TECHNICAL MEMORANDUM

DATE: March 21, 2019

TO: Boston Region Metropolitan Planning Organization

FROM: Michelle Scott, MPO Staff

RE: Proposed SFY 2019 Transit Asset Management Targets for the Boston Region

Through its federal Transit Asset Management (TAM) rule,[1] the Federal Transit Administration (FTA) requires transit agencies, metropolitan planning organizations (MPO), and state agencies to work together to achieve and maintain a state of good repair for transit systems. FTA requires transit providers that receive federal funds and own, operate, or manage capital assets used to provide public transportation—and states coordinating groups of these transit providers—to establish targets each year for federally required TAM performance measures. These measures relate to the condition of transit rolling stock, nonrevenue service vehicles, facilities, and rail fixed guideway infrastructure. Meanwhile, FTA requires MPOs to set regional performance targets for these TAM measures in coordination with transit and state agencies. This memorandum proposes updates to the Boston Region MPO's existing set of TAM performance targets.

In May 2018, the MPO adopted its first set of TAM targets, which reflect state fiscal year (SFY) 2018 (July 2017 to June 2018) and are based on targets set by the Massachusetts Bay Transportation Authority (MBTA), the Cape Ann Transportation Authority (CATA), and the MetroWest Regional Transit Authority (MWRTA). MPOs are federally required to review their TAM performance targets when updating their Long-Range Transportation Plan (LRTP) or Transportation Improvement Program (TIP). MPO staff recommends that the MPO adopt the proposed updates to its regional TAM targets presented in this memorandum and take action to do so at its March 21, 2019, meeting. These proposed updated targets are based on SFY 2019 (July 2018 to June 2019) targets set by the MBTA, MWRTA, and CATA. These targets account for recent asset inventory and condition data and these agencies' expectations for asset procurement and improvement during SFY 2019. MPO staff would then incorporate updated TAM targets into its next TIP and LRTP.

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[1] 49 Code of Federal Regulations (CFR) Part 625

1 TAM REQUIREMENTS

The FTA's TAM rule requires applicable transit providers to carry out several activities to achieve and maintain a state of good repair for their assets:

- Develop and implement a TAM plan, and update this plan at least once every four years

- Conduct transit asset inventories and condition assessments, and report inventory and condition information to the National Transit Database (NTD) annually

- Develop annual performance targets for TAM performance measures

- Report targets and prior year performance to the NTD annually

For more details on transit provider roles and responsibilities, see the memo titled "SFY 2018 Transit Asset Management Targets for the Boston Region."[2]

Since the MPO adopted its current set of transit asset management targets in May 2018, the MBTA, CATA, and MWRTA have developed TAM plans, which include asset portfolio and condition data, approaches these agencies will follow to achieve and maintain transit state of good repair, and information on investment priorities. The MBTA, CATA, and MWRTA have also submitted transit asset inventory and condition data and SFY 2019 performance targets to the NTD. These TAM targets are essentially forecasts that account for the most recent available data on the number and condition of relevant transit assets and the anticipated effect that capital investment will have on asset procurement and improvement.

MPOs also have TAM responsibilities, which are defined by the FTA's TAM Rule and the Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning rule, which sets requirements for MPO planning processes.[3] Transit agencies and group plan sponsors, such as the Massachusetts Department of Transportation (MassDOT), must provide TAM plans and targets to MPOs that program these entities' transit projects and services in the TIP. In turn, MPOs must perform the following tasks:

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[2] Boston Region MPO. "SFY 2018 Transit Asset Management Targets for the Boston Region." December 7, 2017 (revised June 5, 2018). Available at https://www.ctps.org/data/pdf/programs/performance/FY_2018_TAM_Targets_Update.pdf.

[3] The Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning rule is documented in 23 CFR Parts 450 and 771 and 49 CFR Part 613.

