

Regional 2020 Transportation Plan



ENDORSED JULY 16, 2019

Certification of the Southeastern Massachusetts Metropolitan Planning Organization

310 CMR 60.05: Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation

This will certify that the Transportation Improvement Program and Air Quality Conformity Determination for the Southeastern Massachusetts Metropolitan Planning Organization (SMMPO) is in compliance with all applicable requirements in the State Regulation 310 CMR 60.05: Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation. The regulation requires MPO to:

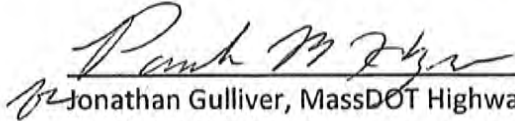
1. 310 CMR 60.05, 5(a)(1): Evaluate and report the aggregate transportation GHG emissions and impacts of RTPs and TIPs;
2. 310 CMR 60.05, 5(a)(2): In consultation with MassDOT, develop and utilize procedures to prioritize and select projects in RTPs and TIPs based on factors that include aggregate transportation GHG emissions impacts;
3. 310 CMR 60.05, 5(a)(3): Quantify net transportation GHG emissions impacts resulting from the projects in RTPs and TIPs and certify in a statement included with RTPs and TIPs pursuant to 23 CFR Part 450 that the MPO has made efforts to minimize aggregate transportation GHG emissions impacts;
4. 310 CMR 60.05, 5(a)(4): Determine in consultation with the RPA that the appropriate planning assumptions used for transportation GHG emissions modeling are consistent with local land use policies, or that local authorities have made documented and credible commitments to establishing such consistency;
5. 310 CMR 60.05, 8(a)(2)(a): Develop RTPs and TIPs;
6. 310 CMR 60.05, 8(a)(2)(b): Ensure that RPAs are using appropriate planning assumptions;
7. 310 CMR 60.05, 8(a)(2)(c): Perform regional aggregate transportation GHG emissions analysis of RTPs and TIPs;
8. 310 CMR 60.05, 8(a)(2)(d): Calculate aggregate transportation GHG emissions for RTPs and TIPs;
9. 310 CMR 60.05, 8(a)(2)(e): Develop public consultation procedures for aggregate transportation GHG reporting and related GWSA requirements consistent with current and approved regional public participation plans;
10. 310 CMR 60.05, 8(c): Prior to making final endorsements on the RTPs, TIPs, STIPs, and projects included in these plans, MassDOT and the MPOs shall include the aggregate transportation GHG emission impact assessment in RTPs, TIPs, and STIPs and provide an opportunity for public review and comment on the RTPs, TIPs, and STIPs.
11. 310 CMR 60.05, 8(a)(1)(c): After a final GHG assessment has been made by MassDOT and the MPOs, MassDOT and the MPOs shall submit MPO-endorsed RTPs, TIPs or projects within 30 days of endorsement to the Department for review of the GHG assessment.

**The Signatories of the SMMPO (or their designees) took this action
at a public meeting of the SMMPO on July 16, 2019.**

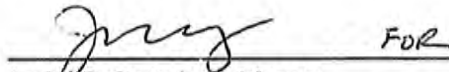
Southeastern Massachusetts Metropolitan Planning Organization
310 CMR 60.05: Global Warming Solutions Act Requirements for the Transportation Sector and
the Massachusetts Department of Transportation
Member Signature Page



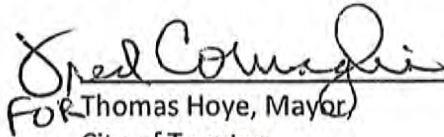
Stephanie Pollack, Secretary and CEO
Massachusetts Department of Transportation (MassDOT)



Jonathan Gulliver, MassDOT Highway Div.
Administrator

 FOR

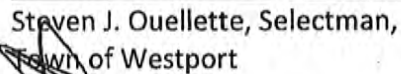
Jasiel F. Correia II, Mayor,
City of Fall River

 FOR

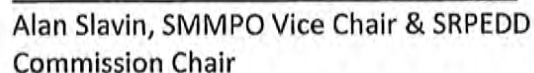
Thomas Hoyer, Mayor,
City of Taunton



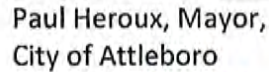
Leilani Dalpe, Selectman,
Town of Middleborough




Steven J. Ouellette, Selectman,
Town of Westport



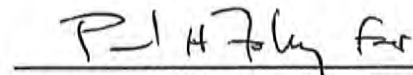
Alan Slavin, SMMPO Vice Chair & SRPEDD
Commission Chair



Paul Heroux, Mayor,
City of Attleboro

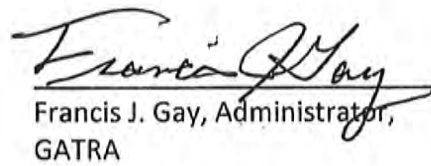
 Sr

Jon Mitchell, Mayor,
City of New Bedford

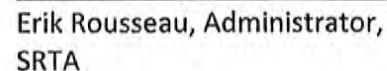
 FOR

Charles Murphy, Sr., Selectman,
Town of Fairhaven

VACANT
(Formally held by Town of Wareham)



Francis J. Gay, Administrator,
GATRA



Erik Rousseau, Administrator,
SRTA

The Signatories of the SMMPO (or their designees) took this action
at a public meeting of the SMMPO on July 16, 2019.

