



Massachusetts Bay  
Transportation Authority

# Service Delivery Policy

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MBTA Policy & Strategic Planning

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## Contents

Executive Summary.....	2
Introduction.....	2
Services and Service Objectives .....	3
<i>Services</i> .....	3
Time Periods .....	4
Service Objectives.....	5
Alternative Service During Diversions .....	7
Service Standards and Planning Tools.....	7
<i>Service Availability and Quality Standards</i> .....	8
<i>Accessibility Standards</i> .....	13
<i>Reliability Service Standards</i> .....	16
<i>Network Quality Standards</i> .....	22
<i>Trip Coverage</i> .....	22
<i>Regional Access</i> .....	23
Service Planning Process.....	25
<i>Service Planning Process</i> .....	25
<i>Initiation of Service Planning Ideas</i> .....	26
<i>Quarterly Service Planning Process</i> .....	27
<i>Rolling Service Plans Process</i> .....	27
<i>Annual Service Evaluation</i> .....	28
<i>Public Participation</i> .....	28
<i>Ongoing Public Outreach</i> .....	29
<i>Rolling Service Plan Public Outreach</i> .....	29
Appendix A: Route Types.....	30
Appendix B: Vehicle Load.....	34
Appendix C: Paratransit Service Standards.....	36
Appendix D: Service Standard Minimums and Targets .....	37

# Executive Summary

This 2024 update to the MBTA’s Service Delivery Policy makes minor changes to and builds upon changes that were incorporated in 2021 to the 2017 iteration of the Policy. This 2024 update maintains the 2021 changes that refined the standards that measure the quality of MBTA services and more explicitly incorporated MBTA strategic priorities (e.g., equity) into the way service is evaluated. The MBTA continues to prioritize transit critical populations that rely on the system, while also utilizing principles from initiatives, such as the Bus Network Redesign, to better align service with regional travel demand to attract and retain riders.

This document is divided into three sections:

1. **Services and Service Objectives** – defines each type of service provided by the MBTA and the time periods of the service day, and lays out the MBTA’s service objectives, which include service availability, service quality, and network quality.
2. **Service Standards and Planning Tools** – sets the quantifiable standards used to measure the objectives for service availability, service quality, and network quality. These standards are divided into two categories: service planning standards used in the service planning process to evaluate and allocate service, and accessibility standards that fall outside the service planning process.
3. **Service Planning Process** – describes the service planning process, including quarterly changes, the rolling service plan process, and the annual gap analysis, and how the service standard minimums and targets are used to prioritize service changes within the rolling service planning process.

Additional information used to measure performance under the standards established in this policy is contained in Appendices A through D.

## Introduction

The Service Delivery Policy sets how the MBTA evaluates service quality and allocates transit service to meet the needs of the region. It is consistent with the MBTA’s enabling legislation and other mandates, including Title VI of the Civil Rights Act of 1964 (Title VI) and the Americans with Disabilities Act of 1990 (ADA). As such, the Service Delivery Policy:

- Defines service availability and sets parameters for levels of service provided.
- Defines the key performance characteristics of quality transit services.
- Identifies quantifiable standards that are used to measure whether the MBTA’s transit services achieve their objectives.
- Outlines a service planning process that applies the service standards in an objective, uniform, and accountable manner.
- Sets the priorities for the service planning process by setting minimum levels and targets for the service standards.
- Commits to involving the public in the service planning process in a consistent, fair, and thorough manner.

This policy is intended to be updated regularly as the MBTA expands its ability to collect and analyze data, build out metrics, and define service parameters and targets. As priorities for service change, this policy will be updated to reflect these new priorities. Future updates will continue to incorporate input from the public prior to adoption. Changes to the service quality standards established in this policy will be made in consultation with the MBTA Advisory Board.

## Services and Service Objectives

### Services

The MBTA operates the following fixed-route<sup>1</sup> transit services: bus, rapid transit, regional rail, and ferry, as described below.

#### **Bus**

“Bus” includes all rubber-tire vehicles regardless of the vehicle’s power source. The MBTA operates several different types of bus services including:

**Local routes** provide full weekday service that extends beyond the morning and afternoon peak travel hours and are the basic building blocks of urban transit. Local routes are designed to serve a broad variety of trip purposes. In general, pick-ups and drop-offs are allowed at all stops across the entire route.

**Frequent routes** are similar to local routes, but generally operate longer hours and at higher frequencies to meet high passenger demand in high-density travel corridors. Frequent routes are identified on maps and schedules.

Silver Line routes meet or exceed the characteristics of frequent routes and operate on dedicated busways or bus lanes for a portion of the routes.

In concert with light rail and heavy rail, the frequent routes ensure geographic coverage of frequent service in the densest areas of Greater Boston’s core and offer intermodal connections to other MBTA services that extend throughout the region.

**Commuter routes** provide a limited number of peak-direction trips during periods when commuters would use the services. Commuter routes include **express routes**, which are characterized by a limited number of stops and portions of the route that travel on limited-access highways into downtown Boston. Some stops may be drop-off or pick-up only.

**Coverage routes** provide a functional connection to the transit network from low-density areas or from places where street networks are not well-connected. Service operates with shorter span and service frequency is low. Stops are closely spaced where practical and pick-ups and drop-offs are allowed at all stops across the entire route.

**Supplemental routes** supplement particular trip needs on Local or Frequent Routes. An example is early morning or late night bus route extensions when rail services are not operating, or

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<sup>1</sup> Fixed-route services are those that operate on designated routes with published timetables and include all light rail, heavy rail, regional rail, ferry, and bus service. The RIDE, the MBTA’s on-demand paratransit service, is not a fixed-route service.

geographic supplements like the Silver Line Waterfront that provide extra capacity on the SL1/SL2/SL3 trunk.

The route type for each route is listed in Appendix A: Route Types. Appendix A may be updated from time to time as changes are made to route designations.

### ***Rapid Transit***

The MBTA's rapid transit system includes heavy rail and light rail services:

**Light Rail.** The MBTA's primary light rail system, the Green Line, provides local service in outlying areas via surface operations and core subway service in and around the Boston city center. The MBTA also operates the Mattapan High Speed Line, which is a light rail extension of the Red Line from Ashmont Station to Mattapan Station.

**Heavy Rail.** The MBTA operates three heavy rail lines—the Red Line, the Blue Line, and the Orange Line—that provide core subway service.

### ***Regional Rail (formerly Commuter Rail)***

The MBTA's Regional Rail lines provides long-haul, commuter-oriented services that link the outer portions of the region with downtown Boston. The Regional Rail schedule offers consistent, bi-directional service, with trains departing at regular time intervals to the extent that infrastructure allows.

### ***Ferry***

The MBTA provides Inner Harbor Ferry service for travel between destinations in Boston, and Commuter Ferry services from the South Shore, Lynn and Winthrop to Downtown Boston and Logan Airport.

### ***Paratransit***

The MBTA's paratransit program, The RIDE, is required by the ADA. It provides door-to-door, public, shared-ride transportation to eligible passengers who cannot use fixed-route service all or some of the time because of a physical, cognitive, or mental disability. The RIDE service area covers 58 cities and towns in and around Boston. It is not intended to meet all the transportation needs of persons with disabilities. The program provides ADA trips (trips with origins and destinations within three-quarter miles of a fixed-route service) at one fare rate and non-ADA trips (when a trip origin and/or destination is greater than three-quarter miles from a fixed route service or for same-day changes, except for trip time negotiation) at a higher fare rate. Performance standards for the MBTA's paratransit service providers are listed in Appendix C.

## **Time Periods**

The MBTA provides different levels of services depending on the time of day and days of the week. Table 1 provides the time periods for weekdays. Saturdays and Sundays are measured separately for most standards.

These time periods are designed for the purposes of bus and rapid transit service planning. Due to the different nature of the service, regional rail has different time periods. Its AM Peak includes all trains that arrive in their final Boston terminal between 6:00AM to 10:00AM and its PM Peak is all trains that originate in Boston and depart between 3:30PM and 7:00PM.

**Table 1: MBTA Weekday Time Period Definitions**

<b>Time Period</b>	<b>Definition</b>
Sunrise	3:00 AM – 5:59 AM
Early AM	6:00 AM – 6:59 AM
AM Peak	7:00 AM – 8:59 AM
Midday Base	9:00 AM – 1:29 PM
Midday School	1:30 PM – 3:59 PM
PM Peak	4:00 PM – 6:29 PM
Evening	6:30 PM – 9:59 PM
Late Evening	10:00 PM – 11:59 PM
Night	12:00 AM – 2:59 AM

## Service Objectives

In collaboration with stakeholders and passengers, the MBTA has identified the following service objectives as representing the most important characteristics of a high-quality transit system.

