.0, or considered adequate. About the same proportion of maintenance and administrative buildings fell below 3.0, while almost two-thirds of parking facilities fell below that threshold. Targets for FY18 are established to sustain current performance.

### > Track condition

Track condition is measured using speed restrictions. In FY17 an average of 6.7% of rapid transit track miles was subject to speed restrictions, ranging from 6.0% to 8.0% on a monthly basis. As an annual average, 8.6% of Green Line track miles were subject to speed restrictions. The target for FY18 is to sustain current performance.

### Revenue vehicle condition, non-revenue vehicle condition, facility condition, and track condition

Vehicle condition is reported as the percent of vehicles that are at or beyond the end of their expected life cycle based on the type and age of the vehicle, known as the Useful Life Benchmark (ULB). Revenue Vehicles transport customers, while Non-Revenue Vehicles are for support and maintenance. In previous years this measure was calculated using a condition assessment process. However, the MBTA has adopted ULB as a measure to be consistent with FTA reporting.

Facility condition is the percent of facilities rated lower than 3.0 on the 1-to-5 scale of the FTA Transit Economic Requirements Model (TERM) (with 5 being the best condition). Facilities include enclosed stations, parking facilities, and maintenance and administrative buildings.

Track condition is the percent of directional track miles where trains must reduce speeds due to track conditions. For example, if trains on a heavy rail line travel 10 miles round trip but must slow down for 1 mile in just one direction due to bridge construction, the Track condition metric would be 10%. This measure covers MBTA Rapid Transit lines including the Mattapan line. Commuter Rail data for this metric is under development.

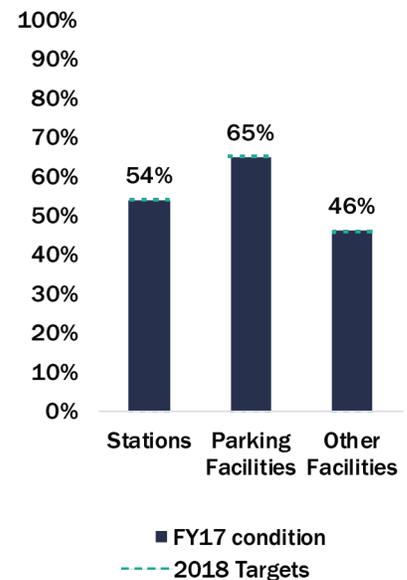


Figure 73. Percent of facilities below 3.0 on TERM scale

# Budget & Capital Performance

## > Fare recovery ratio

Following the fare increase effective at the very beginning of FY17, the MBTA showed an increase in fare recovery ratio from FY16 to FY17 of 2 percentage points. From FY16 to FY17, fare revenue increased by 6% while operating expenses only increased by 1.5%. In comparison, without a fare increase, the fare recovery ratio increased by 1.2 percentage points from FY15 to FY16. This measure does not include expenses due to debt.

### Fare recovery ratio

*Fare recovery ratio is a ratio of the revenue received from fares and passes to the total amount of operational expenses. Ratios closer to 100% indicate that passengers directly pay for more of the cost of operating service. The measure is one way of looking at the cost effectiveness of the services that are being provided.*

