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Comprehensive Regional Transit Plan 2020

MetroWest Regional Transit Authority

Table of Contents

Figures

Tables

Acronyms

ACS	American Community Survey
ADA	Americans with Disabilities Act
APC	Automated Passenger Counter
APTA	American Public Transportation Association
AVL	Automatic Vehicle Location
CARES	Coronavirus Aid, Relief, and Economic Security
CCRTA	Cape Cod Regional Transit Authority
CDC	Centers for Disease Control
CFR	Code of Federal Regulations
COVID-19	Novel Coronavirus Disease of 2019
CRTP	Comprehensive Regional Transit Plan
CSA	Comprehensive Service Assessment
ESRP	Employee Safety Reporting Program
FSU	Framingham State University
FTA	Federal Transit Administration
FTE	Full-Time Equivalent
FY	Fiscal Year
GATRA	Greater Attleboro-Taunton Regional Transit Authority
GHG	Greenhouse Gas
GWSA	Global Warming Solutions Act
LEHD	Longitudinal Employer-Households Dataset
LRTA	Lowell Regional Transit Authority
MART	Montachusett Regional Transit Authority
MassDOT	Massachusetts Department of Transportation
MBCC	MassBay Community College
MBTA	Massachusetts Bay Transportation Authority
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MWRTA	MetroWest Regional Transit Authority
NTD	National Transit Database
RTA	Regional Transit Authority

TAM	Transit Asset Management
TCI	Transportation & Climate Initiative
TERM	Transit Economic Requirements Model
ULB	Useful Life Benchmark
UPT	Unlinked Passenger Trip
USDOT	United States Department of Transportation
VRH	Vehicle Revenue Hour
WRTA	Worcester Regional Transit Authority

Glossary

Access: The opportunity to reach a given destination within a certain timeframe or without significant physical, social, or economic barriers.

Accessible Vehicle: A public transportation vehicle that does not restrict access, is usable, and provides allocated space and/or priority seating for individuals who use mobility devices.

Americans with Disabilities Act (ADA): The Americans with Disabilities Act, passed in July 1991, gave direction to local transit agencies to ensure full access to transportation for persons with disabilities.

Boardings: The total number of passengers getting on a transit vehicle during a specified period of time. See also Ridership and Passenger Trip.

Capital Cost: The cost of equipment and facilities required to support transportation systems, including vehicles, radios, shelters, software, etc.

Central Transfer Point: A central meeting place where routes or zonal demand response buses intersect so that passengers may transfer. Routes are often timed to facilitate transferring and depart once passengers have had time to transfer. When all routes arrive and depart at the same time, the system is called a pulse system. The central transfer point simplifies transfers when there are many routes (particularly radial routes), several different modes, and/or paratransit zones. A downtown retail area is often an appropriate site for a central transfer point, as it is likely to be a popular destination, a place of traffic congestion and limited parking, and a place where riders are likely to feel safe waiting for the next bus. Strategic placement of the transfer point can attract riders to the system and may provide an opportunity for joint marketing promotions with local merchants.

Circulator: A bus that makes frequent trips around a small geographic area with numerous stops around the route. It is typically operated in a downtown area or area attracting tourists, where parking is limited, roads are congested, and trip generators are spread around the area. It may be operated all-day or only at times of peak demand, such as rush hour or lunchtime.

Commuter Bus Service: Transportation designed for daily, round-trip service, which accommodates a typical 8-hour, daytime work shift (e.g., an outbound trip arriving at an employment center by 8 AM, with the return trip departing after 5 PM).

Coordination: Coordination means pooling the transportation resources and activities of several agencies. The owners of transportation assets talk to each other to find ways to mutually benefit their agencies and their customers. Coordination models can range in scope from sharing information, to sharing equipment and facilities, to integrated scheduling and dispatching of services, to the provision of services by only one transportation provider (with other former providers now purchasing services). Coordination may involve human service agencies working with each other or with public transit operations.

Cost per Boarding: The total operating expenditures of a route or service divided by the number of total boardings.

Cost per Revenue Mile or Hour: The total operating expenditures of a route or service divided by the number of revenue miles or revenue hours.

Demand Response Service: Service to individuals that is activated based on passenger requests. Usually passengers call the scheduler or dispatcher and request rides for dates and times. A trip is scheduled for that passenger, which may be canceled by the passenger. Usually involves curb-to-curb or door-to-door service. Trips may be scheduled on an advanced reservation basis or in “real-time.” Usually smaller vehicles are used to provide demand

response service. This type of service usually provides the highest level of service to the passenger but is the most expensive for the transit system to operate in terms of cost per trip. In rural areas with relatively high populations of elderly persons and persons with disabilities, demand response service is sometimes the most appropriate type of service. Sub-options within this service type are discussed in order of least structured to most structured, in terms of routing and scheduling.

- **Pure Demand Response Service**: Drivers pick up and drop off passengers at any point in the service area, based on instructions from the dispatcher. In pure demand response systems, the dispatcher combines immediate requests, reservations, and subscription service for the most efficient use of each driver's time.
- **Zonal Demand Response Service**: The service area is divided into zones. Buses pick up and drop off passengers only within the assigned zone. When the drop off is in another zone, the dispatcher chooses a meeting point at the zone boundary for passenger transfer or a central transfer is used. This system ensures that a vehicle will always be within each zone when rides are requested.
- **Flexibly Routed and Scheduled Services**: Flexibly routed and scheduled services have some characteristics of both fixed route and demand response services. In areas where demand for travel follows certain patterns routinely, but the demand for these patterns is not high enough to warrant a fixed route, service options such as checkpoint service, point deviation, route deviation, service routes, or subscription service might be the answer. These are all examples of flexible routing and schedules, and each may help the transit system make its demand response services more efficient while still maintaining much of the flexibility of demand responsiveness.
- **Microtransit**: A form of demand response service, open to the general public, that requires some type of "reservation," typically made via an app-based system. Typically, microtransit uses software algorithms to completely automate the scheduling of the trip, the fare collection (if any), and the route the driver will utilize (communicating with the driver via some type of mobile data terminals).

Deviated Fixed Route Service: Transit buses travel along a predetermined alignment or path with scheduled time points at each terminal point and in some instances at key intermediate locations. Route deviation service is different than conventional fixed route bus service in that the vehicle may leave the route upon requests of passengers to be picked up or returned to destinations near the route. Following an off-route deviation, the vehicle typically returns to the point at which it left the route. Passengers may call in advance for route deviation or may access the system at predetermined route stops. The limited geographic area within which the vehicle may travel off the route is known as the route deviation corridor.

Dial-A-Ride Service: A name that is commonly used for demand response service. It is helpful in marketing the service to the community, as the meaning of "dial-a-ride" may be more self-explanatory than "demand response" to someone unfamiliar with transportation terms.

Environmental Justice: Executive Order 12898, issued in 1994, requires agencies receiving federal funds to determine whether their programs, policies, and activities will have disproportionately high and adverse human health or environmental effects on minority or low-income populations.

Express Bus Service: Express bus service characteristics include direct service from a limited number of origins to a limited number of destinations with no intermediate stops. Typically, express bus service is fixed route/fixed schedule and is used for longer distance commuter trips. The term may also refer to a bus that makes a limited number of stops, while a local bus makes many stops along the same route but as a result takes much longer.

Farebox Recovery Ratio: The percentage of operating costs covered by revenue from fares and contract revenue (total fare revenue and total contract revenue divided by the total operating cost).

Fares: Revenue from cash, tickets, and pass receipts given by passengers as payment for public transit rides.

Federal Transit Administration (FTA): An operating administration within the United States Department of Transportation that administers federal programs and provides financial assistance to public transit.

Feeder Service: Local transportation service that provides passengers with connections to a longer-distance transportation service. Like connector service, feeder service is service in which a transfer to or from another transit system, such as an intercity bus route, is the focal point or primary destination.

Fixed Route: Transportation service operated over a set route or network of routes on a regular time schedule.

Headway: The length of time between vehicles moving in the same direction on a route. Headways are called short if the time between vehicles is short and long if the time between them is long. When headways are short, the service is said to be operating at a high frequency; if headways are long, service is operating at a low frequency.

Intercity Bus Service: Regularly scheduled bus service for the public that operates with limited stops over fixed routes connecting two or more urban areas not near, that has the capacity for transporting baggage carried by passengers, and that makes meaningful connections with scheduled intercity bus service to more distant points, if such service is available. Intercity bus service may include local and regional feeder services, if those services are designed expressly to connect to the broader intercity bus network.

Interlined Routes: When fixed routes are routed through a transfer center or some other terminal location and become another route, with passengers typically allowed to ride through from one route to another without an additional fare and/or transfer fee. The “interline” is typically identified on public materials.

Operating Expenditures: The recurring costs of providing transit service (wages, salaries, fuel, oil, taxes, maintenance, insurance, marketing, etc.).

Operating Revenue: The total revenue earned by a transit agency through its transit operations. It includes passenger fares, advertising, and other revenues.

Paratransit Service: "Paratransit" means the transportation of passengers by motor vehicle or other means of conveyance by persons operating on a regular and continuing basis and the transportation or delivery of packages in conjunction with an operation having the transportation of passengers as its primary and predominant purpose and activity but excluding regular route transit. "Paratransit" includes transportation by carpool and commuter van, point deviation and route deviation services, shared-ride taxi service, dial-a-ride service, and other similar services.

Boardings per Mile or Hour: Productivity measure that takes the total boardings and divides by the miles and/or hours operated. The hours and/or miles may be presented as either total vehicle miles or hours or as revenue miles or hours.

Passenger Trip (Unlinked): Typically, one passenger trip is recorded any time a passenger boards a transportation vehicle or other conveyance used to provide transportation. “Unlinked” means that one trip is recorded each time a passenger boards a vehicle, no matter how many vehicles that passenger uses to travel from their origin to their destination.

Performance Indicator: An indicator is a metric that provides meaningful information about the condition or performance of the transportation system but is neither managed nor used to evaluate the effectiveness of policies, strategies, or investments.

Performance Measure: A performance measure is a metric that measures progress toward a goal, outcome, or objective. This definition covers metrics used to make decisions or evaluate the effectiveness or adequacy of a policy, strategy, or investment.

Performance Target: A target is a specific performance level representing the achievement of a goal, outcome, or objective.

Point Deviation Service: A type of flexible route transit service in which fixed scheduled stops (points) are established but the vehicle may follow any route needed to pick up individuals along the way if the vehicle can make it to the fixed points on schedule. This type of service usually provides access to a broader geographic area than does fixed route service but is not as flexible in scheduling options as demand response service. It is appropriate when riders change from day to day, but the same few destinations are consistently in demand. Also sometimes called checkpoint service.

Public Transportation: Transportation service that is available to any person upon payment of the fare either directly, subsidized by public policy, or through some contractual arrangement, and that cannot be reserved for the private or exclusive use of one individual or group. “Public” in this sense refers to the access to the service, not to the ownership of the system that provides the service.

Revenue Hours: The number of transit vehicle hours when passengers are being transported. Calculated by taking the total time when a vehicle is available to the public with the expectation of carrying passengers. Excludes deadhead hours, when buses are positioning but not carrying passengers, but includes recovery/layover time.

Revenue Miles: The number of transit vehicle miles when passengers are being transported. Calculated by taking the total mileage operated when a vehicle is available to the public with the expectation of carrying passengers. Excludes deadhead mileage, when buses are moving but not carrying passengers.

Ridership: The total of all unlinked passenger trips, including transfers. One trip that includes a transfer would be counted as two unlinked passenger trips.

Ridesharing: A form of transportation, other than public transit, in which more than one person shares the use of a vehicle, such as a van or car, to make a trip. Variations include carpooling or vanpooling.

Section 5304 (State Transportation and Planning Program): The section of the Federal Transit Act of 1991, as amended, that provides financial assistance to the states for purposes of planning, technical studies and assistance, demonstrations, management training, and cooperative research activities.

Section 5307 (Urbanized Area Formula Program): The section of the Federal Transit Act of 1991, as amended, that authorizes grants to public transit systems in urban areas with populations of more than 50,000 for both capital and operating projects. Based on population and density figures, these funds are distributed directly to the transit agency from the FTA.

Section 5310 (Enhanced Mobility for Seniors and Persons with Disability): The section of the Federal Transit Act of 1991, as amended, that provides grant funds for the purchase of accessible vehicles and related support equipment for private non-profit organizations to serve elderly and/or people with disabilities, public bodies that coordinate services for elderly and

people with disabilities, or any public body that certifies to the state that non-profits in the area are not readily available to carry out the services.

Section 5311 (Non-urbanized Area Formula Program): The section of the Federal Transit Act of 1991, as amended, that authorizes grants to public transit systems in non-urbanized areas (fewer than 50,000 population). The funds initially go to the governor of each state.

Section 5339 (Bus and Bus Facilities): The section of the Federal Transit Act of 1991, as amended, that makes federal resources available to states and designated recipients to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities, including technological changes or innovations to modify low or no emission vehicles or facilities. Funding is provided through formula allocations and competitive grants. A sub-program provides competitive grants for bus and bus facility projects that support low and zero-emission vehicles.

Service Area: The geographic area that coincides with a transit system's legal operating limits (city limits, county boundary, etc.).

Service Gaps: When certain geographic segments cannot be covered by transportation services. This term can also refer to instances where service delivery is not available to a certain group of riders, or at a specific time.

Service Span: The duration of time that service is made available or operated during the service day (e.g., 6 AM to 10 PM on weekdays).

Spare Ratio: The percentage/number of vehicles that an operator purchases in excess of the number of vehicles required to provide the maximum level of service. The spares are required so that some vehicles may cycle through a preventive maintenance regimen while the full level of planned service can still be provided.

Standard: A recommendation that leads or directs a course of action to achieve a certain goal. A standard is the expected outcome for the measure that will allow a service to be evaluated. There are two sets of transit standards.

- **Service design and operating standards**: Guidelines for the design of new and improved services and the operation of the transit system.
- **Service performance standards**: The evaluation of the performance of the existing transit system and of alternative service improvements using performance measures.

State Contract Assistance: The program through which the RTAs receive state operating funding for transit at the discretion of the Massachusetts Legislature via the state budget process annually. The total amount of state contract assistance funding provided in the state budget is allocated to the RTAs via a formula developed with RTA input.

Through Routes: When fixed routes are routed through a transfer center or some other terminal location and become another route, but – unlike interlining – passengers are not typically allowed to ride through from one route to another, as a "through-route" is typically only visible/presented on the operating schedule for bus operators and is not identified on public materials.

Title VI: Title VI of the Civil Rights Act of 1964 requires that "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

Transportation Network Companies: Private sector companies that provide software routing, scheduling, and payment services to independent contractor drivers for a fee; these drivers then

utilize their own vehicles to provide a (typically) curb-to-curb transportation service, sometimes to sole riders and sometimes to pooled groups.

Total Operating Cost: The total of all operating costs incurred during the transit system calendar year, excluding expenses associated with capital grants.

Transfer: Passengers arrive on one bus and leave on another (totally separate) bus to continue their trip. The boarding of the second vehicle is counted as an unlinked passenger trip.

Transit Dependent: A description for a population or person who does not have immediate access to a private vehicle, or because of age or health reasons cannot drive and must rely on others for transportation.

Transit Subsidy: The operating costs not covered by revenue from fares or contracts.

Trip Denial: Occurs when a trip is requested by a passenger, but the transportation provider cannot provide the service. Trip denial may happen because capacity is not available at the requested time. For ADA paratransit, a capacity denial is specifically defined as occurring if a trip cannot be accommodated within the negotiated pick-up window. Even if a trip is provided, if it is scheduled outside the +60/-60-minute window, it is considered a denial. If the passenger refused to accept a trip offered within the +60/-60-minute pick-up window, it is considered a refusal, not a capacity denial.

Volunteers: Persons who offer services to others but do not accept monetary or material compensation for the services that they provide. In some volunteer programs, the volunteers are reimbursed for their out-of-pocket expenses; for example, volunteers who drive their own cars may receive reimbursement based on miles driven for the expenses that they are assumed to have incurred, such as gasoline, repair, and insurance expenses.

1. Executive Summary

1.1 Introduction

This 5-Year Comprehensive Regional Transit Plan (CTRP) builds on the work of the MetroWest Regional Transit Authority's (MWRTA) 2015 Comprehensive Service Assessment (CSA). This plan was recommended by the Task Force on Regional Transit Authority Performance and Funding, in its final report issued April 2019.[1]

The Task Force Report included 24 recommendations in 5 categories: Investment and Performance, Accountability, Service Decisions, Quality of Service, and Environmental Sustainability. The updating of the plan (Recommendation #7) was included in the service decisions grouping. Specifically, Recommendation #7 advised that "RTAs will continue to succeed by understanding their markets and by aiming to have their service networks meet the current and future mobility needs of their region as well as support connectivity to other regions where possible. This effort will be guided by the completion or updating of Comprehensive Regional Transit Plans (CRTPs) every five years…"[2]

Following publication of the Task Force Report, a commitment to complete the CRTP was included in MWRTA's 2-year Memorandum of Understanding (MOU) with the Massachusetts Department of Transportation (MassDOT), executed in August 2019.

The primary goals of this CRTP are to (1) provide an agency and service overview including fare structure; (2) identify essential markets, gaps in service, and ridership growth opportunities given demographic, socioeconomic, and employment data and the impacts of the novel coronavirus (COVID-19) pandemic; (3) evaluate the results of performance indicators and assess performance monitoring systems; and (4) provide recommendations for a strategic 5-year vision that will prioritize the development and implementation of a decision-making driven by data analysis and focused on performance.

The MWRTA CRTP started in December 2019 but took a profound and unexpected turn mid-way through the project. Following the kick-off meeting in January 2020, the process proceeded with data collection, goal development, and planning for community and rider engagement. However, by the middle of March 2020, when the engagement activities were scheduled to commence, the world experienced a historic pause due to the COVID-19 pandemic.

In response to the pandemic, on March 10, 2020, Massachusetts Governor Charlie Baker declared a state of emergency and subsequently issued a stay-at-home order on March 23, 2020, closing all non-essential businesses. These safety measures, issued in the face of an unprecedented threat to public health, had serious, sweeping impacts, including on the development of this plan and transit operations writ large. MWRTA, along with the other regional transit authorities (RTAs), suspended fare payment and reduced service levels, encouraging non-essential riders to temporarily discontinue travel.

While MWRTA attempts a return to normal service in accordance with public health guidelines, ridership is low due to pandemic impacts such as distance learning, business closures, remote work, furloughs, layoffs, and reluctance to use public transportation due to health and safety concerns. In response to the

"The MWRTA's concern is not only for the drivers, but also for all customers as we move through these turbulent times." – MWRTA website

[1] Task Force on Regional Transit Authority Performance and Funding, *A Vision for the Future of Massachusetts' Regional Transit Authorities*, April 2019, https://malegislature.gov/Reports/7917/SD2385_RTAtaskforceReport.pdf.
[2] Task Force on Regional Transit Authority Performance and Funding, *A Vision for the Future of Massachusetts' Regional Transit Authorities*, April 2019, page 4. https://malegislature.gov/Reports/7917/SD2385_RTAtaskforceReport.pdf.

continued ridership volatility, this CRTP acknowledges the unpredictability over the coming months and years and equips MWRTA with data-driven and performance-focused recommendations so that the Authority will be able to quickly and successfully adapt to a changing transit market.

1.2 Overview of MWRTA Services

MWRTA serves an area located in the western portion of the Boston metropolitan area and is served by the Framingham/Worcester Line of the Massachusetts Bay Transportation Authority (MBTA) Commuter Rail system. MWRTA is 1 of the 15 RTAs that, along with MBTA, operates public transportation in the Commonwealth. Because of the Framingham/Worcester Line's presence in the MWRTA service area, several MWRTA services are designed to meet with and coordinate with the MBTA Commuter Rail line at several key locations, as well as with the western terminus of the MBTA Subway Green Line D – Riverside Branch.

Prior to the pandemic, MWRTA operated 15 local weekday fixed routes. The Green Line Connector is a fixed route that operates on Saturdays only between the Halstead Apartments and the Woodland MBTA station, providing weekend coverage along the State Route 9 corridor. Five commuter shuttles offered Monday through Friday fixed route service between commuter rail stations and area employers during peak time periods. Two additional shuttles provided service to the MassBay Community College (MBCC) Framingham and Wellesley campuses. (All MassBay and commuter shuttles were temporarily suspended due to the COVID-19 pandemic.)

On Tuesdays, Wednesdays, and Thursdays, MWRTA operates the Boston Hospital shuttle three times daily between residences in Natick and Framingham, the Blandin Hub, Natick VFW Post, and multiple hospitals in the City of Boston. Riders can transfer to the Boston Hospital shuttle from other MWRTA routes at the Blandin Hub, but advanced booking is required for this service. General purpose demand response (Dial-A-Ride) is available to customers in Ashland, Marlborough, Southborough, and Wayland. MetroWest RIDE is a demand response service for Americans with Disabilities Act (ADA)-eligible residents traveling anywhere in Framingham, Natick, Wellesley, and Dover. MetroWest RIDE also provides ADA paratransit service through route deviations within three-quarters of a mile of fixed routes outside of those communities.

1.3 Planning Process

The impacts and limitations imposed by the COVID-19 pandemic required flexibility in the approach for developing this 5-year plan. While some elements of the original process developed pre-pandemic remained viable, many had to be adapted to respond to the new realities of COVID-19. From public outreach to fare policy analysis to the structure of the recommendations, this planning process incorporates considerations relating to uncertainty around how the future might unfold.

1.3.1 Review of Transit Services and Market Conditions

A review of service from the last 5 years and market demand analysis were conducted to identify gaps and needs in MWRTA's service area. The analysis overall indicated that MWRTA's service is efficient, performing comparably to its national peers in many metrics, and that service is generally provided to areas where demographic data indicate demand is highest. However, safety measures like remote learning and teleworking, along with furloughed workers and lay-offs, greatly disrupted MWRTA's existing ridership patterns, particularly in terms of the academic community and Boston-oriented commuter ridership, making it difficult to infer future transit demand from past performance. This planning process brought to light the importance of implementing new technology to conduct ongoing analysis of real-time data rather than focusing primarily on historical trends.

1.3.2 Scenario Planning

"…riders will return to physical offices due to the challenges of working remotely, but they may not work as many hours in the office..." – Stakeholder Comment

The project team used scenario planning exercises to imagine what the next 5 years might hold in terms of ridership and market demand. After the state of emergency was issued, MWRTA leadership participated in a brainstorming session centered around establishing key uncertainties in the face of the COVID-19 pandemic. Subsequent to that workshop, a high-ridership scenario (a return to 100 percent of pre-pandemic ridership), medium-ridership scenario (75 percent of pre-pandemic ridership), and low-ridership scenario (50 percent of pre-pandemic ridership) were developed to inform the development of needs and recommendations. These scenarios formed the framework of the recommendations in this plan.

1.3.3 Public Outreach

Due to social distancing guidelines and other safety protocols resulting from the COVID-19 pandemic, no in-person outreach could be conducted. Outreach for this CRTP was primarily undertaken through an online community outreach survey conducted in the summer of 2020. Additionally, MWRTA surveyed key regional stakeholders, including local leaders and community members. Finally, a survey of MWRTA's bus operators was also conducted to solicit their input.

Over 230 survey responses were collected using the online survey. Note that the findings are not a statistically valid sample of MWRTA riders or the region's residents – rather, they allowed the study team to identify key issues and themes. They should be used as a guide in the context of other public outreach and data analysis. Nonetheless, key takeaways that comport with other planning efforts include:

- Most survey respondents indicated that they use MWRTA for travel to and from employment opportunities.
- Stakeholders are supportive of MWRTA and particularly value MWRTA as a key component in providing mobility for senior citizens.
- Most survey respondents would like to see MWRTA's fixed routes operate every 30 minutes.

1.4 Core Needs and Recommendations

MWRTA identified six core needs to include in this plan. Table 1 lists the core recommendations that MWRTA will pursue in the next 5 years, regardless of ridership levels. The full list of identified needs and recommendations can be found in Chapters 7 and 8, respectively.

Table 1. Core Needs and Recommendations

Need	Recommendation(s)
Improved safety	Assess flag stop versus designated stop service along unsafe corridors, such as State Route 9, and alter as necessary.
	Collaborate with Natick town planners to explore signalization or other congestion mitigation along Natick Mall Road.

Need	Recommendation(s)
Modernized and efficient fleet	Replace aging vehicles that exceed Transit Asset Management (TAM) Plan/MOU useful life benchmarks (ULBs).
	Procure modernized fare collection systems.
	Evaluate cost/benefit of vehicle maintenance department to include in-house body shop versus using local private sector facilities.
	Procure one electric vehicle for pilot study and consider 50% fleet electrification by 2025 dependent on success of the pilot and the advancement of battery technology.
	Expand fixed route fleet as needed to accommodate service recommendations and (if warranted based on automated passenger counter [APC] data) to maintain social distancing guidelines under increased ridership conditions.
Improved station amenities for customers and staff	Explore buy/lease opportunities at Pearl Street Garage.
	Expand bike/pedestrian connectivity and emerging technologies to support last mile connections.
	Provide safe, clean, well-ventilated public restrooms at Blandin Hub and Intermodal Hub.
	Explore vendor agreements or incentives for childcare facility in proximity to Blandin Hub.
Marketing	Highlight interconnections with MBTA rail services, both commuter rail and rapid transit.
	Install electronic sign boards at high demand locations and enhance accessibility of digital rider tools.
	Target outreach and marketing initiatives to veterans.
	Start up a local cable TV show highlighting diverse MWRTA programs and services.
Increased bicycle visibility	Allow more bicycle visibility where possible; sub-let space for bike repair stations and explore additional bikeshare program opportunities.
Community-centered administrative practices	Continue working with local colleges/universities to hire interns.
	Continue to outreach and partner with the disabled community for authority staffing needs
	Continue to offer third floor to non-profits for meetings after COVID-19.

Need	Recommendation(s)
Enhanced performance management system	Identify technology-driven data tools and key performance metrics to establish an improved enterprise-wide data-driven management and decision-making framework. Implement a public-facing and transparent performance reporting mechanism.

2. Background and 2020 Context

The 15 RTAs[3] provide vital mobility options and lifeline services to the millions of people across the Commonwealth outside of the Greater Boston region. The 2020 CRTP process for the RTAs, funded by MassDOT, came out of Commonwealth-wide initiatives in 2018 and 2019. The CRTPs are both a result of and a contributor to the ongoing discussions on regional transportation. Recent and ongoing initiatives include the following:

- Governor's Commission on the Future of Transportation[4]
- A Vision for the Future of Massachusetts' Regional Transit Authorities[5] (RTA Task Force)
- Transportation & Climate Initiative[6]
- MBTA Fare Transformation [7]

The RTA Task Force Final Report Recommendation #7 was the primary initiative driving the development of this CRTP.[8] The CRTP is carried as a commitment in the 2-year MOU with MassDOT signed in August 2019. In addition to the CRTP, the MOU also contained commitments on performance metrics and targets, maintaining an up-to-date asset inventory, submitting a fare policy by December 2020, submitting a balanced budget annually, and reporting timelines. The MWRTA MOU is discussed in more detail in Chapter 6.

The MWRTA CRTP process began in December 2019 but took a profound and unexpected turn mid-way through the project. Following the kick-off meeting in January 2020, the process proceeded with data collection, goal development, and planning for community and rider engagement. However, by the middle of March 2020, when the engagement activities were scheduled to commence, the world experienced a historic pause due to the COVID-19 pandemic.

In response to the pandemic, on March 10, 2020, Governor Baker declared a state of emergency and subsequently issued a stay-at-home order on March 23. The stay-at-home order, originally intended to last 2 weeks, ended up lasting until May 18, 2020. As of the finalization of this plan in early 2021, the pandemic continues to disrupt services and negatively impact transit ridership. Given the unprecedented nature of this disruption and unknown long-term economic, social, and public health implications, the next few years will likely see continued widespread societal change. Therefore, transit agencies especially will need to continue to build a data-driven and performance-focused decision-making framework to respond to these uncertain demographic and industry trends.

This chapter provides background and current context around the CRTP process for all RTAs. MWRTA-specific contextual information is included in Sections 2.2 and 2.3.

2.1 Background

Commonwealth-wide initiatives, organized generally around the themes of climate change, new technology, and providing affordable and convenient transportation options for all people, set the stage for the CRTP process. The RTAs play an important role in getting people across the

[3] Commonwealth of Massachusetts, "General Laws Chapter 161B: Transportation Facilities, Highway Systems, and Urban Development Plans," https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter161B.
[4] Commission on the Future of Transportation, *Choices for Stewardship: Recommendations to Meet the Transportation Future*, 2018, https://www.mass.gov/orgs/commission-on-the-future-of-transportation.
[5] Task Force on Regional Transit Authority Performance and Funding, *A Vision for the Future of Massachusetts' Regional Transit Authorities*, April 2019, https://malegislature.gov/Reports/7917/SD2385_RTAtaskforceReport.pdf.
[6] Transportation and Climate Initiative, accessed 2020, https://www.transportationandclimate.org/.
[7] Massachusetts Bay Transportation Authority, accessed 2020, https://www.mbta.com/projects/fare-transformation.
[8] Task Force on Regional Transit Authority Performance and Funding, *A Vision for the Future of Massachusetts' Regional Transit Authorities*, April 2019, https://malegislature.gov/Reports/7917/SD2385_RTAtaskforceReport.pdf.

diverse regions of the Commonwealth to work, to school, and to essential services. Because of this role, the RTAs are pivotal in improving the public's mobility options as explored through the Commonwealth-wide initiatives described in this section.

2.1.1 Governor's Commission on the Future of Transportation

Established by Executive Order in January 2018, the Governor's Commission on the Future of Transportation was convened to explore the following topics across the Commonwealth and their impact on transportation between 2020 and 2040:

- Climate and Resiliency
- Transportation Electrification
- Autonomous and Connected Vehicles
- Transit and Mobility Services
- Land Use and Demographics

The Commission completed its work and released findings in December 2018 in a report entitled *Choices for Stewardship: Recommendations to Meet the Transportation Future*.[9] Findings from the report included:

- The Commonwealth is expected to grow by 600,000 residents by 2040 and job growth is also expected to continue.
- Commonwealth residents are on average older than in many other US states, and older adults are expected to comprise a larger portion of the population in the future.
- Transit ridership has followed national trends and been declining in recent years.
- Use of transportation network companies has increased dramatically in recent years.
- Connected and autonomous vehicles are expected to radically change transportation and mobility in the future.
- The impacts of climate change are happening sooner and more intensely than originally projected with significant implications by 2040.
- Transportation accounts for 40 percent of all greenhouse gas (GHG) emissions in the Commonwealth.
- Electric vehicles could be part of the solution to reducing transportation emissions but would require significant infrastructure to implement.

The Commission used a scenario planning approach to itemize recommendations to prepare the Commonwealth's transportation system for the future. While many trends were evaluated for use in the scenario planning exercise, technology adoption as well as jobs and housing distribution were chosen as the two major trends that will most likely shape people's mobility options and needs. Based on the scenario planning trend analysis, the Commission then identified key challenges facing the Commonwealth's transportation system and developed recommendations across five categories to prioritize improvements over the next 20 years:

- Modernize existing state and municipal transit systems and transportation assets to more effectively and sustainably move more people throughout a growing Commonwealth.

[9] Commission on the Future of Transportation, *Choices for Stewardship: Recommendations to Meet the Transportation Future*, 2018, https://www.mass.gov/orgs/commission-on-the-future-of-transportation.

- Create a 21st century "mobility infrastructure" that will prepare the Commonwealth and its municipalities to capitalize on emerging changes in transportation technology and behavior.
- Substantially reduce GHG emissions from the transportation sector in order to meet the Commonwealth's Global Warming Solutions Act (GWSA) commitments, while also accelerating efforts to make transportation infrastructure resilient to a changing climate.
- Coordinate and modernize land use, economic development, housing, and transportation policies and investment in order to support resilient and dynamic regions and communities throughout the Commonwealth.
- Make changes to current transportation governance and financial structures in order to better position Massachusetts for the transportation system that it needs in the coming years and decades.

Within these five categories are a total of 18 recommendations on how to best prepare the Commonwealth's transportation network for challenges and opportunities through 2040. The recommendations will guide Commonwealth-wide systems, specific solutions, and transportation investments, and will have a profound impact on the RTAs over the next 20 years.

2.1.2 A Vision for the Future of Massachusetts' Regional Transit Authorities

Resulting from the Governor's Commission on the Future of Transportation initiative and directed by Outside Section 72 of the FY 2019 Massachusetts State Budget,[10] a Task Force on Regional Transit Authority Performance and Funding was established in the fall of 2018. The Task Force produced a report entitled *A Vision for the Future of Massachusetts' Regional Transit Authorities: Report of the Task Force on Regional Transit Authority Performance and Funding* in April 2019.[11]

The report built on the first recommendation from the Commission, "Prioritize investment in public transit as the foundation of a robust, reliable, clean, and efficient transportation system." It set forth a path to stabilize, modernize, and improve the RTAs through five categories of action: Investment and Performance, Accountability, Service Decisions, Quality of Service, and Environmental Sustainability.

From those five categories, several goals related to the CRTP emerged:

- Sign a mutually negotiated MOU with MassDOT on a plan for performance monitoring and development of performance targets.
- Complete the CRTP and update every 5 years.
- Identify and evaluate a demonstrated community need for evening and 7-day service.
- Identify and evaluate appropriate transit services and potential partnerships based on level of demand and efficiency.
- Develop pilot programs for innovative delivery models.
- Increase regional collaboration, including cross-RTA services.
- Collaborate with municipalities to provide safe walking and bicycle access to transit and comfortable, safe bus stops.
- Conduct a fare equity analysis every 3 years.

[10] Commonwealth of Massachusetts, "Budget Summary FY2019," https://budget.digital.mass.gov/bb/gaa/fy2019/os_19/houtexp.htm.
[11] Task Force on Regional Transit Authority Performance and Funding, *A Vision for the Future of Massachusetts' Regional Transit Authorities*, April 2019, https://malegislature.gov/Reports/7917/SD2385_RTAtaskforceReport.pdf.

- Collaborate with the MBTA Fare Transformation process and adopt the proposed system.
- Participate in the Massachusetts Environmental Policy Act process.
- Maximize multimodal connectivity.
- Maintain an easily accessible website and robust social media presence.
- Collaborate with MassDOT and MBTA to integrate information services.
- Employ intentional outreach strategies.
- Purchase all zero-emission public buses by 2035.

Many of these goals are addressed and/or discussed as part of this CRTP.

2.1.3 Transportation & Climate Initiative

Massachusetts is a participating state in the Transportation & Climate Initiative of the Northeast and Mid-Atlantic States:

> *The Transportation and Climate Initiative (TCI) is a regional collaboration of 12 Northeast and Mid-Atlantic states and the District of Columbia that seeks to improve transportation, develop the clean energy economy and reduce carbon emissions from the transportation sector. The participating states are: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia.*
>
> *The initiative builds on the region's strong leadership and commitment to energy efficiency and clean energy issues, and its programs to reduce carbon emissions in the power sector, which have resulted in the region becoming one of the most energy efficient areas in the nation. At the same time, the effort underscores the sense of urgency shared by all 13 jurisdictions, and their collective aspirations to become the leading region for sustainability and clean energy deployment in the country.*

While the COVID-19 pandemic temporarily reduced congestion and associated pollution in the short-term, it has likely altered commuting patterns and housing choice in the long-term, which has environmental and sustainability implications. As such, the need to reduce carbon emissions from the transportation sector is just as important as it was before the COVID-19 pandemic. Additionally, the COVID-19 pandemic highlighted racial disparities in exposure to air pollution and disproportionate impacts of threats to public health. To that end, the TCI jurisdictions are collaborating to develop a low-carbon transportation program that advances equity.

The TCI jurisdictions are collaborating to develop a regional agreement to cap pollution from transportation fuels and invest in solutions that result in reduced emissions, cleaner transportation, healthier communities, and more resilient infrastructure. Massachusetts TCI participation will likely impact the RTAs in several ways, including vehicles, infrastructure, technology, and funding.

2.1.4 MBTA Fare Transformation

Several RTAs are located adjacent to MBTA and/or connect to MBTA commuter rail service. As such, some RTAs, including MWRTA, use MBTA's CharlieCard/CharlieTicket fare media, while other RTAs are considering it. Therefore, fare interoperability and the impact the MBTA Fare Transformation project will have on RTA fare media and fare collection will have substantial impact on the RTAs.

2.2 2020 Context

The year 2020 unfolded in a radically different manner than was anticipated. Because of the COVID-19 pandemic and the as-yet-unknown ways that the pandemic and its aftermath will permanently alter how, when, and where people travel, this CRTP process had to be flexible and RTAs will need to be nimble, cautious, data-driven, and performance-focused in responding to an uncertain future. To that end, it will be critical for MWRTA to continue building a data-driven and performance-focused management and decision-making framework to lean into and respond to the rapid changes that are expected to continue to impact the future of the transit industry. This approach will position the Authority for continued success.

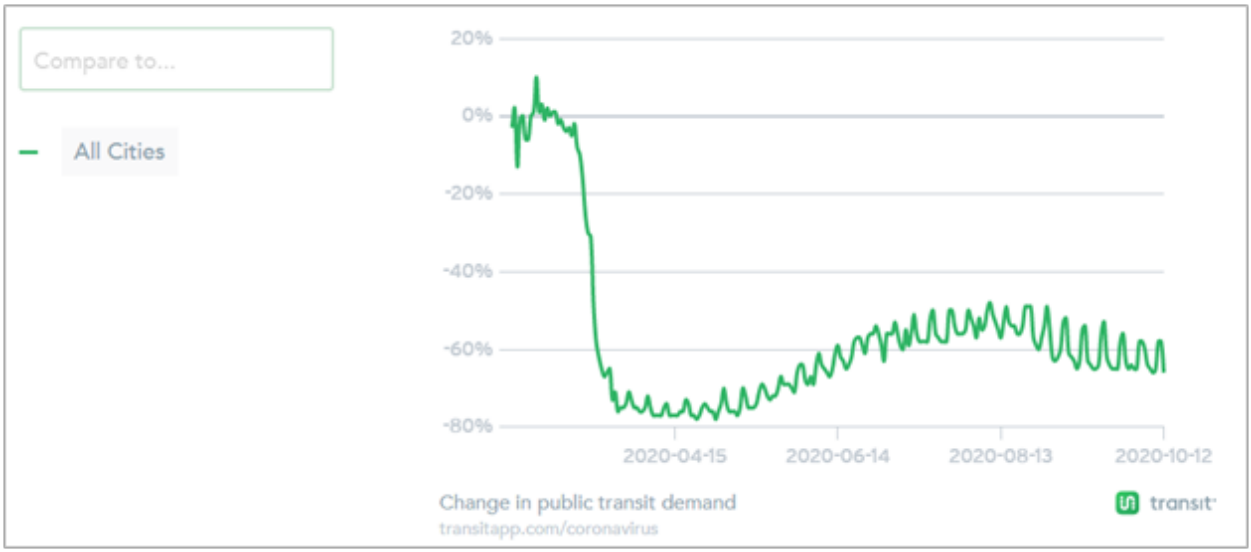
2.2.1 COVID-19 Pandemic

Impacts to the transit industry from the COVID-19 pandemic included the following:

- Reduction of service due to driver availability, social distancing requirements that can impose capacity constraints on transit vehicles, and reduced demand
- Loss of ridership due to business closures/disruptions, remote working and learning, increased popularity of online shopping, telemedicine due to safety concerns, and stay-at-home orders and advisories, which have depressed demand for discretionary trips
- Temporary suspension of fare collection or fare collection enforcement along with rear-door boarding
- Implementation of employee protection measures, such as plexiglass shields and distribution of personal protective equipment
- New rigorous public space cleaning protocols and the removal of seats and tables from transit facilities to discourage congregation

As a result of these impacts, ridership on systems around the country initially declined by up to 80 percent and has been slow to rebound (Figure 1).