- **Service Availability.** People should be able to use the MBTA to travel throughout the service area at convenient times and with reasonable coverage.
- **Service Quality.** Passengers should experience service that is frequent, comfortable, and reliable throughout the service area.
- **Reliability.** The MBTA should operate the services it schedules. Passengers should experience consistent headways on frequent services and on-time performance on infrequent services. Passengers should not experience excessive wait times.
- **Comfort.** Passengers should have a reasonable amount of personal space during their trips.
- **Network Quality.** The MBTA should strive to provide transit service that is well-matched to travel demand and that is competitive with car-based modes.
- **Accessibility.** The MBTA should ensure that its infrastructure and vehicles, as well as its services, are fully accessible to all riders, including those with disabilities. In doing so, the MBTA strives to exceed ADA requirements.<sup>2</sup>
- **Equity.** The MBTA strives to improve service quality and access to opportunities for transit critical populations, including low-income people, people of color, seniors, people with disabilities, and those in low- or no-vehicle households.
- **Communication.** Passengers should receive accurate and relevant information about the services available to them in languages consistent with the MBTA’s Language Access Plan, in a

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<sup>2</sup> The accessibility measures established in this policy center on infrastructure as accessed by those with mobility-related disabilities. The MBTA recognizes that this narrow treatment of accessibility does not fully reflect all functional needs of riders, nor does it reflect all of the MBTA’s internal design standards. For additional information and data regarding accessibility, contact [accessibility@mbta.com](mailto:accessibility@mbta.com).

timely manner, and in alternative formats as requested.

- **Safety and Security.** Passengers should experience safe and secure traveling conditions. The MBTA should operate and maintain the system with the highest regard for the safety of passengers and employees.
- **Rider Satisfaction.** The MBTA should understand and meet customer expectations.
- **Environmental Benefit.** The MBTA should reduce its own environmental impact and should offer passengers a service experience that supports travel choices other than single-occupancy vehicle trips.

Table 2 summarizes the service objectives for which the MBTA has established measurable standards and lists the types of tools the MBTA has available to improve performance as well as the Title VI implications of each. This policy does not establish standards for all of the objectives identified above. Standards for safety and security are set by state and federal regulation and are monitored and reported outside of this policy. The MBTA monitors rider satisfaction through a monthly Customer Opinion Panel and other survey efforts, the results of which are reported monthly on the MBTA Performance Dashboard. The MBTA Environmental Department monitors the MBTA’s environmental impact, including measures of greenhouse gas emissions per unlinked passenger trip and greenhouse gas displacement, which results are published in the MBTA Sustainability Report.

**Table 2: MBTA Service Objectives and Standards**

<b>Service Objective</b>	<b>Standards</b>	<b>Tools to Address</b>	<b>Title VI Implication</b>
Service Availability	Span of Service, Coverage: <ul style="list-style-type: none"> <li>• Base Coverage</li> <li>• Frequent Service Coverage</li> </ul>	Service planning	Service monitoring and equity analyses for major service changes
Service Quality	Frequency of Service	Service planning	Service monitoring and equity analyses for major service changes
Reliability	Schedule Adherence, Passenger Wait Time, Service Operated	Service planning, operational changes, municipal partnerships	Service monitoring
Comfort	Vehicle Load	Service planning, operational changes, municipal partnerships	Service monitoring
Accessibility	Station Accessibility, Bus Stop Accessibility, Dock Accessibility, Elevator Uptime, Platform Accessibility, Vehicle Accessibility	Capital budget, operational changes	Service Monitoring (Vehicle Accessibility excluded)
Network Quality	Trip Coverage Regional Access	Service planning, operational changes, municipal partnerships	Excluded from Service Monitoring (preliminary measures)

## Alternative Service During Diversions

From time to time, service may be temporarily diverted to accommodate construction and maintenance, special events, or emergencies. For pre-planned diversions on rapid transit, the MBTA strives to provide substitute service in accordance with its Diversion Service Standards.<sup>3</sup> The Diversion Service Standards are designed to align service availability, frequency, capacity, and accessibility as closely as possible with this Service Delivery Policy while providing transparency and setting customer expectations regarding changes to their journey. Diversion service may rely on other, existing MBTA service (subway, bus, regional rail and/or ferry) and may include short pedestrian diversions of less than 0.25 miles. The MBTA is committed to providing customer information in multiple languages at least two weeks before the start of any pre-planned rapid transit diversion and will provide at least 60 days' notice before any surge event. During an emergency closure, the Diversion Service Standards may not apply in full.

## Service Standards and Planning Tools

To monitor service availability, service quality, network quality, and accessibility, the MBTA has established quantifiable standards that 1) establish the acceptable levels of service that the MBTA must provide to achieve the service objectives and 2) use a framework for measuring the performance of MBTA services as a part of the service planning process. The service planning standards are used in the service planning process to evaluate and allocate service, while the accessibility standards are used to inform capital and operating decisions. Both the service planning and accessibility standards are evaluated in the Service Monitoring portion of the MBTA Title VI Program.

The service planning process is designed to use the service standards to help ensure a cost-effective and equitable allocation of service throughout the region within the overall amount of operations funding, which is determined through the annual budget process. This policy also provides a service planning tool to measure the cost-efficiency of bus routes.

The MBTA publicly reports progress towards the performance targets every year via the Service Delivery Report. This allows the MBTA to track progress toward targets and adjust targets as necessary. Service standard minimums and targets are listed in Appendix D: Service Standard Targets.

Some of these standards are evaluated over a relatively short period, for example daily or quarterly, and others are evaluated when the MBTA considers modifying service. How often each standard is evaluated is listed in Table 8.

Each standard has a number of components:

- The *definition* describes what conditions are considered passing for that standard. Within a single standard, the definition changes depending on the type of service or time period.
- The *pass/fail* condition is measured at different levels of aggregation depending on the standard. For example, whether a bus is considered on time is measured at each time point on the route.
- The *targets* provide a medium-term goal for improving service; targets may be updated on a yearly basis as progress is made.

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<sup>3</sup> More information about the MBTA's Subway Diversion Service Standards can be found at <https://www.mbta.com/policies/service-delivery-policy>



- The bus service planning standards have a *minimum*. Since service planning requires trade-offs between standards, the minimums are used to set priorities. If performance at a route or mode level falls below the minimum level on a standard, that standard becomes a priority to address in the service planning process as appropriate.
- The *equity checks* enable the MBTA to monitor service quality experienced by low-income riders and riders of color on an ongoing basis and to determine if riders in these groups experience service that meets the standard minimums or targets. The purpose of the equity checks is to provide transparency around levels of service provided to protected populations and to help inform and prioritize future service planning changes.

All standards are designed in the positive direction, where 100% would be perfect performance. This means improvement is always measured by increasing the percentage. Depending on the standard, performance can be measured at the route level, at the mode level, or for the entire network.

### ***Service Availability and Quality Standards***

The service *availability* standards define the levels of service that will provide meaningful access to the transit system in terms of Span of Service (the length of the service day) or where service operates. The Span of Service standard varies by mode. In addition, the MBTA measures geographic access to the system using a Coverage standard with two components.

The service *quality* standards evaluate the quality of service delivered to passengers in terms of Frequency of Service (number of trips per hour on a given route), Reliability (on-time performance), and Comfort (crowding). Equity checks using demographic data for each of the availability and quality standards are used to assess the level of service experienced by low-income riders and riders of color, as compared to riders as a whole.<sup>4</sup>

Many of the service standards differ depending on the time of day the service is offered. Table 1 defines the weekday service time periods. Because weekend travel patterns differ from weekdays, specific periods are not defined for Saturdays and Sundays.

#### ***Span of Service***

Span of Service refers to the hours during which the MBTA provides service. The MBTA has established Span of Service standards that define the expected hours that any given service will operate.

The Span of Service standards, stated in Table 3, vary by mode and by day of the week, reflecting the predominant travel flows in the region. If Table 3 does not specify an expected span of service for a mode or time period, then there is no respective standard. Service hours are set based on demand.

**Table 3: Span of Service**

<b>Mode</b>	<b>Day</b>	<b>Expected Span of Service</b>
<b>Bus</b>		
Local	Weekday	6:30 AM – 8:30 PM

<sup>4</sup> Rider demographics are collected through the MBTA Systemwide Passenger Survey, and results of the survey provide the percentages of riders who identify as low-income or as people of color by mode. Because Coverage is a residence-based standard, demographic information for equity checks comes from the American Community Survey (ACS) conducted by the U.S. Census Bureau.

	Saturday	7:30 AM – 7:00 PM
	Sunday	8:30 AM – 7:00 PM
Coverage	Weekday	No minimum span
Commuter	Weekday	6:30 AM – 9:00 AM
		4:00 PM – 7:00 PM
Supplemental	Weekday	No minimum span
Frequent Routes	Weekday	5:30 AM – 12:30 AM
	Saturday	5:30 AM – 12:30 AM
	Sunday	6:30 AM – 12:30 AM
<b>Heavy Rail</b>	Weekday	5:30 AM – 12:30 AM
	Saturday	5:30 AM – 12:30 AM
	Sunday	6:30 AM – 12:30 AM
<b>Light Rail</b>	Weekday	5:30 AM – 12:30 AM
	Saturday	5:30 AM – 12:30 AM
	Sunday	6:30 AM – 12:30 AM
<b>Commuter Rail</b>	Weekday	6:30 AM – 10:30 PM
	Weekend	7:30 AM – 7:00 PM
<b>Ferry</b>		
Year-round	Weekday <sup>5</sup>	7:00 AM – 8:00 PM
	Weekend <sup>6</sup>	10:30 AM – 6:00 PM
Seasonal <sup>7</sup>	Weekday	7:00 AM – 7:30 PM
	Weekend	9:00 AM – 8:30 PM

The standards require that the first trip in the morning in the peak direction of travel must depart its origin stop at or before the beginning span of service time (for example, 6:30 AM for Local Bus on weekdays). At the end of the service day, the last trip in the evening in the peak direction of travel must arrive at its destination stop at or after the ending span of service time (for example, 8:30 PM for Local

<sup>5</sup> Charlestown and Hingham/Hull.