- Develop targets for TAM performance measures for metropolitan regions, in coordination with transit agencies and state departments of transportation

- Report these targets in the LRTP, along with progress made toward meeting these targets compared to past performance or baseline data

- Describe in the TIP, to the maximum extent practicable, how projects programmed in the TIP will achieve performance targets identified in the LRTP

2   TAM PERFORMANCE MEASURES

The TAM Rule specifies four performance measures, which apply to four TAM asset categories: rolling stock (vehicles that provide passenger service), equipment (nonrevenue service vehicles), facilities, and infrastructure (rail fixed guideway systems). Table 1 describes these measures.

Table 1
TAM Performance Measures by Asset Category

Asset Category	Relevant Assets	Measure	Measure Type	Desired Direction
Rolling Stock	Buses, vans, and sedans; light and heavy rail cars; commuter rail cars and locomotives; ferry boats	Percentage of revenue vehicles that have met or exceeded their ULB	Age-based	Minimize percentage
Equipment	Service support, maintenance, and other nonrevenue vehicles	Percentage of vehicles that have met or exceeded their ULB	Age-based	Minimize percentage
Facilities	Passenger stations, parking facilities, administration and maintenance facilities	Percentage of assets with condition rating lower than 3.0 on FTA TERM Scale	Condition-based	Minimize percentage
Infrastructure	Rail fixed guideway systems	Percentage of track segments with performance (speed) restrictions, by mode	Performance-based	Minimize percentage

FTA = Federal Transit Administration. TAM = Transit Asset Management. TERM = Transit Economic Requirements Model. ULB = Useful Life Benchmark.

Two definitions apply to these performance measures:

- **Useful Life Benchmark (ULB)**—"The expected lifecycle of a capital asset for a particular transit provider's operating environment, or the acceptable period of use in service for a particular transit provider's operating environment."[4] For example, FTA's default ULB for a bus is 14 years.[5]

- **FTA Transit Economic Requirements Model (TERM) Scale**—A five category rating system used in FTA's TERM to describe asset condition, with a rating of 5 reflecting the best conditions.

3   SFY 2019 TAM PERFORMANCE TARGETS

3.1   Process

The MBTA, MWRTA, and CATA have developed a set of SFY 2019 TAM targets that account for recent asset inventory and condition data and these agencies' expectations of the effects capital investment will have on asset procurement and improvement in SFY 2019. When setting targets, each agency has discretion to use FTA-identified default ULBs for vehicles or to adjust ULBs with approval from FTA. The MBTA has used FTA default ULBs for its rolling stock targets and uses MBTA-defined ULBs, which are based on agency-specific usage and experience, for its equipment targets. CATA and MWRTA have selected ULBs from other sources.[6]

MPO staff used these SFY 2019 MBTA, CATA, and MWRTA transit agency targets to propose an updated set of TAM targets for the Boston region, which are shown in Tables 2 through 5. MPO staff recommends that the MPO reflect transit agency TAM target values and timeframes as these agencies and the MPO continue to incorporate TAM elements into their planning and coordination processes. After consulting with the MBTA, CATA, and MWRTA, MPO staff have aggregated some target information for particular asset subgroups; staff has noted these cases in the tables. When compared to SFY 2018 baselines, the SFY 2019 TAM targets described in Tables 2 through 5 may reflect changes in the overall number of assets in each transit category, past or planned asset replacement or repair, other factors depending on the asset type, or a combination of these factors. MPO staff note that the required TAM performance

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[4] FTA. Performance Management. November 15, 2017. www.transit.dot.gov/PerformanceManagement.

[5] FTA. Default Useful Life Benchmark Cheat Sheet. October 26, 2016. www.transit.dot.gov/TAM/ULBcheatsheet.

[6] CATA used useful life criteria as defined in FTA Circular 5010.1E (Award Management Requirements) for ULB values. MWRTA used useful life criteria as defined in MassDOT's Fully Accessible Vehicle Guide and in FTA Circular 5010.1E for ULB values.

measures for which targets are set focus on specific proxies for transit asset state of good repair, as noted in the Measure Type column in Table 1—these proxies may not reflect asset condition or performance, or do so in a comprehensive way.