Figure 1. Changes in National Transit Ridership (April 15, 2020–October 12, 2020)



Source: Transit App

Locally, at the beginning of the pandemic, MWRTA took the following actions to protect the workforce and riders while continuing to provide essential transit services:

- Provided drivers with face coverings, gloves, hand sanitizer, and informational material on best hygiene and hand washing practices
- Required passengers to wear face coverings on vehicles
- Installed a clear barrier and blocked off two seats directly behind the driver to ensure drivers can maintain social distancing
- Reduced physical capacity of fixed route vehicles from 16 to 7 seated passengers to assist with passenger social distancing
- Temporarily suspended fare collection policies starting April 6, 2020
- Allowed some MWRTA staff to perform essential duties from home and limiting non-essential visitors at its facilities
- Temporarily suspended in person consumer feedback office hours, moving feedback options to online and call in
- Temporarily reduced service levels, in particular on MassBay and commuter shuttles
- Implemented essential taxi service in collaboration with South Middlesex Opportunity Council[12]
- Encouraged passengers to follow Centers for Disease Control (CDC) guidelines regarding hygiene, hand washing, and staying home when feeling ill
- Implemented more frequent and rigorous vehicle cleaning procedures, including disinfecting all vehicles every night with a high-quality disinfectant recommended by the CDC

In the early stages of the pandemic, mirroring national results, MWRTA experienced as much as 90 percent year-over-year ridership loss, with ridership reaching its lowest point in April 2020. By winter of 2020, ridership began to rebound to approximately 30 percent of 2019 levels before plateauing. The sanitation and protective measures described above remain in effect, fare collection has resumed, and commuter shuttles remain suspended.

2.2.2 Federal Coronavirus Aid, Relief, and Economic Security Act

MWRTA has been able to continue to mitigate the financial impacts of the pandemic through funding from the federal Coronavirus Aid, Relief, and Economic Security (CARES) Act. The CARES Act apportioned operating and capital funds for public transportation to mitigate lost revenue due to extreme ridership decline, the suspension of fare collection, the implementation of cleaning and protection protocols, and other related costs. The funding has been provided through the Federal Transit Administration (FTA) Section 5337 (capital – state of good repair), Section 5307 (urbanized area), and Section 5311 (rural areas) funding programs. For Massachusetts RTAs, a total of $213.4 million was apportioned through the CARES Act, including $6.7 million for MWRTA.

2.3 Plan Considerations

Given all the previous work that led to the development of the CRTPs and the unprecedented, transformational conditions during which the CRTPs were developed, the CRTP process necessarily evolved through 2020. Considerations for all RTAs include the following:

- The 5-year period prior to the 2020 pandemic year, fiscal year (FY) 2015 to FY 2019, was considered for recent historical trend analysis to understand how the systems were

[12] The essential taxi service provides essential trips to eligible individuals in need of transportation assistance during the pandemic. The rides are provided by local taxi/livery services through a grant funded by the Metropolitan Area Planning Council (MAPC).

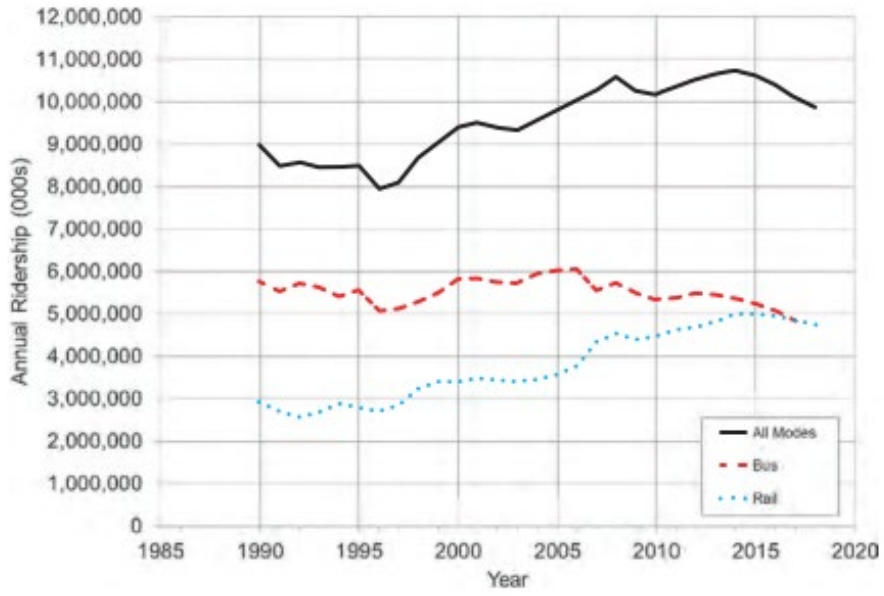
operating prior to the pandemic and to provide a baseline for understanding the market for transit service in each community.

- The rider, community, public, and stakeholder outreach was primarily conducted online. As with all transit planning processes, outreach is one component of many that go into the identification of needs, solutions, and recommendations.

2.3.1 Transit Demand and Economic Uncertainties

Notwithstanding pandemic-related disruptions, for many years, transit ridership has been stagnant or declining nationally (Figure 2). This trend has accelerated in the past few years, with most systems – and bus transit in particular – experiencing steady declines in ridership The American Public Transportation Association (APTA) attributes the decline to four broad categories: erosion of time competitiveness, reduced affinity, erosion of cost competitiveness, and external factors.[13] The erosion of time competitiveness is related to increasing traffic congestion and competing uses of street and curb space. Reduction in affinity refers to more competition for customer loyalty, and the erosion of cost competitiveness has to do with increasing costs without corresponding increase in demand for the service. And, finally, external factors are both the most challenging to define and to mitigate and include such things as policy changes that could improve transit usage but are too far-reaching for a transit agency alone to tackle.

Figure 2. Change in Annual Ridership by Year for Bus, Rail, and All Modes (1985–2020)



Source: Transit Center, Who's On Board 2019

Although MWRTA has been able to avoid this national tend and has experienced modest increases in ridership over the last 5 years (see Section 4.2), it is uncertain whether those national trends, combined with the pandemic's negative impact on transit ridership, will become a longer term pattern that affects MWRTA's recovery.

Pandemic trends of particular concern to MWRTA include the increase in remote work and distance learning, which could significantly impact the workforce and student ridership markets. In addition, long-term economic impacts and sustained levels of unemployment may change the landscape of where people with limited transportation options reside. For all transit systems,

[13] American Public Transportation Association (APTA), "Understanding Recent Ridership Changes," https://www.apta.com/research-technical-resources/research-reports/understanding-recent-ridership-changes/.

including MWRTA, public concern about the health impacts of shared ride services will also remain a challenge. While public transit has instituted mask-wearing requirements, cleaning protocols, social distancing, and other mitigation measures, systems will also have to continue to work to reassure riders about the public health safety of their services. To monitor and lead into these trends and position the Authority for success, it will be critical for MWRTA to use data tools to routinely analyze key system performance metrics and make service and financial decisions within the context of a performance-focused framework.

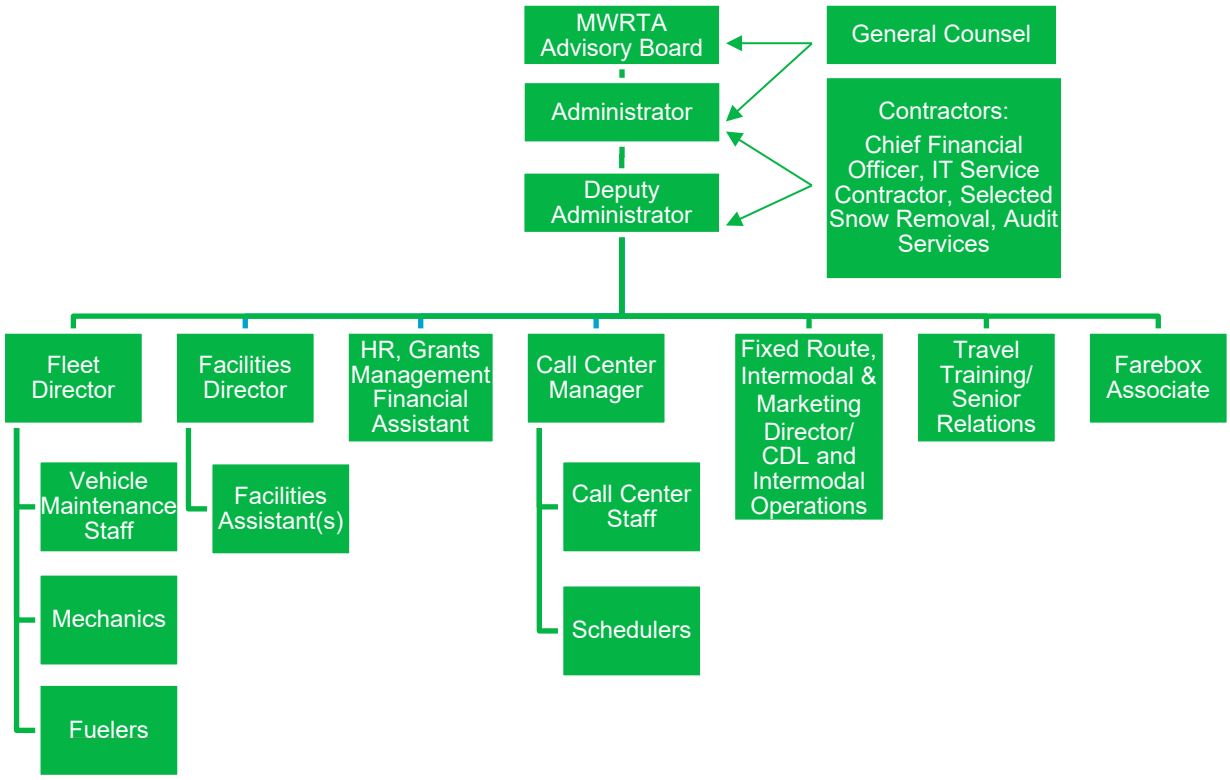
3. Agency Overview

3.1 Transit Agency Background

MWRTA was formed in 2006, in accordance with Massachusetts General Law Chapter 161B Section 5 and began providing public transportation services in 2007. MWRTA serves the western part of the Boston metro area, with a service area roughly between Route 128/95 on the east and I-495 on the west, including portions of southern Middlesex County, northern Norfolk County, and eastern Worcester County. Sixteen member communities include the cities of Framingham and Marlborough and the towns of Ashland, Dover, Holliston, Hopedale, Hopkinton, Hudson, Milford, Natick, Sherborn, Southborough, Sudbury, Wayland, Wellesley, and Weston.

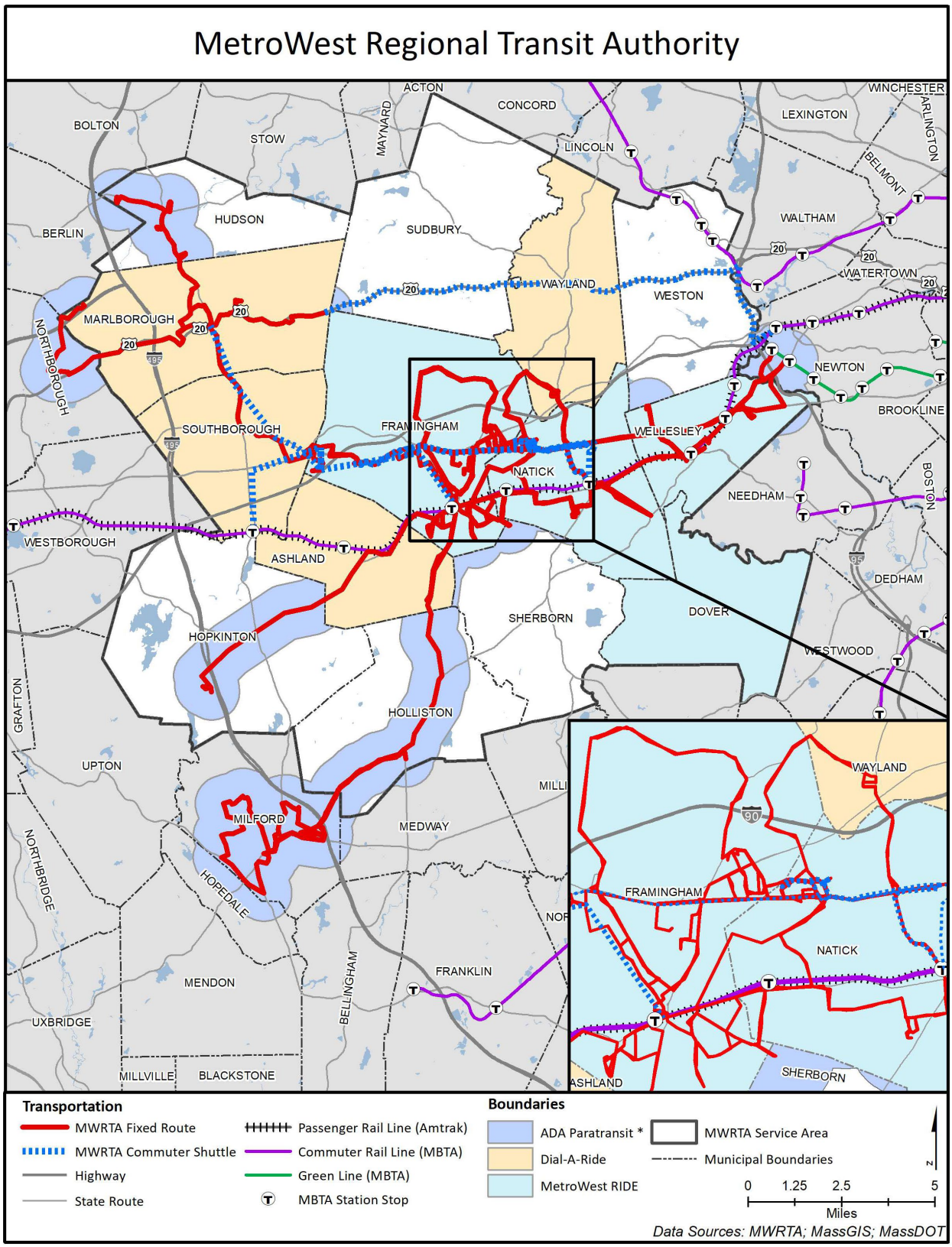
MWRTA is governed by an Advisory Board, comprised of representatives from each of its 16 member communities as well as one representative from the disabled community. For decisions requiring a board vote, the disabled community representative has one vote share and the remaining votes are weighted by apportionment. The advisory board meets approximately once per quarter, with day-to-day operations overseen by an appointed administrator, as shown on Figure 3.

Figure 3. Organizational Chart



In 2019, MWRTA services included 15 fixed routes, 2 MBCC shuttles, 5 commuter shuttles, a Boston Hospital shuttle, ADA paratransit service, and general public demand response (Dial-a-Ride) in the towns of Ashland, Marlborough, Southborough, and Wayland. Most services connect at the Blandin Hub, located near the Framingham MBTA Commuter Rail Station. MWRTA contracts with Kiessling Transit for delivery of fixed route and ADA paratransit services as well as Dial-a-Ride service in several towns. An overview of the MWRTA service area, fixed routes, and demand response services is shown on Figure 4.

Figure 4. Location Map



MWRTA funding sources include FTA, MassDOT, local assessments, and farebox recovery. In 2019, MWRTA had an operating budget of approximately $10.7 million, including $5.4 million in bus operating expense and $5.3 million in demand response operating expenses. Bus and demand response services generated over $927,000 in fare revenue. Capital expenditures vary each year, ranging from $6.6 million in FY 2015 to $1.1 million in FY 2018. Revenue for capital purchases comes from a mix of primarily federal and state funding. In recent years, the balance of state and federal funding shifted from approximately 75 percent federal funding and 25 percent state funding in FY 2015 and FY 2016 to less than 20 percent federal funding in FY 2017 and FY 2018. More detailed service and financial information is available in Chapter 4.

3.2 Mission

The stated mission of MWRTA is “to further expand public transportation for everyone by providing outstanding community-wide dependable and convenient public transportation services that enhance mobility, environmental quality, and economic vitality in the MetroWest Region.”

3.3 Goals and Objectives

Successful accomplishment of the vision/mission statement for MWRTA means:

- The citizens of the region value public transportation as an important public service, which benefits the community as a whole by consistently and efficiently providing exemplary service that meets diverse individual needs.
- Public transit employees are seen and see themselves as committed, competent, and motivated members of the region’s premier public service.
- The Transitions Travel Training Program will assist individuals looking to gain more knowledge of the fixed route system, and eventually train them how to utilize the system to fit their needs.

Specific goals include:

- Increase efficiency and frequency in all fixed routes, while continuing to expand to other communities in the MetroWest area.
- Provide safe, high-quality bus transportation to all customers, and support our employees in that endeavor.

Additionally, as a member of the Boston Metropolitan Planning Organization (MPO), MWRTA observes the goals developed through the *Charting Progress to 2040*[14] long-range transportation plan for the Boston region. These goals include safety, economic vitality, system preservation and modernization, capacity management and mobility, clean air and sustainable communities, transportation diversity, equity, and inclusion.

[14] Boston Region Metropolitan Planning Organization, https://www.ctps.org/lrtp

4. Transit Service Overview (FY 2015-FY 2019)

The sections that follow describe MWRTA's representative transit services, including historical (FY 2015 to FY 2019) service levels as well as descriptions of recent service changes not related to the COVID-19 pandemic or temporary service reductions. Pandemic-related effects on service levels and ridership are described in more detail in Chapter 5.

4.1 Description of Services

Prior to the pandemic, MWRTA operated 15 local weekday fixed routes, described in Table 2. The Green Line connector is a fixed route that operates on Saturdays only between the Halstead Apartments and the Woodland MBTA station, providing weekend coverage along the Route 9 corridor. A new Framingham grocery route (Route 4G) providing fixed route service between the Blandin Hub, Second Street, Market Basket, and Natick Mall is not included in the FY 2015 to FY 2019 service level analysis that follows. Five commuter shuttles offered Monday through Friday fixed route service between commuter rail stations and area employers during peak time periods. Two additional shuttles provided service to the MBCC Framingham and Wellesley campuses.[15]

On Tuesdays, Wednesdays, and Thursdays, MWRTA operates the Boston Hospital shuttle three times daily between residences in Natick and Framingham, the Blandin Hub, Natick VFW Post, and multiple hospitals in the City of Boston. Riders can transfer to the Boston Hospital shuttle from other MWRTA routes at the Blandin Hub, but advanced booking is required for this service. General purpose demand response (Dial-a-Ride) is available to customers in Ashland, Marlborough, Southborough, and Wayland. MetroWest RIDE is a demand response service for ADA-eligible residents traveling anywhere in Framingham, Natick, Wellesley, and Dover. MetroWest RIDE also provides ADA paratransit service through route deviations within three-quarters of a mile of fixed routes outside of those communities.

Table 2. Service Overview

Route	Service Type	Description
Route 1	Fixed Route	Natick Mall to Woodland MBTA Station via Route 9, Cedar, and Washington. Select (commuter) trips to downtown Framingham.
Route 2	Fixed Route	Clockwise circulation between downtown Framingham, MetroWest Medical Center, Framingham Public Library, and Natick Mall.
Route 3	Fixed Route	Counterclockwise circulation between downtown Framingham, Natick Mall, Library, and MetroWest Medical Center.
Route 4 North	Fixed Route	North Framingham Circulator from Blandin Hub to MetroWest Medical Center, Stop & Shop, and Natick Mall.
Route 4 South	Fixed Route	South Framingham Circulator from Blandin Hub to Framingham MBTA Station, Bethany Hill, Shaw's, Market Basket, and Massachusetts Correctional Institution (MCI)-Framingham.

[15] All MassBay and commuter shuttles have been temporarily suspended due to the COVID-19 pandemic.

Route	Service Type	Description
Route 5	Fixed Route	Blandin Hub to South Hayward Street via Main Street/Massachusetts Route 135.
Route 6	Fixed Route	Bethany Hill and Blandin Hub to Milford Crossing via Route 126 and Main Street. Select trips to Milford.
Route 7	Fixed Route	Downtown Framingham (Banana Lot) and Blandin Hub to downtown Marlborough.
Route 7C	Fixed Route	Natick Mall to Woodland MBTA Station via Route 9, Cedar, and Washington.
Route 8	Fixed Route	Natick Community Center to MassBay Wellesley and Woodland MBTA Green Line Station via Route 135, Forest, Wellesley, Oakland, and Route 9. Select trips from Blandin Hub.
Route 9	Fixed Route	Natick Mall to Framingham State University (FSU) and Staples headquarters via Route 9. Select trips from Blandin Hub.
Route 10	Fixed Route	Blandin Hub to Natick Mall, Natick Center MBTA Station, and Natick Community Center.
Route 11	Fixed Route	Blandin Hub to Natick Mall, Natick Center MBTA Station, and Natick Community Center.
Route 14	Fixed Route	Circulator for town of Milford with select trips to Framingham.
Route 15	Fixed Route	Circulates between Marlborough and Hudson with select trips to Framingham.
Green Line Connector	Fixed Route	New March 2019 - Saturday only. Woodland MBTA station to Natick Mall, FSU, and Halsted Apartments.
MassBay Campus Shuttle	MassBay Shuttle	Operates between MassBay Framingham, Natick Mall, FSU, and MassBay Wellesley during the school year.
MassBay Riverside	MassBay Shuttle	Operates between MassBay Wellesley and the Riverside MBTA Station via Route 16 and Grove Street.
Natick	Commuter Shuttle	Natick MBTA station to Natick area employers.
Framingham	Commuter Shuttle	Framingham MBTA station to Framingham area employers.
Boston Scientific	Commuter Shuttle	Boston Scientific to Southborough MBTA station.
Route 20	Commuter Shuttle	Wayside Inn to Riverside MBTA station.
MathWorks	Commuter Shuttle	Blandin Hub to MathWorks Campus and Mass Rte. 9 apartment complexes.

Route	Service Type	Description
Boston Hospital	Demand Response	Qualifying riders may request curbside pickup in Framingham and Natick or board at the Blandin Hub or Natick VFW Post for shuttles to Boston area hospitals.
MetroWest Ride	Demand Response	Framingham, Natick, Wellesley, and Dover (city-wide) as well as deviated route three-quarter mile ADA paratransit in other MWRTA locations.
Dial-a-Ride	Demand Response	General purpose demand response for residents of Ashland, Marlborough, Southborough, and Wayland.

Source: MWRTA, 2020 pre-COVID services

Table 3 and Table 4 summarize pre-pandemic operating spans and headways, respectively. Temporary service reductions due to COVID-19 are not included in the descriptions that follow nor the assessment of FY 2015 to FY 2019 service metrics. Prior to the pandemic, fixed route services were generally operated between 5:30 AM and 8:45 PM Monday through Friday and from 8:30 AM to 5:30 PM on Saturday. MWRTA does not operate Sunday service. The five commuter shuttles (Route 20, Natick, Framingham, Boston Scientific, and MathWorks) only operated Monday through Friday during the AM peak and PM peak periods. On Saturdays, Routes 2, 3, 4N, 4S, 7, 7C, 11, and the Green Line connector operated with a delayed start and earlier pull-in compared to their weekday counterparts.

On weekdays, the majority of MWRTA fixed routes required an hour or more of wait time between trips. Route 4N and Route 9 were the most frequent with trips every 30 minutes prior to the pandemic.[16] Route 10 had the longest headways of 135 minutes on weekdays. Most routes offer the same frequency on Saturdays as weekdays, with the exception of Route 7, which operates every 60 minutes on weekdays and every 135 minutes on Saturdays. Fixed route spans and headways are compiled in Table 3 and Table 4, respectively. Prior to the COVID-19 pandemic, MWRTA had planned to expand service for Routes 2, 7, and 11 by approximately 2 hours to 10:30 PM These changes have not been implemented and are not included in the tables that follow.

The Boston Hospital shuttle operated Tuesday through Thursday making three round trips daily. Local pick-up and drop-off times are by appointment with Boston area hospital arrival times ranging from 9:10 AM to 5:25 PM. MetroWest RIDE and Dial-a-Ride service hours vary by location to reflect fixed route service hours and ADA paratransit requirements.

Table 3. Fixed Route Span of Service

Route	Weekday	Saturday	Sunday
Route 1	5:30 AM – 8:45 PM	N/A	N/A
Route 2	6:30 AM – 7:55 PM	9:00 AM – 5:00 PM	N/A
Route 3	6:15 AM – 8:00 PM	8:25 AM – 5:00 PM	N/A
Route 4 North	7:05 AM – 8:27 PM	9:05 AM – 5:05 PM	N/A
Route 4 South	6:10 AM – 6:45 PM	8:59 AM – 5:18 PM	N/A

[16] As a result of COVID-19 service changes, only Route 4N still operates with 30-minute frequencies all day. Routes 1, 2, 9, and 10 offer 30-minute frequencies during peak hours only.

Route	Weekday	Saturday	Sunday
Route 5	5:30 AM – 8:10 PM	N/A	N/A
Route 6	5:51 AM – 8:22 PM	N/A	N/A
Route 7	5:30 AM – 8:45 PM	8:30 AM – 5:30 PM	N/A
Route 7C	7:21 AM – 8:00 PM	8:00 AM – 4:55 PM	N/A
Route 8	6:20 AM – 7:58 PM	N/A	N/A
Route 9	5:46 AM – 8:50 PM	N/A	N/A
Route 10	6:25 AM – 8:30 PM	N/A	N/A
Route 11	6:30 AM – 8:35 PM	8:00 AM – 5:25 PM	N/A
Route 14	6:30 AM – 8:17 PM	N/A	N/A
Route 15	6:30 AM – 7:00 PM	N/A	N/A
Green Line Connector	N/A	8:00 AM – 5:40 PM	N/A
MassBay Campus Shuttle	8:00 AM – 6:30 PM	N/A	N/A
MassBay Riverside	7:15 AM – 6:30 PM	N/A	N/A
Natick Commuter Shuttle	6:30 AM – 10:15 AM, 4:00 PM – 7:25 PM	N/A	N/A
Framingham Commuter Shuttle	6:10 AM – 9:25 AM, 4:15 PM – 7:25 PM	N/A	N/A
Boston Scientific Commuter Shuttle	5:50 AM – 9:30 AM, 3:25 PM – 7:05 PM	N/A	N/A
Route 20 Commuter Shuttle	5:30 AM – 10:40 AM, 4:15 PM – 8:10 PM	N/A	N/A
MathWorks Commuter Shuttle	6:30 AM – 9:30 AM, 4:00 PM – 7:30 PM	N/A	N/A

Source: MWRTA

Table 4. Frequency of Fixed Route Service

Route	Weekday	Saturday	Sunday
Route 1	20/40/80 minutes	N/A	N/A
Route 2	65 minutes	65 minutes	N/A
Route 3	75 minutes	75 minutes	N/A
Route 4 North	30 minutes	30 minutes	N/A
Route 4 South	42 minutes	42 minutes	N/A
Route 5	70 minutes	N/A	N/A

Route	Weekday	Saturday	Sunday
Route 6	75 minutes	N/A	N/A
Route 7	60 minutes	135 minutes	N/A
Route 7C	100 minutes	100 minutes	N/A
Route 8	75 minutes	N/A	N/A
Route 9	30 minutes	N/A	N/A
Route 10	135 minutes	N/A	N/A
Route 11	90 minutes	90 minutes	N/A
Route 14	70 minutes	N/A	N/A
Route 15	70 minutes	N/A	N/A
Green Line Connector	N/A	90 minutes	N/A
MassBay Campus Shuttle	90 minutes	N/A	N/A
MassBay Riverside	15 minutes	N/A	N/A
Natick Commuter Shuttle	2 trips/day	N/A	N/A
Framingham Commuter Shuttle	2 trips/day	N/A	N/A
Boston Scientific Commuter Shuttle	2 trips/day	N/A	N/A
Route 20 Commuter Shuttle	6 trips/day	N/A	N/A
MathWorks Commuter Shuttle	7 trips/day	N/A	N/A

Source: MWRTA

Operating revenue sources for FY 2017 to FY 2019 are shown in Table 5. Prior to FY 2019, MWRTA leveraged approximately 22 percent of operating revenue from a variety of federal funding programs, including Section 5307 (Urbanized Area Formula), Section 5310 (Senior Mobility), Section 5316 (Job Access and Reverse Commute), and Section 5317 (New Freedom) programs. Discontinuation of the federal Job Access Reverse Commute and New Freedom programs affected MWRTA's FY 2019 federal revenue. State funding constitutes over a quarter of MWRTA revenue, and over a third of revenue comes from local government general funds. Over 10 percent of system operating revenue is directly generated by MWRTA through passenger fares and other sources, including park and ride revenues, advertising revenue, concessions, reimbursements, and rebate income.

Table 5. Operating Funding Sources (FY 2017–FY 2019)

Funding Source	FY 2017	%	FY 2018	%	FY 2019	%
Federal	$2,266,915	23%	$2,406,523	22%	$1,790,366	16%

Funding Source	FY 2017	%	FY 2018	%	FY 2019	%
State	$3,210,270	33%	$2,842,566	27%	$3,581,407	33%
Local	$3,351,903	34%	$3,979,120	37%	$4,078,598	37%
Directly Generated	$999,879	10%	$1,479,242	14%	$1,452,517	13%
TOTAL	**$9,828,967**	**100%**	**$10,707,451**	**100%**	**$10,902,888**	**100%**

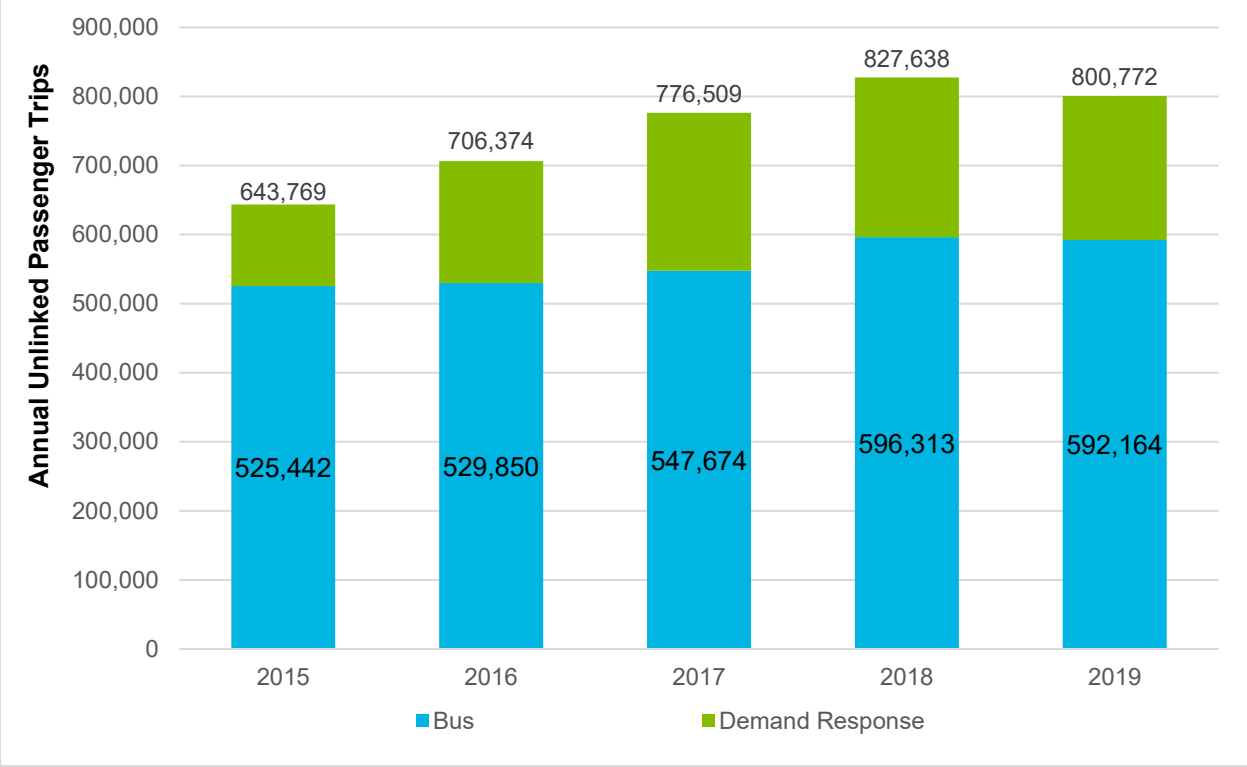
Source: NTD, MWRTA

In 2019, fare revenues totaling $927,536 accounted for 64 percent of MWRTA's directly generated funding. Of these, approximately one-third ($319,000) of fares were paid for by organizations and the remainder were paid for directly by passengers. Organizational revenues include cooperative agreements with business partners as well as bulk purchase of fare products, which are then distributed by the organization. MWRTA allows organizations to purchase fares in bulk as a convenience but does not offer a discount on bulk-purchased fares. Organizational revenues may be temporally separated from a rider's use of those fare products and as such are not included in farebox recovery calculations. MWRTA does not provide contract-based services.

4.2 Ridership and Service Operations

Historical FY 2015 to FY 2019 system ridership is shown on Figure 5. System ridership is comprised of over 70 percent bus and under 30 percent demand response. Ridership peaked in FY 2018 following an annual ridership increase of 7 to 10 percent each year since FY 2015. FY 2020 ridership to date is considerably lower than historical trends as a result of the COVID-19 pandemic and has been excluded from this analysis. It may take longer than initially expected for ridership to recover to the 2021 target level.

Figure 5. Annual System Ridership Trends (FY 2015–FY 2019)



Source: NTD FY 2015 – FY 2018, MWRTA FY 2019

MWRTA ridership peaked across all modes in FY 2018, with 827,638 passengers systemwide. Demand response ridership declined by 10 percent between FY 2018 and FY 2019 to 208,608 riders in FY 2019, likely a result of MWRTA's travel training program designed to help ADA-eligible riders use fixed route services when possible. This represents approximately 26 percent of total system boardings. Fixed route boardings represent 74 percent of FY 2019 ridership, and a slight (less than 1 percent) decline compared to FY 2018.

Figure 6 illustrates fixed route ridership by month for the 2017 to 2019 calendar years. Ridership peaks in the fall following a summer lull as a result of high student ridership levels. Demand response ridership by month, as shown on Figure 7, also experiences a similar though less pronounced drop in ridership during the summer months.

Ridership for regular fixed routes (those that run standard hours on weekdays) is shown on Figure 8. Route 4, which is reported as a combination of Routes 4N and 4S, shows the highest ridership. The next highest ridership routes include Route 7 to Marlborough and Route 1 to the Woodland MBTA Station.