<sup>6</sup> Charlestown.

<sup>7</sup> The MBTA provides the following weekday seasonal ferry service: Lynn (scheduled between the end of April and end of November); Winthrop/Quincy (scheduled between the end of April and end of November), and East Boston (scheduled between the beginning of April and end of November). On the weekends, the Lynn and East Boston ferries are scheduled to operate between Memorial Day weekend to Columbus Day weekend. To view the schedule for each ferry route, visit [mbta.com/schedules/ferry](http://mbta.com/schedules/ferry)

Bus on weekdays). Routes without a peak direction of travel (for which less than 60% of ridership at a given time is in a single direction) are evaluated based on their first and last trips in either direction.

Paratransit service generally operates from 5:00 AM to 1:00 AM, seven days a week. Where fixed route bus or rapid transit service starts earlier or ends later, ADA paratransit trips within 0.75 miles of such routes also will start earlier and/or end later. The MBTA provides premium paratransit service to areas outside of 0.75 miles distance from fixed-route service. During the service planning process, the MBTA will evaluate vehicle loads at the beginning and end of the service day to determine whether expanding the span of service is warranted.

The MBTA’s performance on this measure is weighted by ridership. Passenger trips taken on services that operate at least during the expected span are counted as “passing”, while trips taken on services that operate less than the expected span are counted as “failing”. This weighting prioritizes meeting the expected span of service on routes and services with high ridership.

**Frequency of Service**

To keep wait times reasonable, the MBTA has established minimum frequency of service levels for each mode, by time of day. On less-heavily-traveled services, these expected levels set the standard for the frequency of service, regardless of customer demand. Frequency of Service standards are measured using either headway (minutes between trips) or frequency (trips per time period).

If Table 4 does not specify a minimum frequency for a mode or time period, then there is no respective standard. Frequencies for these services are set based on demand.

**Table 4: Service Frequency**

<b>Mode</b>	<b>Weekday Time Periods</b>	<b>Minimum Frequency</b>
<b>Bus</b>		
Local	AM and PM Peak	Every 30 minutes
	All other periods	Every 60 minutes
	Saturday and Sunday	Every 60 minutes
Coverage	All periods	Every 60 minutes
Commuter	AM Peak	3 trips in the peak direction
	PM Peak	3 trips in the peak direction
Frequent Routes	AM and PM Peak	Every 15 minutes
	Early AM and Midday Base/School	Every 15 minutes
	Evening and Late Evening	Every 15 minutes
	Saturday and Sunday	Every 15 minutes
	Night/Sunrise	Every 30 minutes
<b>Rapid Transit</b>	AM and PM Peak	Every 10 minutes
	All other periods	Every 15 minutes
	Saturday and Sunday	Every 15 minutes
<b>Commuter Rail</b>	AM Peak	3 trips in peak direction
	PM Peak	4 trips in peak direction
	All other periods	Every 3 hours in each direction

	Saturday	Every 3 hours in each direction
<b>Ferry</b>	AM and PM Peak	3 trips in the peak direction
	Off-Peak periods	Every 3 hours

Frequency is only evaluated for periods within the service’s required Span of Service. AM Peak and PM Peak are defined differently for regional rail.

The MBTA’s performance on this measure is based on scheduled service and is weighted by ridership at the route/direction/time period level. Passenger trips taken on services that operate at the expected frequency or better are counted as “passing”, while trips taken on services that operate at less than the expected frequency are counted as “failing.” This weighting prioritizes meeting the expected frequency during peak time periods and on services with high ridership. Performance is evaluated for each mode along with the corresponding equity checks for low-income riders and riders of color.

The frequency of service levels may not be sufficient to meet passenger demand on heavily used services or on services with peak ridership that is outside the traditional peak hours. When load levels as defined in the crowding standard indicate that additional service is warranted on a particular route, the MBTA may increase that service’s frequency or provide larger vehicles with sufficient capacity to accommodate passenger demand.

**Coverage**

An important aspect of providing the region with adequate access to transit services is the system’s geographic coverage.<sup>8</sup> The MBTA measures coverage in two ways, with corresponding equity checks:

- Base Coverage
- Frequent Service Coverage

The MBTA prioritizes providing frequent service in areas with high population and employment density and areas where high proportions of low-income and low-vehicle households are located, while maintaining an acceptable level of Base Coverage. For the Coverage standard, the MBTA will set a minimum for Base Coverage and a target for Frequent Service Coverage.<sup>9</sup>

Coverage is measured within the cities and towns of the MBTA’s service area that are not served by a regional transit authority (RTA), based on residents’ walking distances from bus stops, rapid transit stations, regional rail stations, and ferry docks, where a reasonable walking distance is defined as one half mile along the street network, or about 10 minutes.

**Base Coverage**

Residents of the region expect the MBTA to provide a basic level of coverage throughout the service area. Base Coverage assesses the geographic extent of all MBTA services, some of which may be relatively infrequent for some or all of the service day.

The MBTA will measure the:

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<sup>8</sup> Because of constraints such as topography and street network restrictions, it is not always possible to achieve uniform geographic coverage.

<sup>9</sup> Base Coverage is evaluated as part of the Title VI Service Monitoring.

*Percent of the population that lives within 0.5 miles of a bus stop, rapid transit station, regional rail station, or ferry dock in the MBTA service area, excluding municipalities that are members of an RTA.*

As the equity check for Base Coverage, the MBTA will also measure the percent of low-income households and the percent of residents of color that live within 0.5 miles of an MBTA transit stop in the service area, to determine if residents in these groups experience a similar level of service as the region as a whole.

### Frequent Service Coverage

Beyond a basic level of transit coverage, frequent service is prioritized for urban areas with high population and employment density, and areas with high proportions of people more likely to use or rely on transit.

For coverage, an MBTA stop or station is considered to receive frequent service if the effective frequency of scheduled service at the stop from 6:00 AM to 10:00 PM is every 15 minutes or better.

The MBTA will measure the:

*Percent of the population that lives within 0.5 miles of frequent MBTA service in census block groups within the service area that either:*

- *have combined population and employment densities of at least 15,000 people and jobs per square mile, or*
- *have combined population and employment densities of at least 7,500 people and jobs per square mile and combined proportions of low-income and low-vehicle households above the service area mean, excluding census block groups within municipalities that are members of an RTA.*

For the equity check for Frequent Service Coverage, the MBTA will also measure the percent of low-income households and the percent of residents of color that live within 0.5 miles of frequent MBTA service in these areas, to determine if residents in these groups experience a similar level of service as the region as a whole.

The goal of this standard is to identify high-priority areas in the MBTA service area that are most likely to need and support frequent transit services. Census block groups with high combined population and employment densities (at least 15,000 people and jobs per square mile), or minimum combined population and employment densities (at least 7,500 people and jobs per square mile) plus high proportions of low-income or low-vehicle households, identify core areas that are mostly contiguous and inclusive of areas of new development. The combination of qualifying factors incorporates dense areas likely to create demand through transit-supportive land use as well as populations most likely to use and rely on frequent service.

For coverage standards, the measured service area is the MBTA service area, excluding municipalities that are members of an RTA. The Frequent Service Coverage target is 70% to reflect the definition of this standard.

**Table 5: Summary of Coverage Standards**

	<b>Numerator</b>	<b>Denominator</b>	<b>Minimum/ Target</b>
Base Coverage	Population living within 0.5 miles of an MBTA stop or station	Population living in census block groups within the MBTA service area	Minimum 75%
Frequent Service Coverage	Population living within 0.5 miles of frequent MBTA service	Population living in census block groups within the MBTA service area that have combined population and employment densities of at least 15,000 per square mile, or combined population and employment densities of at least 7,500 per square mile and combined proportions of low-income and low-vehicle households above the service area mean	Target 70%

***Paratransit Coverage***

The ADA requires transit agencies to provide paratransit service within 0.75 mile of bus routes (excluding commuter bus) and rail transit stops (excluding regional rail). The MBTA goes beyond this minimum required coverage and provides paratransit service to “premium” areas outside the ADA-requirement, extending to the outer limits of the 58 communities in the paratransit service area. Changes to fixed-route service will be evaluated for their impact on paratransit service.

***Accessibility Standards***

Whether all customers can access a stop, platform, or ferry dock, or board or alight a vehicle or vessel depends on whether stations, bus stops, and docks are accessible and whether elevators are operational.

For station, bus stop, and dock accessibility, the MBTA will measure structural accessibility in two ways: unweighted and ridership-weighted.

The unweighted measure will include all stations, bus stops, and docks while the ridership-weighted measure will exclude stations, bus stops, and docks for which reasonably accurate and current ridership data is not available. The minimum for both measures will always be set as the current annual performance, and the MBTA will continue to measure progress toward this standard.

***Station Accessibility***

A number of criteria determine whether or not a station is accessible. Very generally speaking, subway stations are typically accessible using elevators, while accessible regional rail stations may include elevators or ramps in combination with full-high or mini-high platforms for level boarding.<sup>10</sup> Surface stops on the Mattapan, Green, and Silver Lines have different accessibility requirements involving the geometry of the street, curb, or platform.