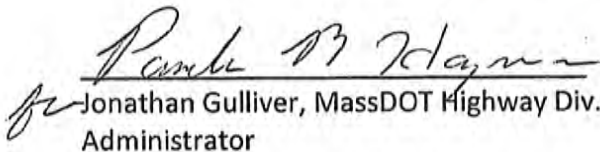
Southeastern Massachusetts Metropolitan Planning Organization

Endorsement of the FFY 2020 Regional Transportation Plan

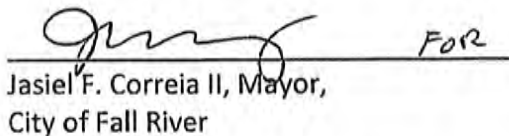
This is to certify that the members of the Southeastern Massachusetts Metropolitan Planning Organization (SMMPO), in accordance with the Comprehensive, Cooperative and Continuing transportation planning process as required in 23 CFR Part 450 of the Federal Regulations, the SMMPO has reviewed and endorses the FFY2020 Regional Transportation Plan for the region.



Stephanie Pollack, Secretary and CEO
Massachusetts Department of Transportation (MassDOT)



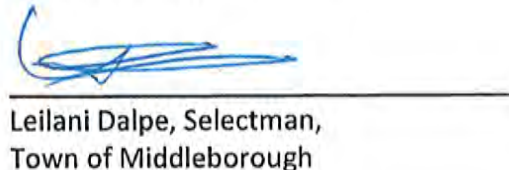
for Jonathan Gulliver, MassDOT Highway Div.
Administrator



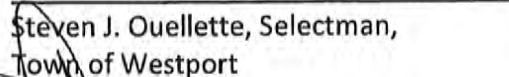
Jasiel F. Correia II, Mayor,
City of Fall River



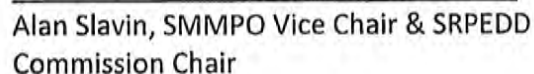
for Thomas Hoyer, Mayor,
City of Taunton



Leilani Dalpe, Selectman,
Town of Middleborough



Steven J. Ouellette, Selectman,
Town of Westport

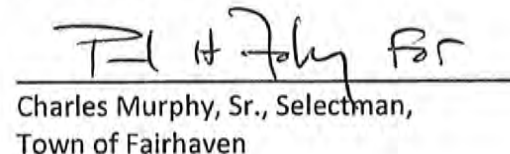


Alan Slavin, SMMPO Vice Chair & SRPEDD
Commission Chair

Paul Heroux, Mayor,
City of Attleboro

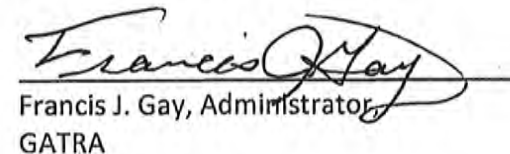


Jon Mitchell, Mayor,
City of New Bedford



Charles Murphy, Sr., Selectman,
Town of Fairhaven

VACANT
(Formally held by Town of Wareham)



Francis J. Gay, Administrator,
GATRA

Erik Rousseau, Administrator,
SRTA

The Signatories of the SMMPO (or their designees) took this action
at a public meeting of the SMMPO on July 16, 2019.

Southeastern Massachusetts Metropolitan Planning Organization (SMMPO) Members

Stephanie Pollack, Secretary and CEO, MassDOT
Alan Slavin, Selectman, Town of Wareham
Paul Heroux, Mayor, City of Attleboro
Jasiel F. Correiro II, Mayor, City of Fall River
Jonathan F. Mitchell, Mayor, City of New Bedford
Thomas C. Hoyer, Mayor, City of Taunton
Jonathan Gulliver, Administrator, MassDOT Highway Division
Charles F. Murphy Sr., Selectman, Town of Fairhaven
Stephen J. Ouellette, Selectman, Town of Westport
Leilani Dalpe, Selectman Chair, Town of Middleborough
Erik Rousseau, Administrator, SRTA
Francis J. Gay, Administrator, GATRA
Deborah Melino-Wender, Chairman, SRPEDD Commission

Southeastern Regional Planning and Economic Development District (SRPEDD) Staff

Administration:

Jeffrey Walker, AICP, Executive Director
Ling Ling Chang, CPA, Chief Financial Officer
Stacy S. Royer, Office Manager

Transportation Staff:

Paul L. Mission, Transportation Planning Manager
Lisa Estrela-Pedro, Assistant Director of Transportation Planning
Jennifer Chaves, Principal Transportation Planner
Jacqueline Jones, AICP, Principal Transportation Planner
Lilia Cabral-Bernard, Senior Transportation Planner/Title VI Coordinator
Angela Azevedo, Senior Transportation Planner & Mobility Manager
Guoqiang Li, PTP, Senior Transportation Planner
Luis DeOliveira, Transportation Planner
Charles Mills, Transportation Planner
Rebekah Rose, Transportation Planning Intern