Figure 6. Fixed Route Monthly Ridership Trends (2017–2019)

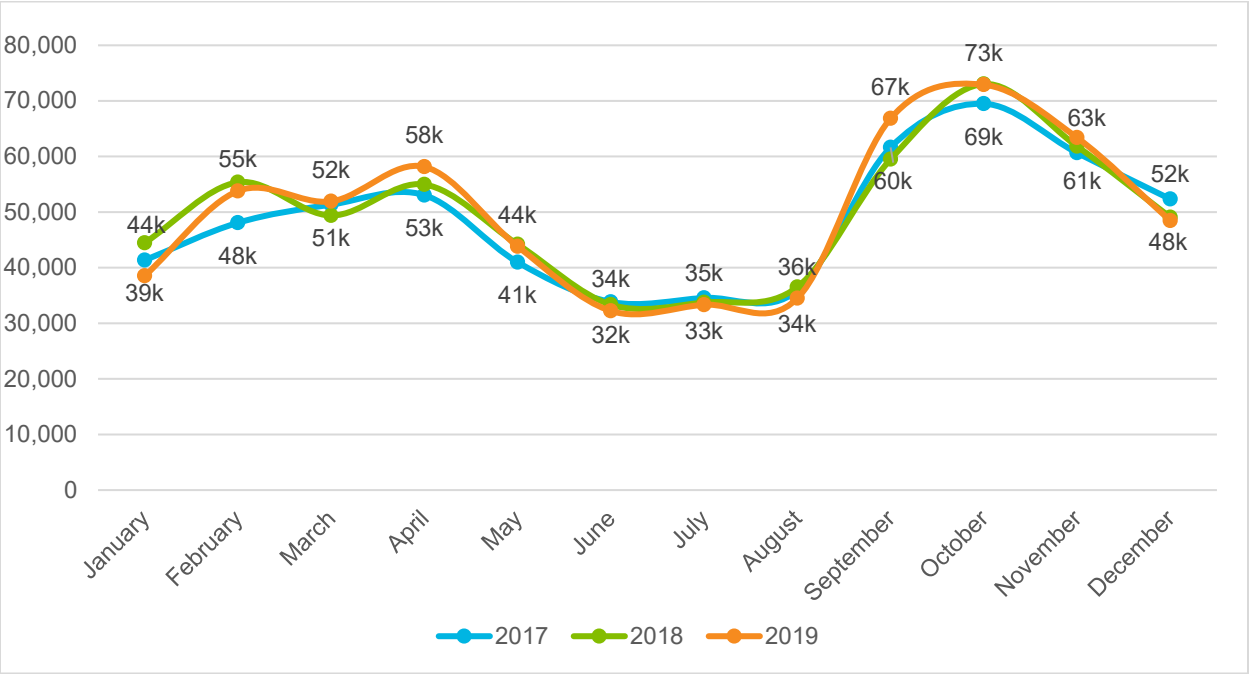
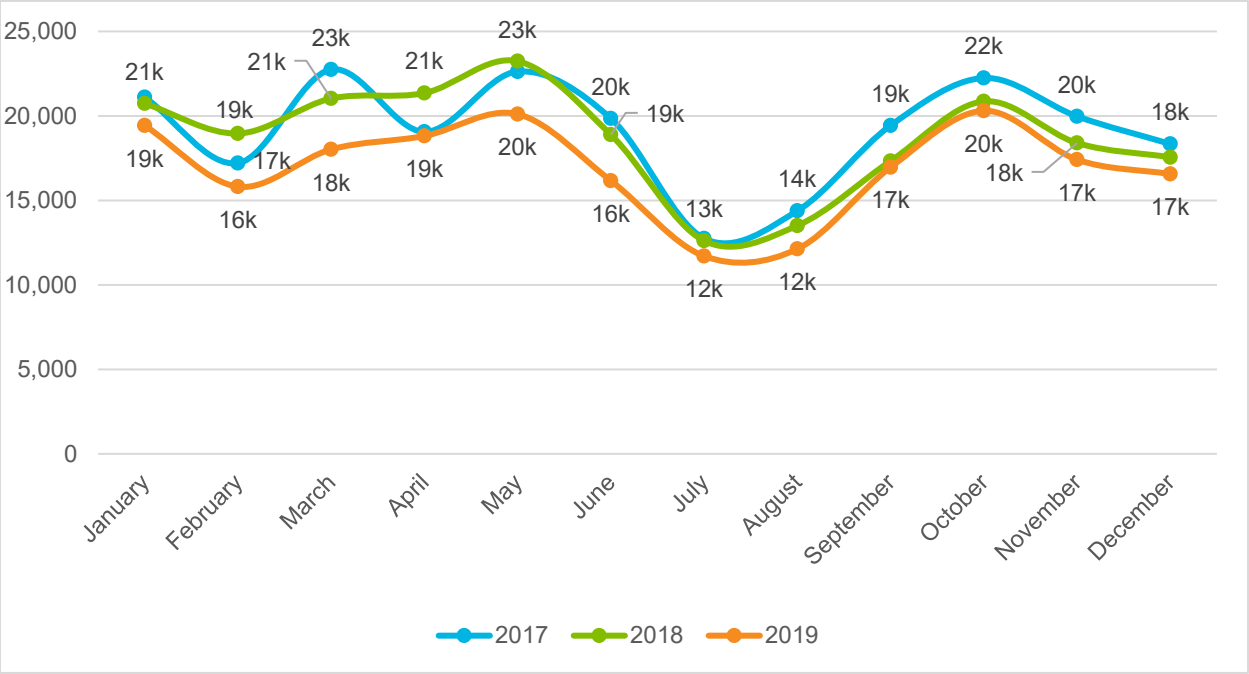
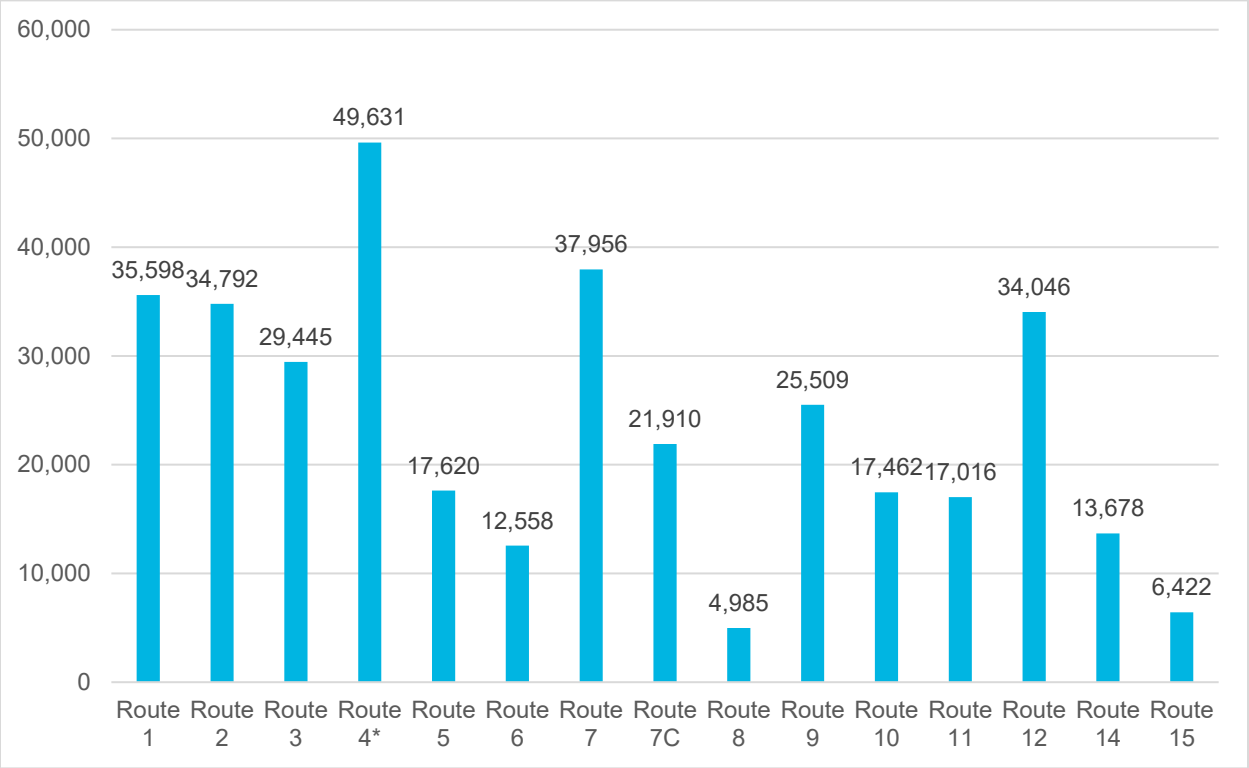


Figure 7. Demand Response Monthly Ridership Trends (2017–2019)



Source: NTD

Figure 8. Regular Fixed Route Ridership (FY 2019)



Source: MWRTA

Green Line Connector not shown due to partial year operation.

** Route 4 ridership combines Routes 4N and 4S.*

Historical revenue hours of service by mode are shown in Table 6. Bus revenue hours increased by approximately 25 percent over 5 years, with a high of 88,110 hours in FY 2019. Demand response revenue hours peaked at 80,927 in FY 2017 and represented over 50 percent of total systemwide revenue hours. Demand response service was similarly high in FY 2018 but dropped approximately 11 percent in FY 2019.

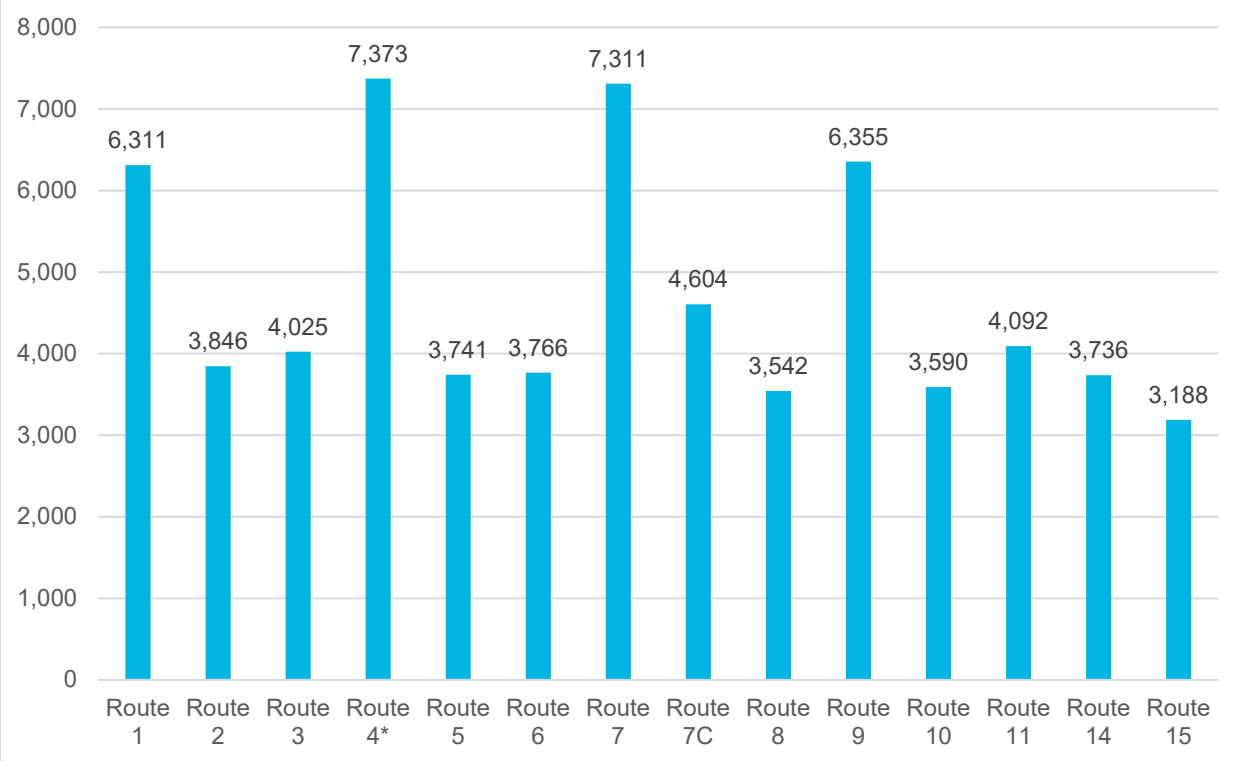
Table 6. Annual Revenue Hours (FY 2015–FY 2019)

Service Type	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Bus	70,360 (53%)	73,775 (51%)	80,598 (50%)	85,201 (51%)	88,110 (55%)
Demand Response	62,522 (47%)	69,735 (49%)	80,927 (50%)	80,832 (49%)	71,896 (45%)
TOTAL	132,882	143,510	161,525	166,033	160,006

Source: NTD, MWRTA

Figure 9 compares annual revenue hours across regular fixed routes for which data are available. As shown, the highest service levels occur on Route 4, Route 7, Route 1, and Route 9.

Figure 9. FY 2019 Annual Revenue Hours, Regular Fixed Routes



Source: MWRTA

** Route 4 revenue hours combine Routes 4N and 4S for consistency with ridership reporting.*

Route 12 revenue hours not comparable, as MWRTA uses an alternate system to track commuter shuttle revenue and performance.

Revenue miles, shown in Table 7, follow similar annual trends as revenue hours. Bus revenue miles increased by approximately 20 percent over 5 years, with a high of 1.25 million revenue miles in FY 2019. Demand response mileage peaked at 1.10 million revenue miles in FY 2017 and FY 2018 and decreased to 1.02 million revenue miles in FY 2019.

Table 7. Annual Revenue Miles (FY 2015–FY 2019)

Service Type	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Bus	1,036,390 (58%)	1,017,250 (54%)	1,116,056 (50%)	1,157,285 (51%)	1,245,430 (55%)
Demand Response	750,097 (42%)	881,230 (46%)	1,103,797 (50%)	1,097,583 (49%)	1,019,650 (45%)
TOTAL	1,786,487	1,898,480	2,219,853	2,254,868	2,265,080

Source: NTD, MWRTA

Historical operating costs by mode are shown in Table 8. System costs increased by approximately 47 percent between FY 2015 and FY 2019, compared to a 20 percent increase in revenue miles and a 25 percent increase in revenue hours over the same period. Much of this can be attributed to moving all drivers over to a new contractor in 2016 and completion of MWRTA's new intermodal facility in 2017. Contract negotiations often result in cost increases, and given MWRTA's relatively low FY 2015 cost of service per revenue hour compared to other Massachusetts providers and national peers (Appendix A), this increase may represent more of a return towards industry standards. The additional O&M costs associated with facility enhancements may be somewhat offset by reduced capital maintenance and vehicle replacement associated with better upkeep of vehicles and equipment. MWRTA's financial efficiency for FY 2015 to FY 2019 is discussed in Appendix A. Costs are roughly evenly split between modes, with between 47 and 53 percent of costs allocated to demand response services. The largest increase in bus costs occurred in FY 2017, while demand response costs increased the most in FY 2016 and FY 2018.

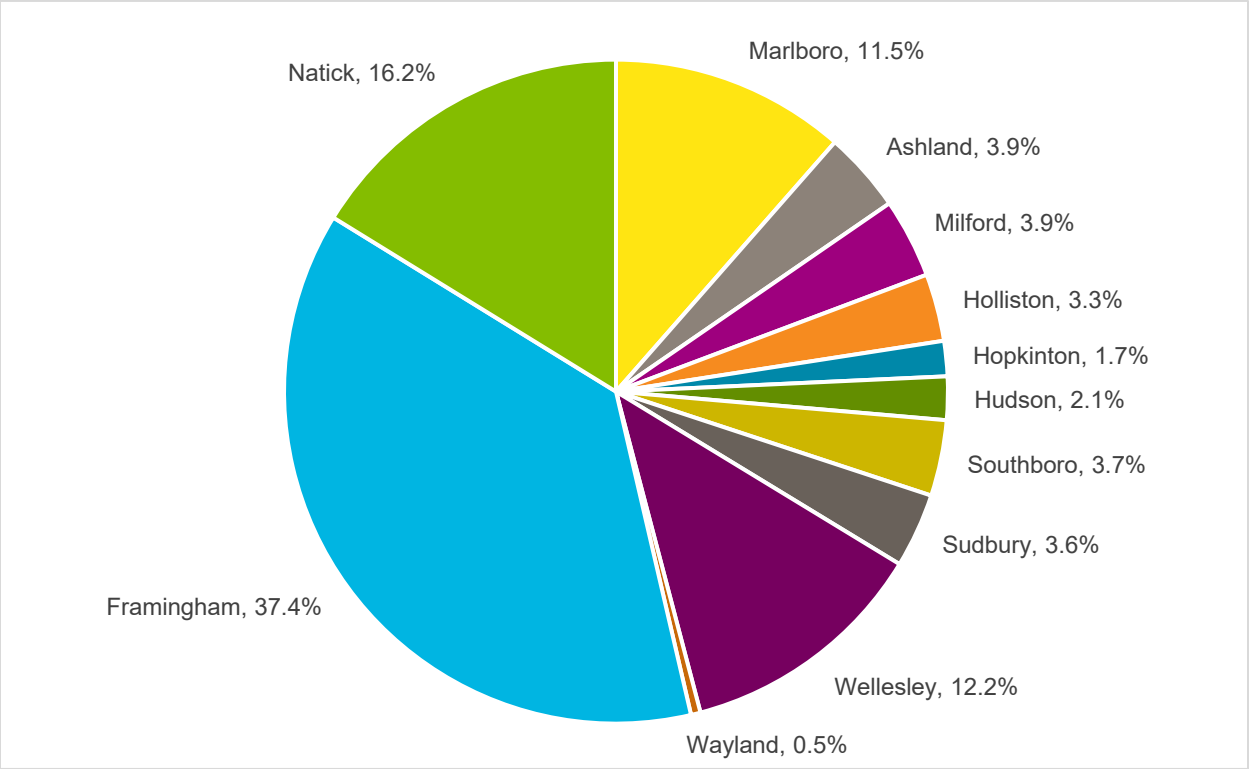
Table 8. Annual Operating Cost (FY 2015–FY 2019)

Service Type	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Bus	3,738,489 (51%)	4,085,657 (48%)	5,203,622 (53%)	5,015,973 (47%)	5,441,890 (51%)
Demand Response	3,532,353 (49%)	4,405,917 (52%)	4,546,059 (47%)	5,592,397 (53%)	5,274,900 (49%)
TOTAL	**$7,270,842**	**$8,491,574**	**$9,749,681**	**$10,608,370**	**$10,716,790**

Source: NTD, MWRTA

MWRTA does not allocate its bus service miles or costs by route. Rather, individual bus route hours of service are allocated to each town, as shown on Figure 10. These allocations are used to understand each town's share of costs. As shown, the highest service levels are located in Framingham, followed by Natick, Wellesley, and Marlborough. Dover and Sherborn do not have bus service, and Weston services are limited to the Route 20 commuter shuttle. The allocation does account for other commuter services in the towns.

Figure 10. Bus Service Allocation (FY 2017)



Source: MWRTA

Table 9 summarizes FY 2019 operating statistics by mode. Performance metrics at the route level and by mode are available in Appendix A.

Table 9. Summary of Operating Statistics by Mode (FY 2019)

Mode	Ridership	Revenue Hours	Revenue Miles	Operating Cost	Revenue Generated
Bus	592,164	88,110	1,245,430	$5,441,890	$676,925
Demand Response	208,608	71,896	1,019,650	$5,274,900	$250,611
Total	**800,772**	**160,006**	**2,265,080**	**$10,716,790**	**$927,536**

Source: MWRTA

4.3 Safety and Security

In 2020, MWRTA finalized FTA Public Transportation Agency Safety Plans (PTASP) requirements that added a higher level of granularity. MWRTA established the following Safety Management Policy:

> "Safety is a core value at the MWRTA, and managing safety is a core business function. We will develop, implement, maintain, and continuously improve processes to ensure the safety of our customers, employees, and the general public."

The MWRTA safety policy expresses the Authority's commitment to the following safety objectives:

- Communicating the purpose and benefits of the safety management system to all managers, supervisors, and employees.
- Providing a culture of open reporting of all safety concerns, ensuring that no action will be taken against any employee who discloses a safety concern through MWRTA's Employee Safety Reporting Program (ESRP), unless such disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or deliberate or willful disregard of regulations or procedures.
- Providing appropriate management involvement and the necessary resources to establish an effective ESRP that will encourage employees to communicate and report any unsafe work conditions, hazards, or at-risk behavior to the management team.
- Identifying hazardous and unsafe work conditions and analyzing data from the ESRP. (After thoroughly analyzing provided data, the transit operations division will develop processes and procedures to mitigate safety risk to an acceptable level.)
- Establishing safety performance targets that are realistic, measurable, and data driven. Continually improving safety performance through management processes that ensure appropriate safety management action is taken and is effective.
- Working with contracted transit providers to ensure that they are aware of agency safety goals and can report safety concerns in the same open manner.
- Reviewing contractor-provided safety programs and trainings to ensure alignment with the Authority's safety goals.

4.4 Asset Management

MWRTA operates out of the Blandin Multimodal Hub located at 15 Blandin Avenue in Framingham, approximately one-half mile from the Framingham MBTA Station. This facility was acquired by MWRTA in 2012 and is approximately 8 years old with a capital value of $19,765,239. MWRTA's 2018 TAM Plan identified the highest Transit Economic Requirements Model (TERM) Scale condition rating of 5.0 for this facility. This facility supports MWRTA's administration (6.5 full-time equivalent [FTE]), customer service (2 FTE), operations (10.5 FTE), and maintenance (12 FTE) departments. Bus operations are supported by a contract with Kiessling Transit.

Parking at Framingham MBTA station is managed by Republic Parking System and maintained by MWRTA. This surface lot includes 294 spaces at a daily rate of $4.00 on weekday, and $2.00 on weekends, or a monthly rate of $70.00.[17] Republic Parking System independently manages commuter lots at West Natick and Ashland MBTA stations, and the Natick Center MBTA station commuter lot is managed by the Town of Natick.

MWRTA's revenue and non-revenue vehicle fleet, as of the 2018 TAM Plan, is characterized in Table 10. Approximately 10 percent of revenue vehicles were mini-vans, with an average age of 4 years. The majority of revenue fleet were 8-passenger, 12-passenger, and 16-passenger cutaway buses. The average age of buses was 5.3 years, and non-revenue fleet was 13 years on average. Over the past 2 years MWRTA received sufficient capital grants to replace more of its aging fleet, bringing ULB more in line with TAM Plan targets. MWRTA will maintain its TAM Plan vehicle condition goals by replacing 20 percent of its fleet annually.

[17] MBTA, https://www.mbta.com/stops/place-WML-0214

Table 10. Fleet Inventory Summary

Vehicle Type	Total Number	Average Age*	Average Mileage (2018)	Average Replacement Value (2018)	% at or past ULB*	FY 2019 ULB Target
Cutaway bus	89	5.3	82,319	$60,638	36.0%	0%
Van/mini-van	9	4.0	34,596	$52,539	0.0%	0%
Non-revenue vehicles	12	13.0	74,773	$20,542	66.7%	50%

Source: MWRTA, 2018 TAM Plan

**Calculated for 2020 age based on purchase year of vehicles inventoried in the 2018 TAM Plan.*

In addition to its facilities and vehicles, MWRTA maintains the following IT assets:

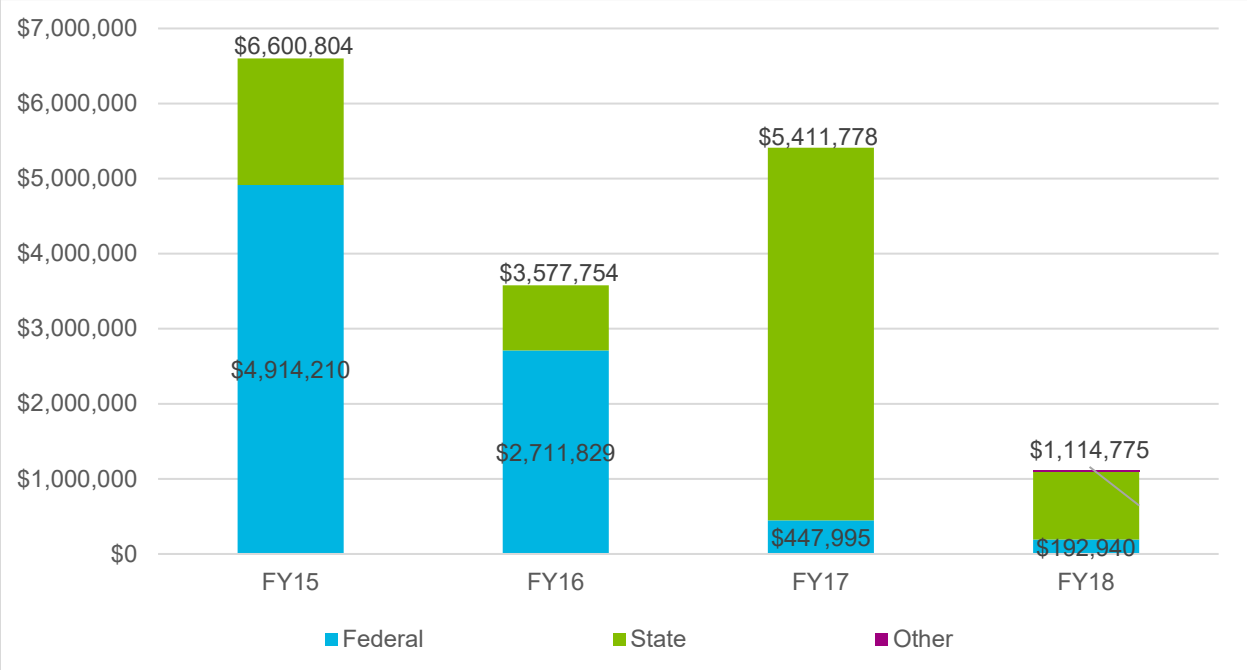
- Website trip planner with real-time bus tracking
- CATCH mobile app with real-time bus tracking
- Trapeze Group automatic vehicle location (AVL) and mobile data terminals
- APCs by UTA
- Vehicles equipped with Vivotek, Inc. and Seon on-board cameras
- In-house automated next-stop announcement system
- BearCom, Inc. radio systems
- DriveCam vehicle-mounted collision warning/tracking system
- CharlieCard smart card payment system
- Axis Communications facility video systems
- TripSpark Technologies and StrataGen Systems scheduling and dispatching software
- Service alert system
- In-house software to track parts and maintenance
- In-house software to monitor accidents and incidents
- QuickBooks accounting software
- In-house mobile payment system

MWRTA also maintains a Twitter account (@MWRTA), which is run by the Director of Fixed Route, Intermodal and Marketing. Twitter is used to post service announcements, including upcoming service changes, holiday service announcements, snow/weather-related service changes, route detours due to road work, major traffic updates, relevant MBTA updates, and changes to bus stop locations. In addition, the MWRTA Twitter account is used to answer questions/complaints received from followers. Service announcements are also communicated via the MWRTA website. MWRTA does not currently use Facebook, YouTube, or any other social media network. A recommendation for enhanced online marketing strategies is included in Section 8.3.3.1.

Capital expenditures and revenue sources associated with replacement and expansion of MWRTA's capital assets are summarized on Figure 11 and Figure 12, respectively. Annual capital expenses ranged from $6.6 million in FY 2015 to $1.1 million in FY 2018. Revenue for capital purchases comes from a mix of primarily federal and state funding. In recent years, the

balance of state and federal funding shifted from approximately 75 percent federal funding and 25 percent state funding in FY 2015 and FY 2016 to less than 20 percent federal funding in FY 2017 and FY 2018.

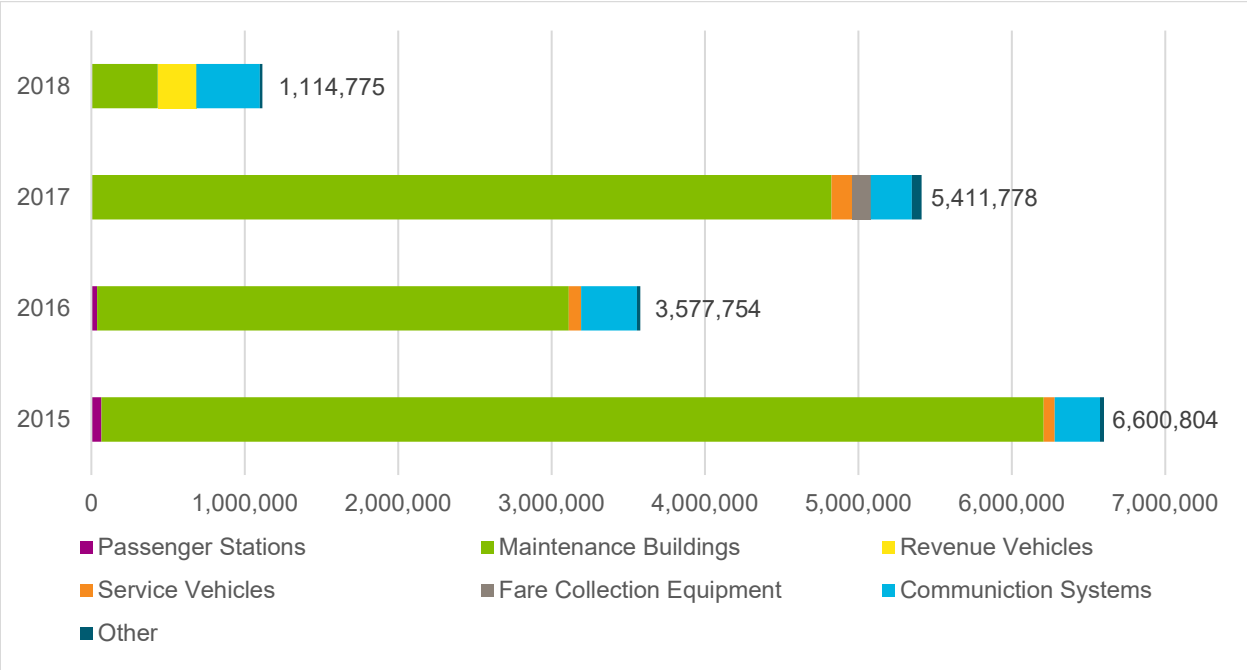
Figure 11. Capital Revenue Sources (FY 2015–FY 2018)



Source: NTD, 2015 to 2018

Categories of capital expenditures by year are shown in Figure 12. As shown, the largest share of capital costs in FY 2015 to FY 2018 was for final payment on the Blandin Hub operations and maintenance facility. Ground was broken on this approximately $20 million facility in 2013 with operations moving into the facility in July 2015. Notable capital expenses in FY 2018 included facility maintenance, communication systems upgrades, and expansion of the fixed route fleet.

Figure 12. Capital Expenditures (FY 2015–FY 2019)



Source: NTD, 2015 to 2018

4.5 Policies and Procedures

MWRTA adheres to the following policies:

- **Shelter Policy**. Informal recommendation that entities providing shelters consider ADA accessibility, bench for riders to sit while they wait, clear plexiglass to see through for safety reasons, and shelter placement 6 feet from the curb to allow for a lift deployment.
- **Bag Policy**. Limits placement of packages on seats when buses are full. Bags are limited to a manageable amount on fixed routes and four bags on demand response.
- **Wheelchair Securement/Lift Use Policy**. Defines procedures for use, securement, and weight limit (800 pounds) for using the vehicle lift.
- **Code of Conduct**. Establishes rules for riders, including:
  - Riders must pay appropriate fare and follow the bus driver's instructions.
  - Children under the age of 12 must be accompanied by an adult at all times and children under 40 pounds must remain in the lap of the accompanying adult or secured in a child safety seat.
  - Mobility devices must not block the aisle.
  - No lewd or lascivious behavior, profanity, fighting, hazing, boisterous behavior, or harassment toward the bus driver or fellow passengers.
  - No eating, drinking, or smoking.
  - No electronic music devices without headphones.
  - Quiet use of cell phones kept to a minimum.
  - Do not leave trash on bus.
  - Remain behind yellow line while bus is in service.
  - No vandalism.
  - Windows should only be opened at the discretion of the bus driver.
  - Shirt and shoes required on bus.
  - No hazardous materials.
  - Violation of rules may result in disciplinary action including suspension/termination of rider privileges.
- **Service Animal Policy**. Permits only ADA-certified service animals on the bus when assisting the disabled and kept under control.
- **Flag Down Policy**. Permits riders to hail the bus down from a safe, visible location, with enough time for the bus to safely pull over and stop.

In compliance with USDOT 49 CFR 26, MWRTA established a goal for disadvantaged business enterprise participation of 3.2 percent for FY 2018 to FY 2020.[18] In addition, MWRTA complies with Massachusetts Public Records Law, Federal Title VI guidelines, and the ADA regarding paratransit eligibility and fares.

[18] https://www.mwrta.com/information/policies

4.6 Regional Connections and Other Transit Providers

MWRTA connects to the MBTA Framingham/Worcester Commuter Rail line at the Ashland, Framingham, Southborough, West Natick, and Natick Center Stations. In addition, riders can connect to MBTA's Green Line at the Woodland or Riverside MBTA Stations. Both lines provide service to downtown Boston where commuters can then transfer to a variety of other transit systems. Traveling west on the Framingham/Worcester line connects riders to the WRTA routes. Amtrak connections are available in Framingham, Worcester, or Boston. Riders can connect to a Greyhound bus to New York from the Intermodal Center. Peter Pan Bus Lines also stop in Framingham, providing connections throughout Massachusetts, as well as to some neighboring states.

4.7 Fare Rates and Structure

The MWRTA fare structure is shown in Table 11. MWRTA offers reduced fares for riders using a CharlieCard, with the exception of a student rider. The student rate is only available for riders paying cash. Student riders boarding with a Charlie Card are eligible for the discounted adult fare. Seniors and disabled riders with valid identification may pay half the adult cash fare, or 56 percent of the adult Charlie Card fare.

Charlie Card stored value can be used to board MWRTA, MBTA, and other participating systems. Monthly pass products for MBTA or other participating RTAs are not honored on the MWRTA system. MWRTA does not offer a pass product.

MWRIDE passengers must set up a fare account and maintain a positive balance in order to book a ride. Payments to the fare account can be made by credit card over the phone, online, and by mail with check or money order. The Charlie Card is not accepted for MWRIDE services.

Table 11. Fare Structure

Fare Type	Cash Fare	Charlie Card Fare
Adults	$1.50	$1.25
Students under 18 or with ID	$1.00	$1.25
Children under 6	Free	Free
Active duty in uniform	Free	Free
Senior with valid identification	$0.75	$0.70
Disabled rider with valid identification	$0.75	$0.70
Riders with Council for the Blind Card	Free	Free
MWRIDE passenger	$2.00	N/A
MWRIDE personal care attendant	Free	N/A

Source: MWRTA

4.8 Fare Policy

The existing MWRTA fare policy was inherited from legacy services that had served parts of the MWRTA service area when MWRTA was first formed. MassDOT and MWRTA entered into a MOU in 2019 before the onset of COVID-19. In the MOU, MassDOT and MWRTA agreed that that the RTA would establish and adopt a fare policy; the MWRTA Advisory Board approved an

updated fare policy on January 25, 2021. The parties also agreed to farebox recovery targets as part of the MOU and as shown in Table 12; these targets were also approved by the Advisory Board. It should be noted that the targets are the same from the baseline through FY 2021; FY 2020 had already been completed at the time of adoption. The fare policy states that any changes to fares must be approved by the MWRTA Advisory Board after adequate public notification.

Table 12. Fare Recovery Targets

	Baseline	FY 2020 Target	FY 2021 Target
System Average	7.64%	7.64%	7.64%
Fixed Route	10.54%	10.54%	10.54%
Demand Response	5.04%	5.04%	5.04%

5. Market Evaluation

This chapter describes existing and projected socioeconomic characteristics of the area served by MWRTA.

5.1 Service Area Overview

Understanding the demographics can help explain changes in transit demand and support recommendations for changes in future transit service. Specifically, people living below the poverty level, households without vehicles, seniors, and disabled individuals typically rely on transit; changes in these demographics can provide insight into transit demand trends. The U.S. Census Bureau's American Community Survey (ACS) and Longitudinal Employer-Household Dynamics (LEHD) program are the primary sources of demographic data used in this analysis and provide valuable indications of trends and projections.

5.2 Demographic Conditions

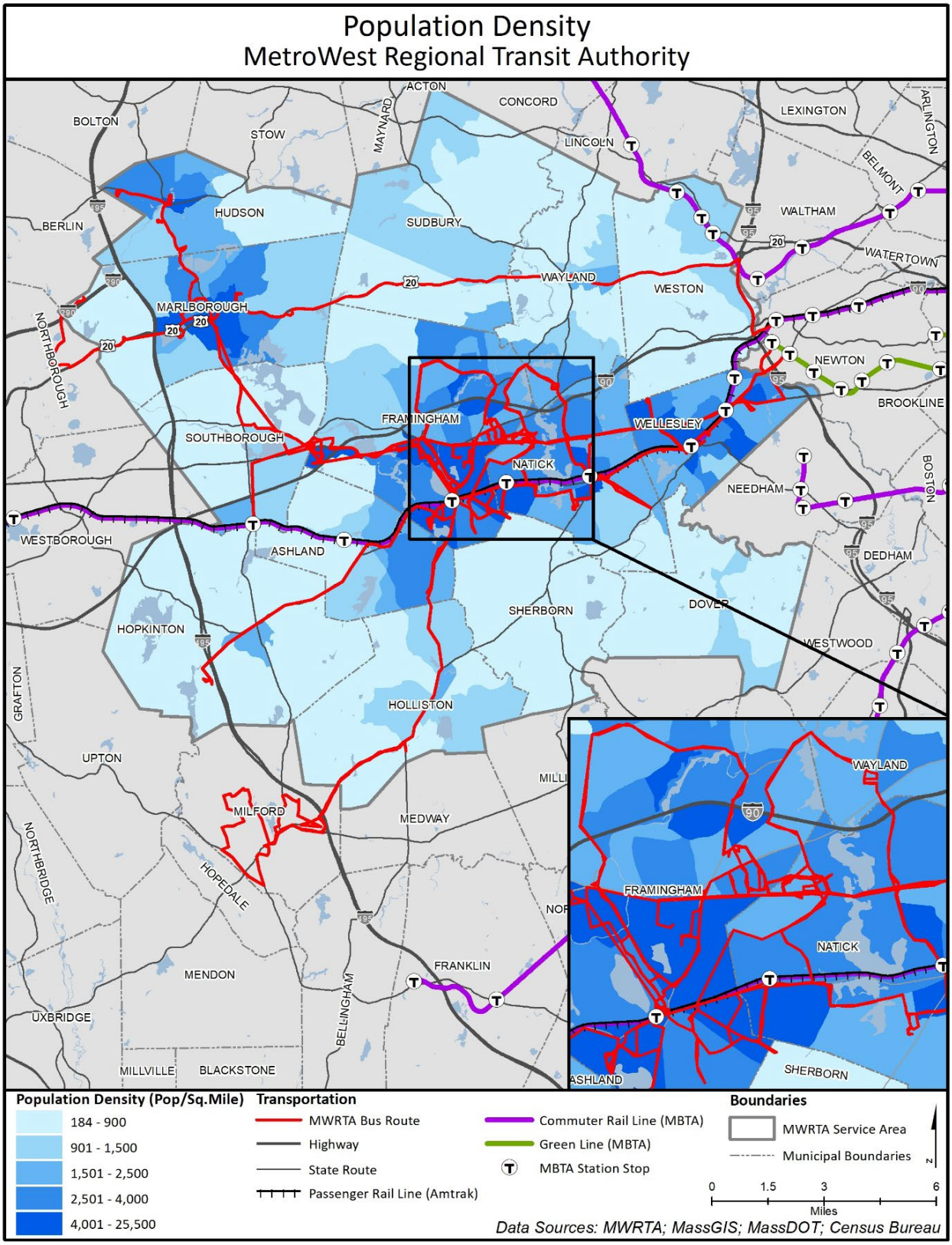
Demographic and socioeconomic statistics are important in transit planning to understand the potential transit markets that exist in an area. Population density is particularly important when evaluating a transit market. Population density, mapped on Figure 13, identifies areas of concentrated population in Framingham, Natick, Wellesley, Marlborough, and Hudson. Sherborn has the lowest population density.

Transit usage is frequently related to level of income, age, vehicle availability, and disability status. Income is a key determinant in the type of transportation used to commute. Households with lower incomes and those without a private vehicle are more likely to be in need of public transportation options than households with higher incomes and those who can afford private transportation. Table 13 summarizes a variety of demographic statistics for counties comprising the MWRTA service area[19] compared to state and national trends.

The MWRTA service area includes a total population of over 309,000 residents, with an average density of 1,280 persons and 750 jobs per square mile. The counties that comprise the MWRTA service area include fewer minority residents compared to the state and national average. The counties are also characterized by higher median household incomes, less poverty, and a generally younger population.

[19] The United States Census Bureau does not track demographics at a geography comparable to the MWRTA service area. Some measures, such as total population and density, were calculated based on statistics for the towns that form the MWRTA service area. However, not all characteristics are available at a town-level geography. For consistency, Table 13 uses county-level or higher geographies to characterize the service area. The majority of the service area is located in southern Middlesex County, in addition to the town of Southborough in eastern Worcester County and the towns of Wellesley and Dover in northern Norfolk County.

Figure 13. Population Density



Source: US Census Bureau ACS 2017

Table 13. Demographic and Socioeconomic Profile (2018)

Area	Median Household Income	Population Living Below Poverty (%)	Households without a Vehicle (%)	Population Over 65 (%)	Minority Population (%)	Disabled Population (%)
Middlesex County	$97,012	7.90%	10.60%	14.70%	27.5%	9.20%
Norfolk County	$99,511	6.5%	9.3%	16.2%	24.3%	9.7%
Worcester County	$71,895	10.4%	9.2%	14.9%	22.9%	12%
Massachusetts	$79,835	10.0%	12.5%	16.5%	29.3%	11.6%
United States	$61,937	13.1%	8.5%	16.0%	39.8%	12.6%

Source: US Census Bureau ACS 2018

5.2.1 Age and Race

The percentages of MWRTA area population over age 65 and under age 18 are illustrated on Figure 14 and Figure 15, respectively. Both groups can be characterized by lower vehicle ownership and potential reliance on public transit for mobility. In addition, riders from both age groups often qualify for a free or reduced fare, such that a route's financial performance (farebox recovery) may be affected by the age composition of the area it serves.

As shown on Figure 14, high concentrations of population over 65 are in Framingham and Weston. Youth population under 18 tend to reside around the periphery of the service area, in Southborough, Hopkinton, Holliston, Sherborn, Dover, Wellesley, Weston, and Sudbury, as shown on Figure 15.

Minority population is shown on Figure 16. MWRTA has a relatively low minority population compared to Massachusetts or the United States. Areas with the highest percentage of minority population (which includes all non-white racial as well as ethnic minority groups) are Framingham, Natick, Wellesley, Marlborough, and Weston.