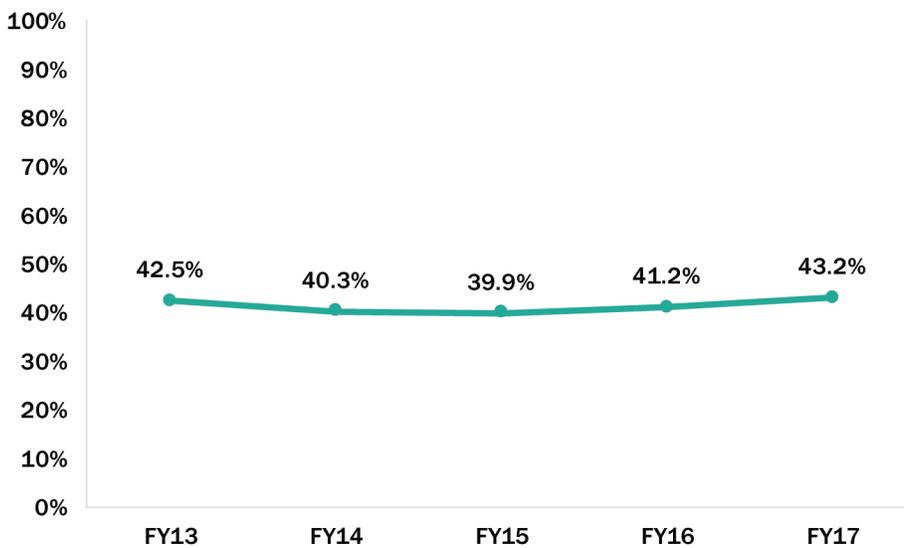


Figure 74. MBTA Fare recovery ratio, FY13-17

## > Number of projects completed, ongoing, and planned for next year

These measures are required by Massachusetts legislation and are considered context measures important for understanding the scope of work managed by the MBTA across each fiscal year. FY17 is the first year that the MBTA has included these measures in *Tracker*.

The number of projects completed in FY17 was 19. Of these, three were vehicle engineering projects, and the remainder were capital projects. Of the 54 ongoing projects headed into FY18, 13 are vehicle engineering projects. Finally, the number of additional projects that are expected to get underway in the upcoming fiscal year is 48, of which four are vehicle engineering projects.

## > Project delivery performance measures

Per the Acts of 2009 and 2013, all operating divisions at MassDOT and the MBTA are required to report on project delivery measures (specifically on time and on budget), and to provide an overview of the projects completed, projects in construction, and projects planned for the upcoming year. Through the Governor’s Special Panel Assessment (following the winter of 2015), and a subsequent external review of the capital delivery process at the MBTA, capital delivery was identified as an area that has not been a priority at the transit agency. Specifically, the Governor’s panel report noted the following issues related to capital delivery: chronic capital underinvestment, bottlenecked project delivery, and flawed contracting processes. The MBTA has focused its efforts on these areas in order to accelerate capital delivery and achieve its spend plan. Improving performance in this area is a critical component of the project delivery pipeline; once progress has been shown in its ability to program the funding for spending, the MBTA will shift to focus on the traditional performance delivery metrics (e.g. projects delivered on time and on budget).

To track progress toward these ends, the MBTA is reporting the following three performance measures. The MBTA will continue this phased approach to the capital delivery process revamp, and will report refined performance measures in the 2018 *Tracker*.

### *Year-over-year increase in spending on state of good repair capital programs*

The amount that is spent each year is a proxy measure for the extent of the work that is being completed. The MBTA spent \$709 million in FY17, more than in any single year since FY13.

### *Year-over-year increase in spending on new vehicles*

Investment in new vehicles is critical to the successful operation of all branches of the MBTA. In FY17 the MBTA spent \$368.4 million, more than double what was spent in FY16 (\$154 million).

### *Amount awarded in construction contracts*

The amount awarded in construction contracts is a critical link in the pipeline of project delivery. The MBTA was successful in nearly tripling the dollar amount awarded in construction projects in FY17.



Figure 75. SGR capital spending

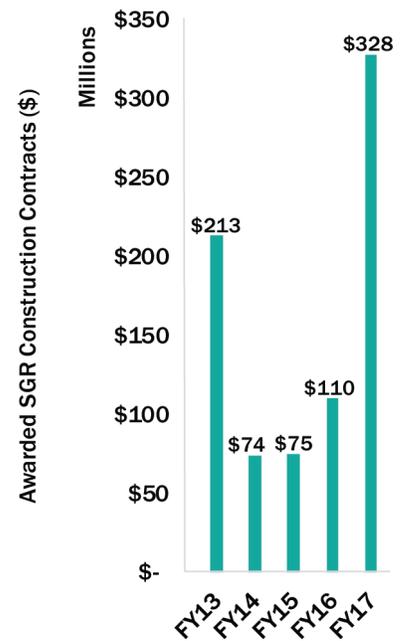


Figure 76. Awarded SGR construction contracts



# Safety

## > Fatalities as a result of transit incidents

In FY17, the Commuter Rail had 19 fatalities; the Orange Line, Red Line, and all bus routes had two fatalities each; the Green line had one fatality; and the Blue line had zero. The number of fatalities has more than doubled from FY16 to FY17 for all modes combined. This increase in these numbers is due to more in person/train collisions on the Commuter Rail. A committee including Federal and MBTA experts has been formed to analyze and address emerging trends regarding person/train collisions.