<sup>10</sup> Regional rail stations in Rhode Island are currently excluded due to differences in demographic data sources.

The MBTA will measure the:

- *Percent of MBTA stations that are accessible.*
- *Percent of riders boarding at MBTA stations that are accessible.*
- *Percent of riders with low-income and the percent of riders of color boarding at MBTA stations that are accessible.*

### ***Bus Stop Accessibility***

Bus stops are considered accessible if they have: a level landing area measuring at least 5 feet wide by 8 feet deep onto which a ramp can be deployed; an accessible path from the bus stop to the nearest crossing and the reciprocal curb cuts; a curb ramp within 100 feet if a crosswalk is present; and no other major barriers present.

The MBTA is continuously working to improve the quality of information available about each of its bus stops. A project to analyze accessible paths to each nearest crossing is ongoing. The annual Service Delivery Report will indicate which data points the MBTA relied on in its assessment of bus stop accessibility for that report, and will incorporate more detailed bus stop attributes as that information becomes dependable and available.

The MBTA will measure the:

- *Percent of MBTA bus stops that are accessible.*
- *Percent of riders boarding or alighting at MBTA bus stops that are accessible.*
- *Percent of riders with low-income and the percent of riders of color boarding or alighting at MBTA bus stops that are accessible.*

### ***Dock Accessibility***

The MBTA considers a dock to be accessible if it is designed in such a way to mitigate excessive slopes caused by changing tides and provides for an accessible transition onto or off of the vessel via a bridge plate or gangway level to the vessel.

The MBTA will measure the:

- *Percent of MBTA docks that are accessible.*
- *Percent of riders boarding or alighting at MBTA docks that are accessible.*
- *Percent of riders with low-income and the percent of riders of color boarding or alighting at MBTA docks that are accessible.*

The MBTA measures the accessibility of all docks where it provides ferry service, including those owned by third-party vendors and municipalities.

### ***Elevator Uptime***

Station elevators should be operational at all times service is offered, although some regular elevator maintenance is required. Elevator uptime is calculated as the time an elevator is operational in relation to the time the station is open to the public.

The MBTA will measure the:

*Percent of total elevator-hours in which elevators are operational, measured as one hour of revenue service provided by one elevator at a station.*

If an elevator is out of service, it is considered non-operational for the duration of the outage regardless of the number of platforms it services or any redundant elevators. This measure encompasses the elevators at rapid transit and regional rail stations that are owned and maintained by the MBTA.

Elevators temporarily taken out of service for repair, maintenance, inspection or cleaning are considered out of service. However, when calculating systemwide uptime, elevators that are not functioning for any of the following reasons are excluded from the equation: elevators under construction for replacement; elevators out of service due to “Act of God” (e.g. severe saltwater flooding of Aquarium elevators during hurricane); and/or elevators that are intentionally turned off to prevent entry into a station for safety or security reasons.

### ***Platform Accessibility***

Riders should be able to access the platforms in each accessible station at all times service is offered. Platform Accessibility evaluates access to platforms as an alternative measure to Elevator Uptime. A platform is considered accessible during those service hours when passengers can reach the street and any transfer platforms without using stairs or escalators.

The MBTA will measure the:

*Percent of total platform-hours that are accessible via elevators.<sup>11</sup>*

This measure encompasses the platforms at rapid transit and regional rail stations with elevators that are owned and maintained by the MBTA. There are times in which an elevator outage may not affect access to station platforms due to redundant elevators, or conversely, times in which a single elevator outage could hinder access to multiple platforms at once.

As with Elevator Uptime, when an elevator has been taken out of service for repair, maintenance, inspection or cleaning, it is considered out of service. However, when calculating platform accessibility, elevators that are not functioning for any of the following reasons are excluded from the equation: elevators under construction for replacement; elevators out of service due to “Act of God” (e.g. severe saltwater flooding of Aquarium elevators during hurricane); and/or elevators that are intentionally turned off to prevent entry into a station for safety or security reasons.

### ***Vehicle Accessibility***

The MBTA will provide at least one fully ADA-compliant vehicle on each trip it operates. All heavy rail vehicles are ADA-compliant. Trips on light rail are considered compliant if at least one of the vehicles in a train set is ADA-compliant (either a Type 8 or Type 9 car.) Although vehicles on the Mattapan Line are not considered to be accessible, accessibility is provided through mini high-level platforms located at each station. A trip on regional rail is considered compliant if at least one ADA-compliant car or coach in the

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<sup>11</sup> A platform hour is one hour of revenue service offered to trains traveling each direction at a station. For each hour of service, a station can provide two accessible platform-hours, one hour for trains traveling in each direction. Stations with multiple platforms serving multiple branches or lines can have more than two accessible platform-hours per hour.



train set matches the location of each high-level platform at stations served by the trip. ADA-compliant regional rail coaches include ADA-compliant restrooms, and have vestibule/door openings meeting minimum width requirements.

A ferry vessel is accessible when the entryways meet or exceed the minimum width requirements established by the ADA and the Massachusetts Architectural Access Board (“MAAB”), have an accessible restroom, and deploy an audio/visual announcement system. All MBTA buses are fully accessible with ramps that can be deployed manually if needed.

The MBTA will measure the:

*Percent of trips that the MBTA provides with at least one ADA-compliant vehicle.*

The RIDE dedicated paratransit fleet includes a substantial number of accessible vehicles. Through the trip reservation process, vehicles are assigned to trips based on customers’ accessibility needs so that all trips requiring an accessible vehicle are provided one.

## ***Reliability Service Standards***

Reliability standards vary by mode and are used to evaluate the on-time performance of individual lines and routes. Reliability standards also vary based on frequency of service. Passengers using frequent services generally are more interested in regular vehicle arrivals than in strict adherence to published timetables, whereas passengers who use less-frequent services expect arrivals/departures to occur as scheduled.

### ***Bus Reliability***

#### **Bus Timepoint Tests**

To determine whether a bus is on time at an individual timepoint, such as the beginning of a route, end of a route, or a scheduled point in between, the MBTA uses two different tests based on the scheduled frequency of the service:

**Scheduled-Departure Service:** A trip is considered to provide scheduled-departure service when it operates with a headway longer than 15 minutes. For scheduled-departure services, passengers generally time their arrivals at bus stops to correspond with the specific published departure times.

**Frequent Service:** A trip is considered to provide frequent service when it operates with a headway of 15 minutes or shorter. For frequent service, passengers can arrive at a stop without looking at a schedule and expect a reasonably short wait. Frequent Routes are always evaluated using the frequent service definition even when their headways exceed 15 minutes.

Routes other than Frequent Routes might operate entirely with frequent service, entirely with scheduled-departure service, or with a combination of both throughout the day. Because such routes may have both types of service, every trip is considered individually to determine whether it represents scheduled-departure service or frequent service, and each timepoint crossed on that trip is measured accordingly. Therefore, there are two separate timepoint tests:

### **On Time Test for Scheduled-Departure Timepoints**

To be considered on time at a timepoint, any trip evaluated using the scheduled-departure standard must meet one of the following conditions:

**Origin timepoint:** The trip must *depart* its origin timepoint between 0 minutes before and 3 minutes after its scheduled departure time.

**Mid-route timepoint:** The trip must *leave* the mid-route timepoint(s) between 1 minute before and 6 minutes after its scheduled departure time.

**Destination timepoint:** The trip must *arrive* at its destination timepoint no later than 5 minutes after its scheduled arrival time.

This standard allows vehicles to arrive early at their mid-route timepoints and at their destinations. The MBTA's communication standards will assess the accuracy and timeliness of vehicle arrival predictions to ensure passengers have information on early mid-route arrivals.

### **On-Time Test for Timepoints on Frequent Services**

**Origin or mid-route timepoint:** To be considered on time at a timepoint, a trip evaluated using the frequent service standard must leave its origin timepoint or mid-route timepoint no later than the scheduled headway plus 3 minutes.

For example, if "trip A" is scheduled to depart at 7:00 AM and the route's next trip, "trip B," is scheduled to depart at 7:07 AM, trip B has a 7-minute scheduled headway. Therefore, trip B must depart no more than 10 minutes (the scheduled headway plus 3 minutes) after trip A actually departs for the origin timepoint to be considered on time. If trip A departs at 7:05 (5 minutes after its scheduled departure time), trip B must depart by 7:15 (10 minutes after trip A's actual departure) to be considered on time.

**Destination timepoint:** The actual run time from the origin timepoint to the destination timepoint must be no more than 120% of the scheduled run time for the trip to be considered on time at the destination timepoint.

### **Treatment of Dropped Trips in the Bus Reliability Standard**

Dropped trips are tracked on a trip-by-trip basis:

- In the scheduled-departure test, dropped trips will count as failures for all timepoint crossings.
- In the frequent service test, a dropped trip will count towards the number of timepoint crossings and will count as failures for all timepoint crossings. The headway of the next operated trip following the dropped trip(s) is measured from the previous operated trip.

### **Bus Route Test**

Bus Reliability is calculated as the:

*Percent of each route's timepoints that are on time.*

The numerator is the number of time points that are on time and the denominator is the number of total time points.