5.2.2 Socioeconomics

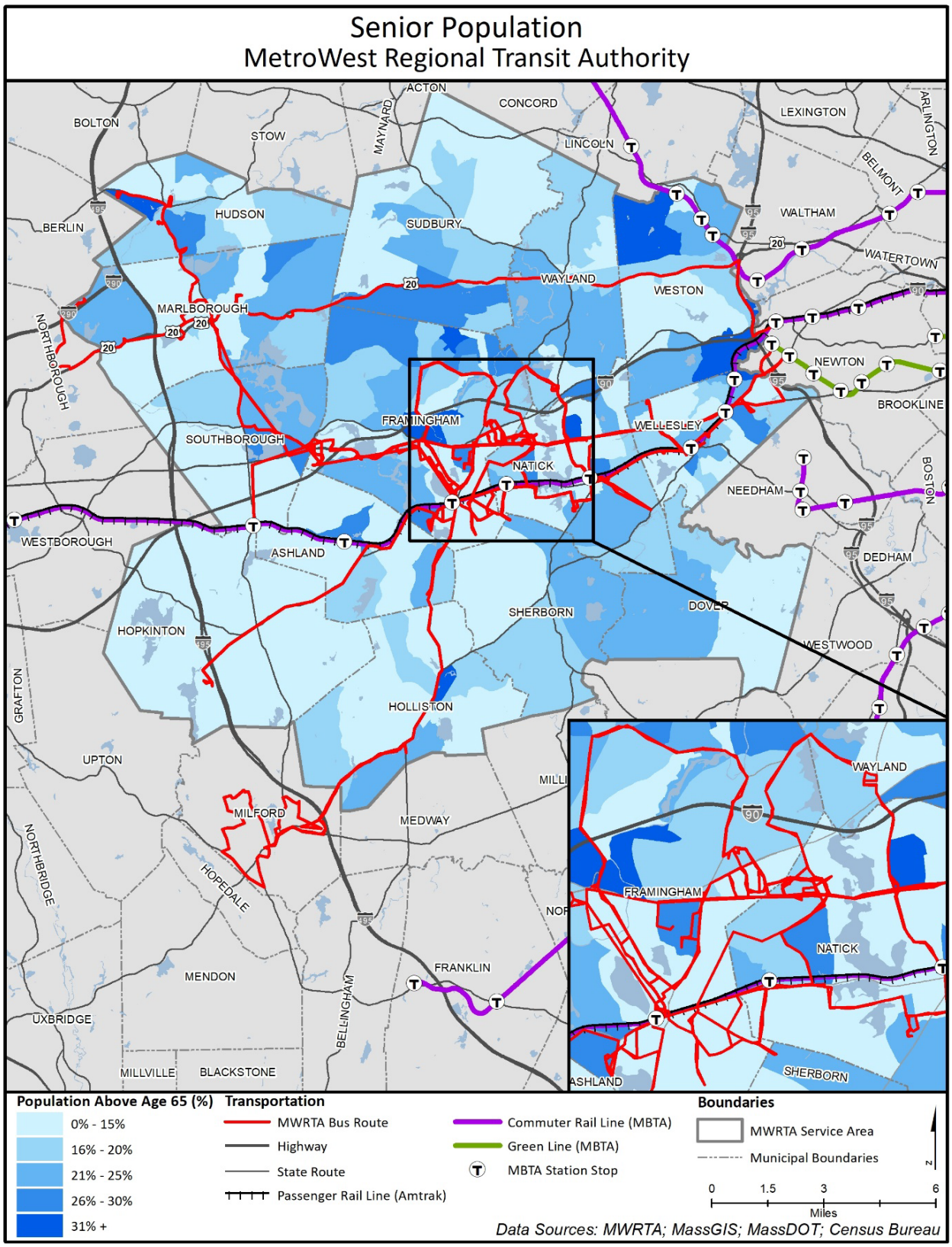
Median household income and the percentage of those living below the poverty level are used as measures for propensity to use transit. Work-trip market shares from ACS show that as income rises the percentage of people using transit decreases. Automobile ownership is expensive, and as household incomes decline, so does the likelihood of having access to a private vehicle. In addition, those who use transit for non-economic reasons may also be less likely to purchase a vehicle.

Figure 17 shows the percentage of people living below poverty for MWRTA area block groups. Pockets of concentrated poverty exist in Framingham, Natick, Marlborough, Hudson, and Weston.

Median household income by block group is shown on Figure 18. Neighborhoods with the lowest median household income (below $65,000) exist in Framingham, Natick, Marlborough, Hudson, Ashland, and Holliston.

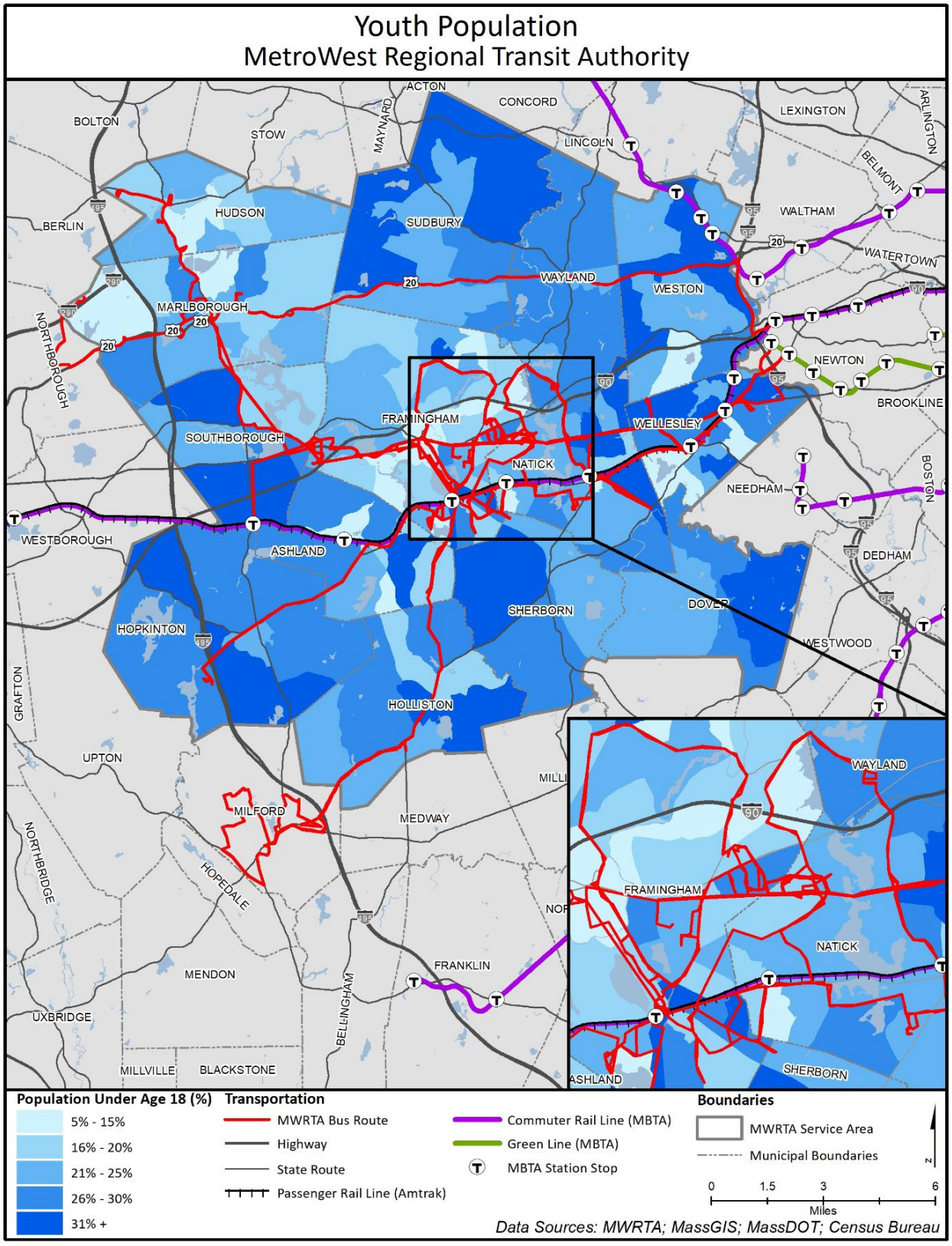
Figure 19 illustrates the concentration of zero-vehicle households. Framingham, Natick, Wayland, and Marlborough have the highest percentages of population without a vehicle, as well as Wellesley neighborhoods adjacent to MBTA commuter rail stations.

Figure 14. Senior Population



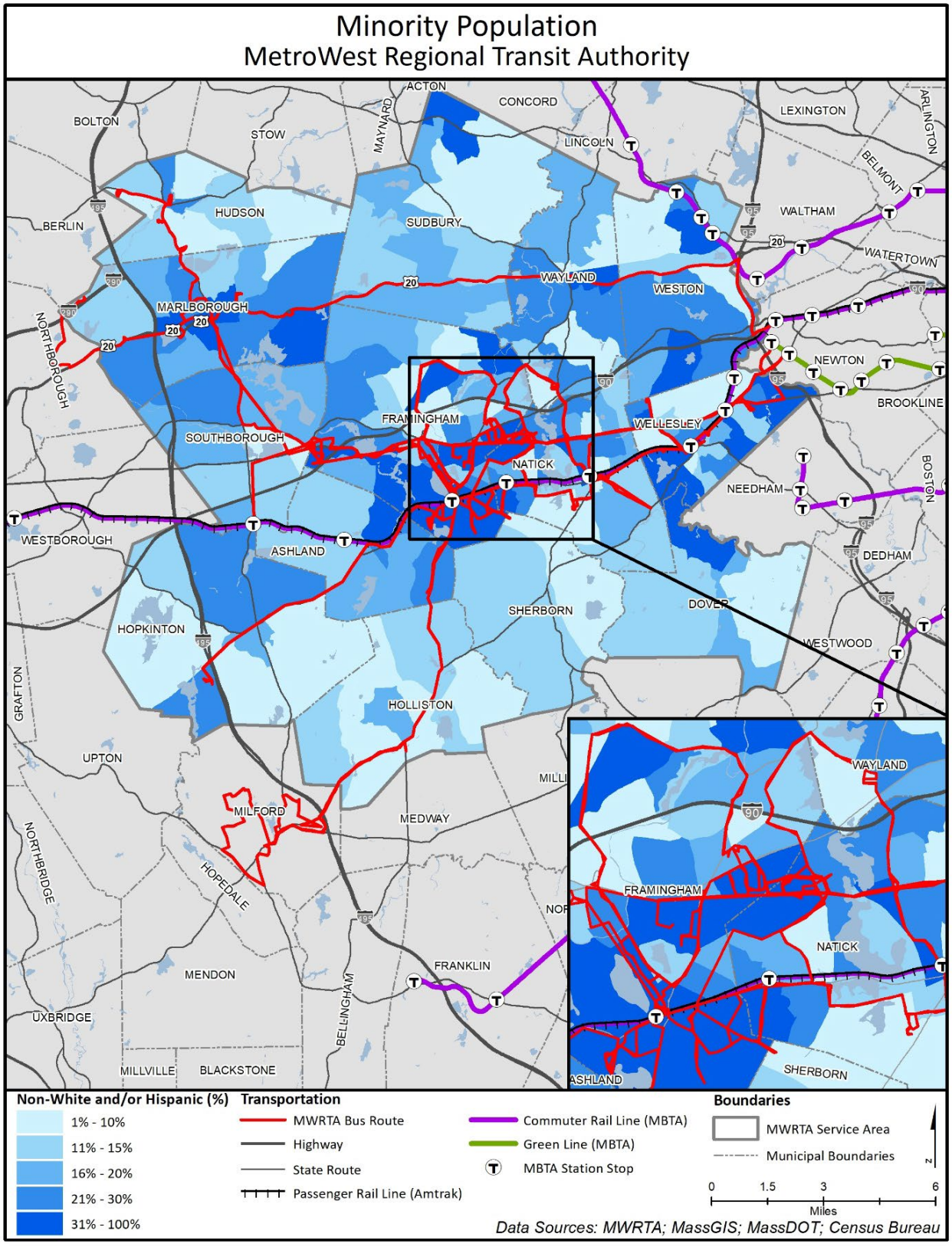
Source: US Census Bureau ACS 2017

Figure 15. Youth Population



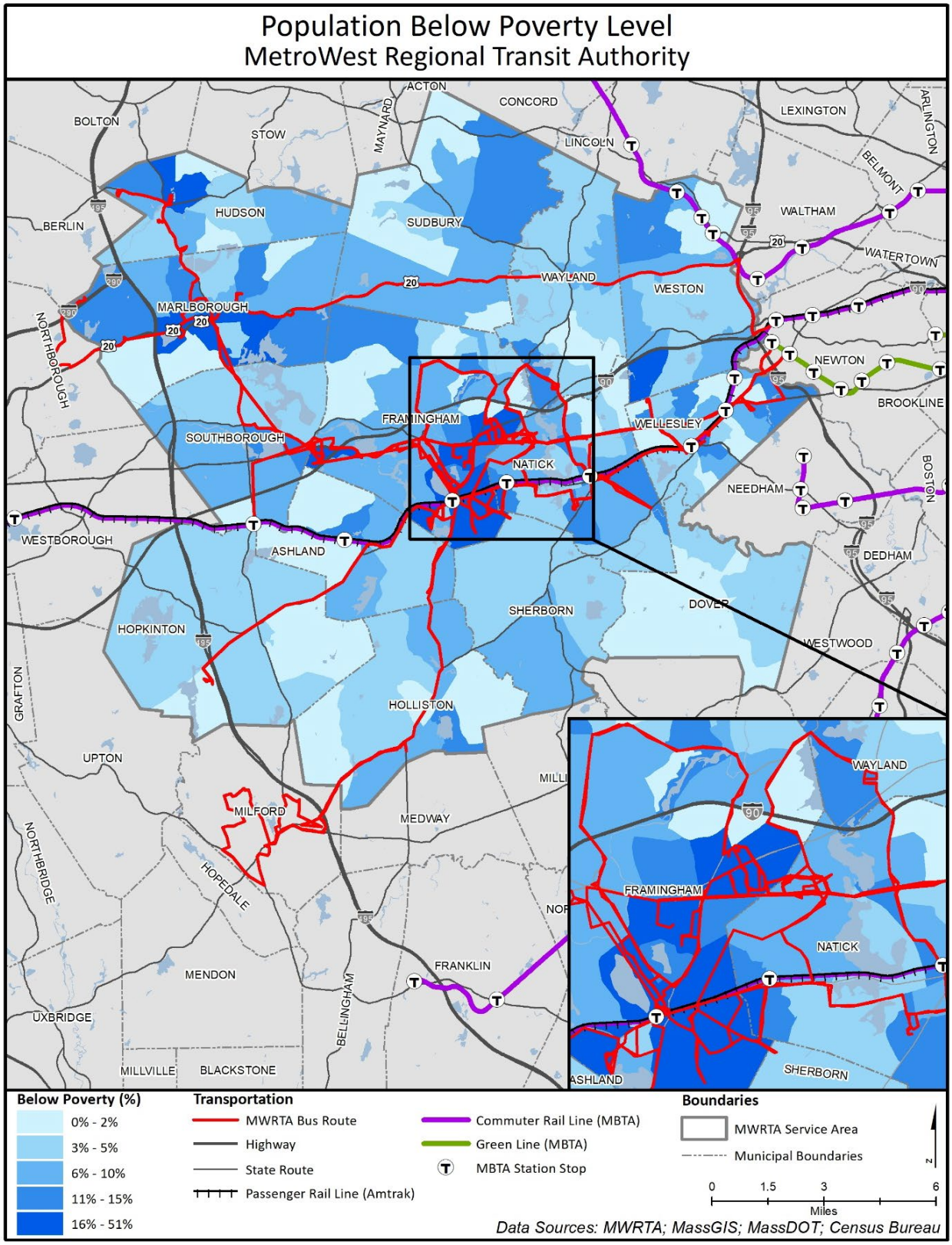
Source: US Census Bureau ACS 2017

Figure 16. Minority Population



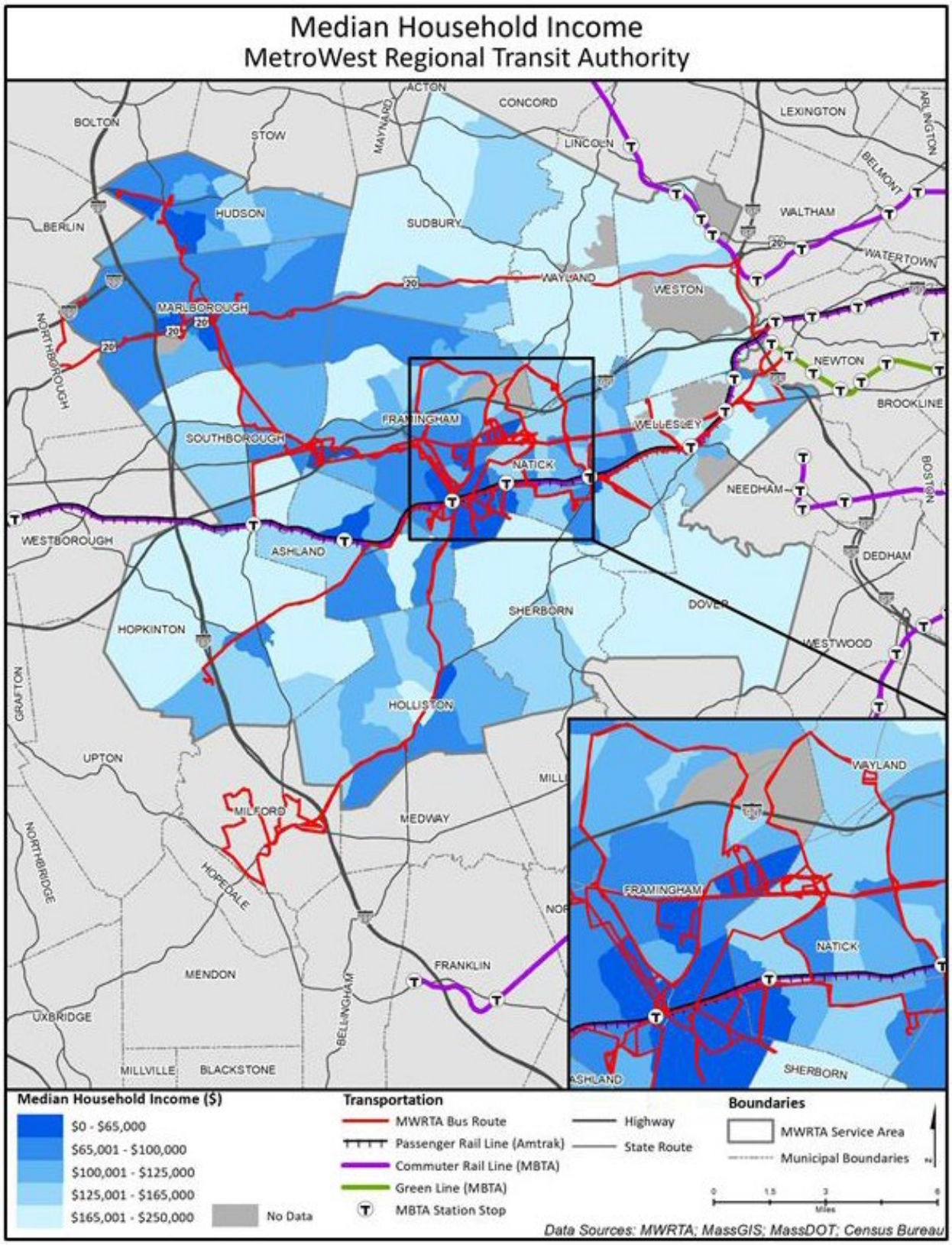
Source: US Census Bureau ACS 2017

Figure 17. Population Below Poverty Level



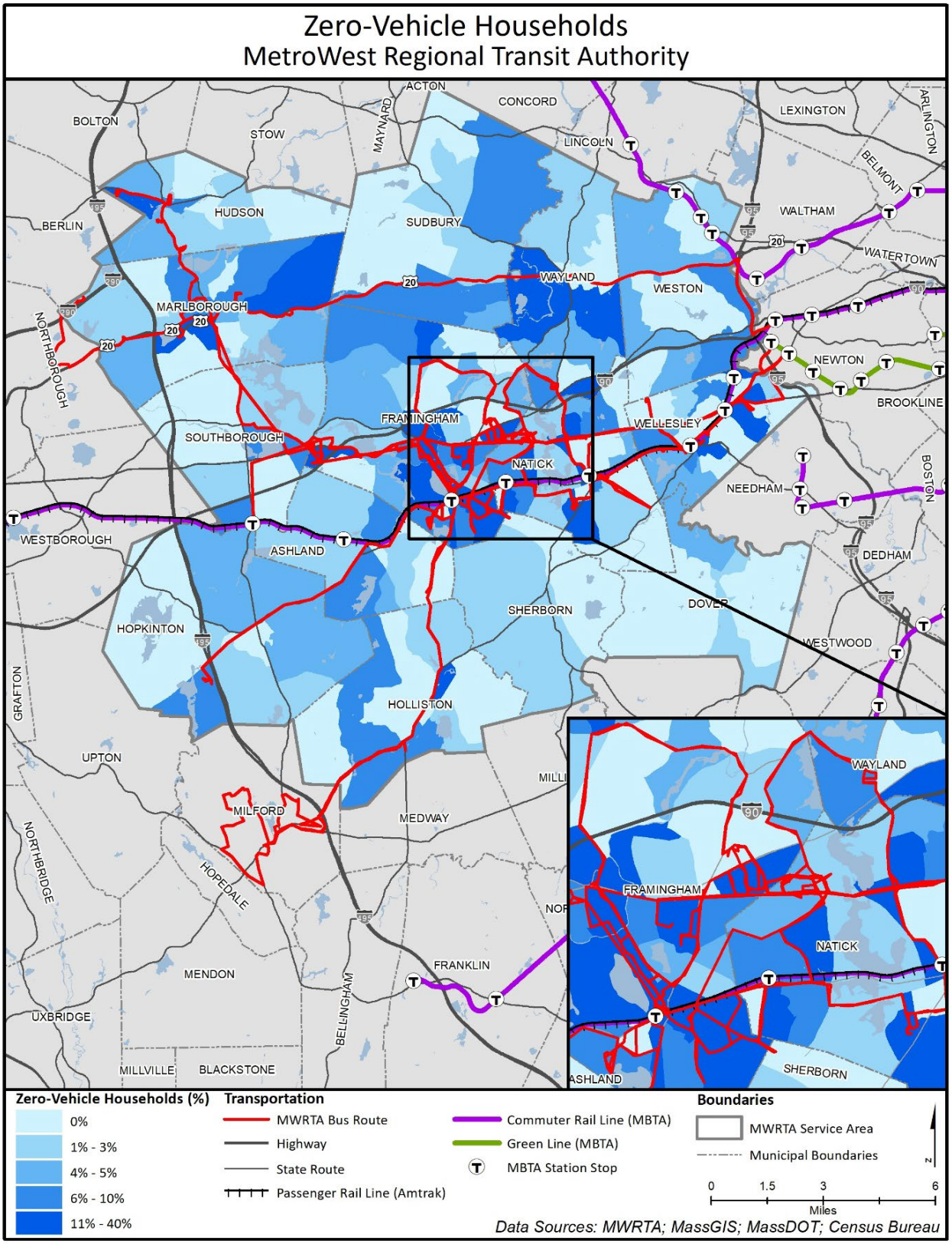
Source: US Census Bureau ACS 2017

Figure 18. Median Household Income



Source: US Census Bureau ACS 2017

Figure 19. Zero-Vehicle Households



Source: US Census Bureau ACS 2017

5.3 Employment

The trip to work is often the most frequent trip taken; therefore, employment characteristics are important factors in the discussion of public transportation. Large employers are common destinations for significant numbers of people, which make them important to transit service planning.

Job density is shown on Figure 20. The highest densities for employment occur in Framingham, Natick, and Hopkinton (along South Street). Major employers in the area include Staples Headquarters, Bose Headquarters, ADESA, Genzyme/Sanofi, MathWorks, TJX, Natick Mall, Cognex, Natick Labs, Boston Scientific, Raytheon, Department of Public Health, Employment Options, Intel, Dell and more. MWRTA currently provides shuttle service to Staples, Boston Scientific, Department of Public Health, Natick Labs, MBCC, FSU, and MathWorks.

5.4 Local and Regional Travel Patterns

Major trip generators are locations frequented by a significant number of people, traveling by all modes, within the study area. Common transit generators include healthcare facilities, transportation hubs, schools and universities, shopping areas, social service agencies, and recreational areas. These generators must be considered when evaluating transit service for a region. Major trip generators for the MWRTA service area are shown on Figure 21. Many trip generators are located within close proximity of a MWRTA bus route, with the exception of locations in Sherborn, Dover, Sudbury, Wayland, south Weston, and north Framingham.

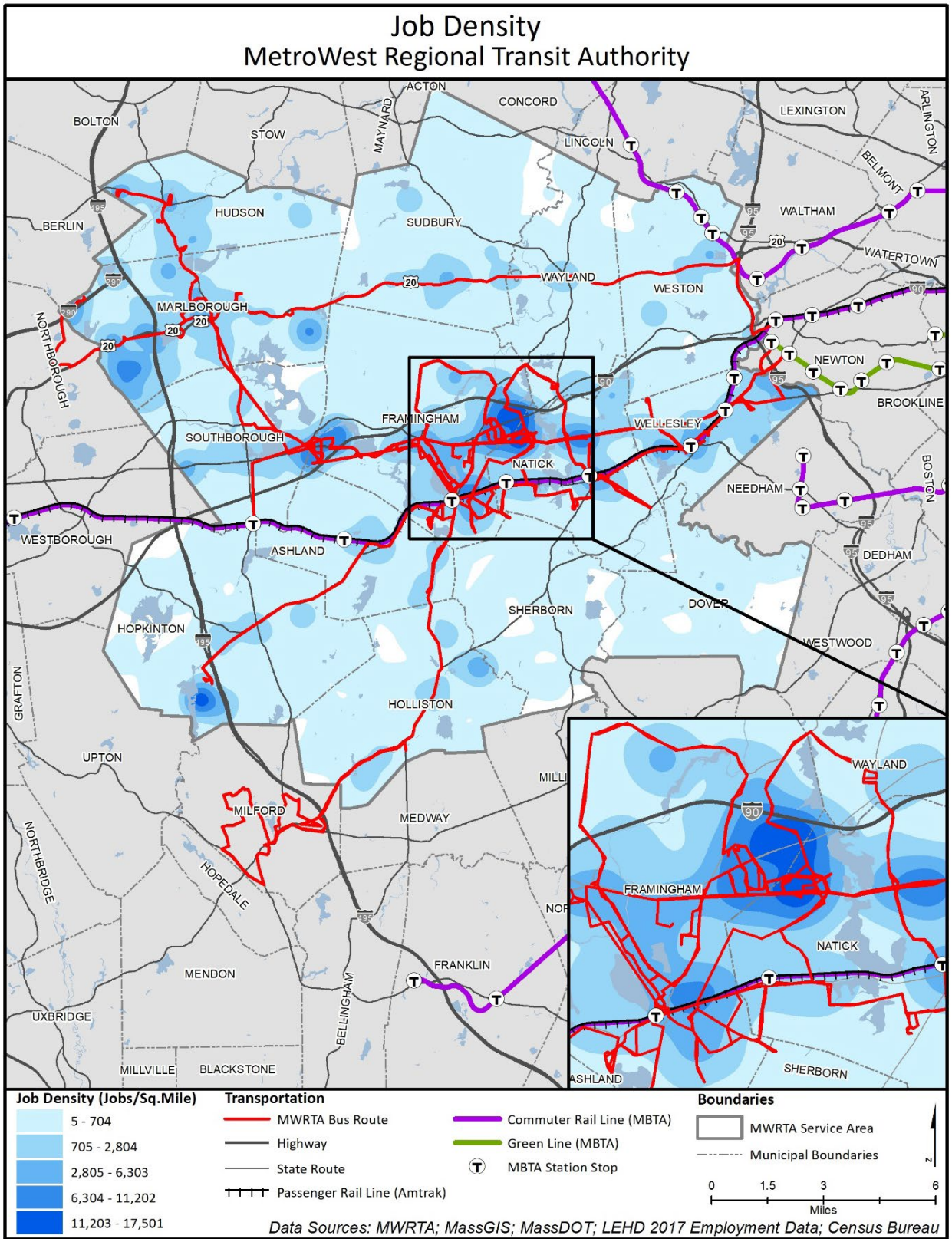
5.5 Land Use and Growth

Land use planning and development in the MWRTA service area is guided primarily by the *495/MetroWest Development Compact Plan*.[20] This plan's geography includes all MWRTA member cities with the exception of Weston, Wellesley, and Dover. The Development Compact Plan identifies priority development and priority preservation areas, as shown on Figure 22.

Following the identification of the regionally significant priority areas, the potential transportation challenges and opportunities in the Compact Region were reviewed. This review was used to develop a set of regionally significant transportation investments, including enhanced service on the route between the Framingham Commuter Rail station and Simarano Drive.

[20] http://www.mapc.org/wp-content/uploads/2017/10/newfinalcompactplansmall.pdf

Figure 20. Job Density



Source: 2017 LEHD

Figure 21. Major Trip Generators

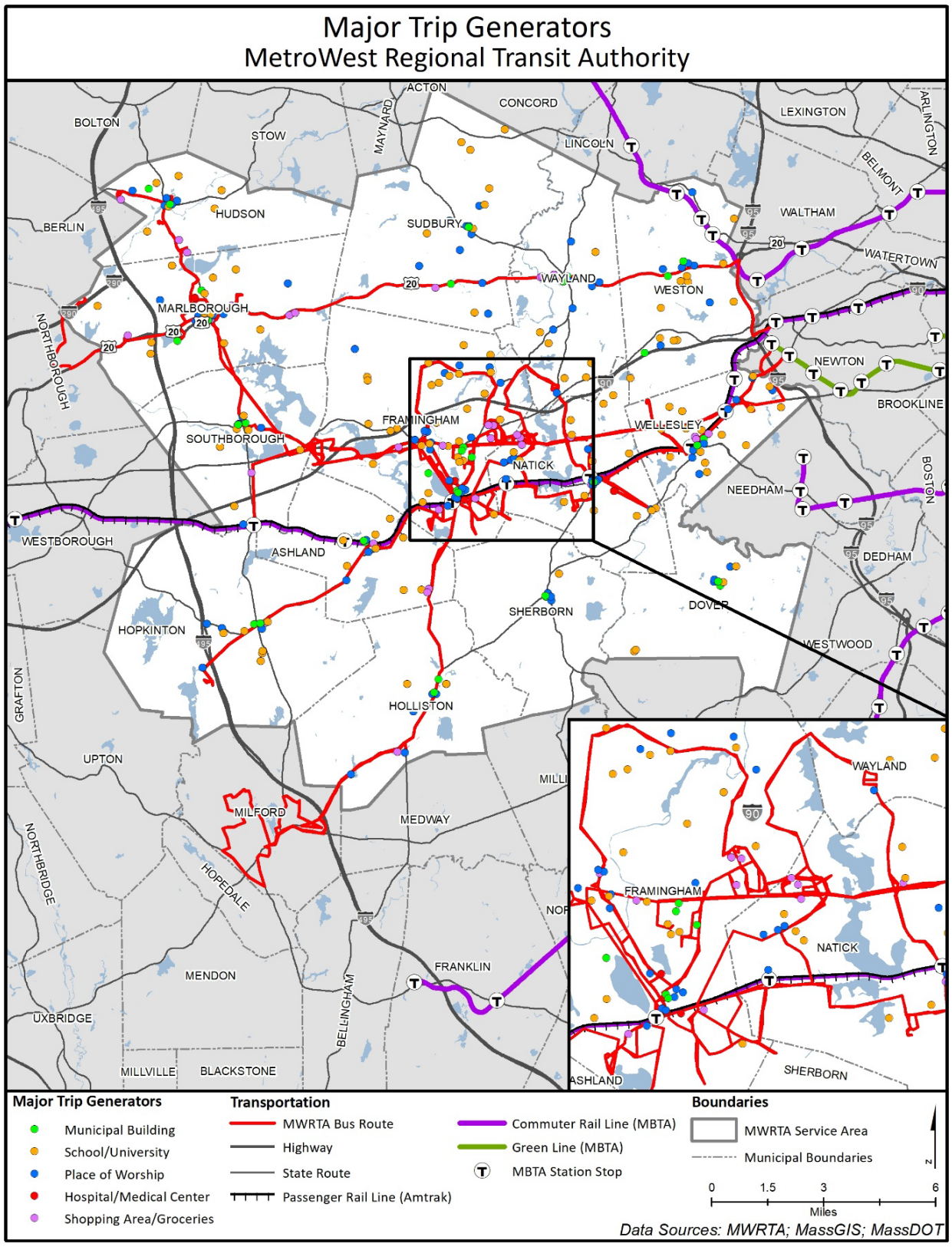
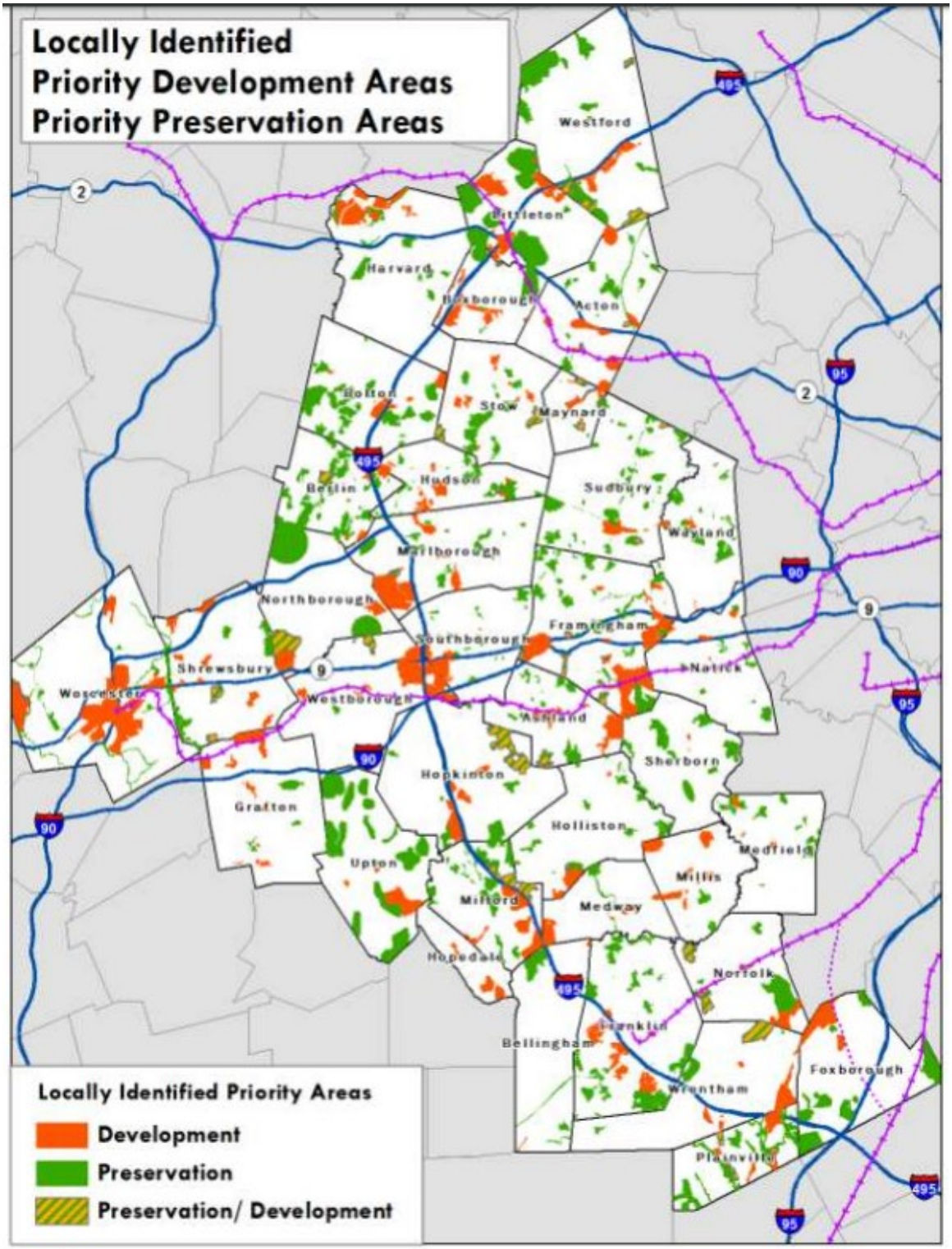


Figure 22. Locally Identified Priority Areas



Source: Metropolitan Area Planning Commission

5.6 Transit Score

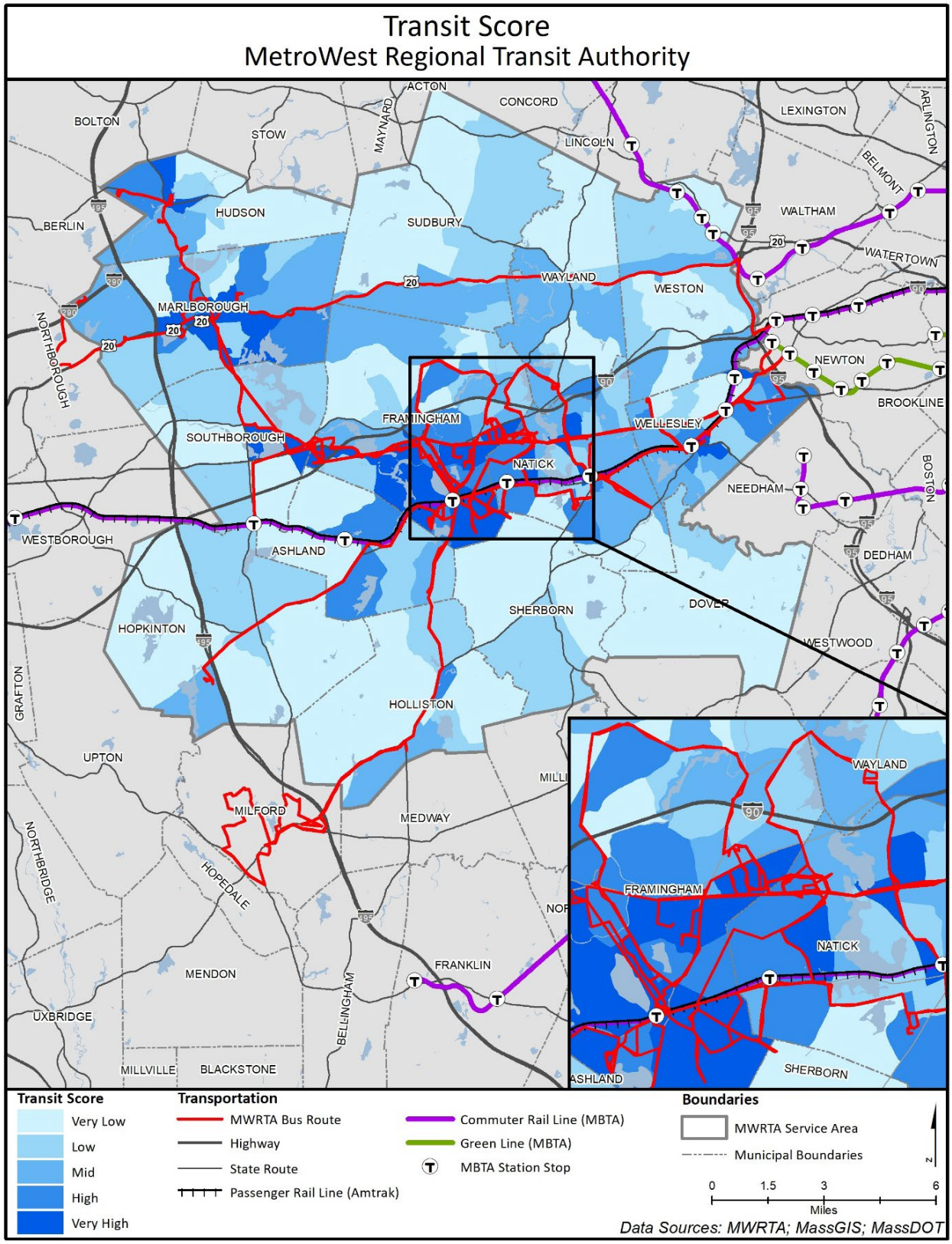
The transit score map is created to spatially analyze several transit-oriented demographic and socioeconomic characteristics at the same time (the characteristics discussed individually in this chapter so far). The transit score is a relative measure of how successful a fixed route transit system is expected to be in a particular region. Used in conjunction with a congruency analysis of major transit generators, the transit score can be used to evaluate existing service, as well as to identify areas of potential demand.