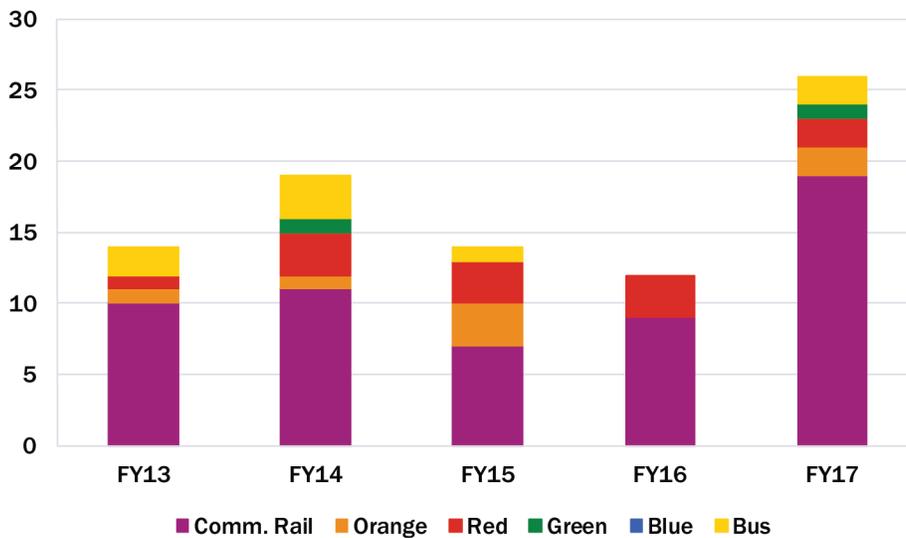


Figure 77. Fatalities as a result of transit incidents by line



# Healthy & Sustainable Transportation

## > Ridership

Customers completed 398 million unlinked passenger trips in total across all MBTA services in FY17. From FY16 to FY17, MBTA annual ridership decreased by 1%, while average weekday ridership increased by less than 1%. This pattern is consistent with a national trend of decreased ridership on buses and outside of commuting hours. MBTA annual bus ridership decreased 6% in from FY16 to FY17, while annual Heavy Rail subway ridership decreased 2%.

Meanwhile, FY17 was the first full year that Government Center was open after its reconstruction, causing Light Rail ridership to climb back to its levels from before the 2-year closure.



Figure 78. Annual MBTA ridership, FY13-FY17

## Ridership

Ridership tells us the number of rides the MBTA system provides per year. Unlinked passenger trips are shown here in accordance with industry standard. This means that each time a vehicle or train is boarded, it counts as one unlinked trip.

Data for FY17 is preliminary and may be adjusted in the future.

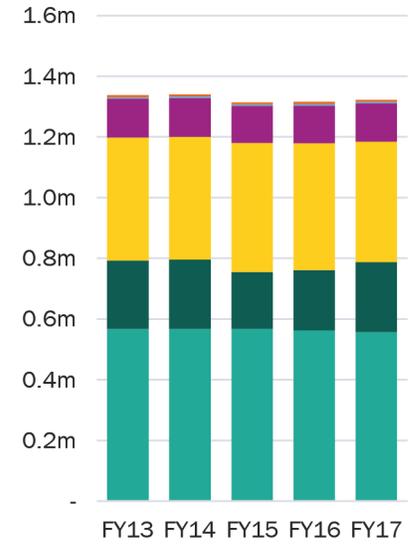


Figure 79. Average ridership per weekday, FY13-FY17

## > Base coverage

In FY17, the MBTA provided service within one-half mile walking distance of 80% of residents in its core service area. Base coverage was virtually unchanged from FY16 and remains above the minimum of 75%. This area covers 59 cities and towns close to Boston.

## Base coverage

People expect the MBTA to provide a basic level of service throughout its service area. Base coverage reflects the percentage of the population that lives no more than 0.5 miles from a bus stop, rapid transit station, commuter rail station, or boat dock. It is calculated for municipalities in the MBTA's core service area, excluding municipalities that are members of a regional transit authority.





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