**Table 6: Summary of the Bus Reliability Timepoint and Route Tests**

	Origin	Mid-Route	Destination
<b>Scheduled Departures (Headways &gt; 15 min.)</b>			
<b>Standard</b>	Depart 0 min. early to 3 min. late	Depart 1 min. early to 6 min. late	Arrive no more than 5 min. late
<b>Arrival Standard</b>	—	—	$A \leq 5.0$
<b>Departure Standard</b>	$0.0 \leq D \leq 3.0$	$-1.0 \leq D \leq 6.0$	—
<b>Frequent Service Departures (Headways <math>\leq 15</math> min.)</b>			
<b>Standard</b>	Depart no later than the scheduled headway plus 3 minutes		Actual run time is no more than 120% of the scheduled running time
<b>Standard</b>	$h_a \leq h_s + 3.0$		$t_a \leq 1.2 \times t_s$

Where:

$A$  = arrival time

$D$  = departure time

$h_s$  = schedule headway

$h_a$  = actual headway

$t_s$  = scheduled running time

$t_a$  = actual running time

**Exceptions:** The first trip of the day on each route, which does not have a leading headway, is considered a scheduled-departure trip. All Frequent Routes are considered frequent services at all times, except for their first trip of the day.

**Light Rail Reliability**

**Passenger Wait Time**

As with frequent bus services, passengers on light rail do not rely on printed schedules; rather, they expect trains to arrive at consistent headways. Therefore, one test of schedule adherence for light rail is measured based on the proportion of a line’s passengers who wait the scheduled headway, or less, for a train to arrive. For people traveling in the trunk section of the Green Line, which typically averages headways of 90 – 100 seconds, the headway for purposes of wait time is defined as 3 minutes or the scheduled headway, whichever is larger.

The passenger wait time standard is measured based on the:

*Percent of passengers traveling in each time period that wait the scheduled headway, or less, at each station.*

## **Heavy Rail Reliability**

### **Trip Time Performance/ Excess Trip Time**

For heavy rail, the MBTA will measure total trip time (defined as travel plus wait time) to ensure that the trip time remains within expected ranges. This allows customers to have a better understanding of their expected time waiting and in transit. The trip time standard measures trip time against a benchmark to determine excess passenger minutes of wait and travel. The excess trip time standard is:

*Percent of passenger trips where trip time is within 5 minutes of benchmark trip time, calculated as the actual trip time minus benchmark trip time, summed for all passengers.*

The data to measure Excess Trip Time is currently only available for heavy rail trips.

### **On-Time Test for Stations on the Mattapan Line**

The Mattapan Line is separate from the other light rail lines because the systems do not exist to evaluate the line using the passenger wait and travel time standards.<sup>12</sup> The Mattapan Line is evaluated using the standard for on-time test for timepoints on frequent services, the same test used to measure the on-time performance of frequent bus service. Mattapan Line station departures serve as timepoint crossings.

Mattapan Line Reliability is measured by the:

*Percent of all station departures (or arrivals for terminal stations) that pass their on-time tests over the entire service day.*

## **Regional Rail Reliability**

Regional rail passengers expect to arrive at their destination station at the time posted in the schedule. The MBTA will measure the number of trains that arrive at the destination terminal no later than 5 minutes after the time published in the schedule.

Regional Rail Reliability is measured as the:

*Percent of trains that arrive at their destination station on time.*

The MBTA and its regional rail operator are working to develop passenger weighted measures for Regional Rail Reliability.

## **Ferry Reliability**

Ferry passengers expect to arrive at their destination dock at the time posted in the schedule. The MBTA will measure the number of boats that arrive at the destination dock no later than 5 minutes after the time published in the schedule.

Ferry Reliability is measured as the:

*Percent of boats that arrive at their destination dock on time.*

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<sup>12</sup> Once the technology systems necessary to evaluate Mattapan Trolley service are finished being implemented, the service will switch over to the same standard as heavy and light rail.

### ***Paratransit Reliability***

The MBTA measures paratransit reliability using the On-Time Performance (OTP) metric. OTP is the percentage of all trips performed on-time, defined as pick-up-based trips that occur up to 6 minutes prior to and 16 minutes after the scheduled pick-up time, plus drop-off-based trips that occur up to 6 minutes after the drop-off (appointment) time, plus customer no-show trips.

### ***Service Operated Standard***

The MBTA intends to operate all of the service it schedules. A multitude of factors, including equipment failure, lack of personnel, and unforeseen delays like medical and police emergencies, can sometimes prevent the MBTA from operating scheduled service.

The MBTA will measure the:

*Percent of scheduled service that is actually provided for each mode of service, including bus, light rail, heavy rail, regional rail, and ferry.*

Planned heavy rail, light rail, and regional rail outages where the MBTA offers substitute service do not count against this standard. For bus, this standard will also be examined at the route level to determine if some bus routes operate a lower percentage of service than others, so steps can be taken to address significant imbalances.

### ***Comfort/Crowding Standards***

Passenger Comfort is a measure of the number of people on a vehicle and whether a seat is available to each rider for all or most of the trip. Passenger Comfort, which varies by mode and time of day, establishes the maximum number of passengers per vehicle to provide a safe and comfortable ride.

During periods when some passengers will need to stand (e.g., at the busiest weekday travel times or locations), the MBTA strives to provide sufficient service so that people are reasonably comfortable. The purpose of the Passenger Comfort standard is to define the levels of crowding that are acceptable by mode and time period. The time periods used by the Passenger Comfort Standard are defined in Table 4 and match those of the Frequency of Service standard.

The seating capacity and maximum number of passengers allowed by the Comfort standards for each mode changes due to the different types of vehicles in the MBTA's fleets at any given time. These are included in Appendix B: Vehicle Load, which is updated as the fleets change.

The MBTA calculates its Comfort metric for each mode for all passengers, along with Comfort for low-income passengers and for riders of color.

### ***Bus***

The MBTA will measure the passenger hours of travel experienced by comfortable bus passengers during each time period. The maximum comfortable load is expressed as a ratio of the number of passengers on the vehicle to the number of seats on the vehicle. The maximum comfortable loads are set based on Department of Public Utility (DPU) Regulation 220 CMR 155.02 (26), which states "passengers in excess of 40 percent above the seating capacity of a motor bus shall not habitually be carried... "

### **High-Volume Time Periods**

The maximum comfortable passenger-to-seat ratio for high-volume travel periods is 140%. At loads of 140% or less of seated capacity, all passengers are considered comfortable. No passengers are considered comfortable when the vehicle load exceeds 140% of seated capacity.

### **Low-Volume Time Periods**

The maximum comfortable passenger-to-seat ratio for lower-volume travel periods is 125%. At loads up to 125% of seated capacity, all passengers are considered comfortable; above 125% and up to 140% of seated capacity, seated passengers are considered comfortable, while standing passengers are not considered comfortable. No passengers are considered comfortable when the vehicle load exceeds 140% of seated capacity.

The MBTA will measure the:

*Percent of passenger travel time experienced in comfortable conditions.*<sup>13</sup>

### **Subway**

The MBTA will measure the passenger hours of subway travel in comfortable conditions during each time period. The maximum comfortable load for subway is determined by combining the number of seats on a given subway car with the number of passengers who can comfortably stand, based on the car's floor area and thresholds for the average floor area needed per standing passenger.

During high-volume travel periods, the minimum comfortable floor area per standing passenger is 3 square feet. During low-volume travel periods, the minimum comfortable floor area per standing passenger is 10 square feet. No passengers on a given train are considered comfortable when the average floor area per standing passenger falls below these thresholds.

The MBTA will measure the:

*Percent of passenger travel time experienced in comfortable conditions.*

Until heavy and light rail vehicles with Automatic Passenger Counters (APCs) are procured, the MBTA lacks the data to accurately measure passenger loads on light rail vehicles, and the per-car passenger loads for heavy rail cars used in the heavy rail comfort calculation are proxied rather than directly measured.<sup>14</sup>

### **Regional Rail**

The MBTA currently lacks the data to accurately measure passenger loads on regional rail coaches and is working with its regional rail operator to collect this type of data. The contract does set expectations on the number of seats the operator should provide based on expected loads.

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<sup>13</sup> For bus routes without enough data to model the passenger time in comfortable conditions, the proxy variable of maximum load will be used for all service planning decisions.

<sup>14</sup> Passenger loads per heavy rail car are averaged based on stop-level boardings and alightings derived from station entries and exits. For heavy rail, passenger travel time is proxied by multiplying passenger loads by median travel times for each segment by day type and 30 minute period.

## **Ferry**

Ferry boats are prohibited by law from carrying more than their certified capacity. Boats will leave people behind before they exceed their capacity. The MBTA will monitor if passengers are being regularly left behind to determine if additional capacity is necessary.

## **Paratransit**

The MBTA's ADA paratransit vehicles are prohibited by law from carrying more passengers than their certified capacity. Because of these limitations, and the fact that RIDE trips are booked in advance, the MBTA does not require comfort standards for the RIDE.

## **Network Quality Standards**

The Network Quality standards evaluate travel demand in the region and whether travel needs are met competitively by the transit network as compared to car-based modes.