FTA will not penalize transit agencies or MPOs for not achieving regional TAM targets nor reward these entities for attaining them. FTA will review how the MPO is incorporating performance-based planning and programming practices, including those related to TAM, into its planning process during quadrennial certification reviews.

3.2   Proposed Targets

Table 2 describes SFY 2018 baselines and SFY 2019 targets for rolling stock. The performance measure that applies to these assets is the percentage of vehicles that have met or exceeded their ULB.

Table 2
SFY 2018 Measures and SFY 2019 Targets
for Transit Rolling Stock, by Agency

Agency	Asset Type	SFY 2018 Baseline (as of 6/30/2018)		SFY 2019 Target (as of 6/30/2019)		Target Compared to Baseline
		Number of Vehicles	Percent of Vehicles ≥ ULB	Number of Vehicles	Percent of Vehicles ≥ ULB	
MBTA	Buses	1,022	25%	1,028	25%	Same
MBTA	Light Rail Vehicles	205	46%	229	41%	Better
MBTA	Heavy Rail Vehicles	432	58%	450	56%	Better
MBTA	Commuter Rail Locomotives	94	27%	104	24%	Better
MBTA	Commuter Rail Coaches	426	0%	429	0%	Same
MBTA	Ferry Boats	4	0%	4	0%	Same
MBTA	THE RIDE Paratransit Vehicles[a]	763	35%	763	9%	Better
CATA	Buses	9	11%	8	0%	Better

Agency	Asset Type	SFY 2018 Baseline (as of 6/30/2018)		SFY 2019 Target (as of 6/30/2019)		Target Compared to Baseline
		Number of Vehicles	Percent of Vehicles ≥ ULB	Number of Vehicles	Percent of Vehicles ≥ ULB	
CATA	Cutaway Vehicles[b]	23	13%	23	0%	Better
CATA	Trolleys (simulated)[c]	2	100%	2	100%	Same
MWRTA	Cutaway Vehicles[b,d]	89	6%	93	0%	Better
MWRTA	Automobiles[d]	9	0%	9	0%	Same

[a] The MBTA THE RIDE paratransit vehicles data and targets reflect automobiles, vans, and minivans.
[b] The NTD defines a cutaway vehicle as a vehicle in which a bus body is mounted on a van or light-duty truck chassis, which may be reinforced or extended. CATA uses nine of these vehicles to provide fixed route services, and 14 of these vehicles to provide demand response service.
[c] Simulated trolleys, also known as trolley-replica buses, have rubber tires and internal combustion engines, as opposed to steel-wheeled trolley vehicles or rubber-tire trolley buses that draw power from overhead wires.
[d] MWRTA uses cutaway vehicles to provide fixed route and demand response service, and uses autos to provide demand response service.
CATA = Cape Ann Transportation Authority. MBTA = Massachusetts Bay Transportation Authority. MWRTA = MetroWest Regional Transit Authority. NTD = National Transit Database. SFY = State Fiscal Year. ULB = Useful Life Benchmark.

Table 3 describes SFY 2018 baselines and SFY 2019 targets for transit agency equipment, which refers to service support, maintenance, and other nonrevenue vehicles. MPO staff has aggregated targets for nonrevenue vehicle subtypes for each of the three transit agencies. The performance measure that applies to these assets is the percentage of vehicles that have met or exceeded their ULB.

Table 3
SFY 2018 Measures and SFY 2019 Targets
for Transit Equipment, by Agency

Agency	SFY 2018 Baseline (as of 6/30/2018)		SFY 2019 Target (as of 6/30/2019)		Target Compared to Baseline
	Number of Vehicles	Percent of Vehicles ≥ ULB	Number of Vehicles	Percent of Vehicles ≥ ULB	
MBTA[a]	1,676	20%	1,676	22%	Worse
CATA	4	25%	3	0%	Better
MWRTA	12	50%	12	50%	Same

[a] MBTA equipment includes both commuter rail and transit system nonrevenue service vehicles.
CATA = Cape Ann Transportation Authority. MBTA = Massachusetts Bay Transportation Authority.
MWRTA = MetroWest Regional Transit Authority. SFY = State Fiscal Year. ULB = Useful Life Benchmark.