Demographic and socioeconomic information is collected from the US Census Bureau for a region divided into smaller geographic units such as tracts, block groups, or blocks. Block groups and census tracts were used for this analysis. Transit-oriented variables used for the analysis include:

- Overall Population Density
- Overall Job Density
- Density of the Population under the age of 18
- Density of the Population over the age of 65
- Percentage of the Population Living Below the Poverty Level
- Percentage of Zero-Car Households

The results of the transit score analysis is illustrated on Figure 23. As shown, the highest transit scores are in Natick, Framingham, Southborough, Marlborough, and Hudson. All areas with a “High” or “Very High” transit score are served by a MWRTA fixed route.

Figure 23. Transit Score



6. Performance Monitoring

Performance-focused management is a critical priority for the Commonwealth and regional transit providers. The federal government has also led the transportation industry to become more performance-driven in the last decade by mandating that federally funded agencies implement a performance-based approach to planning and programming. This broad emphasis on having a strong enterprise-wide, data driven, and transparent performance management framework as the foundation for making decisions is especially relevant in addressing the challenges of COVID-19 and other market uncertainties.

The purpose of this chapter is to outline MWRTA's current performance measurement practices, track performance results for the WRTA/MassDOT Bilateral MOU, and make recommendations supporting data-driven and performance-focused decision-making. Historical performance information and a review of peer agencies are included in Appendix A.

6.1 Current Performance Measurement Practices

MWRTA has developed a detailed performance measurement system informing their decision-making processes. MWRTA's system for performance monitoring includes:

- Periodically reporting a broad range of performance results to its Advisory Board and federal and state funding partners
- A commitment to tracking and reporting key metrics to MassDOT under the bilateral 2-year MOU that MWRTA signed with MassDOT in August 2019
- Transparent sharing of performance results with the public, through performance summaries made available on MWRTA's website

MWRTA also has internal performance monitoring protocols related to management decisions. MWRTA prepares an annual PDF performance dashboard for its fixed route and demand response services that is posted on the MWRTA website. The 6-page annual performance summary report on its website shows month to month operating statistics for fixed route and demand response services. Performance measures include:

- Ridership
- Vehicle revenue hours
- Vehicle revenue miles
- Scheduled trips operated
- Preventable accidents
- Miles between road calls

Although MWRTA has a strong base to build on, it will be very beneficial for the Authority to strengthen their performance management practices to support data-driven enterprise-wide decision-making. Recommendations for improving MWRTA performance management practices are provided at the end of this chapter.

6.1.1 State and Federal Monitoring Requirements

MWRTA collects and reports a variety of performance metrics to both FTA and the Commonwealth on a monthly, quarterly, and annual basis as part of their funding agreements. Summary performance metrics that MWRTA has tracked and reported to MassDOT through the GrantsPlus and asset data systems over the FY 2015 to FY 2019 time period are displayed in Appendix A. FTA requires transit providers that receive federal funding to submit data (including

service, financial, and asset inventory and condition) both monthly and annually to the National Transit Database (NTD).

6.1.2 Performance Metrics and Targets from MassDOT Memorandum of Understanding

New to the MWRTA's performance monitoring obligations is a commitment to monitor and report on a selection of performance metrics, baselines, and targets established by MWRTA and MassDOT in the categories of ridership, customer service and satisfaction, asset management, and financial performance. This commitment is contained in a bilateral MOU signed by MWRTA and MassDOT in August 2019. The MOU states that MWRTA's performance is to be measured by comparing established baselines against FY 2020 and FY 2021 targets. With a few exceptions, the baselines are averages of data collected in FY 2016 to FY 2018. The performance measures included in the MWRTA MOU, along with their baselines and targets, are shown in Table 14.

Table 14. FY 2021 Performance Measure Targets in the MOU

Metric	Baseline	FY 2020 Target	FY 2021 Target
UPT (Fixed Route)	557,945	560,000	570,000
UPT (Demand Response)	212,228	212,228	212,228
UPT (System)	770,173	772,228	782,228
UPT/VRH (Fixed Route)	6.98	6.98	6.98
UPT/VRH (Demand Response)	2.74	2.74	2.74
UPT/VRH (System)	4.90	4.90	4.90
Fixed route travel training (people receiving service per month)	4.5	6.0	6.0
First mile/last mile computer app UPTs (Fixed Route)	1,800	2,200	2,200
On-time performance (Fixed Route)	98%	97%	97%
On-time performance (Demand Response)	99.5%	97%	97%
On-time performance (System)	99%	97%	97%
Call center hold times	1 minute 1 second	1 minute 30 seconds	1 minute 30 seconds
Revenue vehicles meeting TAM Plan ULBs (system)	FY 2018 TAM Plan	Meets/Doesn't Meet	
Reportable equipment meeting TAM Plan ULBs	FY 2018 TAM Plan	Meets/Doesn't Meet	
Facilities meeting TAM Plan ULBs	FY 2018 TAM Plan	Meets/Doesn't Meet	
Actual versus projected capital resources expended on systemwide assets (TAM Plan)	105%	100%	100%
Farebox recovery (Fixed Route)	10.54%	10.54%	10.54%

Metric	Baseline	FY 2020 Target	FY 2021 Target
Farebox recovery (Demand Response)	5.04%	5.04%	5.04%
Farebox recovery (System)	7.64%	7.64%	7.64%
Operating cost/ VRH (Fixed Route)	$56.81	$58.51	$62.03
Operating cost/ VRH (Demand Response)	$65.64	$67.61	$71.67
Operating cost/ VRH (System)	$61.14	$62.97	$66.75
Operating cost/ UPT (Fixed Route)	$8.14	$9.37	$9.65
Operating cost/ UPT (Demand Response)	$23.96	$27.56	$28.39
Entrepreneurship revenue collected	$216,772	$386,250	$380,000
Percent of fleet using alternative fuels	0%	30%	30%
Increase in number of public/private partnerships	14.33	16	16

6.1.3 How the Transit Market Has Been Affected by COVID-19

When initially negotiated, MOU targets reflected the reasonable expectation that MWRTA could improve upon the identified baselines for the period of FY 2020 through FY 2021. Through the first and second quarter of FY 2020, MWRTA had been performing relatively well against most of its service effectiveness and financial efficiency metrics (Figure 24 through Figure 26). However, the pandemic has impacted and continues to impact MWRTA through the fourth quarter of FY 2020. Months into the pandemic, the transit industry is still trying to understand what the “new normal” will look like. Transit providers are uncertain how many former customers will return (ridership has dropped as much as 80% in some systems) and what that timeline looks like. They are also grappling with how to ensure a safe workplace and retain employees as the risk associated with transit operations (and driving a transit vehicle in particular) has gone up significantly since March 2020.

After the outbreak became widespread in Massachusetts in mid-March 2020, many institutions and industries that fuel the region’s economy, as well as MWRTA’s ridership, have been severely altered for the foreseeable future. Some of the most significant changes include:

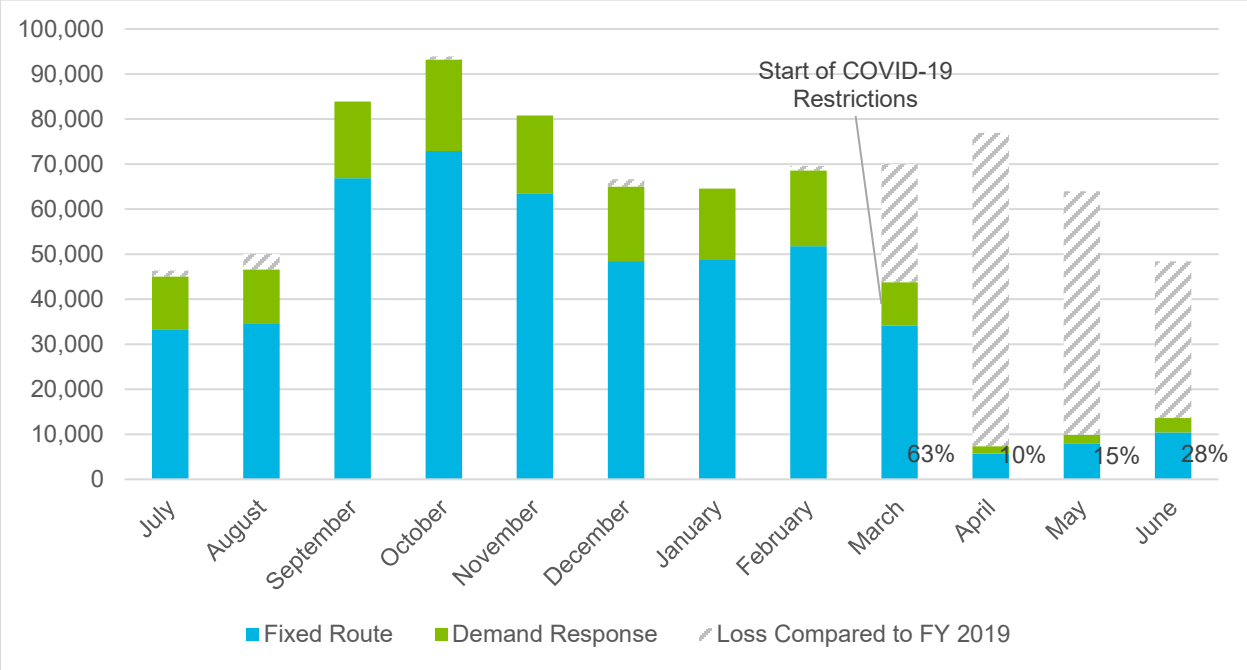
- Suspension of classes and a shift towards virtual learning at FSU, Wellesley College, and MBCC
- Shift towards virtual and hybrid learning options at area schools
- Reduction in MBTA commuter rail ridership
- Large employers including MathWorks, Boston Scientific, and Staples accommodating more work from home arrangements
- Reduction in commercial and leisure activities
- Reduction in senior activities and services provided by area Councils on Aging

These institutions and services are not only major trip generators but they also contribute to area employment and sales tax receipts that impact MWRTA’s local revenue streams. As the timeline for eradicating the virus and the impact that pandemic-related trends (such as increased telework, distance learning, telemedicine, and online shopping) could have on future

transit demand are extremely uncertain, MWRTA will need to be flexible in its ability to adjust service according to demand and funding availability. Access to ridership data that is detailed and readily available is imperative to MWRTA's ability to both maintain lifeline are and transport essential workers.

Figure 24 shows FY 2020 ridership information for MWRTA compared to an FY 2019 baseline. At the beginning of the fiscal year, MWRTA had been close to or exceeding FY 2019 month-over-month ridership levels. Restrictions to travel and stay at home orders related to COVID-19 began in March 2020, and ridership levels fell dramatically in the following months. By April, ridership had fallen to just 10% of FY 2019 levels. June was characterized by a slight recovery, but ridership was as low as 28% of FY 2019 levels. During this time, MWRTA had suspended fare collection in an effort to allow more social distancing between its drivers and customers. Lower ridership and suspension of fare collection combine such that MWRTA's productivity and financial efficiency performance metrics are not comparable to MOU targets during this time. This trend of depressed ridership has continued into FY 2021, especially apparent compared to traditionally high fall ridership as education-oriented trips are replaced by students learning virtually from home.

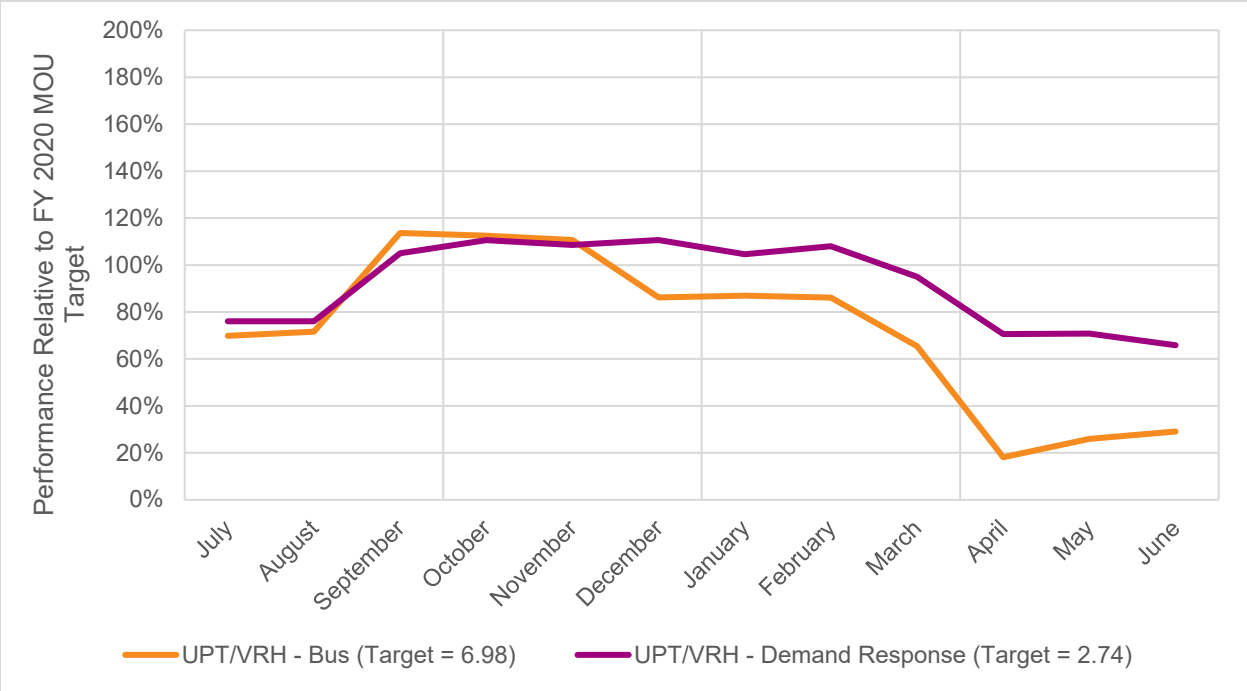
Figure 24. FY 2020 COVID-19-related Ridership Loss



Source: MWRTA, MassDOT FY 2020 RTA Service Report

Figure 25 shows FY 2020 performance for unlinked passenger trips per vehicle revenue hour, as a percentage of the FY 2020 MOU target. MWRTA performed as expected through the first and second quarters, with below average performance in the summer and above average performance with school in session. Both measures began to decline in March and continued dropping in April, with fixed route productivity approximately 20 percent of MOU targets throughout Q4. Pandemic-related ridership losses impacted service productivity throughout the third and fourth quarters of FY 2020.

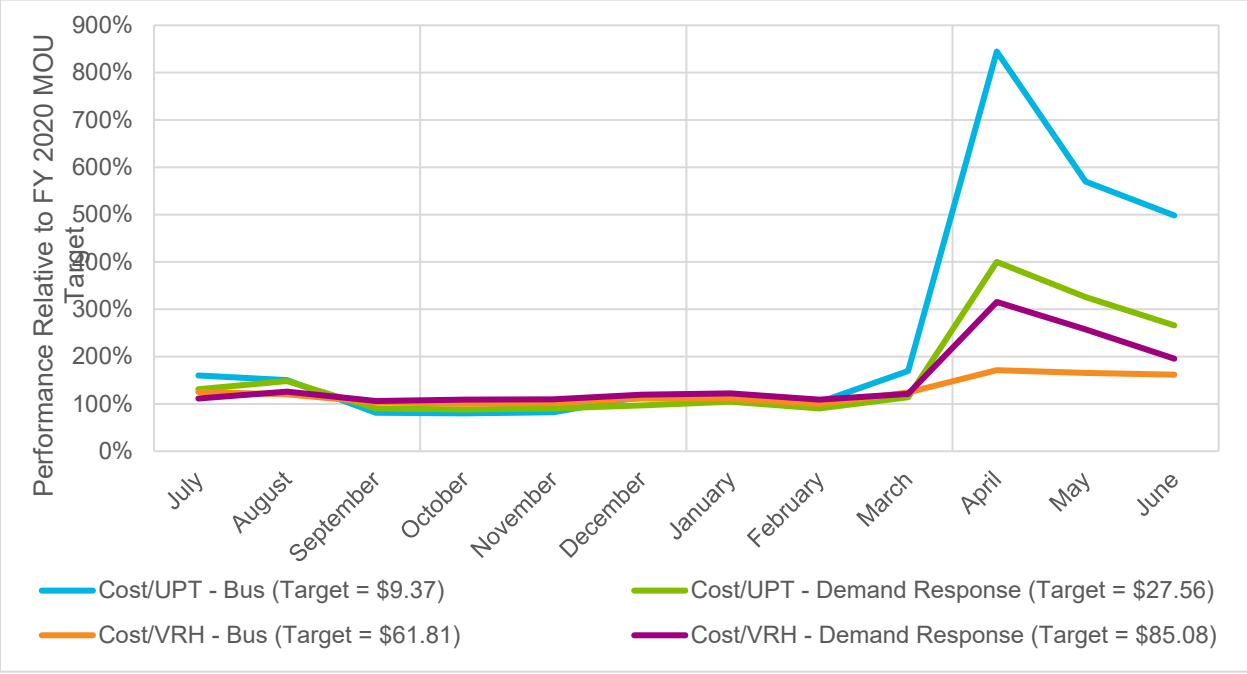
Figure 25. FY 2020 Service Effectiveness Metrics Relative to Targets



Source: MWRTA, MassDOT FY 2020 RTA Service Report

As shown in Figure 26, costs per unit of service were slightly above the established FY 2020 MOU targets throughout the first and second quarters and most of the third quarter. Costs per hour and per passenger spiked in April. The cost per passenger metric was especially impacted by the pandemic, as MWRTA experienced increased costs and lost riders during the same period.

Figure 26. FY 2020 Financial Efficiency Metrics Relative to Targets



Source: MWRTA, MassDOT FY 2020 RTA Service Report

Since the outbreak of the COVID-19 pandemic, which includes the third quarter of FY 2020 and beyond, all parties acknowledge that meeting ridership and service efficiency goals has been extremely challenging. MWRTA and MassDOT will continue to review MOU performance results through the term of the agreement and will mutually utilize this data to inform agreements for FY 2022 and beyond.

6.2 Considerations for the Next 5 Years: Moving to a Data-Driven Performance-Focused Decision-Making Framework

Building on MWRTA's current performance management practices, there are some critical enhancements in data collection and performance measurement that MWRTA should adopt over the next 5 years. These changes support an enterprise-wide decision-making process guided by data and performance. Ultimately, adopting a data-driven performance-focused decision-making framework will aid in the navigation of the uncertainties brought on by COVID-19 and other market trends.

6.2.1 Data

The first critical need that MWRTA should fulfill to enhance performance management is in the area of data collection and evaluation. While MWRTA collects, analyzes, and reports performance data, the Authority would greatly benefit from strengthening its data collection tools to better support performance-driven decision making. It will be critical for MWRTA to evaluate its data collection and evaluation tools and invest in technology driven solutions to provide real-time information on key system indicators and reaffirm the key metrics that will best inform MWRTA decisions, particularly in the service planning, cost control, and financial business lines.

Principals for data evaluation include:

- **Data Collection**: A transit agency must have the data collection systems in place from which to draw the information for making decisions. These systems can be automated, such as APCs, or drawn from manual observations or samples. Validation of the information collected is a crucial aspect of data-driven decision making. As transit operations equipment has become more technologically sophisticated, vast amounts of operations data have become available to service providers. Authorities should have technology-driven data analysis tools and strategies that ensure that the data collected facilitates MWRTA's reporting requirements and informs operations, service, and financial planning.
- **Data Analysis**: Transit operators have ample data produced on a daily or even hourly basis from the systems used to deliver service. Information from AVLs, APCs, fareboxes, phone systems, and other technology can be voluminous, and having appropriate levels of data analysis capacity is essential to distilling the information into key decision-driving reports. MWRTA already has a strong data foundation to build on as fixed route vehicles are equipped with UTA APC technology and Trapeze AVL systems, including mobile data terminals. APC systems facilitate consistent and more easily collected ridership data across its bus routes and stops, enabling ridership and efficiency performance comparisons. MWRTA should continue to monitor, analyze, and apply the data collected through its APC and AVL technology to facilitate review of performance metrics for every route and stop.

6.2.2 Performance Metrics

MWRTA should continue to assess its performance around key service and financial indicators to establish performance targets and corrective actions that better reflect the Authority's priorities through a variety of scenarios. When evaluating existing practices and developing

recommendations for new metrics, it is important for MWRTA to keep in mind that performance measures should be:

- Easily measurable with realistic, aspirational targets that will lead to successful outcomes
- Inclusive of thresholds for corrective actions
- Clear and intuitive to transit staff as well as to non-transportation professionals
- Acceptable and useful to transportation professionals
- Comparable across time and between geographical areas
- Reported on a regular schedule (monthly, quarterly, or annually), depending on the state and federal requirements and the nature of the data
- Functionally related to actual system operations so that changes are reflected with minimal lag time in operating statistics
- A cost-effective means of data collection
- Based on statistically sound measurement techniques, where appropriate
- Consistent with measures identified for other systems
- Readily available, when possible, to facilitate flexibility and agility in service planning
- Framed around actionable language, setting thresholds when additional analysis or service changes are warranted

MWRTA should also create actionable guidelines for the performance metrics they regularly report that reflect the variety of potential future transit conditions. MWRTA's 2015 CSA did not identify thresholds for decision-making around when to add new services. When evaluating new services, guidelines should consider both the characteristics of the area requesting service as well as the overall landscape for transit. Low-density areas may be less desirable as candidates for new service during depressed system ridership conditions, such as those experienced during the COVID-19 pandemic. High-density areas may also warrant a range of appropriate service levels: meeting basic service needs through depressed ridership conditions while accommodating capacity for social distancing as ridership recovers. Table 15 provides recommendations for new service thresholds.

Table 15. Recommended New Service Thresholds

Jobs and Population per Square Mile	Service Thresholds (Low Ridership)	Service Thresholds (High Ridership)
Less than 2,000	No service	Alternative modes*
2,000-3,000 (in reasonable proximity to existing MWRTA facilities)	Limited scheduled trips per day or alternative modes*	120-minute headways or peak only service
3,001-6,500 (in reasonable proximity to existing MWRTA facilities)	Limited scheduled trips per day	60-minute headways
6,501-16,000	30/60-minute headways by time of day or trunk	30-minute headways
Over 16,000	30-minute headways	15-minute headways

** Indicates that MWRTA should weigh the potential for demand response, microtransit, commuter express, or other modes to meet transportation needs in an area not conducive to traditional fixed route service.*

MWRTA's 2015 CSA did not identify thresholds for when corrective actions (such as more extended analysis or service changes) should be undertaken for underperforming routes. As post-pandemic ridership stabilizes, it will be important to establish and implement thresholds for corrective actions in order to simplify service planning and foster the transparency of the decision-making process, especially in the event of sustained funding shortages or ridership loss following the pandemic.

Table 16 provides an example of the types of thresholds MWRTA could adopt to help identify routes that may warrant examination. Many of these metrics are already monitored by MWRTA and lend themselves to quantitative thresholds, which can easily be adjusted to reflect post-pandemic conditions.[21] A variety of potential corrective actions are available to address specific concerns on an individual route; however, decisions regarding the most appropriate corrective actions will be context-dependent and should reflect a holistic and community-centered understanding of the route's function and relationship to other parts of the network.

Table 16. Recommended Service Correction Thresholds

Service Threshold	Local Routes	Commuter Shuttles	Zone-Based	Potential Corrective Action(s)
Passengers per hour	6	4	4	Route realignment, schedule adjustments, reclassification
Subsidy per passenger	Above 150% of system average		$8	Route or schedule adjustments, zone- or distance-based fares, alternate revenue stream
Farebox recovery (excluding periods of fare suspension)	8%	8%	8%	Route or schedule adjustments, zone- or distance-based fares, alternate revenue stream
Cost per revenue hour	Above 150% of system average		Above fixed route average	Route realignment/turn-backs, layover adjustments, labor/overtime allocation
On-time performance	90%	90%	N/A	Schedule analysis, recovery time adjustments, capital improvements
Miles between road calls	10,000	10,000	20,000	Vehicle reassignment, preventive maintenance
Accidents per 100,000 miles	3	3	3	Route safety analysis and realignment, operator training

[21] Thresholds identified in Table 16 represent a synthesis of historical performance (documented in Appendix A), COVID-19 impacts on performance, and the aspirational goals identified in the MOU, but should be adjusted periodically to reflect new information and data collected following the pandemic.

It is recommended that MWRTA continue to monitor and adjust service evaluation thresholds in light of new data reflecting the pandemic, with updates occurring at least every 5 years (in conjunction with MWRTA's 5-year CRTP updates).

6.2.3 Expand Public Transparency

MWRTA's website includes an "Open Checkbook" page that includes annual payroll and audited financial statements from 2014 to 2019. Advisory Board meeting minutes and the annual performance report (described in Section 6.1) are located under MWRTA's "About" and "Information" pages, respectively. The purpose of providing this information is to maintain public trust in MWRTA and allow the public to better understand the service and key decision making. The MWRTA website does not include links to planning documents (such as the 2015 CSA), budgets, or route-level performance data. MWRTA should consider the following options for presenting key route-level operating statistics on its website:

- **Static PDF, updated at regular prescribed intervals:** Key route-level operating statistics can be formatted in Microsoft Word or a similar word processing tool and then saved as a static PDF file. This report can be combined with or presented separately from the similarly formatted fixed route and demand response performance metrics report.
  - If possible, use of Microsoft references or strategic visual basic may allow for a more automated update of a customized dashboard template using standard data formats, reducing MWRTA staff burden in creating the publicly facing performance dashboard.
  - Include a schedule for expected updates, be it monthly, quarterly, or annually.
- **Automated Dashboard:** Several platforms exist for creating customizable data visualization dashboards that allow the public to interactively explore operational data.
  - Tableau: Most commonly used tool for transit providers that maintain a performance dashboard. Requires proficiency in SQL queries.
  - Microsoft Power BI: Drag and drop dashboard format that is integrated with other Microsoft software. Does not work well for complex data associations. Free version may be suitable for limited data analysis
  - Domo: Selection of pre-built graphics allows for less technical staff to develop some visualizations while more technical staff may customize more complex visualizations using SQL.

If feasible, MWRTA should consider the option to allow download of limited raw data sets, making the data easy to access so that analysis can be included in efforts to educate the public, academic studies, or planning studies. In addition, it is recommended that MWRTA incorporate some route-level performance information in its annual performance report, including:

- **Ridership by Stop:** This measures passengers boarding and disembarking by stop. The technology associated with this data collection (APCs and AVLs) and supporting software can generate reports quickly for any time period requested and includes data that can help separate information spatially and by time of day. This is recommended for annual reports, though in the near-term it may be more appropriate to assess the information monthly or quarterly until ridership stabilizes.
- **Route Performance by Route Type**: An indication of how each fixed route performs against key indicators (passengers per hour, subsidy per passenger, and farebox recovery) established by route type (see Section 6.2.2). This information will help educate the public about the decision-making process behind service changes. The thresholds against which routes are compared should be reevaluated after ridership has stabilized post-pandemic.

7. Transportation Needs

This chapter provides a summary of the process used to identify MWRTA's 5-year service, capital, staffing, and technological needs, as well as key opportunities for growth. Needs identified during this process were scored and prioritized as recommendations (see Chapter 8). In some cases, needs may reflect MWRTA's long-term vision and may not be immediately feasible as recommendations during the pandemic or during periods of diminished local, state, or federal revenue. Other needs may serve as temporary measures intended to facilitate recovery (due to the effects from the COVID-19 pandemic). The strategy for classifying needs and recommendations embraces the uncertainty facing the region and the transit industry as a whole as a result of the pandemic and places each within the context of a specific recovery scenario.

7.1 Needs/Opportunities Identification Process

To identify needs, the project team held regular coordination meetings with MWRTA technical and administrative staff. These meetings provided an opportunity to discuss performance trends observed for existing services and discuss challenges and opportunities for strategic investment to better meet the needs of the community or increase operational efficiency. In addition, targeted outreach was conducted with MWRTA drivers, stakeholders, and members of the public. Summaries of the outreach process and findings are included in Appendix C. Driver, stakeholder, and public input was reviewed and vetted with MWRTA staff and are consistent with MassDOT goals and initiatives.

The needs identified by this process reflect a time of unprecedented uncertainty in the transit industry. There are several looming questions facing transit agencies across the country:

- When will systemwide ridership return to pre-pandemic levels?
- How might the transit market be permanently changed by the pandemic?
- Which user groups are going to be more or less impacted by the pandemic?
- How can new technology be used to provide mobility options in a potentially transformed transit market?
- Which fixed routes will see faster recovery and which ones will see a slower recovery?
- Will the pandemic drive increased sprawl as people seek larger houses with home offices, more space for at-home child education, and yard space?

The answers to these questions and others will be determined by broad driving forces largely outside of the control of MWRTA, such as national economic policy, unemployment rates, education policy, availability of funding for capital investments, and municipal land use plans. However, MWRTA can plan for contingencies based on how the future might unfold and be prepared for multiple potential scenarios.

7.2 Recovery Scenarios

In order to address the uncertainty of the future, this analysis defines three qualitative ridership scenarios of transit demand in three potential futures through 2025. These include a high-ridership scenario, a medium-ridership scenario, and a low-ridership scenario (see below). Each identified need was categorized as either a core need or a ridership-dependent need. Core needs are those that MWRTA is likely to face regardless of ridership or economic recovery and typically include capital items such as regular maintenance, fleet replacement, and technology solutions needed to keep up with changing industry standards and customer expectations.

7.2.1 High-Ridership Scenario

The high-ridership scenario is defined as a return to 86 percent or more of 2019 levels. This scenario imagines the transit needs associated with a relatively well-recovered and stable economy precipitated by the following possible conditions:

- There is an effective vaccine developed and widely available.
- There is continued federal support for small businesses and state and local governments to reduce layoffs resulting from the pandemic and prevent further reductions in staffing due to lagging consumer spending and tax receipts.
- There is federal support to transit agencies to fill any budget gaps resulting from reduced fare revenue, reduced state and local tax support, and increased costs associated with cleaning and installation of PPE.

As a result of a successful vaccination development and distribution effort and/or ongoing federal support, ridership would be expected to rise to levels similar to 2019. Specific aspects of this return of ridership demand include the following:

- Educational institutions, including FSU and MassBay, resume with primarily in-person classes, though it is likely that distance learning is likely to comprise a larger share of course offerings than before the pandemic.
- MBTA commuter rail ridership and service levels return to pre-pandemic conditions.
- Restaurants and non-essential businesses open with strong sales.
- Unemployment drops to 2019 levels with people traveling to work on transit, and in particular, service-sector workers who depend on transit for mobility.

Importantly, the high-ridership scenario does not envision ridership rising above where it was before the pandemic, but rather envisions a return to ridership at roughly the same levels seen in 2019.

7.2.2 Medium-Ridership Scenario

The medium-ridership scenario imagines a future in which ridership recovers somewhat from its lowest level in 2020 but has not fully recovered. This scenario may be characterized by stable ridership between 60 and 85 percent of 2019 levels or by a less predictable or volatile ridership that precludes either a “low” or high” ridership scenario. This scenario would envision the following conditions:

- The COVID-19 vaccine is slow to be developed, as limited effectiveness, has distribution problems, or has low-uptake due to public skepticism about its safety. While many people would be vaccinated, this lack of widespread immunization (herd immunity) means that many are still reluctant to be in public spaces.
- Federal support for small businesses and laid off workers is modest, and state and local governments are forced to reduce services and lay off staff due to funding shortfalls. While some economic activity returns as portions of the population are vaccinated and return to pre-pandemic activities, unemployment still remains substantially higher than in 2019.
- Transit agencies see some additional direct federal aid that prevents the deepest cuts in transit service. Lifeline service on suburban and rural routes is maintained with modest route consolidation or restructuring on some low-performing routes.

As a result of this middling performance on vaccination development and economic support, the transit market remains depressed. Some specific transit market impacts are:

- A moderate return of student activity on the FSU and MassBay campuses.
- Some area schools return to in-person instruction, while others continue virtually or on a hybrid schedule.
- MBTA commuter rail service runs at full-service levels, although commuter ridership may remain somewhat depressed.
- Riders most sensitive to the risks of the pandemic (seniors, people with pre-existing conditions) rely more on demand response transit, which is more expensive to provide than fixed route services.
- Unemployment remains somewhat high and travel to service-sector places of work is depressed, reducing overall ridership.

These factors interact to produce a scenario where there is some rebound from the lows of spring 2020 but keep overall system ridership below 2019 numbers.

7.2.3 Low-Ridership Scenario

The low-ridership scenario is defined as ridership that remains below 60% of 2019 levels. This scenario imagines a future where the transit market is compromised and transit demand plateaus at or near ridership levels seen post-pandemic.

Note that some parts of MWRTA's service area may experience recovery at different rates than others. For example, routes that support essential services, jobs, or populations with limited travel options may experience higher and quicker ridership recovery than routes better characterized as providing leisure travel. Identified needs that are specific to a particular route or service reflect the recovery scenario most appropriate for that particular route or service.

7.3 List of 2021–2025 Needs/Growth Opportunities

Table 17 summarizes the needs that were identified through this process, the rationale for the need, and identifies each need as either a core need, or a need specific to one of the three assumed recovery scenarios. The primary sources that helped to define each need are noted in the table, but needs may be more broadly supported by groups and agencies not listed.

Table 17. Needs by Recovery Scenario

Description of Need	Source	Rationale	Scenario
Solutions for low-productivity routes that maintain essential coverage	Staff	Fiscal responsibility, essential trip coverage.	Low Ridership
Sunday service	Staff, Surveys	Frequent rider request.	High Ridership
Higher frequency service	Staff, Surveys	Frequent rider request; frequent service can help maintain social distancing on high-ridership routes.	High Ridership
Regional connections	Staff, Surveys	Limited options to connect outside of Boston.	High Ridership

Description of Need	Source	Rationale	Scenario
Improved safety	Staff	Minimize risk to riders and assets, congestion improvements can reduce costs and on-time performance concerns.	Core Need
Modernized and efficient fleet	Staff; Stakeholders	Replace older fleet; electrification; need for updated fare collection.	Core Need
Improve station amenities for customers and staff	Staff	Improve driver retention; more flexible staffing; public image.	Core Need
Marketing	Staff	Promote image of MWRTA and increase ridership.	Core Need
Increased bicycle visibility	Staff	First/last mile connections.	Core Need
Community-centered administrative practices	Staff	Extend community-oriented staffing and facility policies.	Core Need
Incentivized fares	Staff	Increase ridership; incentivize lower cost service modes.	Medium Ridership
Enhanced performance management system	RTA Task Force, MassDOT	Management and decision-making based on data and performance; provides accountability and transparency	Core

8. Recommendations

The recommendations for this 5-year plan reflect a data-driven process that takes into account historical operational data, stakeholder input, industry best practices, Commonwealth-wide goals, and RTA priorities. Specific recommendations were developed to address each identified need, then scored and prioritized to reflect appropriate recovery scenario assumptions, cost and complexity of implementation, and potential impact. These recommendations provide a framework for pursuing strategic service changes, capital enhancements, and policy approaches to ensure the best mobility options for the region's residents.

8.1 Guiding Principles

Despite the uncertainty facing the transit industry due to the COVID-19 pandemic, several guiding principles remain steadfast despite the shifting transit landscape. These guiding principles must be considered as MWRTA's needs are analyzed and recommendations are made.

- **Safety:** One of MWRTA's primary responsibilities is ensuring the safety of its customers and employees. This includes consideration of not only operational and traffic safety, but also, as underscored by the pandemic, a focus on health and hygiene of its vehicles and facilities.
- **Customer Experience:** A high-quality customer experience begins when a customer searches for transit information or books a demand response trip and includes all interactions with MWRTA facilities, vehicles, and staff from waiting for a bus, to the ride itself and any last mile needs.
- **Equity Considerations/Title VI**: Recommendations must avoid, minimize, or mitigate disproportionately high adverse effects on minority or low income populations; ensure full and fair participation of affected communities in the decision-making process; and prevent the denial, reduction, or delay in the receipt of benefits by minority and low-income populations
- **Fiscal Responsibility:** MWRTA's service plans and fare policies are financially constrained based on available state and federal resources. Recommendations seek to maximize the value of each dollar spent on MWRTA services.
- **Environmental Stewardship**: MWRTA is committed to environmental stewardship both in helping as many riders as possible reduce their carbon footprint and through consideration of lower emission technologies across its fleet and facilities.
- **Regional Land Use and Economic Development Goals:** MWRTA service changes and capital investment should be consistent with regional planning efforts.

8.2 Scoring

Scoring is be based on two categories, complexity of implementation (described in Figure 27. Recommendation Complexity Thresholds) and presumed impact of the recommendation (described in Figure 28. Recommendation Impact Thresholds). Scores for each category are relative to the recommendation (route- or community-specific or systemwide) and are presented as high, medium, or low.

Factors used to assess the complexity of implementation include:

- Capital and/or operating costs
- Contractual obligations (union issues, need for more operators, third party limitations)

- Technology or logistical concerns
- Political or board challenges
- Coordination with other agencies

Figure 27. Recommendation Complexity Thresholds

Low	Medium	High
Easier to implement with very little costs or barriers to do so.	Either a low cost but several barriers or there is a mid-high cost but no other barriers.	Significant costs to implement with several barriers such as internal needs/issues, political challenges, and/or coordination with others.

Factors used to assess the potential impacts of recommendations include:

- Number of riders or potential riders that would benefit
- Environmental benefits
- Benefits of diversity, equity, and inclusion within environmental justice communities
- Communities and businesses
- Operational

Figure 28. Recommendation Impact Thresholds

Low	Medium	High
Would most likely go unnoticed by riders but would have an impact.	Would impact only a segment of riders on the route or system.	Large benefit to everyone.