The current standards of Span, Frequency, and Coverage focus on measuring whether a transit option is available by time and location. The Network Quality standards go further to measure the quality of scheduled service. Scheduled service quality is determined by evaluating whether scheduled transit trips can get riders to destinations in a manner competitive with car trips. These measures use trips as the unit of analysis,<sup>15</sup> with the assumption that the transit network should create connections between where people are and where they want to go. Quality of transit compared to car-based modes is determined by evaluating total travel time on both modes, in addition to other factors that influence perceptions of transit convenience: transit frequency, walk distance, wait time, and number of transfers.

The Network Quality measures are based on the fundamental assumption that transit riders make a mode choice for each trip. Therefore, the MBTA should strive to align the transit network with demand and provide service that is competitive with car-based modes to retain and attract riders to the transit system. Network Quality measures are being tested and refined and do not yet have minimum standards or targets. As a result, these measures will not be included in the Service Monitoring section of the Service Delivery Policy. The MBTA will eventually use these measures to evaluate its network and will develop minimums and targets.

There are two measures that evaluate transit network quality: Trip Coverage and Regional Access.

### **Trip Coverage**

The Trip Coverage measure considers all trips regardless of mode and determines: 1) whether there is a transit option for the trip, and 2) whether the available transit service for that trip is competitive.

The MBTA will measure the:

*Percent of the region's trips that have a competitive transit option.*

Data on trips made in the region comes from location-based services data and includes demographic information that allows for equity checks. Using this demographic information, the MBTA can evaluate

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<sup>15</sup> Location-based services (LBS) data is used for trip-level analyses in the Network Quality measures. Trips include trips that are currently being made, or trips to important regional destinations.

whether the transit network is covering all trips, including trips by people with low income or people of color.

The Trip Coverage measure is aggregated to the network level to assess how well-matched the MBTA network is to actual travel demand. Trip Coverage can be used to evaluate the transit network's performance in particular contexts, such as examining travel at certain times of day, for specific locations, or for particular groups, such as people with low income or people of color.

## ***Regional Access***

In addition to serving trips currently being made, the transit network should provide access to important regional destinations for all residents in the service area, even if those trips are not currently being made. The Regional Access measure identifies important regional destinations and evaluates the availability and quality of the transit network in serving those destinations from each residence. Regional Access measures: 1) whether transit is available from a residence to regional destinations, and 2) whether the available transit service from the residence to regional destinations is competitive.

The MBTA will measure the:

*Percent of residents in the service area that can reach regional destinations with a competitive transit option.*

Regional Access complements the residential Coverage measures by evaluating access to specific destinations and complements the Trip Coverage measure by evaluating transit competitiveness for certain trips, even if few people are currently making those trips. Regional destinations are identified through an iterative process using location-based-services data that reflects changes in travel demand and that can elevate new regional destinations as they arise. This process and the regional destinations that are identified are vetted through public input via the MBTA Customer Opinion Panel and additional avenues of engagement.

## **Service Planning Tools**

In addition to service standards, the MBTA can and should use diagnostic tools as part of its service planning process. For example, the MBTA needs to be able to evaluate the cost-effectiveness of its bus routes, even without establishing a cost standard. This Bus Route Benefit-Cost Ratio Tool will be used to determine the cost-efficiency of the service provided and to identify service changes to improve performance.

### ***Bus Route Benefit-Cost Ratio***

The MBTA considers three primary characteristics, or aspects, when evaluating whether a service is valuable to the system:

- **Ridership:** The total number of boardings; the number of riders of color, riders with low income, and riders with limited vehicle access using the service; and the number of riders transferring to other services.
- **People using Free/Reduced Fares:** The percentage of riders using free and reduced fare credentials on the service.
- **Access to the Network:** Whether a service provides access to the greater network and the region. Using location-based-services data, Access to the Network assesses how many trips are



currently being made in the region by any mode, and how many trips being made by transit-critical populations can be made using a given service.

Each bus route receives a benefit score for each of these aspects. Table 7 has the current weights.

**Table 7: Weighting of Components of Bus Route Benefit**

	<b>Ridership</b>	<b>Reduced Fare Users</b>	<b>Access to the Network</b>
Weight	70%	15%	15%

After calculating the overall benefit score from the scores for each aspect, the overall benefit score is divided by the operating cost (vehicle revenue hours) to develop a benefit-cost ratio.

Routes with high benefit-cost ratios will be analyzed to understand characteristics of high performing routes. Routes with low benefit-cost ratios will be reviewed to identify ways to improve the route’s performance. Routes with high benefit that come at a high cost can be evaluated to see if the benefit can be provided at a lower cost (e.g., with the introduction of transit priority on the route to reduce the vehicle revenue hours needed to operate the same level of service).

**Frequency of Analysis**

The MBTA measures all of the standards at different frequencies depending on the availability of data and the use of the specific metric. Table 8 shows how often each of the standards are measured.

**Table 8: Frequency at Which Each Standard is Typically Measured**

<b>Standard</b>	<b>Daily</b>	<b>Quarterly</b>	<b>Annual/Service Plan</b>	<b>Biannual</b>
<i>Availability</i>				
Span of Service	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frequency	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Coverage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Accessibility</i>				
Station Accessibility	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bus Stop Accessibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Dock Accessibility	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Elevator Uptime	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Platform Accessibility	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vehicle Accessibility	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Reliability</i>				
Bus and Rail Reliability	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ferry Reliability	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Service Operated	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Comfort</i>				
Crowded Passenger Minutes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Service Planning Process

The MBTA regularly evaluates the performance of its services and recommends and implements service changes through the service planning process. The service planning process strives to ensure that the MBTA uses resources in the most effective manner by developing strategies to improve performance and/or to allocate service within the system. Additionally, the process also identifies the gap between actual service levels and the targets set in this policy. The service planning process includes system-wide quarterly changes, ongoing rolling Service Plan changes, and an annual evaluation to inform the MBTA's budget process.

This section focuses on planning for bus and subway, although many of the processes described here may be used in planning for regional rail and ferry. Service planning changes may also have implications for the MBTA's paratransit service coverage.

### Service Planning Process

The service planning process takes place on two levels:

- 1) The quarterly evaluation and implementation of incremental service changes. Quarterly changes to transit services can be implemented with existing equipment, within the adopted budget, and without significantly affecting route structure or service delivery.
- 2) The annual review of system performance along with rolling service plans focused on development of proposals for more substantial service changes in particular regions or on individual routes. Rolling Service Plan changes have a notable effect on passengers, resource requirements, route structure, or service delivery.

The primary differences between the quarterly service changes and the rolling service plans include:

- Magnitude of service changes considered (as defined in Table 9).
- Extent and type of analysis used.
- Level of public participation.

**Table 9: Quarterly and Service Plan Changes**

Magnitude	Resource Implications	Type
Quarterly	Changes that can be implemented with existing equipment and within the adopted budget	<ul style="list-style-type: none"> <li>• Running time adjustments</li> <li>• Departure time adjustments</li> <li>• Headway changes to match ridership and service levels (provided the frequency and comfort minimums are still met)</li> <li>• Changes to stop locations</li> <li>• Route alignment changes</li> <li>• Span of service changes within 1 hour or less</li> <li>• Route extensions of 1 mile or less</li> <li>• Route variation modifications</li> </ul>

<b>Service Plan</b>	Changes that will have a significant effect on resources, and may potentially have a significant effect on passengers	<ul style="list-style-type: none"> <li>• Major service restructuring</li> <li>• Implementation of new routes or services</li> <li>• Elimination of a route or service</li> <li>• Elimination of part of a route greater than 1 mile</li> <li>• Span of service changes greater than 1 hour</li> <li>• Route extensions greater than 1 mile</li> </ul>
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**Initiation of Service Planning Ideas**

Service changes may be initiated in a variety of ways, including, but not limited to:

- Service requests and/or comments from the public, including municipalities and organizations, through public meetings or workshops, written correspondence, the MBTA website, the MBTA customer call center, email, social media, and the like.
- Proposals made by MBTA staff, including Service Planning staff and Operations staff such as drivers, inspectors, or garage superintendents.
- Studies completed by regional entities or municipalities.
- Gaps identified between provision of MBTA services and performance targets established in this policy. If during the Quarterly or Rolling Service Plan process a route is found to fall below the minimum on one of the established standards, it will be prioritized.

**Table 10: Summary of Service Planning Processes**

	<b>Quarterly Service Planning Process</b>	<b>Rolling Service Plan Process</b>
<b>Initiation of changes:</b>	Requests/comments from public, including public and non-profit entities Bus Operations feedback; Service Planning staff; Service studies	Requests/comments from public, including public and non-profit entities Bus Operations feedback; Service Planning staff; Service studies Public meetings
<b>Evaluation of changes:</b>	Route-level analysis using the evaluation criteria Review by Service Committee	Area or district-level analysis using the evaluation criteria including performance review of all services using service standards Comparative evaluation of proposed service changes and possible new services Review by Service Committee Public review and comment Title VI and Environmental Justice analysis as needed
<b>Implementation of changes:</b>	Quarterly with regular schedule changes	Rolling, upon approval of the Service Plan by the MBTA governing board

## ***Quarterly Service Planning Process***

The MBTA Service Planning Department screens potential service changes to determine whether they should be evaluated and implemented as part of the Quarterly process or Service Plan process. Potential changes are considered with respect to their impact on Service Delivery Policy standards.