Table 4 describes SFY 2018 baselines and SFY 2019 targets for passenger facilities, such as stations and parking facilities, and administrative and maintenance facilities. The performance measure that applies to these assets is the percentage of facilities that have a FTA TERM scale score—which is a composite score based on assessments of facility components—of less than three. Facilities with scores below this threshold are considered to be in marginal or poor condition. A facility's composite score is not a measure of the facility's safety or performance.

The MBTA's SFY 2018 facility measures and SFY 2019 facility targets in Table 4 only reflect those facilities that have undergone a recent on-site condition assessment. The number of facilities that the MBTA has not yet assessed is shown to provide a more comprehensive count of the MBTA's assets. The MBTA expects to complete on-site assessments for all facilities in advance of the four-year requirement from the FTA.

Table 4
SFY 2018 Measures and SFY 2019 Targets for Transit Facilities, by Agency

| Agency | Facility Type | SFY 2018 Baseline (as of 6/30/2018) | | SFY 2019 Target (as of 6/30/2019) | | Target Compared to Baseline |
		Number of Facilities	Percent of Facilities < 3	Number of Facilities	Percent of Facilities < 3	
MBTA	Passenger–Assessed[a]	96	13%	96	11%	Better
MBTA	Passenger–Not Assessed[a]	285	In progress	286	TBD	N/A
MBTA	Administrative/Maintenance–Assessed	156	68%	156	63%	Better
MBTA	Administrative/Maintenance–Not Assessed	38	In progress	38	TBD	N/A
CATA	Administrative/Maintenance	1	0%	1	0%	Same
MWRTA	Administrative/Maintenance	1	0%	1	0%	Same

[a] Passenger facilities include stations and parking facilities.
CATA = Cape Ann Transportation Authority. MBTA = Massachusetts Bay Transportation Authority.
MWRTA = MetroWest Regional Transit Authority. N/A = Not applicable. TBD = To be determined.

Table 5 describes SFY 2018 baselines and SFY 2019 targets for infrastructure, specifically rail fixed guideway. The MBTA is the only transit agency in the Boston region with this asset type. The performance measure that applies to

these assets is the percentage of track that is subject to performance, or speed, restrictions. The MBTA samples the share of track segments with speed restrictions throughout the year.

Table 5
SFY 2018 Measures and SFY 2019 Targets
for Transit Infrastructure (Fixed Guideway), MBTA

Agency	Track Type	SFY 2018 Baseline (as of 6/30/2018)		SFY 2019 Target (as of 6/30/2019)		Target Compared to Baseline
		Directional Route Miles	Percent of Miles with Speed Restrictions	Directional Route Miles	Percent of Miles with Speed Restrictions	
MBTA	Transit Fixed Guideway[a]	130.23	11%	130.23	10%	Better
MBTA	Commuter Rail Fixed Guideway	663.84	1%	663.84	1%	Same

Note: The term "directional track miles" represents the miles managed and maintained by the MBTA with respect to each direction of travel (for example, northbound and southbound), and excludes nonrevenue tracks such as yards, turnarounds, and storage tracks. The baseline and target percentages represent the annual average number of miles meeting this criterion over the 12-month reporting period.
[a] The MBTA's Transit Fixed Guideway information reflects light rail and heavy rail fixed guideway networks.
MBTA = Massachusetts Bay Transportation Authority. SFY = State Fiscal Year.

4   REQUESTED ACTION AND NEXT STEPS

MPO staff recommends that the Boston Region MPO vote to adopt this set of SFY 2019 TAM performance targets for the Boston region. Should the MPO select this approach, staff will present and describe these targets in the performance chapters of the federal fiscal years 2020–24 TIP document and *Destination 2040*, the MPO's next LRTP. Going forward, the MPO will work with transit agencies and MassDOT to use TAM performance measures and targets to monitor the condition of transit assets in the region, and consider the impacts that transit programs and projects proposed for its LRTP and TIP will have on transit state of good repair.

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