Complexity scores were assigned a value of 1, 2, or 3 from high to low, while impacts were assigned a value of 1, 2, or 3 from low to high, such that total scores range from 2 (high complexity and low impact) to 6 (low complexity and high impact).

8.3 Recommendations Overview

Table 18 summarizes the recommendations designed to meet each need, as well as its complexity and impact score. Further detail and staging considerations are provided in the following sections.

Table 18. Recommendation

Need	Recommendation	Complexity	Impact	Score
Solutions for low-productivity routes that maintain essential coverage	SERVICE – Continue transition of Route 8 to demand response/microtransit zone in Wellesley.	Low	Mid	5
	SERVICE – Explore demand response/microtransit options for the U.S. Route 20 Shuttle corridor.	Low	Low	4
	SERVICE – Explore alternate service delivery concepts for the I-495 corridor.	Low	Low	4
	SERVICE – Examine potential to streamline Routes 6 and 14 to offer more frequency in Milford with limited one seat service to Framingham.	Low	Mid	5
Longer evening spans	SERVICE - Expand Monday to Friday evening and late-night service for Routes 2, 7, and 11 when warranted.	Low	High	5
	SERVICE - Consider microtransit or demand response solution for evening service.	Low	Mid	5
Sunday service	SERVICE - Consider microtransit or demand response solution for Sunday services.	Mid	Mid	4
Higher frequency service	SERVICE - Pursue data-driven frequency recommendations for each route, generally expecting to achieve 30-minute frequencies on as many routes as possible.	High	Mid	3
Regional connections	SERVICE - Provide seamless connections with partnering RTAs and transit providers (GATRA, WRTA, CrossTown Connect, MART) as warranted to allow additional options for transit riders to traverse RTA boundaries.	High	Mid	3
	CAPITAL – Continue discussions with MBTA on the possibility of MWRTA establishing a more robust demand response transfer station at Riverside.	Mid	Mid	4
Improved safety	CAPITAL - Assess flag stop versus designated stop service along unsafe corridors, such as Route 9, and alter as necessary.	Mid	Mid	4

Need	Recommendation	Complexity	Impact	Score
	CAPITAL – Collaborate with Natick town planners to explore signalization or other congestion mitigation along Natick Mall Road.	High	High	4
Modernized and efficient fleet	CAPITAL - Replace aging vehicles that exceed TAM Plan/MOU ULBs.	Mid	Low	3
	CAPITAL - Procure modernized fare collection systems.	Mid	Mid	4
	CAPITAL - Evaluate cost/benefit of expanding maintenance department to include in-house body shop versus using local private sector facilities.	High	Low	2
	CAPITAL - Procure one electric vehicle for pilot study, additional vehicles to continue study, and consider 50% paratransit fleet electrification by 2025 dependent on success of the pilot and the advancement of battery technology.	Low	Mid	5
	CAPITAL - Expand fixed route fleet as needed to accommodate service recommendations and (if warranted based on APC data) to maintain social distancing guidelines under increased ridership conditions.	High	Mid	3
	CAPITAL – Explore feasibility, costs, and potential partnerships for commercial or managed lanes on I-495, with consideration of potential future transit or commercial applications of automated vehicle technology.	High	Mid	3
Improved station amenities for customers and staff	CAPITAL – Explore buy/lease opportunities at Pearl Street Garage.	High	Mid	3
	CAPITAL - Expand bike/pedestrian connectivity and emerging technologies to support last mile connections.	Low	Mid	5
	CAPITAL - Provide safe, clean, well-ventilated public restrooms at Blandin Hub and Intermodal Hub.	Mid	Mid	4
	ADMINISTRATIVE - Explore partnership agreements or incentives for childcare facility in proximity to Blandin Hub.	High	High	4

Need	Recommendation	Complexity	Impact	Score
Marketing	ADMINISTRATIVE - Highlight interconnections with MBTA rail services, both commuter rail and rapid transit.	Low	Med	5
	CAPITAL – Install electronic sign boards at high demand locations. Enhance accessibility of digital rider tools.	High	Med	3
	ADMINISTRATIVE – Target outreach and marketing initiatives to veterans.	Low	Low	4
	ADMINISTRATIVE - Start up a local cable TV show highlighting different MWRTA programs and services.	High	Low	2
Increased bicycle visibility	ADMINISTRATIVE - Allow more bicycle visibility where possible; sub-let space for bike repair stations and explore additional bikeshare program opportunities.	Low	Low	4
Community-centered administrative practices	ADMINISTRATIVE - Continue working with local colleges/universities to hire interns.	Low	Low	4
	ADMINISTRATIVE - Continue to outreach and partner with the disabled community for MWRTA staffing needs.	Low	Mid	5
	ADMINISTRATIVE - Continue to offer third floor to non-profits for meetings after COVID-19.	Low	Mid	5
Incentivized fares	ADMINISTRATIVE - Study costs/benefits of incentivizing ADA riders using Framingham/Worcester Commuter Rail line.	Mid	Mid	4
	ADMINISTRATIVE - Search for a sponsor for ADA eligible demand response services.	High	Mid	3
Enhanced performance management system	ADMINISTRATIVE - Identify technology-driven data tools and key performance metrics to establish an improved enterprise-wide data-driven management and decision-making framework. Implement a public-facing and transparent performance reporting mechanism.	Mid	Low	3

8.3.1 Service Recommendations

This section provides additional detail regarding the nine service-related recommendations outlined in Table 18. In some cases, recommendations have been grouped where they represent a choice between multiple options or where alignment and scheduling recommendations may be paired for a more streamlined roll-out.

8.3.1.1 Microtransit Service Pilot and Alternate Service Delivery Options

Several recommendations in Table 18 explore possible ways to utilize MWRTA's new microtransit service pilot. These include alternate service delivery in Wellesley, along U.S. Route 20, and the I-495 corridor, as well as possible use for expanded service spans on Sundays and in the evening. MWRTA is improving the CATCH App to allow riders the option to book and pay for their trip through the app.

Wellesley is recommended as an ideal location for the initial pilot (Score =5). The Massachusetts Route 20 and I-495 corridors may be more difficult to serve given the linear highway-oriented nature of these areas (Score=4), but trip booking may prove to be an effective way to ensure vehicles only operate during periods of demand, especially during depressed pandemic ridership levels. In particular, the I-495 corridor may offer an opportunity to pilot some form of limited use commercial traffic lane, which could be used to facilitate commercial or public transit or micro-transit trips, including future use as an automated vehicle facility. (See Section 8.3.2 for more information). Benefits of managing lanes may include limiting wear and tear of heavy transit and commercial vehicles to a single lane of traffic as well as allowing for improved travel times for an express or rapid service concept from Milford or Marlborough.

In future years, as ridership returns, MWRTA may utilize micro-transit to test pilot services in new or emerging markets. Micro-transit trip demand data can be used to assess the feasibility and ideal operation of potential new fixed route services.

8.3.1.2 Milford Service Adjustments

Another opportunity to address low service productivity during low and mid-level ridership recovery scenarios may exist in Milford. MWRTA should explore opportunities to utilize the financial, staff, and vehicle resources currently used to operate Routes 6 and 14 as a more cohesive service to and around Milford. During lower system ridership, this could operate as a demand response zone in Milford with limited opportunities to express to the Blandin Hub/Framingham station. For high-ridership scenarios Milford service could be operated as a higher frequency fixed route with select trips to Framingham, with more frequent peak and midday service, extended span, and one seat ride to Framingham. In either scenario, trips to Framingham could be coordinated with pull-ins/pull-outs and staggered shift changes to transition deadhead to added revenue service.

8.3.1.3 Evening Service

MWRTA received a FY 2020 Discretionary Grant award to pilot extended evening service on Routes 2, 7, and 11, Monday through Friday. MWRTA was preparing to launch the pilot in late March/early April 2020; however, the project was suspended due to COVID-19. As a result of the grant award and MWRTA's advance planning work, this recommendation will be fairly easy to implement (Score=5) and is recommended for the earliest plan stages after system ridership recovery. MWRTA will monitor the open hours of local retail establishments along these routes and anticipates launching this pilot once those businesses have resumed normal operations and demand increases.

8.3.1.4 Sunday Service

Central Transportation Planning Staff (CTPS) will be performing a study to look at the different options for Sunday service. MWRTA will monitor the success of the microtransit pilot and consider microtransit as an option for Sunday service. MWRTA will also use data gathered to determine the most cost-effective way to provide evening/late night service, as well as late night service on weekends.

8.3.1.5 Frequency

In general, MWRTA's vision is for all fixed routes to operate every 30 minutes during peak hours. Given current ridership levels, it may take a while for some routes to warrant that level of service. MWRTA should study options for frequency improvements on each route individually, using data-driven tools and criteria. Alternative mechanisms to achieve higher frequency service in a cost-constrained scenario may include:

- Consolidating less productive services to form a single high-frequency trunk with alternating coverage-based extensions
- Shortening a route or eliminating route deviations to accommodate more frequent service through lower cycle times
- Soliciting financial partnerships for frequent service that benefits large employers or institutions

As ridership increases, MWRTA should continue to evaluate high-frequency benchmarks and continue to pursue funding opportunities for additional frequency.

8.3.1.6 Explore Regional Service Connections

Currently, the MWRTA service area has good connections to Boston or Worcester via the Framingham/Worcester MBTA commuter rail line and other private carriers. However, for transit riders traveling along the I-495 corridor, options are more limited, sometimes requiring travel times over 3 hours with a transfer at South Station. Providing seamless connections to adjoining RTAs such as GATRA, LRTA, or MART would provide additional affordable options for transit riders to traverse RTA boundaries. MWRTA should begin by coordinating with adjacent transit providers to determine options for coordinated travel, whether through timed transfers at a shared stop or through service agreements or cost sharing for longer through trips. The city of Franklin in the GATRA service area and Littleton in the LRTA service area (where MART is also considering connections) may be good locations for transfer to these providers. Regional service can be costly, and coordinated services bring their own logistical challenges, and for that reason this strategy is best suited for later plan phases (Score=3), following full system recovery. However, MWRTA should begin coordinating to determine potential costs and estimate demand to make a data-driven decision.

8.3.2 Capital Recommendations

This section describes the 12 recommendations outlined in Table 18 for capital improvements or purchases. Some recommendations have been grouped to indicate opportunities to lower costs or administrative burden by considering some purchases or strategies more holistically.

8.3.2.1 Riverside Transfer Station

As part of MWRTA's goal to increase regional connectivity, capital improvements may be helpful to facilitate an easier transfer of demand response/ADA customers between MWRTA and MBTA services. MWRTA would like to discuss with MBTA whether MBTA would support MWRTA's interest in building an ADA accessible transfer building at the Riverside MBTA station to provide

a safe, comfortable, weatherproof area for demand response passengers and for drivers to wait for their transfer. This capital investment would reduce MWRTA operational costs by reducing the need for some out-of-region demand response trips and allows MWRTA vehicles to continue on to their next trip when other parties are late to the transfer appointment. Unnecessary waiting between trips increases costs per passenger and per mile for demand response services. This improvement may also be beneficial for WRTA demand response operations for passengers connecting to Boston. As such, MWRTA should explore cost-sharing opportunities and facility management solutions in collaboration with WRTA and MBTA and compare potential operating cost savings to capital investment. This recommendation scores a 4 based on moderate complexity and moderate impact and should be pursued in middle year phases of the plan following system ridership stabilization.

8.3.2.2 Capital Fund for stop and street improvements

Two recommendations in Table 18 regarding safety and traffic concerns may require coordination with MassDOT or local jurisdictions streets and planning departments. One is to explore signalization or transit priority treatments that help alleviate the added bus travel times caused by high traffic conditions at the Natick Mall. Although costs and coordination steps necessary to address these issues are high, benefits are also expected to be high (score=4), as this location affects riders, on-time performance, travel times and costs on nine of MWRTA's fixed routes that stop at this location.

Another traffic/safety related capital improvement is to transition some of MWRTA's flag-down stops to designated stops (where warranted by data and safety assessments). Flag stops can create safety issues around whether riders attempt to flag down vehicles too near an intersection or where they create a distraction for drivers in situations that require their full attention on the road. Flag stop systems can also lead to missed connections when new riders are improperly trained as to how to flag the driver or when drivers do not have appropriate site lines. Costs associated with marking a designated stop by signage alone would be low, but additional stop amenities, such as benches or shelters, can add to costs. In some cases, a designated stop at a high-volume location may require ADA-compliant sidewalk connections or a bus pull-out to allow traffic to bypass the stopped transit vehicle. These features affect the right of way and would require additional coordination with MassDOT or local jurisdictions.

In order to tackle both types of improvements, MWRTA should designate a staff liaison and identify a capital budget line item to be used in partnership with MassDOT and/or towns to incentivize transit-focused improvements as part of larger road modification, signal timing, or resurfacing projects. MWRTA staff would be responsible for identifying and prioritizing transit-related capital improvements and facilitating conversations with the relevant jurisdictions. By identifying a capital fund, MWRTA would be able to participate in cost sharing agreements that help leverage transit amenities into ongoing street improvement projects. Scoring reflects a partnership-driven approach; it is not anticipated that MWRTA would fully fund or pursue larger capital improvement projects without participation of the relevant jurisdiction.

8.3.2.3 Vehicle Replacement/Expansion

MWRTA has established vehicle replacement guidelines through its 2018 TAM Plan. Follow through of the TAM Plan will result in a need to replace a portion of MWRTA's fleet each year as vehicles reach the end of their useful life. Keeping the fleet in a state of good repair and replacing vehicles that reach their useful life is a clear and constant priority for MWRTA. In addition, new in-service vehicles and spares may be part of any regional service expansions that may be warranted

The process of regular vehicle replacement affords an opportunity to adjust the current fleet mix of vehicle types to better meet MWRTA's needs. MWRTA staff have noted the following priorities for its demand response fleet over the 5-year planning horizon:

- MWRTA plans to upgrade the demand response vehicles from gas to electric when the range of electric vehicles exceeds 200 miles.
- MWRTA would like to procure a single electric paratransit vehicle in order to test the charging range and cost-effectiveness for a FY 2021 electric vehicle pilot. This effort would be undertaken in cooperation with MassDOT and utilize findings from any recently completed studies.
- Information gathered through this pilot will inform decisions about MWRTA's ability to use electric paratransit vehicles across a wider share of its fleet. In the event of a successful test, MWRTA's goal is to electrify 50% of its demand response fleet by 2025. Also contingent on a successful pilot, MWRTA may consider expanding its solar capacity to keep pace with additional power needs associated with fleet electrification.

Regular fleet replacement and expansion (Score=3) should occur on a rolling basis, as necessary and in reflection of MWRTA's TAM Plan and available capital funding. Procurement of one pilot electric demand response vehicle (Score=5) should occur in early plan phases to help inform decision-making for later years.

8.3.2.4 Cost/Benefit Analysis of Maintenance Facility Upgrades

MWRTA has expressed a desire to expand its current maintenance capabilities through development of an in-house body shop. This would reduce the turnaround time for returning a vehicle to revenue service after a major accident. This 5-year plan has informally assed this recommendation as having a fairly high cost and low impact (Score=2), compared to other recommendations. It is therefore more appropriate for later year implementation. Prior to implementation, MWRTA should document the costs and any service disruptions caused by delays associated with out-of-shop body work. In addition, MWRTA should assess maintenance records from previous years to determine the frequency at which these kinds of services are typically needed. Potential lifecycle benefits and costs of facility upgrades should be weighed to inform decision-making.

8.3.2.5 Fare Collection Systems

Modernization of MWRTA's fare collection systems is associated with a moderate cost/complexity and moderate impact (Score=4). Updated fare collection technology would provide riders significantly easier electronic payment options on MWRTA services and could serve to reduce administrative costs associated with cash handling.

8.3.2.6 Pearl Street Garage

The Pearl Street Garage, located at 3 Pearl Street, Framingham, provides safe, weather sheltered, overnight parking to commuters using the Framingham MBTA commuter rail station. MWRTA should opportunities to buy or lease this facility in later plan years after ridership stabilization (Score=3). This facility would increase parking revenues, allow additional access to inter-city bus services, and provide connections to the Chris Walsh Trail.

8.3.2.7 Enhance Last Mile Connections from Stations and Transfer Hubs

One of the highest scoring capital recommendations (Score=5) is to expand last mile trip options and increase the connectivity of non-motorized or alternative trip types to MWRTA's major transit centers. In particular MWRTA would like to expand the bike/pedestrian path that connects the Framingham Commuter Rail Station to the Blandin hub. Expansion of the path would connect users into a local Environmental Justice neighborhood, providing direct, safe, walking access to local transit options. This recommendation should be targeted for early implementation following moderate ridership recovery.

In addition, expansion of the Chris Walsh Trail would help to create a more comprehensive intermodal center. Currently, the Chris Walsh Trail goes around the pond but doesn't create a connection to the hub. MWRTA is working with the Framingham Parks Department to create a better connection for walking to the intermodal center.

In Natick, expansion of the Cochituate Trail is already under construction and will connect Natick Mall to downtown Natick. This long thin connection between the lakes may also be feasible to explore less traditional last mile options, in consideration of those who may have mobility limitations. Although the right of way would likely not accommodate a traditional transit vehicle, smaller vehicles, and emerging technologies such as cart rental or group rapid transit may offer a solution.

8.3.2.8 I-495 Managed Lanes

MWRTA would like to explore, in partnership with MassDOT and other potential stakeholders, the feasibility of implementing some form of managed lanes within the I-495 corridor, with particular consideration of possible adaptation for automated vehicle deployment in the near future. MWRTA should study costs and benefits of potential uses of managed lanes for commercial and/or transit purposes, including micro-transit, transportation network company operators, or express bus services. The I-495 corridor is of particular interest to MWRTA due to its difficulty to serve with traditional transit approaches. Benefits include limiting road wear of large bus and truck vehicles to a single lane and offering a potential travel time savings for select trip types, boosting the attractiveness of transit in this corridor.

8.3.2.9 Restroom Upgrades

The recommendation to provide safe, clean, and impressive public restrooms at the Blandin Hub and the Intermodal Hub is associated with moderate capital and ongoing maintenance costs as well as a moderate impact for riders and staff (Score=4). Short-term focus should be on upgrades that enhance best health and hygiene practices in response to the COVID-19 pandemic. For example, more automated and touchless surfaces may be warranted as well as ensuring that automatic cut-off of soap or waterspouts provides enough time to comply with CDC handwashing protocols. Some facilities have begun replacing silver fixtures with copper (a natural anti-microbial) and replacing air dryers with paper towel dispensers to reduce the risk of creating air-borne contaminants.[22] This may impart a need for more frequent restocking and trash removal. In addition to capital upgrades, MWRTA should assess its facility maintenance procedures to determine whether more rigorous cleaning schedules are warranted. A more complete modernization of the facilities (if financially feasible) may enhance employee morale and strengthen MWRTA's public image.

8.3.3 Administrative Recommendations

This section describes administrative or organizational recommendations.

8.3.3.1 Marketing

Table 18 identified four recommendations related to MWRTA's marketing strategies. Additional capital purchases may be needed to modernize MWRTA's public communication tools in order to increase rider access to available information. This includes items such as installation of electronic signboards at high demand stops. In addition, MWRTA should consider data and communication tools to establish and/or more effectively manage information across social media, website, and print formats.

[22] Industrial Safety and Hygiene News, https://www.ishn.com/articles/112528-the-new-normal-when-it-comes-to-public-restrooms.

Among administrative recommendations, the first is to increase marketing about the available connections between MWRTA services and MBTA commuter rail and rapid transit. This is assessed as the most potentially cost-effective marketing recommendation (Score=5) and could involve collaborative marketing strategies mutually beneficial to MWRTA, MBTA, and area employers.

MWRTA should also establish a more targeted marketing campaign to address the needs of veterans. This is a relatively low cost/low complexity effort to impact a smaller but important rider group (Score=4). A third marketing initiative would involve setting up a local cable TV show highlighting different MWRTA programs and services. This potentially higher cost and lower impact recommendation (Score=2) should be evaluated in later plan years following system ridership recovery. MWRTA should explore opportunities to partner this strategy with other agencies or initiatives to reduce costs and broaden impacts. Any new marketing initiatives should consider the following strategies:

- Ensure information reaches customers staying at home during the pandemic by including more telephonic, online, or app-based marketing strategies.
- Coordinate a unified rollout for new services with route-level and system mapping, schedule adjustments, website alerts, and Google GTFS feed updates to ensure consistent information across platforms.
- Schedule a periodic review of website information and google transit assignments to very accuracy of customer facing information.
- Educate riders regarding new health and hygiene protocols.

8.3.3.2 Explore Potential Partnership Agreements

COVID-19 has amplified an unmet need for child care options accessible by transit riders and MWRTA staff. The American Planning Association notes the often disconnected relationship between childcare facilities and sustainable planning initiatives and infrastructure:

> “Accessing child care convenient to home, work, or school is a challenge for many parents, particularly those who depend on public transit or rely on subsidized child care…. Child care centers can be located in or near transit, housing, and workplaces in urban, suburban, and rural areas to facilitate transit ridership and support mixed use development (LINCC 2005; 2008a). A California study determined that parents would ride transit—even by choice—to and from child care when the facility is conveniently located.”[23]

Throughout the pandemic, working parents have experienced school and childcare closures and a need to prepare for both temporary and long-term disruptions to child care. Unmet childcare needs may limit staff ability, increasing MWRTA’s administrative burden to ensure drivers are assigned to key routes. MWRTA should explore opportunities partner with other groups to encourage or otherwise incentivize the location of a childcare facility in proximity to the Blandin Hub or Framingham MBTA Station.

A second lease opportunity involves bike rental or repair business. By promoting bike use near its existing hubs, MWRTA can help riders identify alternate first mile/last mile connections, improving core line ridership and reducing customer requests for less productive connections. Location of bike rental facilities near the hub can also improve connectivity between the Blandin Hub and the Framingham station for connecting customers. In addition, these types of

[23]American Planning Association, “Child Care and Sustainable Community Development” page 6. https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Importance-of-Ensuring-Adequate-Child-Care.pdf.

agreements can improve overall customer perception of MWRTA facilities and provide an additional source of local revenue.

8.3.3.3 Community-centered Administrative Practices

MWRTA has identified three administrative/hiring practices that collectively support ties to the communities in which it operates and efforts to encourage diversity, equity, and inclusion in the workplace:

- Continue collaborating with local colleges and universities (FSU and MassBay) to hire interns.
- Continue to outreach and partner with the disabled community for Authority staffing needs:
  - Call center is ideal placement for individuals with a variety of abilities.
  - Combined with existing MWRTA policies regarding inclusion of dual-language call center employees, this will help ensure that call center staff is representative of and sensitive to the needs of a variety of MWRTA riders.
- Continue to offer third floor to non-profits for meetings:
  - This practice was temporarily suspended during COVID-19, but should be reinstated after the pandemic.
  - Allow facilities and meeting rooms to be repurposed, when not being actively used by MWRTA.
  - Increase visibility of MWRTA in the community and awareness of MWRTA services among non-profits, many of whom work directly with key customer demographics.

Finally, MWRTA will continue to pursue improving contacts with local businesses so that relationships that could improve the awareness and use of transit can be developed.

8.3.3.4 Incentivized Fares

MWRTA has expressed a desire to incentivize certain trips through its fare structure. The first of these recommendations is to create a system of “fare free” rides for ADA-qualified riders utilizing the Framingham/Worcester Commuter Rail line. This could help to reduce the number of costly ADA trips for both MWRTA and MBTA and may reduce transfer times for ADA riders utilizing both agencies services. The loss of the commuter fare revenue would be more than offset by saving associated with eliminating the transit subsidy associated with demand response trips (Score=4). The second recommendation is to eliminate fares for ADA eligible demand response services. This could be associated with higher revenue losses (Score=3) and is therefore more suited to later plan years or as a temporary measure to spur ridership recovery. If desired, alternate funding sources or sponsors for these trips should be identified

8.3.3.5 Performance Management System

As identified in Table 18. Recommendation and described extensively in Chapter 6, MWRTA should identify technology-driven data tools and key performance metrics, particularly in the service and financial performance areas. These tools will be used to establish an improved enterprise-wide data-driven performance-focused management and decision-making framework. As an outgrowth of this system, MWRTA should implement a public-facing and transparent performance reporting mechanism. Although the impact of this recommendation may be less noticeable for riders, it is a core need and recommended for Phase 1 of implementation. Early implementation will help MWRTA respond with more clarity to the uncertain transit conditions presented by the pandemic.

Appendix A Illustrative FY 2015-FY 2019 Performance Results and Peer Review

To provide historical context for MWRTA performance since the 2015 CSA was completed, this appendix provides information on MWRTA systemwide performance for fixed route and demand response modes for FY 2015 through FY 2019. (FY 2020 and FY 2021 results are covered under the Bilateral WRTA/MassDOT MOU discussed in Chapter 6.) A brief performance comparison with peer transit systems is also provided below.

FY 2015 to FY 2019 Performance Evaluation

Service Effectiveness

Service effectiveness describes the amount of service utilized per unit of transit service provided. Service effectiveness is measured based on two indicators: passengers per mile and passengers per hour. Service effectiveness trends for fixed routes are summarized in Table 19. As shown, MWRTA bus routes are generally less productive than other Massachusetts RTAs, attributed partially to smaller vehicles and higher headways, while demand response services are more productive, both by revenue hour and revenue mile. Bus productivity per hour declined in 2019 along with reductions in ridership. Demand response productivity per hour declined by approximately 17 percent between FY 2017 and FY 2019.

Table 19. Fixed Route Productivity (FY 2017–FY 2019)

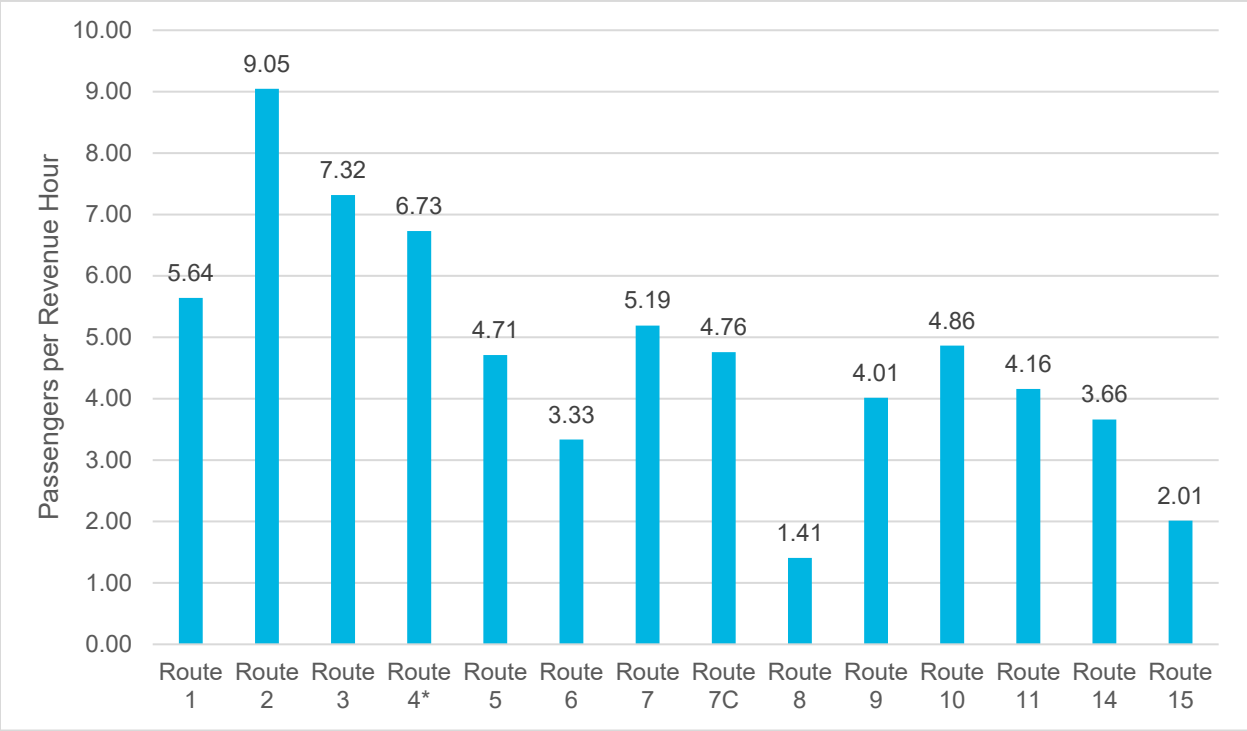
Mode	Fixed Route		Demand Response	
Productivity Metric	Passengers / Mile	Passengers / Hour	Passengers / Mile	Passengers / Hour
FY 2017	0.49	6.80	0.21	2.84
FY 2018	0.52	7.00	0.21	2.72
FY 2019	0.48	6.72	0.20	2.37
FY 2018 Massachusetts Average*	1.37	18.39	0.15	2.13
National Average	2.26	27.21	0.13	1.97

Source: MWRTA, NTD

** Massachusetts average excludes MBTA (from all modes) and CCRTA and MART (from demand response).*

Among fixed routes in FY 2019, Route 2 is the most productive at 9.05 passengers per revenue hour, followed by Route 3 and Route 4 (combined Routes 4N and 4S patterns). All other routes fell below the fixed route average productivity of 6.72 passengers per revenue hour. Route 8, which roughly parallels the Framingham MBTA Commuter Rail line and the MassBay Riverside shuttle, is the least productive, as shown on Figure 29.

Figure 29. Passengers per Revenue Hour (FY 2019)



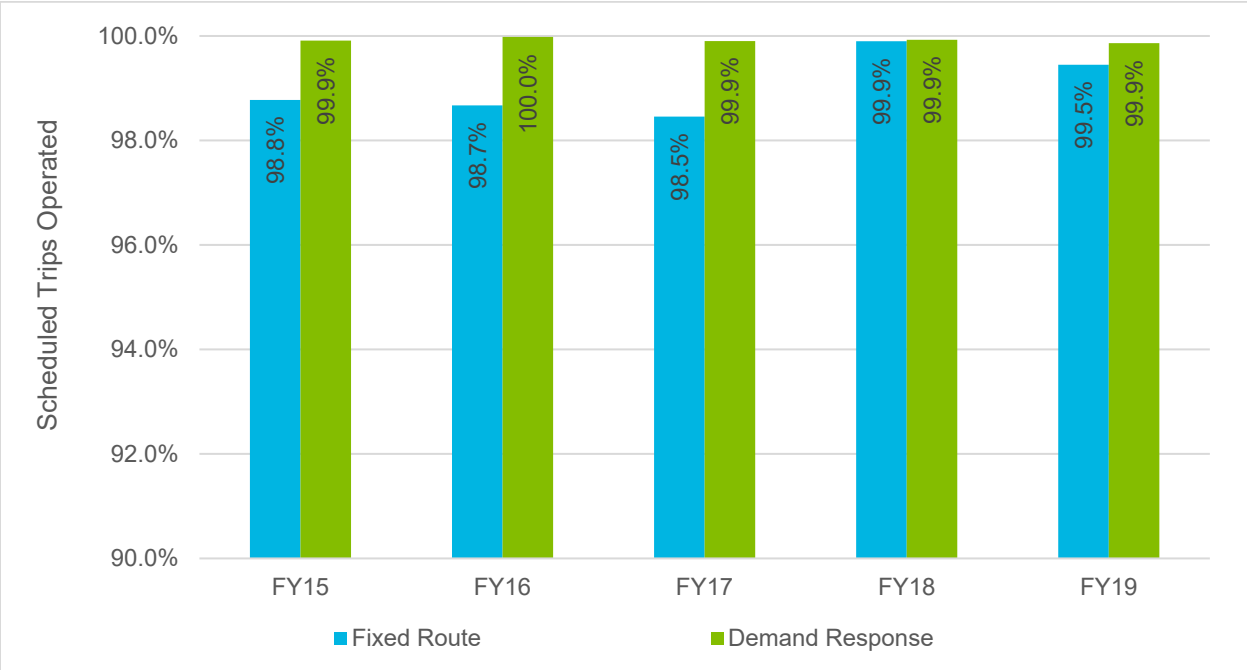
Source: MWRTA

Note: Route 12 revenue hours not available.

** Route 4 revenue hours combine Routes 4N and 4S.*

Figure 30 shows the percentage of scheduled trips that were operated each year from FY 2015 to FY 2019. Demand response schedule adherence has consistently remained above 99.9 percent. Fixed route schedule adherence improved from between 98 and 99 percent for FY 2015 through FY 2017 to over 99.5 percent trips operated in FY 2018 and FY 2019.

Figure 30. Scheduled Trips Operated by Mode (FY 2019)



Source: MassDOT, RTA Service Report

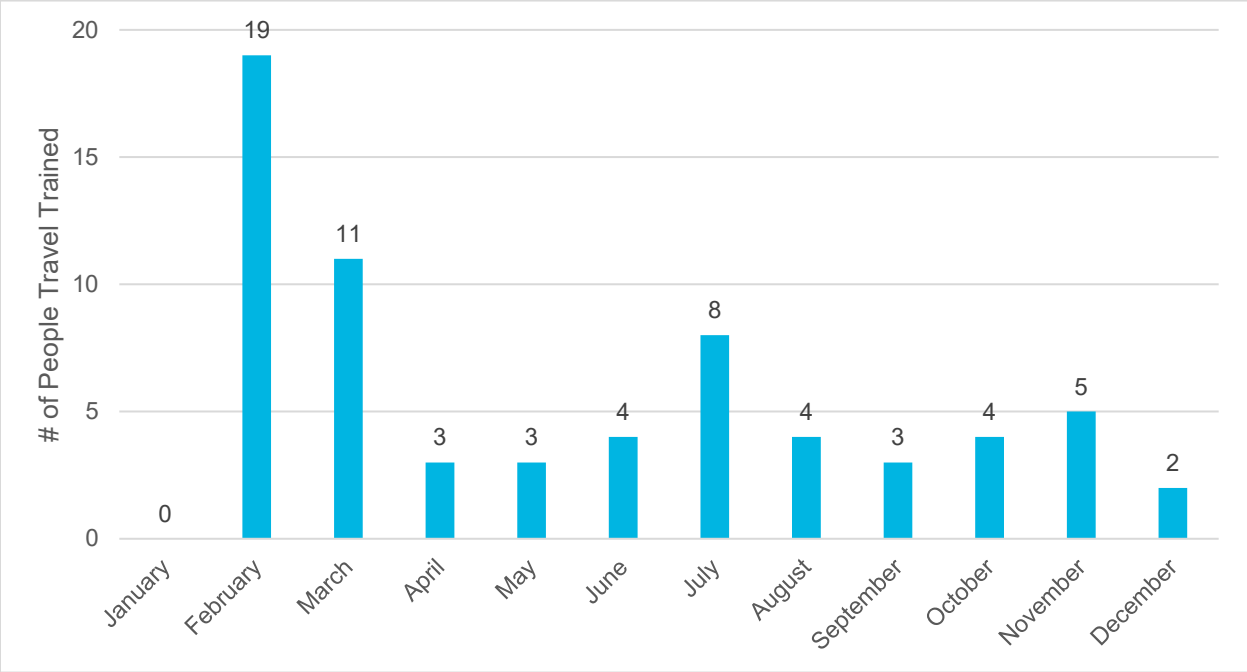
Customer Service and Satisfaction

MWRTA defines on-time performance as the percentage of routes that begin their shift within 5 minutes of the scheduled departure time. This is an “out-of-gate” (i.e., start of the shift) measure that does not account for early or late arrivals at individual stops, and as such, MWRTA meets regularly with its contractors to improve on-time performance.

MWRTA has set an internal target of 1 minute or better for customer service hold times. The average hold time for customers requesting demand response service is 57.4 seconds, and the average hold time for all other calls is 19 seconds.

Travel training helps existing demand response customers learn about and become more comfortable using fixed route buses, and includes a 6-month check-in. In 2019, MWRTA provided travel training to 66 customers, for an average of 5.5 per month. February had the highest participation, followed by March and July, as shown on Figure 31.

Figure 31. Travel Training (CY 2019)



Source: MWRTA, 2019

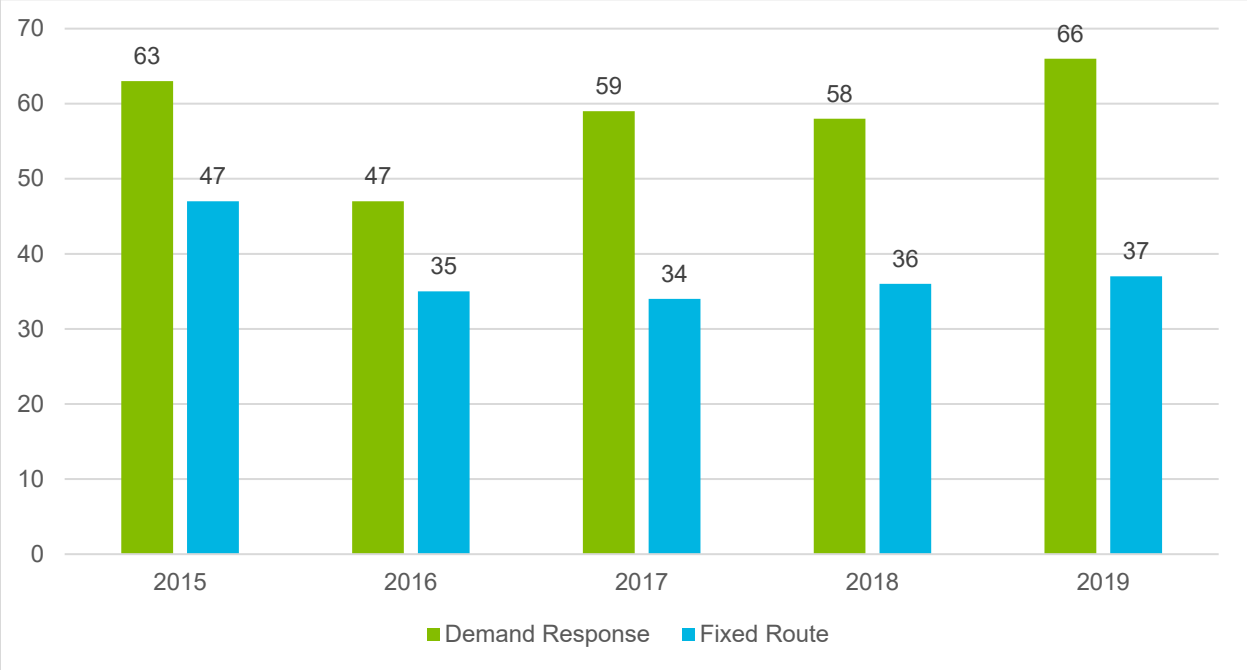
Asset Management

Information regarding MWRTA’s fleet and facilities, including TERM rating and ULB, is documented in Section 4.4. The following describes MWRTA performance across several uniformly reported metrics related to asset maintenance and operational safety. Consistently reported data such as these can help to document historical trends and may be useful if incorporated into MWRTA’s performance monitoring framework. Changes in MWRTA’s revenue fleet over time can be seen on Figure 32. Demand response fleet decreased by 25 percent between 2015 and 2016 but rebounded through 2019. Fixed route fleet decreased more slowly by 21 percent between FY 2015 and FY 2018.