Proposed changes are presented to the Service Committee, which includes representatives of the following departments:

- Service Planning
- Schedules
- Bus Transformation
- Operations
- System-wide Accessibility
- Office of Performance Management and Innovation
- Office of Transportation Access (Paratransit)
- Other departments, as appropriate

Quarterly changes are approved by the Service Committee and implemented within the adopted budget as soon as practical.

## ***Rolling Service Plans Process***

Two inputs inform the Service Plan process, which is performed on a continuous rolling basis in particular areas or on certain routes:

- 1) Current service performance measured against performance targets.
- 2) Recommendations for service changes that improve route or network performance.

The priorities for the rolling service plan are determined by which service planning standards fall below their minimum level. Depending on the standard, the analysis is done at the network, mode, and/or route level. If the performance level of a mode falls below the minimum on any standard, that standard must be prioritized. Since there are tradeoffs between standards, allocating resources to address priority standards can impact other standards. After suggested changes, the performance levels on all standards must be re-evaluated to determine if the changes lowered performance on any other standards below the minimum levels at the route, mode, and/or network level. Since Comfort and Reliability can only be measured for operated service, proxy variables can be used to model the impact of the proposed changes.

During the Rolling Service Planning process, the routes are evaluated using the Benefit-Cost Ratio tool corresponding to the most recent data available. Routes that have a low ratio are flagged for analysis. The tool is used to determine which aspect(s) of the service are driving the low ratio and could be addressed to improve the service, or how the cost could be lowered, up to and including route elimination. Routes that perform with high ratios will also be evaluated to consider which aspect(s) may have contributed to extraordinary performance and whether they can be emulated in other services.

The Service Committee recommends service proposals to include in the Preliminary Service Plan. Each Preliminary Service Plan is made available to the public for review and comment. A list of final recommendations is then submitted to the MBTA governing board for approval before the changes are implemented, along with Title VI and environmental justice service equity analyses, if necessary.

As with the Quarterly service planning process, a goal in developing service plans is to ensure that the MBTA uses available resources effectively. However, the rolling planning process also can identify service changes and enhancements that have merit, but which cannot be provided within the existing operating budget. In such cases, additional operating funds may be requested, and the service(s) may be implemented when sufficient resources become available.

With seven bus districts and four heavy rail or light rail districts, the MBTA anticipates that the rolling process will take 2-3 years to complete an entire cycle. The MBTA may consider substantial service changes for a specific route or corridor either individually or grouped with other routes, areas, or bus districts.

### ***Annual Service Evaluation***

Once a year, the MBTA will publish a summary report of mode and network performance according to the standards included in this Service Delivery Policy. This report will include an analysis of the “gap” between the level of service that the MBTA is currently providing and the levels of service the MBTA would need to provide to reach the performance targets set in this Service Delivery Policy.

The MBTA will quantify gaps and identify potential actions to close the gaps. Options include those internal to the Service Planning process, such as shifting resources to benefit one service or standard over another without dropping below the minimum on any standards. The gap analysis will also consider external measures, such as securing additional operating funds, future capital investments, or more inter-governmental cooperation. Both internal and external measures will give policymakers, MBTA officials, and the public a better sense of the tradeoffs inherent in budget-constrained service planning and suggest how additional resources could be used to provide service according to Service Delivery Policy performance targets.

### ***Public Participation***

Public participation in the general service planning process occurs both on an on-going basis and as part of the Service Plan-specific process. The purpose of public involvement in the service planning process is to promote regular dialogue with existing and potential passengers, elected officials, and communities regarding their service needs.

Public participation is always required for a Rolling Service Plan. In addition, specific changes made as part of the quarterly service planning process may require public participation.<sup>16</sup>

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<sup>16</sup> Public participation is conducted in accordance with the MBTA’s Public Engagement Plan, which can be found at [www.mbta.com/policies/public-engagement](http://www.mbta.com/policies/public-engagement)

## ***Ongoing Public Outreach***

The MBTA provides avenues for ongoing communication through its website, customer phone line, dedicated public engagement team, social media outlets, standing committees, and comments sent to individual MBTA officials. Service-related comments and requests are directed to the appropriate department for consideration and response. Upon request, MBTA staff also attend public meetings held by municipalities or with public officials to address specific service issues. From time to time, the MBTA may conduct specific market or route-based meetings to gather direct feedback on potential service changes. This ongoing public outreach informs both the quarterly service planning process and the rolling service plan process.

## ***Rolling Service Plan Public Outreach***

Once a Preliminary Service Plan is complete, the MBTA schedules one or more public meetings in appropriate locations. At these open meetings, the MBTA presents the analysis and issues behind the proposed service changes and solicits public comments on them. MBTA staff then assesses and analyzes the suggestions made through the public comments and, as appropriate, incorporates them into the final recommendations that go to the MBTA's governing board for approval.

## Appendix A: Route Types

**Table A1: Local Bus Routes**

7	City Point - Otis St & Summer St
8	Harbor Point - Kenmore Station
9	City Point - Copley Station
10	City Point - Copley Square
11	City Point - Chauncy St & Summer St
14	Roslindale Square - Heath St
16	Forest Hills Station - Andrew Station or Harbor Pt
17	Fields Corner Station - Andrew Station
19	Fields Corner Station - Kenmore or Ruggles Station
21	Ashmont Station - Forest Hills Station
24	Wakefield Ave & Truman Pkwy - Ashmont Station
26	Ashmont Station - Norfolk St Loop
29	Mattapan Station - Jackson Square Station
30	Mattapan Station - Forest Hills Station
31	Mattapan Station - Forest Hills Station
33	River St & Milton St - Mattapan Station
34/34E	Walpole Center or Dedham Line - Forest Hills Station
35	Dedham Mall or Grove St - Forest Hills Station
36	VA Hospital, West Roxbury - Forest Hills Station
37	Baker St & Vermont St - Forest Hills Station
38	Wren St - Forest Hills Station
40	Georgetowne - Forest Hills Station
41	Centre St & Eliot St - JFK/UMass Station
42	Forest Hills Station - Nubian Station
43	Ruggles Station - Park St Station
44	Jackson Square Station - Ruggles Station
45	Franklin Park - Ruggles Station
47	Central Square, Cambridge - Broadway Station
50	Cleary Square - Forest Hills Station
51	Reservoir Station - Forest Hills Station
52	Dedham Mall - Watertown Yard
59	Needham Junction - Watertown Square
60	Chestnut Hill - Kenmore Station
61	North Waltham - Waltham Center
62	Bedford VA Hospital - Alewife Station
64	Oak Square - University Park or Kendall/MIT Station
65	Brighton Center - Kenmore Station
67	Turkey Hill - Alewife Station
68	Harvard Square - Kendall/MIT Station
69	Harvard Square - Lechmere Station
70	Market Place Dr or Waltham Center-University Park

74 Belmont Center - Harvard Station  
 75 Belmont Center - Harvard Station  
 76 Lincoln Lab - Alewife Station  
 78 Arlmont Village - Harvard Station  
 80 Arlington Center - Lechmere Station  
 83 Rindge Avenue - Central Sq, Cambridge  
 85 Spring Hill - Kendall/MIT Station  
 86 Sullivan Square Station - Reservoir Station  
 87 Arlington Center or Clarendon Hill - Lechmere Station  
 88 Clarendon Hill - Lechmere Station  
 89 Clarendon Hill or Davis Square - Sullivan Square  
 90 Davis Station - Assembly Row  
 91 Sullivan Square Station - Central Sq, Cambridge  
 92 Sullivan Square Station - Downtown  
 93 Sullivan Square Station - Downtown  
 94 Medford Square - Davis Square  
 95 West Medford or Arlington Ctr - Sullivan Square Station  
 96 Medford Square - Harvard Station  
 97 Malden Center Station - Wellington Station  
 99 Woodland Rd - Malden Center Station  
 100 Elm St - Wellington Station  
 101 Malden Center Station - Sullivan Square Station  
 104 Malden Center Station - Sullivan Square Station  
 105 Malden Center Station - Sullivan Square Station  
 106 Lebanon Loop - Wellington Station  
 108 Linden Square - Wellington Station  
 109 Linden Square - Sullivan Square Station  
 110 Wonderland Station - Wellington Station  
 112 Wellington Station - Wood Island Station  
 119 Northgate Shopping Center - Beachmont Station  
 120 Orient Heights Station - Jeffries Point  
 132 Redstone Shopping Center - Malden Center Station  
 134 North Woburn - Wellington Station  
 137 Reading Depot - Malden Center Station  
 201/202 Fields Corner Loop  
 210 Quincy Center Station - Fields Corner Station  
 211 Quincy Center Station - Squantum  
 215 Quincy Center Station - Ashmont Station  
 216 Houghs Neck - Quincy Center Station  
 220 Hingham Depot - Quincy Center Station  
 222 East Weymouth - Quincy Center Station  
 225 Weymouth Landing - Quincy Center Station  
 226 Columbian Square - Braintree Station  
 230 Montello Station - Quincy Center Station



236	South Shore Plaza - Quincy Center Station
238	Crawford Square - Quincy Center Station
240	Avon Square - Ashmont Station
245	Quincy Center Station - Mattapan Station
350	North Burlington - Alewife Station
411	Kennedy Dr or Jack Satter House - Malden Center
426	Central Square, Lynn - Wonderland or Haymarket <b>(Partially Express)</b>
429	Northgate Shopping Center - Central Square, Lynn
430	Saugus Center - Malden Center Station
435	Salem Depot - Central Square, Lynn
436	Liberty Tree Mall - Central Square, Lynn
441/442	Marblehead - Wonderland Station
450	Salem Depot - Wonderland or Haymarket Station <b>(Partially Express)</b>
455	Salem Depot - Wonderland Station
553	Roberts - Newton Corner
CT2 (747)	Sullivan Square Station - Ruggles Station
CT3 (708)	Beth Israel - Andrew Station
712/713	Point Shirley - Orient Heights Station <b>(Private Carrier)</b>

**Table A2: Frequent Routes**

1	Harvard Square - Nubian Station
15	Fields Corner Station or Kane Sq - Ruggles Station
22	Ashmont Station - Ruggles Station
23	Ashmont Station - Ruggles Station
28	Mattapan Station - Ruggles Station
32	Wolcott or Cleary Square - Forest Hills Station
39	Forest Hills Station - Back Bay Station
57	Watertown Yard - Kenmore Station
66	Harvard Square - Nubian Station
71	Watertown Square - Harvard Station
73	Waverley Square - Harvard Station
77	Arlington Heights - Harvard Station
111	Woodlawn - Haymarket Station
116/117	Wonderland Station - Maverick Station
SL1 (741)	Logan Airport Terminals - South Station
SL2 (742)	Drydock Ave - South Station
SL3 (743)	Chelsea Station - South Station
SL4 (751)	Nubian Station - South Station
SL5 (749)	Nubian Station - Temple Place

**Table A3: Commuter Bus Routes**

4	North Station - Marine Park
121	Wood Island Station - Maverick Station

131	Melrose Highlands - Malden Center Station
351	Bedford Woods Drive - Third Avenue
354	North Burlington - State St, Boston <b>(Express)</b>
424	Eastern Ave & Essex St - Wonderland
428	Oaklandvale - Haymarket Station <b>(Express)</b>
451	North Beverly Station - Salem Depot
501	Brighton Center - Federal St & Franklin St <b>(Express)</b>
504	Watertown Yard - Federal St & Franklin St <b>(Express)</b>
505	Waltham Center - Federal St & Franklin St <b>(Express)</b>
554	Waverley Square - Newton Corner
556	Waltham Highlands - Federal St & Franklin St
558	Riverside Station - Federal St & Franklin St

**Table A4: Coverage Bus Routes**

18	Ashmont Station - Andrew Station
55	West Fenway - Copley Square
217	Quincy Center Station - Ashmont Station
456	Salem Depot - Central Square, Lynn
439	Nahant - Wonderland Station
714	Pemberton Point - Hingham Depot <b>(Private Carrier)</b>
716	Cobbs Corner - Mattapan Station <b>(Private Carrier)</b>

**Table A5: Supplemental Bus Routes**

114	Mystic Mall - Maverick Station
171	Logan Airport Terminals - Nubian Station
191	Mattapan Station - Haymarket
192	Cleary Square - Haymarket
193	Watertown Yard - Haymarket
194	Clarendon Hill - Haymarket

## Appendix B: Vehicle Load

**Table B1: Bus**

Vehicle Type	No. of Seats	Off-Peak Standard	Off-Peak Max Load	Peak Load Standard	Peak Max Load
New Flyer 40' Emission Contr. Diesel	39	125%	48	140%	54
Neoplan 60' Compressed Natural Gas	57	125%	71	140%	79
New Flyer 60' Diesel-Electric Hybrid	57	125%	71	140%	79
New Flyer XDE60 - Yellow	53	125%	66	140%	74
New Flyer XDE60 - Silver	53	140%	66	140%	74
New Flyer XDE60 - Airport	37	140%	51	140%	51
New Flyer XDE60 XRBattery	53	140%	74	140%	74
New Flyer XE60	51	140%	71	140%	71
New Flyer 40' XDE40	36-37	125%	45-46	140%	50-51
New Flyer XN40	36	125%	45	140%	50
New Flyer XDE40	36	125%	45	140%	50

**Note:** Dual-mode vehicles used in Silver Line tunnels and left-side door buses are always evaluated using the Peak Load Standard because of the operating characteristics of that service and because those vehicles have more standing room per seat.

**Table B2: Vehicle Load on Light Rail and Heavy Rail**

Vehicle Type	No. of Seats	Floor Area (sq. ft.)	Early AM/AM Peak	Midday Base	Midday School/ PM Peak	Evenings & Weekends
Green Line 7/8/9	46/44	207	100	66	100	66
Mattapan Line	41	120	73	53	73	53
Red Line 1	62	306	165	94	165	94
Red Line 2	61	297	161	92	161	92
Red Line 3	50	338	163	84	163	84
Red Line 4 – Cab Car	32	360	152	68	152	68
Red Line 4 – Non-Cab Car	38	381	165	76	165	76
Orange Line 14 – Cab Car	41	270	131	68	131	68
Orange Line 14 – Non-Cab Car	44	287	139	72	139	72
Blue Line	35	154	86	50	86	50

**Table B3: Regional Rail**

Vehicle Type	Fleet ID	No. of Seats	Peak Load Standard	Peak Max Load
Pullman	200–258	114	110%	125

Bombardier	350–389	127	110%	140
Bombardier	600–653	122	110%	134
Bombardier	1600–1652	122	110%	134
Kawasaki	700–749	185	110%	204
Kawasaki	750–781	182	110%	200
Kawasaki	900–932	178	110%	196
Kawasaki	1700–1724	175	110%	193
MBB	500–532	94	110%	103
MBB	1500–1533	96	110%	106
Rotem	800–846	179	110%	197
Rotem	1800–1827	173	110%	190

**Table B4: Commuter Boat (MBTA-Owned)**

Vessel Name	Vessel Type	Max Load
Flying Cloud	Catamaran	149
Lightning	Catamaran	149
Champion	Catamaran	150
Glory	Catamaran	150
Schoodic Explorer	Catamaran	150

**Table B5: RIDE Vehicles (MBTA-Owned)**

Vehicle Type	Seating Capacity	Wheelchair Capacity
Ford Flex	4	0
Ford Transit	4	0
Ford E350 Cutaway	4 – 8	0 – 2

## Appendix C: Paratransit Service Standards

The MBTA monitors The RIDE contractors using performance metrics. If a contractor fails to meet standards set in the contracts or FTA ADA requirements, they may incur monetary penalties.

**On-Time Performance (OTP).** The percentage of all trips performed on time, defined as pick-up based trips that occur up to 6 minutes prior to and 16 minutes after the scheduled pick-up time plus drop-off-based trips that occur up to 6 minutes after the drop-off (appointment) time, plus customer no-show trips.

**Productivity.** The ratio of completed trips to the number of revenue hours.

**Excessively Late Pick-Ups.** Measured in two buckets: pick-ups that occur between 61 and 120 minutes late, and those that are more than 120 minutes late.

**Excessively Late Drop-Offs.** For appointment-based trips and measured in two buckets: drop-offs that occur between 31 and 60 minutes late, and those that are more than 60 minutes late.

**Table C1: Paratransit Service Standards**

Standard	Target
On-time Performance	90%
Productivity	1.15
Excessively late pick-ups, 61-120 minutes, per 1,000 trips.	0
Excessively late pick-ups, greater than 120 minutes, per 1,000 trips.	0
Excessively late drop-offs, 31 – 60 minutes, per 1,000 trips.	0
Excessively late drop-offs, greater than 60 minutes, per 1,000 trips.	0

## Appendix D: Service Standard Minimums and Targets

Standard	Minimum	Target
<b>Span of Service Standards</b> (minimums and targets apply to weekdays only)		
Bus	90%	95%
Heavy Rail	—	100%
Light Rail	—	100%
Regional Rail	—	100%
Ferry	—	100%
<b>Service Frequency Standards</b> (minimums and targets apply to weekdays only)		
Bus	90%	95%
Rapid Transit	—	100%
Ferry	—	100%
<b>Coverage Standards</b>		
Base Coverage	75%	—
Frequent Service Coverage	—	70%
<b>Accessibility Standards</b>		
Station Accessibility (Unweighted)	76%	100%
Station Accessibility (Ridership-Weighted)	94%	100%
Bus Stop Accessibility (Unweighted)	TBD*	TBD*
Bus Stop Accessibility (Ridership-Weighted)	TBD*	TBD*
Dock Accessibility (Unweighted)	TBD*	TBD*
Dock Accessibility (Ridership-Weighted)	TBD*	TBD*
Elevator Uptime	99.40%	100%
Platform Accessibility	99.40%	100%
Vehicle Accessibility (Green Line)	100%	100%
<b>Reliability Standards</b>		
Bus Reliability	70%	75%
Rapid Transit Passenger Wait Times	—	90%
Regional Rail Reliability	Contract requires 92% (adjusted)	
Ferry Reliability	—	99%
The RIDE Reliability	—	90%
Bus Service Operated	—	99.50%
Light Rail Service Operated	—	99.50%
Heavy Rail Service Operated	—	99.50%
Regional Rail Service Operated	Contract sets fines for canceled service	
Ferry Service Operated	Contract sets fines for canceled service	
<b>Passenger Comfort Standards</b>		

Bus Passenger Minutes in Comfortable  
Conditions

92%

96%

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\*The MBTA is working towards gathering data sufficient to set standards and targets for bus stop and dock accessibility.