In the event of an out-of-service vehicle, MWRTA relies on spare vehicles to provide for the continuation of service. The spare ratio is defined as the percentage of active fleet not normally

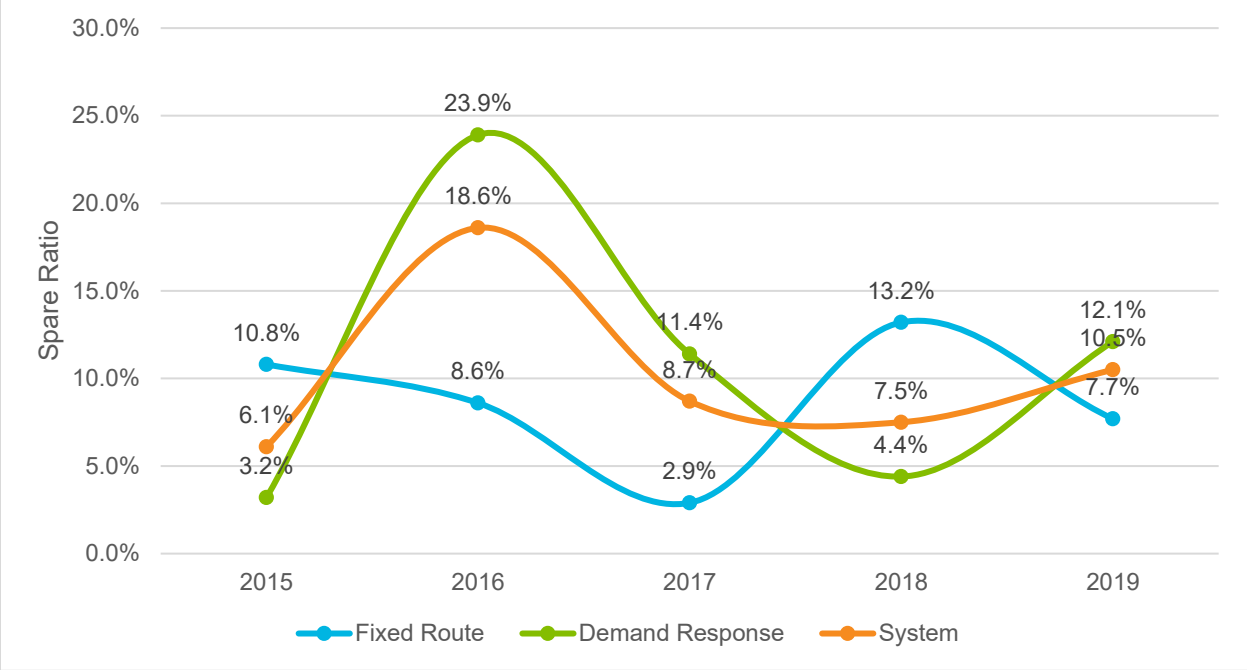
in operation during maximum service levels. As shown on Figure 33, MWRTA's system spare ratio decreased from 18.6 percent in FY 2016 to only 7.5 percent in FY 2018. Industry standard is to maintain between 15 percent and 20 percent spares relative to total fleet size. Capital constraints and dependency on state and federal awards restricted MWRTA's ability to procure as many new vehicles as needed in 2018; however, larger capital grant awards in FY 2019 and FY 2020 have allowed MWRTA to increase their spare ratio.

Figure 32. Active Fleet by Mode (2015-2019)



Source: NTD, FY 2015-FY 2018

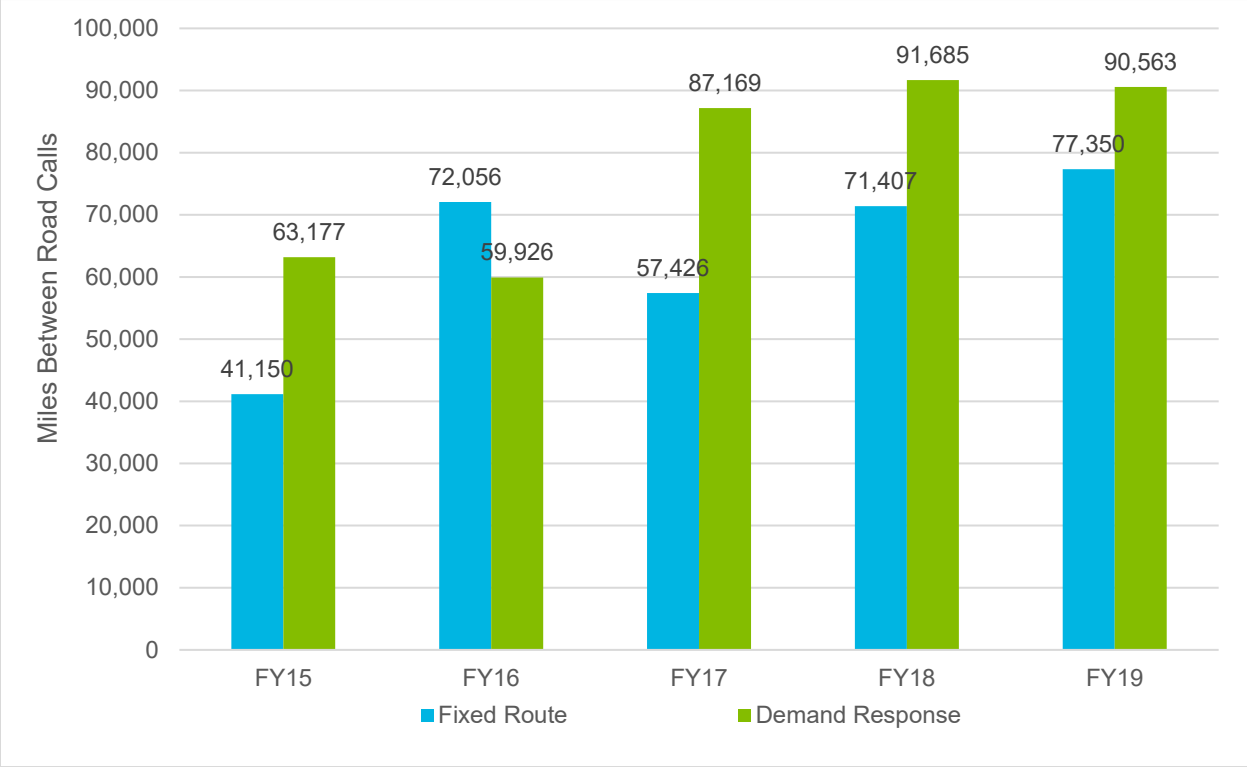
Figure 33. Vehicle Spare Ratio (2015-2019)



Source: NTD, FY 2015-FY 2019

MassDOT collects information from all RTAs regarding the average mileage between road calls. FY 2015 to FY 2019 data for MWRTA are shown on Figure 34. This information helps categorize the maintenance needs of MWRTA's existing fleet. As shown, fixed route vehicles required servicing (road calls) approximately every 40,000 to 80,000 miles. Demand response vehicles could travel approximately 60,000 to 90,000 miles before needing a road call. Maintenance needs generally decreased with all vehicle types able to travel farther on average between road service calls.

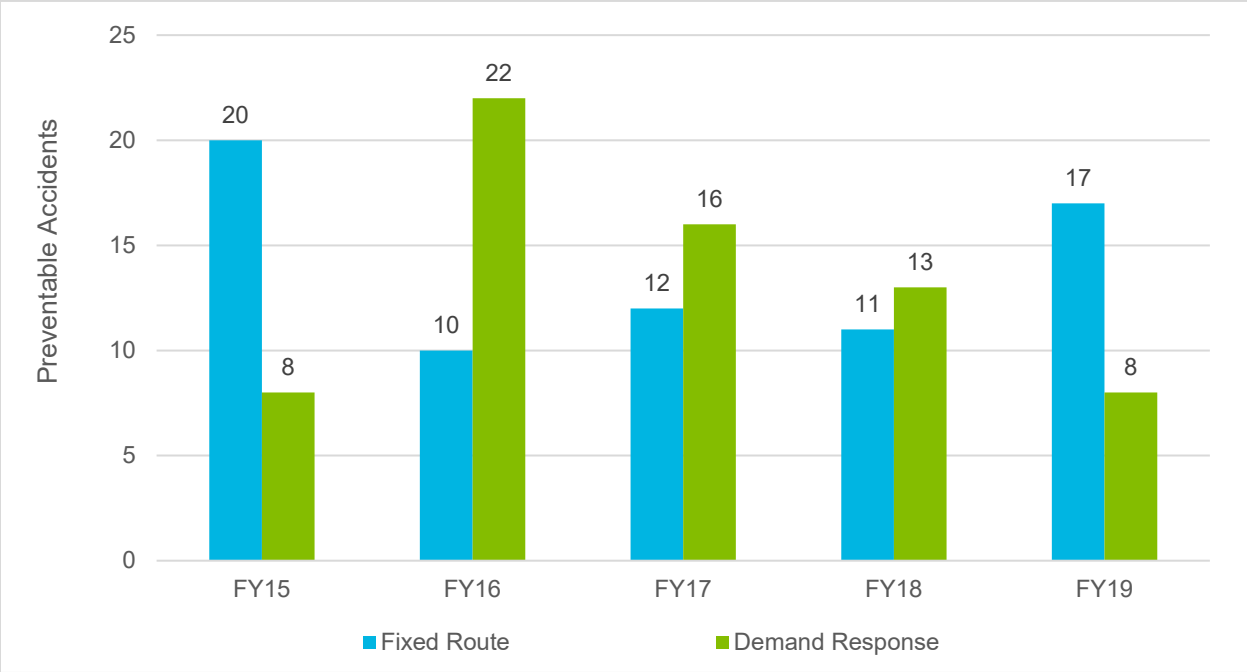
Figure 34. Average Miles Between Road Calls (FY 2015–FY 2019)



Source: MassDOT, RTA Service Reports, FY 2015-FY 2019

Figure 35 summarizes preventable accidents by mode. As shown, preventable accidents involving demand response decreased from a high of 22 in FY 2016 to 8 in FY 2019. For fixed routes, preventable accidents were highest in FY 2015, dropped in FY 2016 through 2018, and rose again to 17 accidents in FY 2019.

Figure 35. Preventable Accidents (FY 2015–FY 2019)

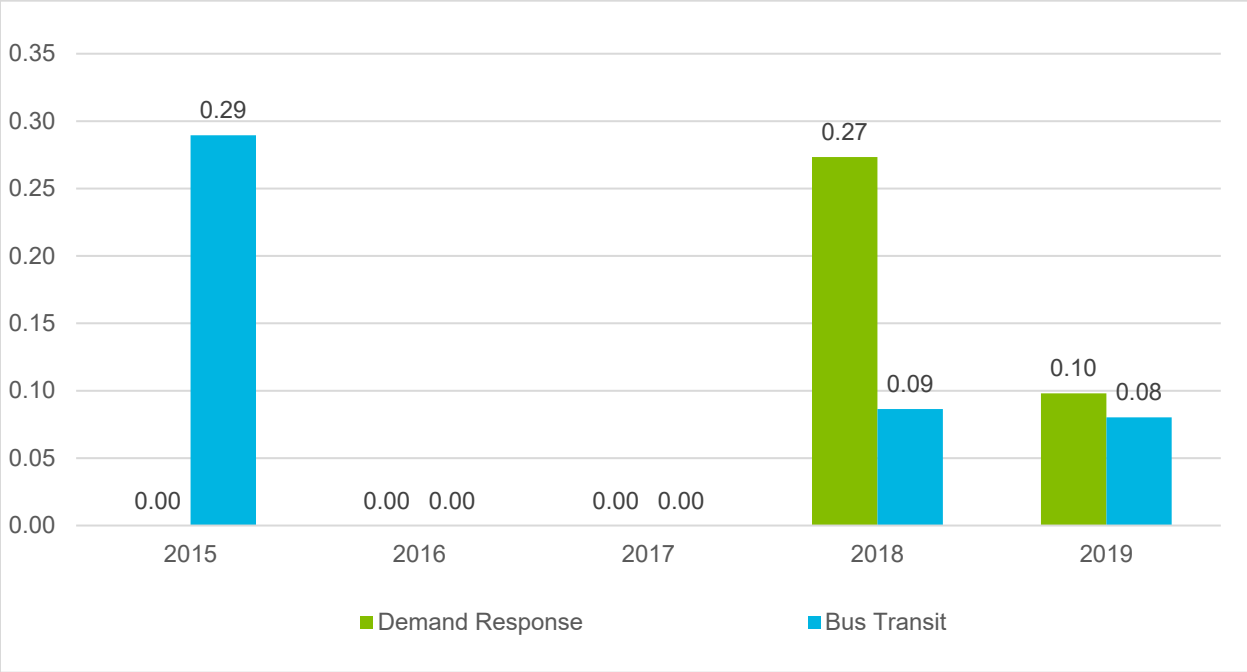


Source: MassDOT, FY 2015 to FY 2019 RTA Service Reports

Historical NTD accident and injury rates can provide context for MWRTA's safety performance. Figure 36 shows a decline in bus safety events from 0.29 per 100,000 vehicle revenue miles in FY 2015 to 0.08 per 100,000 vehicle revenue miles in 2019. Safety events involving demand response vehicles ranged from zero in FY 2015 through FY 2017 to 0.27 per 100,000 vehicle revenue miles in FY 2018.

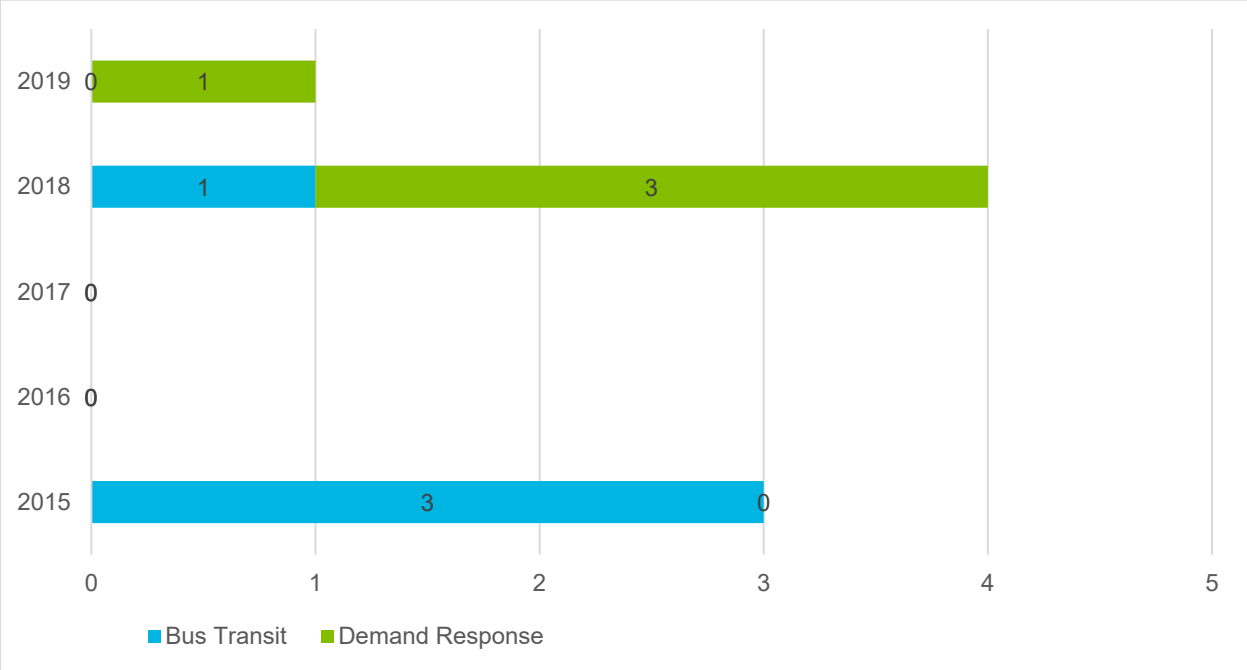
The total number of NTD-reported injuries (Figure 37) was 4 or less each year since FY 2015. There were no injuries for either mode in FY 2016 and FY 2017. No fatalities occurred systemwide between FY 2015 and FY 2019.

Figure 36. NTD Reported Safety Events per 100,000 Vehicle Revenue Miles (FY 2015–FY 2019)



Source: NTD, 2015-2019

Figure 37. NTD Reported Injuries by Mode (FY 2015–FY 2019)



Source: NTD, 2015-2019

Financial Performance

Cost effectiveness measures the effectiveness of the system from a financial standpoint – how well the dollars put into the system are being used to produce trips. Typical cost effectiveness indicators include cost per passenger, cost per mile, cost per hour, farebox recovery, and

subsidy per passenger. A summary of financial performance metrics for fixed routes is provided in Table 20, and demand response financial metrics are provided in Table 21.

As shown, MWRTA's fixed routes are significantly less costly per hour and per mile than the national average and other RTAs, likely due to MWRTA's use of cutaway vehicles or smaller, as described in Section 4.6. MWRTA bus routes have a lower cost effectiveness per passenger and a lower farebox recovery compared to state and national averages as a result of lower productivity.

Table 20. Fixed Route Financial Efficiency (FY 2017–FY 2019)

Cost Effectiveness Metric	Cost/ Mile	Cost/ Hour	Cost/ Passenger	Subsidy/ Passenger	Farebox Recovery
FY 2017	$4.66	$64.56	$9.50	$8.79	7.4%
FY 2018	$4.33	$58.87	$8.41	$7.18	14.7%
FY 2019	$4.37	$61.76	$9.19	$8.05	12.4%
FY 2018 Massachusetts Average**	**$7.24**	**$97.20**	**$5.29**	**$4.47**	**15.4%**
FY 2018 National Average	**$11.15**	**$133.99**	**$4.92**	**$3.83**	**22.1%**

Source: MWRTA, National Transit Database

*** Massachusetts average excludes MBTA.*

Demand response costs per mile and per hour increased in FY 2018 and FY 2019 and exceed state and national averages. However, as a result of the higher productivity of MWRTA's demand response service, costs per passenger are lower than the state average. Farebox recovery for demand response declined from 5.2 percent to 4.8 percent in FY 2019.

Table 21. Demand Response Financial Efficiency (FY 2017–FY 2019)

Cost Effectiveness Metric	Cost/ Mile	Cost/ Hour	Cost/ Passenger	Subsidy/ Passenger	Farebox Recovery
FY 2017	$4.12	$56.17	$19.87	$18.84	5.2%
FY 2018	$5.10	$69.19	$24.18	$22.92	5.2%
FY 2019	$5.17	$73.37	$25.29	$24.08	4.8%
FY 2018 Massachusetts Average**	**$4.38**	**$59.86**	**$28.28**	**$25.95**	**8.3%**
FY 2018 National Average	**$4.33**	**$64.93**	**$32.92**	**$30.46**	**7.5%**

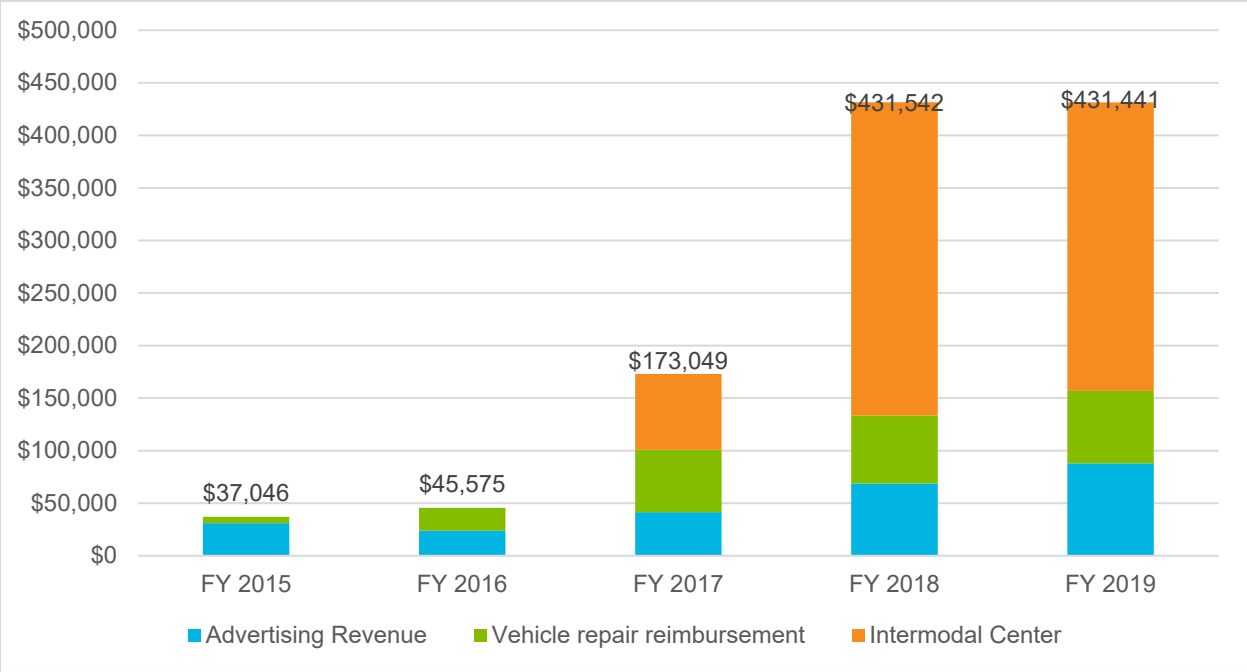
Source: MWRTA, National Transit Database

**Not specified in MOU; derived from cost per passenger and farebox recovery targets.*

***Massachusetts average excludes MBTA, CCRTA, and MART.*

Entrepreneurship revenue includes receipts from advertising, vehicle repair reimbursements, and parking revenue from the Blandin Intermodal Center (Framingham MBTA Station). Figure 38 illustrates sources of entrepreneurship revenue between FY 2015 and FY 2019.

Figure 38. Entrepreneurship Revenue (FY 2015–FY 2019)



Source: MWRTA

Peer Evaluation

As part of the CRTP, a peer review was prepared to gain an understanding of how similar systems are operating transit service. This peer review explores transit services that operate in similar conditions. Although each transit system and route is unique, the similarities and differences in these peers provide useful insight into how transit service is provided and operated throughout the country.

Peers were chosen using iNTD, which assigns transit agencies across the country and their service areas with ”likeness scores” for demographic and service metrics as summarized in Table 22 and Table 23. After excluding outliers (transit properties with two or more characteristics that widely differed from MWRTA), iNTD’s overall likeness score was used to rank peers. In addition, Cape Ann Transportation Authority and Berkshire Regional Transit Authority were identified by MWRTA for inclusion in the peer analysis.

Table 22. Peer Systems Census Data (2018)

System	Town	State	Population Density	Growth Rate	Percent Poverty
MetroWest Regional Transit Authority	Framingham	MA	2,359	6.8%	10.2%
County of Howard	Ellicott City	MD	3,177	5.3%	11.5%
Pasco County Board of County Commissioners	Port Richey	FL	2,773	19.0%	14.2%
Western Contra Costa Transit Authority	Pinole	CA	6,715	5.7%	10.2%
Fort Bend County, Texas	Sugar Land	TX	3,369	25.0%	14.8%

System	Town	State	Population Density	Growth Rate	Percent Poverty
Laketran	Grand River	OH	2,283	4.9%	14.7%
Cape Ann Transportation Authority	Gloucester	MA	2,359	6.8%	10.2%
Berkshire Regional Transit Authority	Pittsfield	MA	1,689	N/A	14.1%

Source: iNTD, 2018

Table 23. Peer Systems Operating Data (2018)

System	Ridership	% Demand Response	Operating Budget	Revenue Miles Operated	Revenue Hours Operated	Farebox Revenue
MetroWest Regional Transit Authority	827,638	49%	$10,608,370	2,254,868	166,033	$1,026,261
County of Howard	761,950	37%	$11,459,106	2,088,262	132,420	$749,207
Pasco County Board of County Commissioners	889,925	17%	$8,557,051	2,022,966	106,327	$867,473
Western Contra Costa Transit Authority	1,207,792	11%	$10,580,562	1,858,830	103,842	$2,291,732
Fort Bend County, Texas	392,613	62%	$7,784,536	1,754,794	82,601	$787,832
Laketran	723,459	73%	$14,966,471	3,154,067	182,038	$1,388,568
Cape Ann Transportation Authority	220,650	34%	$2,494,251	323,479	22,903	$180,227
Berkshire Regional Transit Authority	570,503	24%	$6,334,181	1,280,573	78,232	$819,615

Source: NTD, 2018

A comparison of key service metrics across peers is presented in Table 24. MWRTA's productivity per mile is average among peers but productivity per hour is below average. This is likely a result of MWRTA passengers having a shorter average trips length (5.2 miles compared to 10 miles for the average peer). The cost per hour to provide service, and the resulting cost per passenger, is lower for MWRTA than its peer group. Farebox recovery is slightly below average but near the median of the peer group. Note that the Western Contra Costa Transit Authority includes a premium commuter express service for a $5 per passenger base fare, which may contribute to its high farebox recovery. The subsidy required per MWRTA passenger is in line with the average for the peer group.

Table 24. Peer System Performance (2018)

Peer	UPT/ Mile	UPT/ Hour	Cost/ Hour	Cost/ UPT	Subsidy/ UPT	Farebox Recovery
MetroWest Regional Transit Authority	0.37	4.98	$63.89	$12.82	$11.58	9.7%
County of Howard	0.36	5.75	$86.54	$15.04	$14.06	6.5%
Pasco County Board of County Commissioners	0.44	8.37	$80.48	$9.62	$8.64	10.1%
Western Contra Costa Transit Authority	0.65	11.63	$101.89	$8.76	$6.86	21.7%
Fort Bend County, Texas	0.22	4.75	$94.24	$19.83	$17.82	10.1%
Laketran	0.23	3.97	$82.22	$20.69	$18.77	9.3%
Cape Ann Transportation Authority	0.68	9.63	$108.90	$11.30	$10.49	7.2%
Berkshire Regional Transit Authority	0.45	7.29	$80.97	$11.10	$9.67	12.9%

Source: NTD 2018

Appendix B Commonwealth Environmental Policies

Transportation is a leading producer of greenhouse gas emissions (GHG) in the Commonwealth, and the only sector identified through the Global Warming Solutions Act of 2006 (GWSA) with a volumetric increase in GHG emissions; meaning that any effort to reduce emissions must significantly target the transportation system. In 2008, through the passage of the GWSA, Massachusetts committed to reduce its GHG emissions by 80 percent below 1990 baseline levels by 2050. Commonwealth policies and action on environmental sustainability in the transportation sector can be summarized by a series of executive orders, regulations, and recommendations to achieve the Commonwealth's goal of reducing transportation-related emissions by 40 percent over the next 20 years,[24] helping to meet the emissions reduction goals of the GWSA.

Massachusetts is establishing an integrated climate change strategy for the Commonwealth through the implementation of Executive Order 569, which was issued in 2017 and had major elements codified in 2018.[25] It aims to develop a roadmap for climate mitigation and adaptation for the Commonwealth.

Sustainability requirements for transportation are summarized in 310 CMR 60.05,[26] where the Climate Protection and Green Economy Advisory Committee advises the Executive Office of Energy and Environmental Affairs on measures to reduce GHG emissions in accordance with the GWSA. The purpose of 310 CMR 60.05 is to assist the Commonwealth in achieving the GHG emissions reduction goals, and to establish an annually declining aggregate GHG emissions limit for MassDOT, as well as general requirements for determining aggregate transportation GHG emissions in the transportation planning process.

To be in line with this regulation, RTAs in particular must conduct comprehensive service reviews; identify service enhancements to increase passenger ridership; identify vehicle technology and operational improvements that can reduce aggregate transportation GHG emissions; and work within the MPO process to prioritize and fund GHG reduction projects and investments.

In Executive Order 579: Establishing the Commission on the Future of Transportation in the Commonwealth, the goal is to determine "how to ensure that transportation planning, forecasting, operations, and investments for the period from 2020 through 2040 can best account for likely demographic, technological, climate, and other changes in future mobility and transportation behaviors, needs and options."[27] This will be accomplished by further investigating topics such as climate and resiliency, transportation electrification, autonomous and connected vehicles, transit and mobility services, and land use and demographics.[28] In 2019, the Commission on the Future of Transportation released their report, *Choices for Stewardship: Recommendations to Meet the Transportation Future*.[29]

The report provides five recommendations with a planning horizon of year 2040. The recommendations include (1) modernizing existing transportation assets; (2) creating a 21st Century "mobility infrastructure" to prepare the Commonwealth for emerging changes in transportation technology and behavior; (3) substantially reducing GHG emissions from the transportation sector; (4) coordinating and modernizing land use, economic development, housing, and transportation policies and investment in order to support resilient and dynamic regions and communities throughout the Commonwealth; and (5) changing current

[24] https://www.mass.gov/doc/a-vision-for-the-future-of-massachusetts-regional-transit-authorities/download.
[25] https://www.mass.gov/executive-orders/no-569-establishing-an-integrated-climate-change-strategy-for-the-commonwealth.
[26] https://www.mass.gov/doc/final-regulation-4/download.
[27] https://www.mass.gov/executive-orders/no-579-establishing-the-commission-on-the-future-of-transportation-in-the.
[28] https://www.mass.gov/executive-orders/no-579-establishing-the-commission-on-the-future-of-transportation-in-the.
[29] https://www.mass.gov/doc/choices-for-stewardship-recommendations-to-meet-the-transportation-future-volume-1/download.

transportation governance and financial structures in order to better position Massachusetts for the transportation system that it needs in the next years and decades.

Current RTA-specific sustainable practices are described in Chapter 4 and recommendations for future sustainable practices are described in Chapter 8.

Appendix C Community and Stakeholder Outreach Results

MWRTA Public Outreach Survey

As a primary tool to gather feedback from current riders and non-riders, the AECOM team worked closely with MWRTA staff to develop an online survey to gain a better understanding of stakeholder preferences regarding current services and elicit feedback about the desire for potential improvements or changes. The following is a summary of the survey results for the entire duration of the survey.

Survey Development and Publication

Through a series of bi-weekly meetings, the AECOM team and MWRTA staff developed a detailed list of survey questions to capture an understanding of critical data, including who uses and does not use MWRTA services; the incentives that drive ridership; the barriers to attracting more customers; and from a customer satisfaction perspective, how MWRTA is doing. In addition, the survey included questions to measure the frequency of use, routes used, and connections to multimodal transit. The survey was made available online in English and Spanish with an introduction question to select a language.

As a result of the COVID-19 pandemic and the required social distancing protocols mandated by the state, in-person public outreach events were cancelled and moved to a virtual platform. To drive traffic to the online survey, which was hosted on Survey Monkey, a series of email blasts urging participation were sent to an extensive list of stakeholder groups, major employers, community partners, elected officials, local chambers of commerce, and municipal website administrators. MWRTA posted a link to the survey on its website and a series of posts were shared and advertised on the MWRTA Twitter account. To further drive awareness, MWRTA also arranged to have a link to the survey posted at terminals and made survey flyers available on buses.

The survey was designed to be mobile-friendly and not require someone to be at a computer to fill it out. The survey link was accompanied by a QR code to enable a quick scan using a smart phone to direct immediately to the survey.

Online Survey

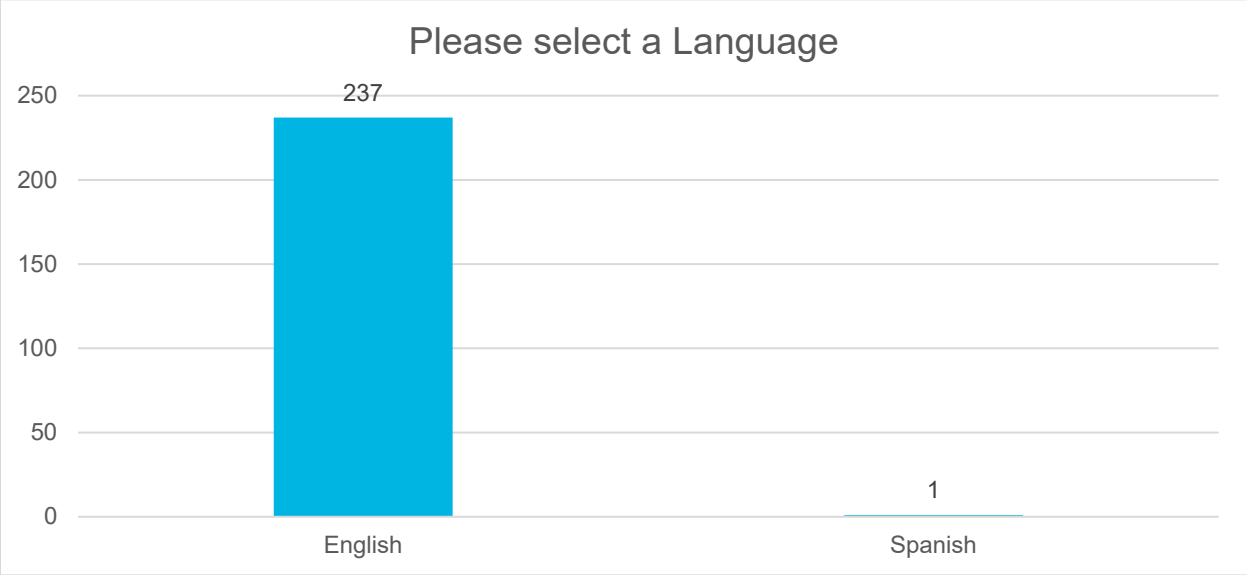
The online survey for MWRTA opened to the public on July 2, 2020, and was open through August 25, 2020. The survey was designed to gather feedback from current MWRTA riders and non-riders. For those who indicated they use the service, a series of questions about current use of the system were asked. For those who indicated they did not use the service, questions focused on why they do not use the service and what it might take to attract them as riders.

Responses

A total of 238 responses were collected using the online survey, including 237 in English and 1 in Spanish. Not all respondents answered all the survey questions, in some cases by choice and in other cases due to the survey instrument funneling riders and non-riders to different sets of relevant questions. The percentages in all figures are based on the number of responses received for that question rather than on the total number of responses.

1. Please select a language: Por favor, seleccione un idioma.

A total of 237 (99.58 percent) participants selected English versus 1 participant (0.42 percent) who selected Spanish.

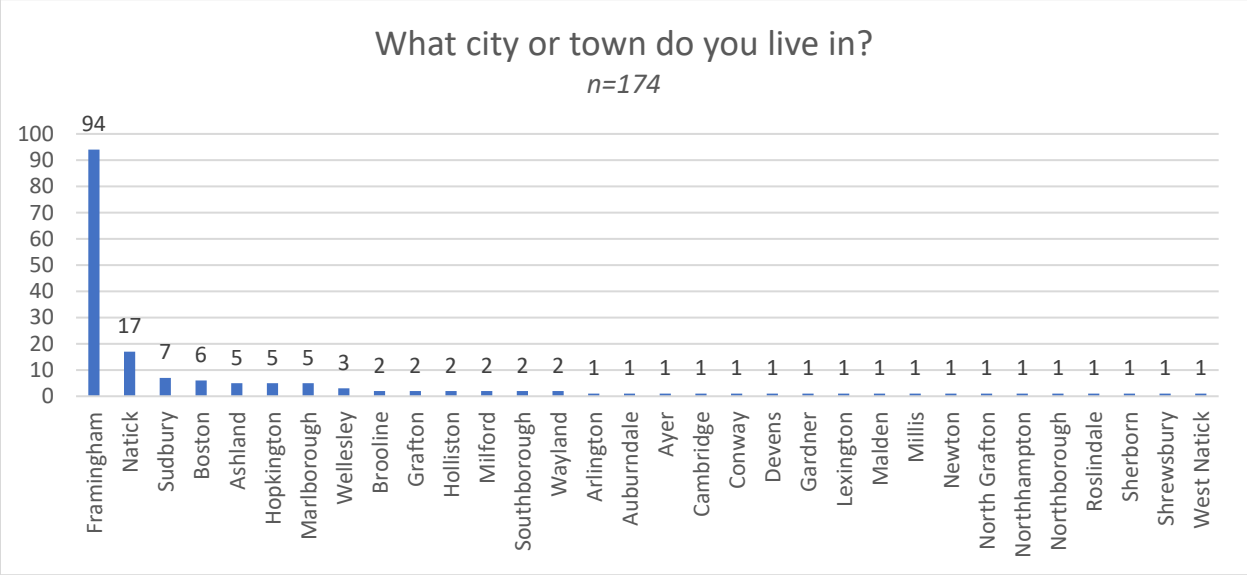


A narrative summary of the survey completed in Spanish is included below:

The respondent lives in Framingham and is a user of MWRTA services primarily to get to work. They are not satisfied with the frequency of service and they feel an acceptable level of frequency would be a bus every 15 minutes on Routes 4N, 5, 7, 9, and the Green Line Connector. The individual feels the biggest barrier to using the service is the limitations on service on Sundays and weekends. The respondent would like to see Sunday/Weekend service to Jefferson Hills Apartments in Framingham and to Wellesley Square. They felt the most important upgrade to MWRTA service would be increased evening, Sunday, and weekend service, but they were not specific as to where. This respondent elected to enter to win the $50 Amazon Gift Card.

2. What City or Town do you live in?

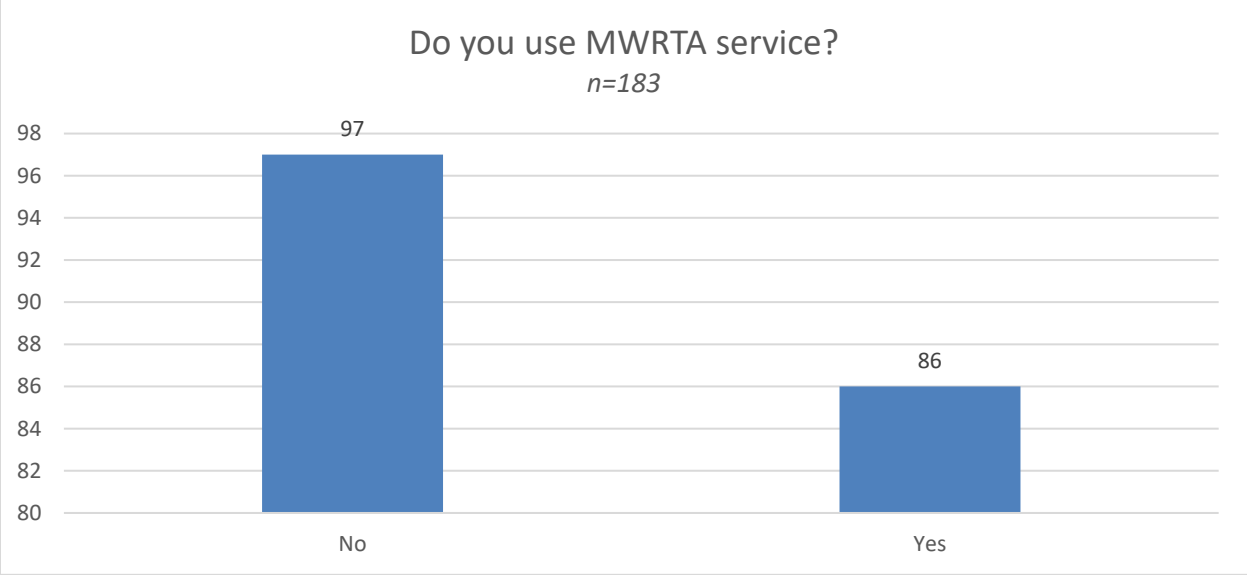
174 respondents answered this question representing 32 cities and towns. 74 skipped this question. The notable spikes were Framingham with 94 selections, Natick with 17, Sudbury with 7, and Boston with 6. The complete results are listed in the following chart.



3. Do you use MWRTA bus service?

A total of 183 respondents answered this question and 70 skipped it. Approximately 53 percent (97) answered “No” to this question indicating they do not use the service. Approximately 47 percent (86) selected “Yes.”

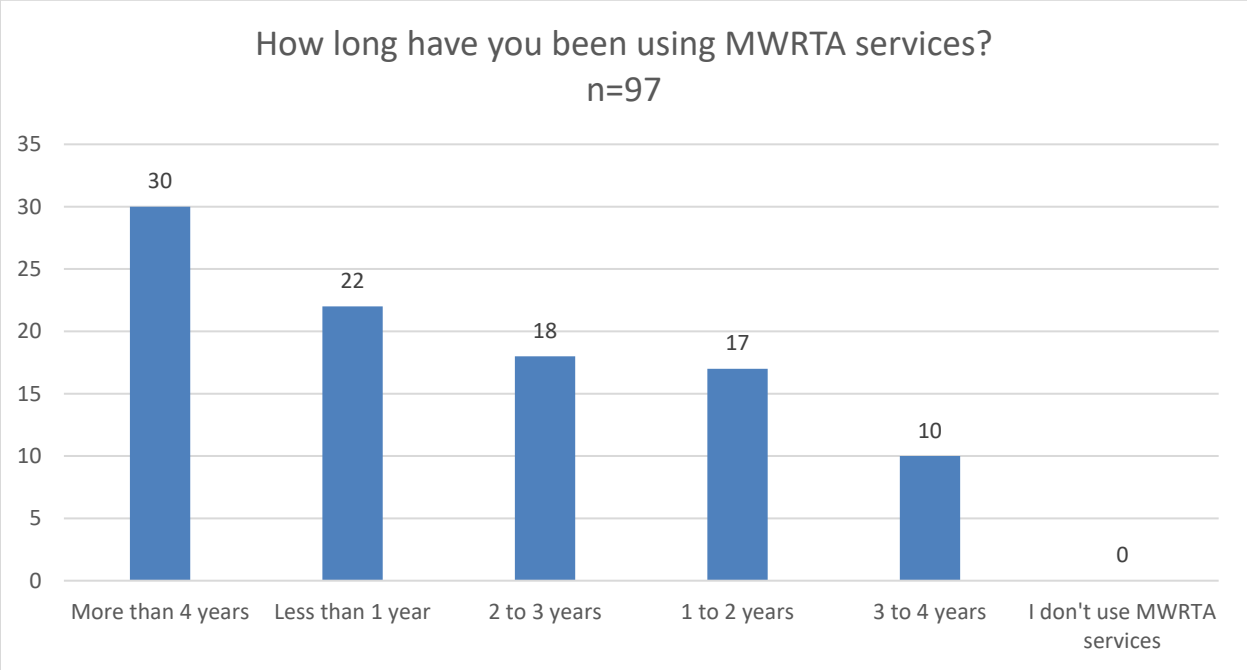
Answer Choices	Percent	Responses
Yes	46.99%	86
No	53.01%	97
	Answered	**183**
	Skipped	**70**



4. How long have you been using MWRTA services?

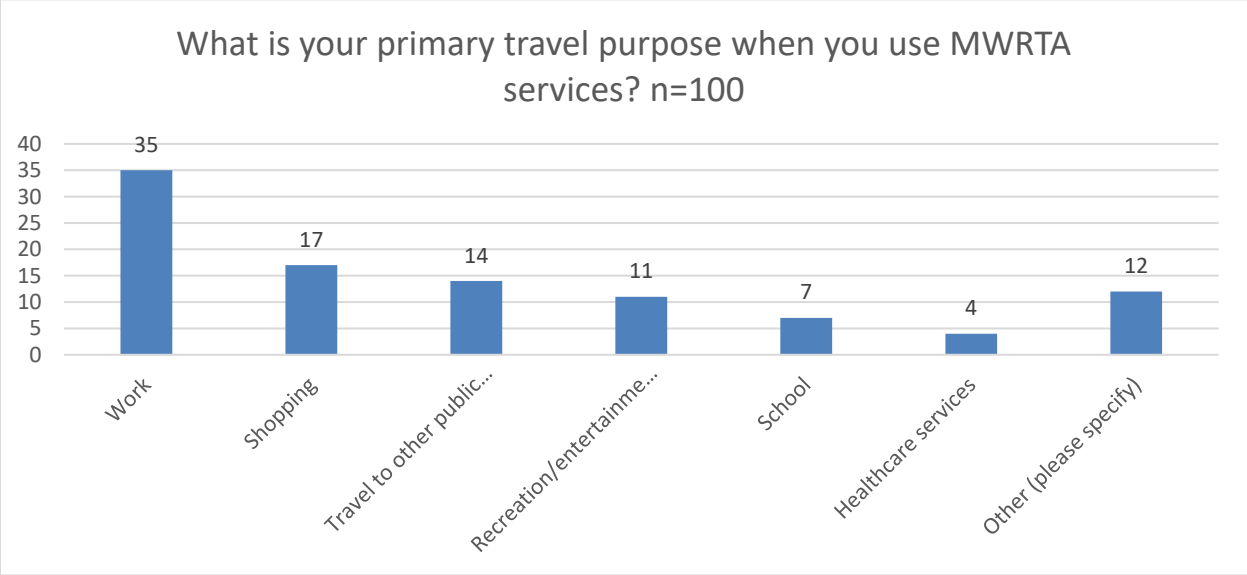
A total of 97 respondents answered this question and 156 skipped it. For those answering this question (97), the length of time customers have been using MWRTA service varies widely.

Thirty percent (30) have been using MWRTA service for 4 or more years; 22 percent (22) have been using MWRTA services less than one year; 18 percent (18) have been using MWRTA services 2 to 3 years; 17 percent (17) have been using MWRTA services from 1 to 2 years; and 10 percent (10) have been using MWRTA services 3 to 4 years. All the 97 respondents who answered the question use the service.



5. What is your primary travel purpose when you use MWRTA services?

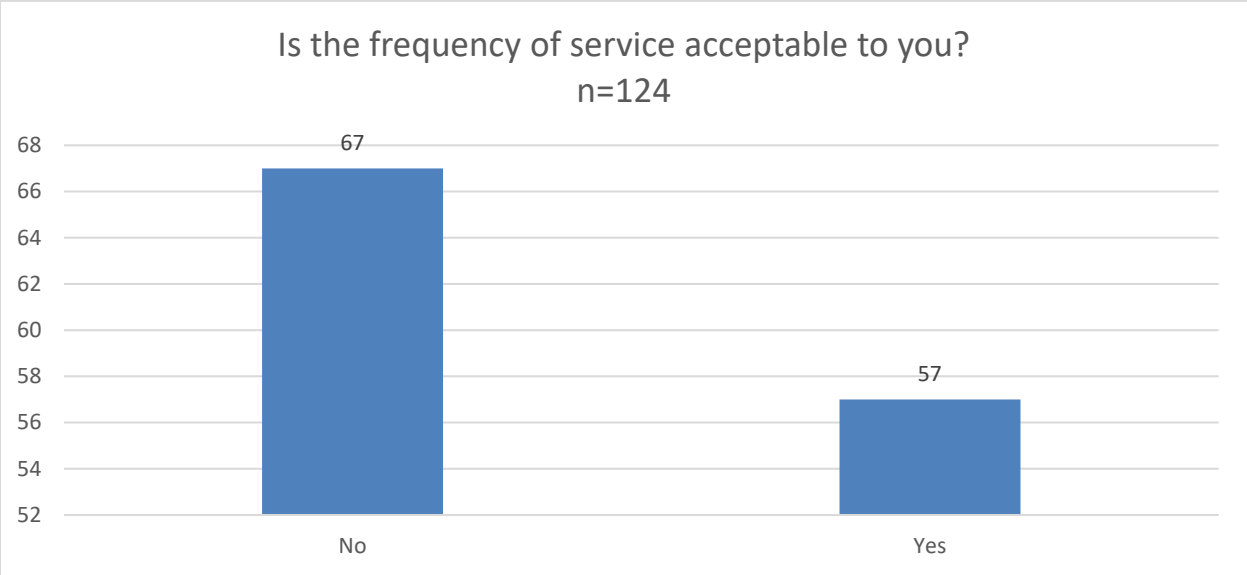
This question was answered by 100 respondents and skipped by 153. Approximately 35 percent selected “Work”; 17 percent selected “Shopping”; 14 percent selected “Travel to other public transportation”; 11 percent selected “Recreation/entertainment”; 7 percent selected “School”; 4 percent selected “Healthcare”; and 12 percent selected “Other (please specify). Of the 12 respondents who selected “Other,” 6 mentioned using the service for all or most of their transportation needs. One respondent claims to use the service to train visually impaired persons to utilize the service, and the others were non-specific.



6. Is the frequency of bus service acceptable to you?

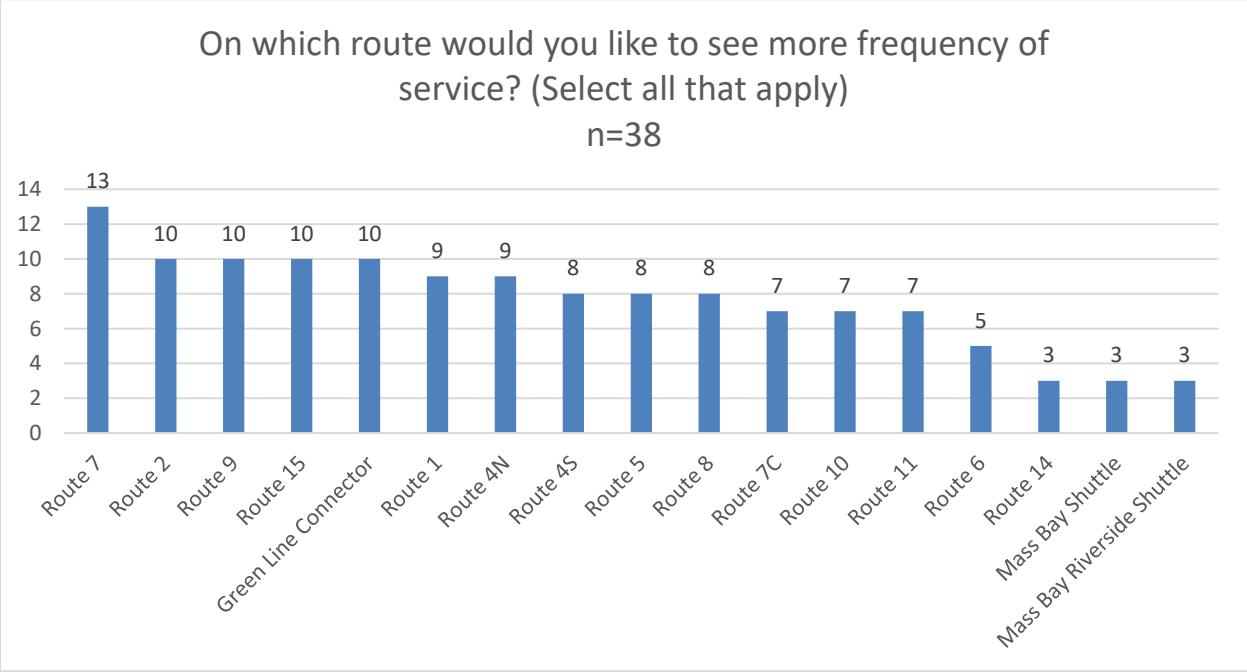
A total of 124 respondents answered this question and 129 skipped it. Of the 124 who answered, 67 percent answered “No”; and 57 percent answered “Yes” indicating they are satisfied with the frequency of service.

Answer Choices	Percent	Responses
Yes	45.97%	57
No	54.03%	67
	Answered	**124**
	Skipped	**129**



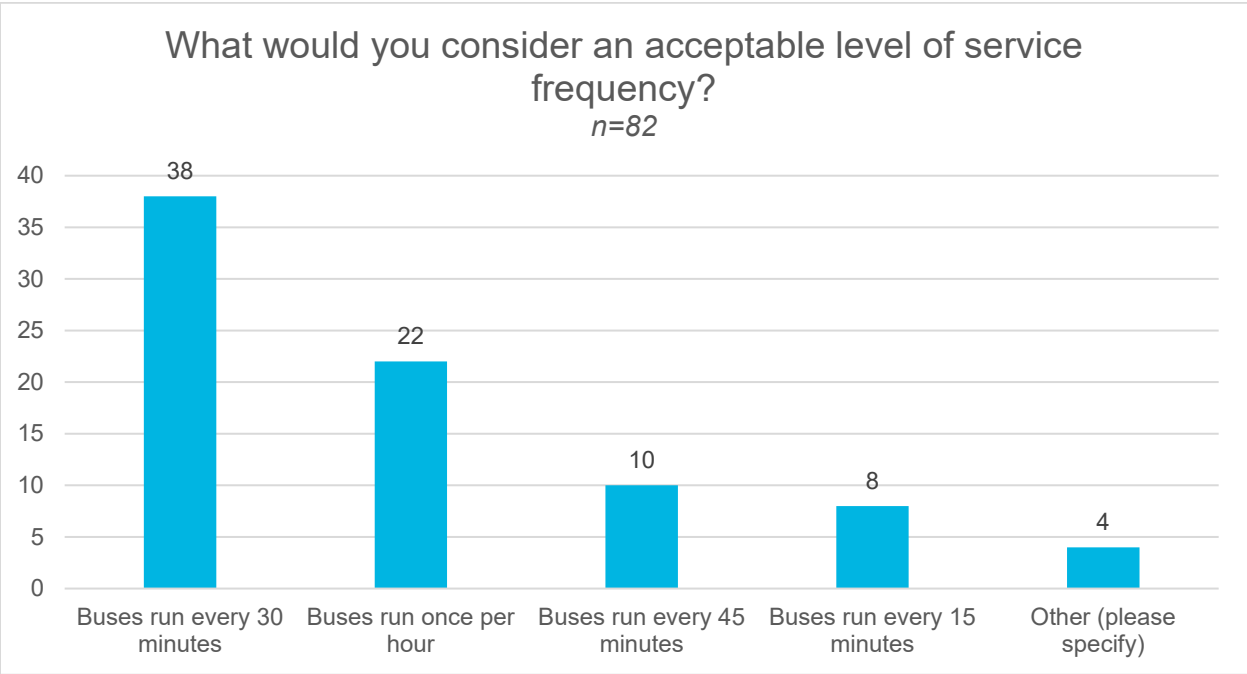
7. On which route would you like to see more frequency of bus service? (Select all that apply).

A total of 38 respondents answered this question with 215 choosing to skip. Of the 38 who answered, 34 percent (13) selected “Route 7”; 26 percent (10) selected “Route 2”; 26 percent (10) selected “Route 9”; 26 percent (10) selected “Route 15”; 26 percent (10) selected “Green Line Connector”; 24 percent (9) selected “Route 1”; 24 percent (9) selected “Route 4N”; 21 percent (8) selected “Route 4S”; 21 percent (8) selected “Route 8”; 21 percent (8) selected “Route 5”; 18 percent (7) selected “Route 7C”; 18 percent (7) selected “Route 10”; 18 percent (7) selected “Route 11”; 13 percent (5) selected “Route 6”; 8 percent (3) selected “Route 14”; 8 percent (3) selected “Mass Bay Shuttle”; and 8 percent (3) selected “Mass Bay Riverside Shuttle”.



8. What would you consider an acceptable level of service frequency?

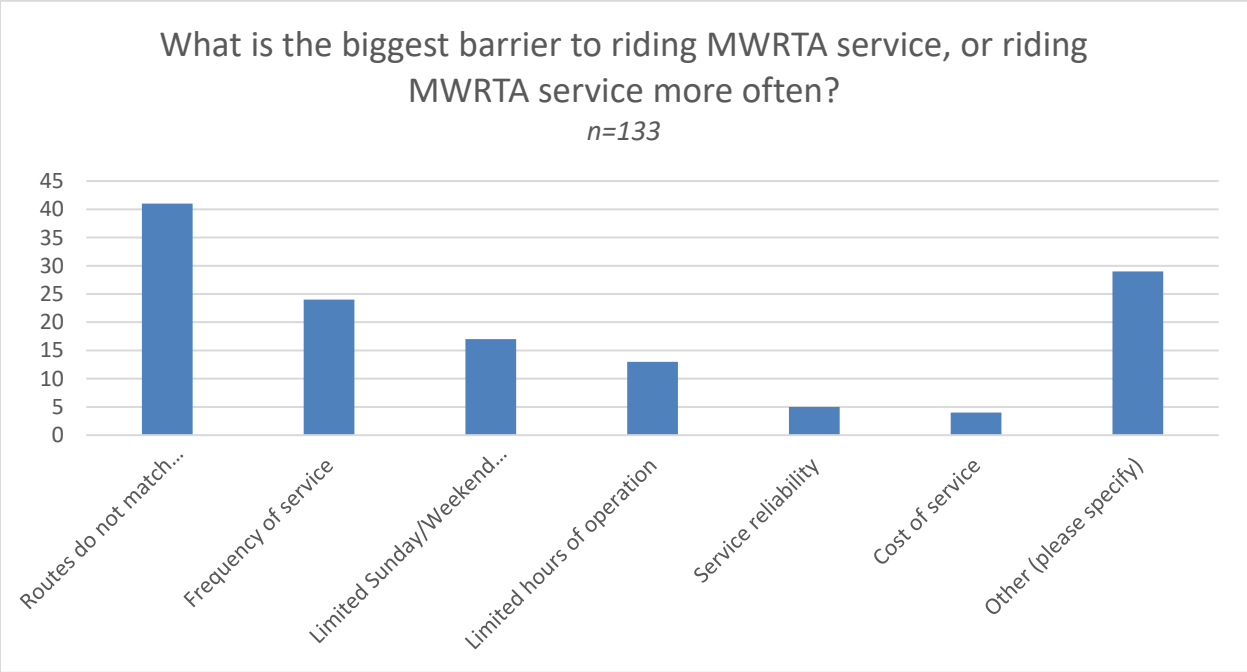
A total of 82 respondents answered this question with 171 choosing to skip it. Of the 82 who responded, 46 percent (38) would like to see buses run every 30 minutes; 26 percent (22) would like to see buses run at least once per hour; 12 percent (10) desired buses run every 45 minutes; and 9 percent (8) would like to see buses run every 15 minutes. Of the four respondents who selected "Other (Please specify)," one would like to see buses run every 30 to 45 minutes; one would like to see Saturday service; one would like to see every 15 to 20 minutes; and one did not use the service.



9. What is the biggest barrier to riding MWRTA service, or riding MWRTA service more often?

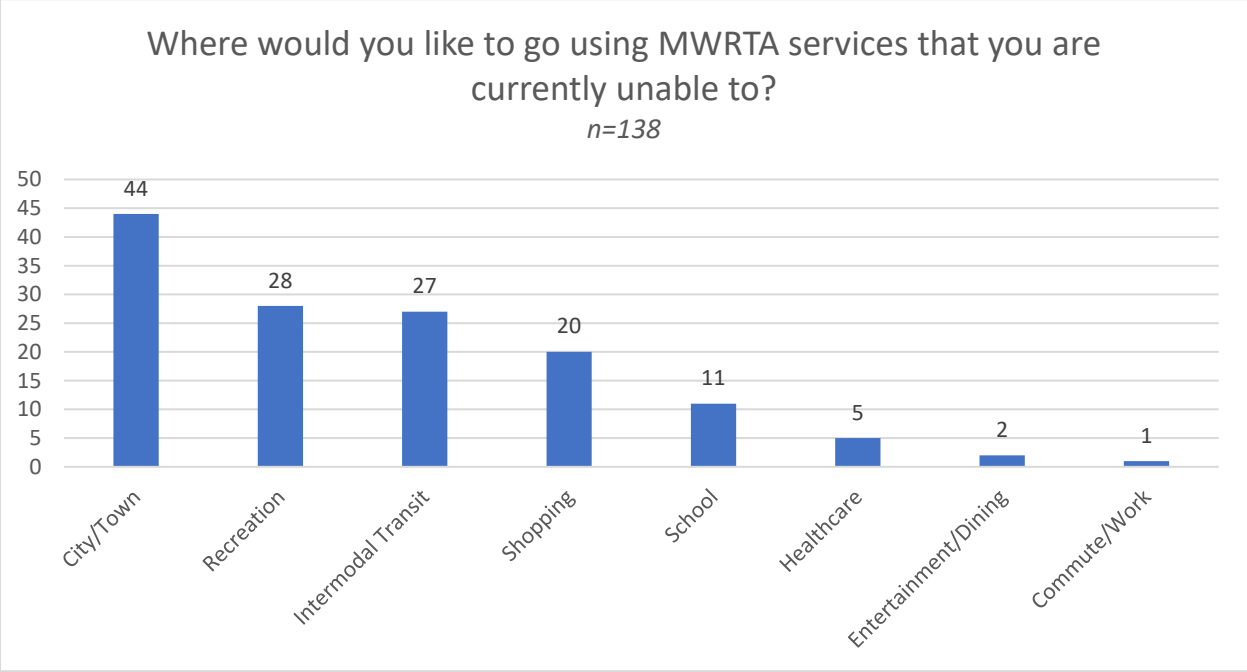
A total of 133 respondents answered this question with 120 electing to skip it. Of the 133 who answered it, 31 percent (41) selected, “Routes do not match desired destinations; 18 percent (24) selected, “Frequency of service”; 13 percent (17) selected “Limited Sunday/Weekend Service”; 10 percent (13) selected “Limited Hours of Operation”; 4 percent (5) selected “Service reliability”; and 3 percent (4) selected “Cost of Service”.

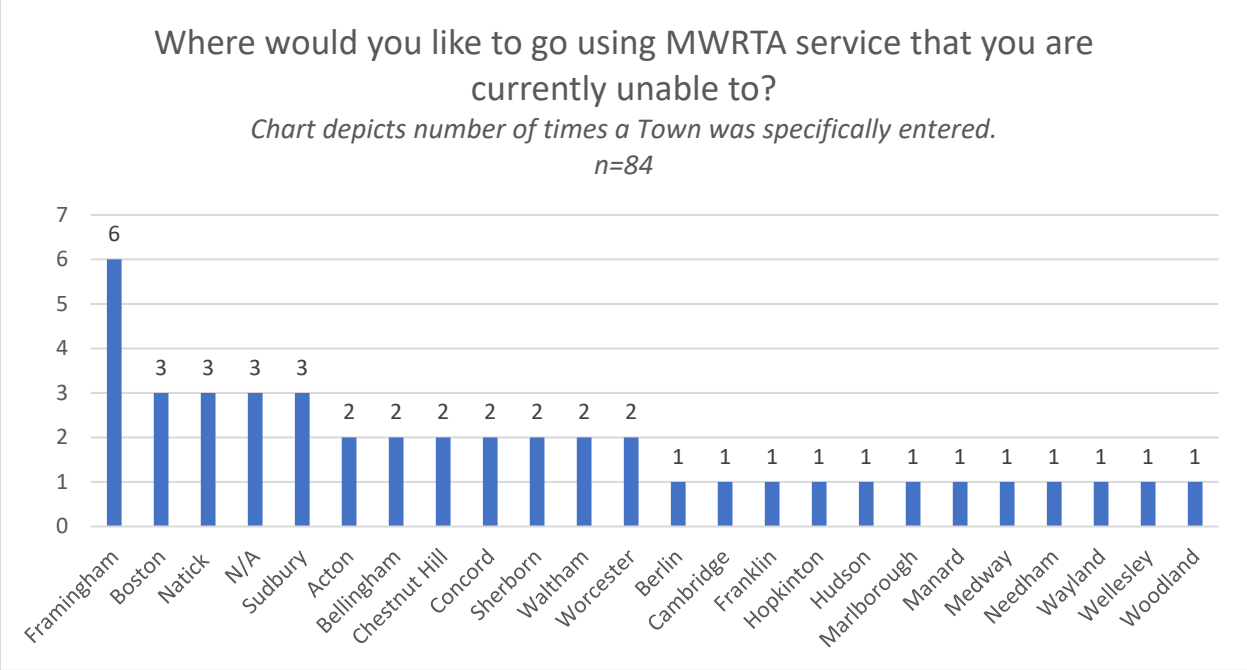
Approximately 22 percent (29) respondents elected to write in their comments. A range of additional barriers were mentioned. Notable answers included COVID-19 concerns, access to automobiles, reliability of service, no service to desired locations, and too much lead time required to book services.



10. Where would you like to go using MWRTA service that you are currently not able to? (Leave blank if you are satisfied with the service).

A total of 84 respondents answered this question with 169 electing to skip it. The 84 who responded generated 138 individual entries as each person was allowed to state up to three desired destinations. A range of general and specific destinations were listed. There were 44 entries that mentioned cities or towns throughout the MetroWest and Greater Boston region. Examples of specific destinations include places like “Natick Mall or “Forge Park MBTA Station,” whereas examples of general destinations might include “Doctor’s office” or “Worcester.” In order to analyze the results, all destinations were defined using eight general categories shown in the following chart. The city/town category was broken down further to show the range of towns and number of times each was selected.



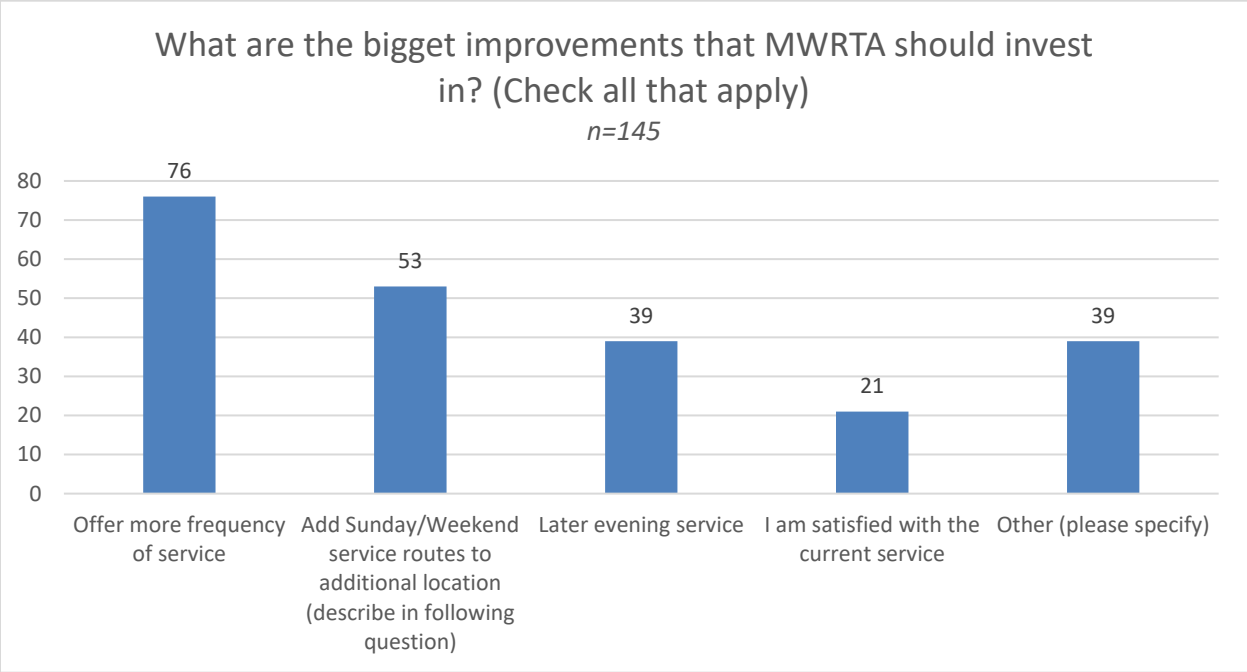


11. What are the biggest improvements MWRTA should invest in? (Check all that apply).

A total of 145 respondents answered this question with 108 electing to skip it. Of the 145 who answered, 52 percent (76) selected “Offer more frequency of service”; 36 percent (53) selected “Add Sunday/Weekend service routes to additional location (describe in following question)”; 27 percent (39) selected “I am satisfied with existing service”; and 27 percent (39) selected “Other (please specify).

Those selecting “Other (please specify)” included written answers covering a broad range of general and specific suggestions. General answers included remarks like, “last mile efforts” or “Make it reliable.” Or, “The whole system needs expansion.” Specific recommendations included suggestions like, “Cheap rates for teens,” or “Deep cleaning of vehicles,” or “Add route 10 on

Saturdays." Of the 39 written answers few were alike, so a trend is not obvious from "Other" (please specify) data.



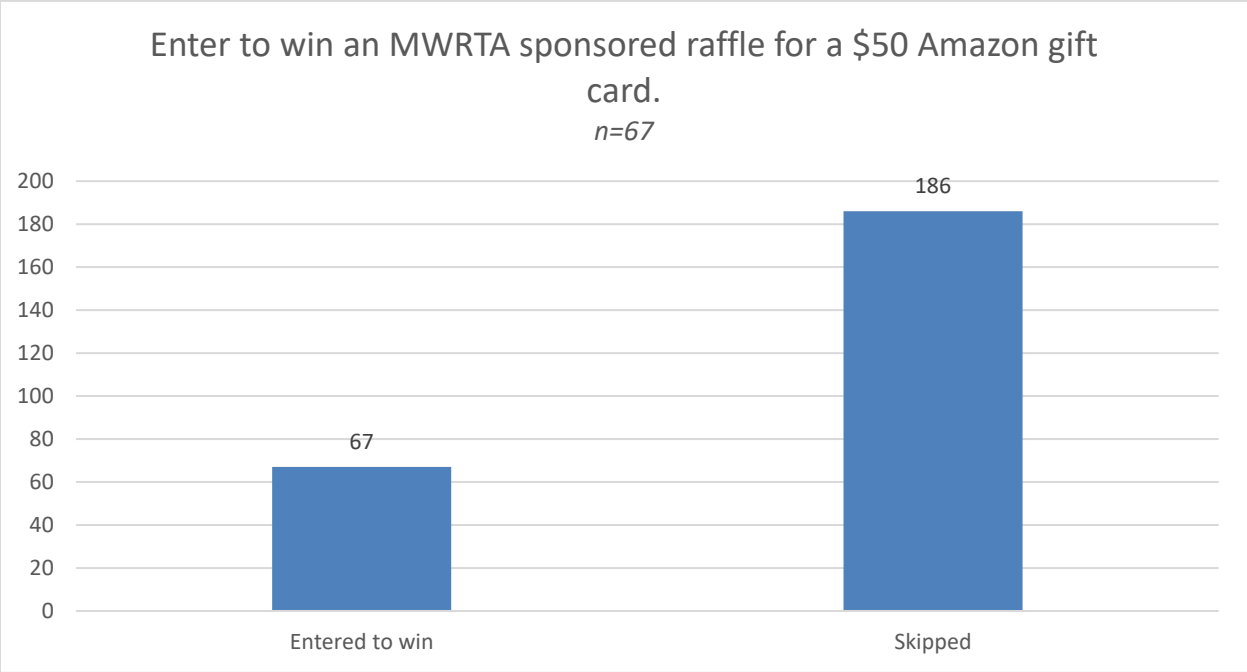
12. To what locations would you like to add Sunday and/or weekend service?

A total of 14 respondents answered this question with 239 electing to skip it. Of note, 5 of the 14 suggestions included recommendations to provide service to Garden in the Woods in Framingham. This suggestion is prominent in response to other survey questions as well. The complete list of specific responses is included in the following table.

Question #12 - Suggested Locations for Sunday/Weekend Service
1. Route 10 or 11 Sunday service, West Natick to the Natick Mall to supplement Route 11 Saturday service
2. Garden in the woods
3. All areas
4. Framingham public library concerts on Sundays
5. Riverside Station
6. Beacon & Summer Streets to downtown Framingham
7. Nursing homes, the hospital, all along Route 9 in Framingham and Natick
8. Garden in the woods
9. Garden in the Woods, Framingham, Massachusetts
10. Recreational locations, namely to Garden in the Woods
11. I think MWRTA should have a stop at the Garden in the Woods
12. Ashland MA MBTA from Holliston
13. Marlborough, Hudson, Framingham and Northborough
14. Add All Route 10 Locations.

13. If you would like to win an MWRTA sponsored raffle for a $50 Amazon Gift Card, please enter your email below. Thank you for your participation!

A total of 68 respondents entered to win the $50 Amazon Gift Card between July 2 and August 25, 2020 (Email addresses were provided to MWRTA management). 186 respondents elected to skip this question.



Bus Operator Survey

As part of the outreach process conducted as part of the CRTP, the bus operators were also solicited as to their opinions and input regarding MWRTA services.

Prior to the onset of the COVID-19 pandemic, the intention was to conduct this outreach in person with the bus operators at the MWRTA facility. However, the social distancing rules and travel restrictions imposed by the pandemic instead meant that the study team pivoted to soliciting bus operator input via a survey instrument. The survey instrument was printed and distributed to the bus operators by MWRTA staff, who then scanned the surveys and shared them with the study team.

The survey questions, along with some key takeaways from the bus operators who responded, are as follows:

1. Are there areas where the traffic "environment" is an issue? Such as: long signals, poor parking enforcement, etc.?

   Generally, the drivers mentioned State Route 9, the perceived narrowness of Arlington Street on MWRTA Route 4, and the desire for MWRTA to reexamine its flag stop policy to determine if it could be eliminated on the busiest segments of roadway, such as State Route 9.

2. Are there any operational bus stop issues you wish to tell us about? Such as: not enough passenger waiting area, inadequate loading areas, or stops where it may be difficult to see waiting passengers?

   Drivers mentioned concerns with the stop at the Lowe's in Framingham (on MWRTA Route 4/State Route 30), at Roche Brothers (which should be moved to Citizens Bank), and the general perceived lack of "passenger waiting areas" in Framingham, Marlborough, Wellesley, and Milford.

3. Under normal, pre-COVID conditions, are there routes with not enough running time? If so, can you tell us the times of the day that this occurs, as well as any other on- time challenges for the route?

   Drivers mentioned MWRTA Route 4, due to the traffic on State Route 9, as well as the perception that the route connecting with the MBTA at Riverside tends to have on-time performance issues. MWRTA Route 15 was also mentioned as perhaps needing more running time.

4. Under normal, pre-COVID conditions, can you tell us where the heaviest ridership stops are that you see most frequent?

   Generally, the drivers mentioned the Natick Mall, MathWorks, Cedar Gardens, the 2nd Street area in Framingham, Market Basket, Walmart, and the MBTA facilities (as well as the "Banana Lot").

5. Can you share with us any operational safety issues, such as sight distance, difficulty in seeing pedestrians, bikes, other modes, or areas where you are required to cross multiple lanes of traffic quickly?

   Drivers mentioned the stop in front of Kohl's (on Route 14), the stop by the Kiddie Academy on Mathworks Express, the aforementioned stop in front of Lowe's on MWRTA Route 4, Dennison Crossing, and any time there is construction along the routes.

6. Under normal, pre-COVID conditions, are there any areas where there is overcrowding on the bus and possible passengers unable to board? If so, at what locations and times of day?

Drivers mentioned shopping areas in general, and the Walmart area and Natick Mall specifically.

7. Thinking back to how service was before COVID, are there other service concerns or suggestions you would like to share?

   One driver replied and mentioned that the overall level of information provided to riders could be improved.

8. Are there any other non-service related issues or concerns you wish to share?

   One driver again mentioned Arlington Street on MWRTA Route 4, and that sometimes there appears to be much congestion near the Wegman's.

Stakeholder Survey

MetroWest Regional Transit Authority (MWRTA) Comprehensive Regional Transit Plan Update
Stakeholder Survey

The safety and well-being of MWRTA passengers and employees remain our foremost consideration during the COVID-19 pandemic. While we are taking every precaution to protect the public today, we must also continue to plan for the future when full service resumes. Funding for service improvements often takes years to secure and feedback from our various stakeholders is vital to ensuring that we have the resources necessary for robust service improvements in the future.

With this in mind, we would like to get your input about the future of the MWRTA and to provide us with your feedback. Please answer the following questions below to the best of your ability, and email your responses back to EmilyV@mwrta.com . Thank you for your time.

1. Are there any local concerns, economic development issues, potential new trip generators, and/or potential changes in land use that may affect MWRTA bus routes?

MWRTA leadership is likely aware of residential construction in downtown Framingham. There is also a proposed moratorium, which could limit potential users. Trip generators from these new residents may create the need to re-evaluate routes and bus frequencies.

2. Do you know of any specific issues related to schedule, routes, connections, or stops?

No. The seniors living in Burkis Square are taking the Callahan Center bus to Market Basket on Fridays.

3. Do you have any recommendations for improving schedules, routes, connections, or bus stops?

Lack of Sunday service is one issue. No other major complaints aside from lack of frequency, which is driven by population.

4. Do you know of any recent or expected changes (land use, economic development, class/employee schedules, etc.) that we should consider for future MWRTA services?

Possible residential housing moratorium.

5. What impact do you feel COVID-19 will have on commuter patterns in general? Have you, or do you have plans to implement a longer term telework policy? Do you anticipate commuter traffic levels to return to a pre-COVID volume?

Fewer riders due to pandemic concerns. I do anticipate riders will return to physical offices due to the challenges of working remotely, but they may not work as many hours in the office.

6. Would your organization be willing to post information regarding MWRTA service announcements, public involvement efforts, or other important MWRTA information via a website or social media page?

YES!

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2. Do you know of any specific issues related to schedule, routes, connections, or stops?

   Just the lack of access to transportation in Sherborn. It does affect those that need caregiver services as aides and home caregivers can't get here and therefore, it is difficult to provide help to older and/or disabled residents.

3. Do you have any recommendations for improving schedules, routes, connections, or bus stops?

4. Do you know of any recent or expected changes (land use, economic development, class/employee schedules, etc.) that we should consider for future MWRTA services?

   We are expecting some new housing developments to be built in the near future. Some of that housing will be for seniors in particular.

5. What impact do you feel COVID-19 will have on commuter patterns in general? Have you, or do you have plans to implement a longer term telework policy? Do you anticipate commuter traffic levels to return to a pre-COVID volume?

6. Would your organization be willing to post information regarding MWRTA service announcements, public involvement efforts, or other important MWRTA information via a website or social media page?
   Yes, as it pertains to our residents

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Stakeholder Survey

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1. Are there any local concerns, economic development issues, potential new trip generators, and/or potential changes in land use that may affect MWRTA bus routes?
   NO

2. Do you know of any specific issues related to schedule, routes, connections, or stops?
   NO

3. Do you have any recommendations for improving schedules, routes, connections, or bus stops?
   No, You and your team has been accommodating t any request we had.

4. Do you know of any recent or expected changes (land use, economic development, class/employee schedules, etc.) that we should consider for future MWRTA services?
   No

5. What impact do you feel COVID-19 will have on commuter patterns in general? Have you, or do you have plans to implement a longer term telework policy? Do you anticipate commuter traffic levels to return to a pre-COVID volume? The school has canceled services due to being remote for the semester.

6. Would your organization be willing to post information regarding MWRTA service announcements, public involvement efforts, or other important MWRTA information via a website or social media page?
   Yes