Additional Contributors:

Grant King, AICP, Director of Comprehensive Planning & Housing
William Napolitano, Environmental Program Director
Jed Cornock, AICP, Principal Comprehensive Planner & Contract Coordinator
Helen A. Zincavage, AICP, CFM, Senior Comprehensive Planner
Sara Brown, Comprehensive Planner

Title VI and Nondiscrimination Notice of Rights of Beneficiaries

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code through Massachusetts Department of Transportation contracts 88920 and 10242. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

The Southeastern Massachusetts Metropolitan Planning Organization (SMMPO) through the Southeastern Regional Planning and Economic Development District (SRPEDD) operates its programs, services, and activities in compliance with federal nondiscrimination laws including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and related statutes and regulations. Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of **race, color, or national origin** (including **limited English proficiency**), be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal assistance. Related federal nondiscrimination laws administered by the Federal Highway Administration, the Federal Transit Administration, or both prohibit discrimination on the basis of **age, sex, and disability**. These protected categories are contemplated within SRPEDD's Title VI Programs consistent with federal interpretation and administration. Additionally, SRPEDD provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with US Department of Transportation policy and guidance on federal Executive Order 13166.

Individuals seeking additional information or wishing to file a Title VI/Nondiscrimination complaint may contact the SRPEDD Title VI/Nondiscrimination Coordinator at the contact information here. All such complaints must be received, in writing, within 180 days of the alleged discriminatory occurrence. A complaint may be filed with the following:

Southeastern Massachusetts Metropolitan Planning Organization (SMMPO)

Title VI Coordinator

SRPEDD

88 Broadway, Taunton, MA 02780

Phone: 508 824-1367 or dial 711 to use MassRelay

Email: lcabral@srpedd.org

The MassDOT Title VI Specialist

MassDOT Office of Diversity and Civil Rights
10 Park Plaza, Suite 3800, Boston, MA 02116
Phone: 857-368-8580 or 7-1-1 for Relay Service.
Email: MassDOT.CivilRights@state.ma.us

The MassDOT Office of Diversity and Civil Rights – Investigations Unit

Assistant Secretary of Diversity & Civil Rights, MassDOT
10 Park Plaza, Suite 3800, Boston, MA 02116
Email: odcrcomplaints@dot.state.ma.us

Massachusetts Public Accommodation Law (M.G.L. c 272 §§92a, 98, 98a) and Executive Order 526 section 4 also prohibit discrimination in public accommodations based on religion, creed, class, race, color, denomination, sex, sexual orientation, nationality, disability, gender identity and expression, and veteran's status, and SRPEDD and the SMMPO assures compliance with these laws. Public Accommodation Law concerns can be brought to SRPEDD's Title VI / Nondiscrimination Coordinator or to file a complaint alleging a violation of the state's Public Accommodation Law, contact the Massachusetts Commission Against Discrimination (MCAD) within 300 days of the alleged discriminatory conduct.

The SMMPO is equally committed to implementing federal Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." In this capacity, the SMMPO identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The SMMPO carries out this responsibility by involving minority and low income individuals in the transportation process and considering their transportation needs in the development and review of the SMMPO's transportation plans, programs and projects.

English: If this information is needed in another language, please contact SRPEDD's Title VI Coordinator by phone at (508) 824-1367.

Portuguese: Caso esta informação seja necessária em outra idioma, favor contar o coordenador em Título VI do SRPEDD pelo telephone (508) 824-1367.

Spanish: Si necesita esta información en otro idioma, por favor contacte al coordinador de SRPEDD del Título VI al (508) 824-1367.

Haitian / French Creole: Si yo bezwen enfòmasyon sa a nan yon lòt lang , tanpri kontakte Koòdonatè Tit VI SRPEDD a pa telefòn nan (508) 824-1367.

Main Text Table of Contents

Introduction	1
Goals & Objectives of the Regional Transportation Plan.....	3
Performance Measures.....	7
The Transportation Evaluation Criteria Process	9
Public Outreach.....	10
Title VI & EJ Demography and Equity Analysis.....	15
Trends	21
Socio-Economic Trends & Projections	21
Regional Land Use Assessment.....	25
“Business as Usual” Growth Examples	25
Example of “Climate and Sustainability” Growth	26
Travel Patterns.....	29
Recommendations.....	32
Congestion.....	34
Major Congestion Projects.....	39
Recommendations	43
Safety	46
Recommendations	52
Bridges	54
Structurally Deficient Bridges	56
Regionally Significant Bridges	58
Recommendations	61
Pavement Management	63
Recommendations	65
Public Transit.....	67
Existing Services	67
GATRA and SRTA Characteristics	67
The Transit Deficiency.....	71
Changing Characteristics and Issues	73
Recommendations	76

Study Needs	78
Commuter Rail	80
Existing Service in the Region	80
Ridership/Parking Trends.....	81
Multi-Modal Connections	82
Future Commuter Rail in the Region - The South Coast Rail Project.....	82
Extension of Commuter Rail to Wareham	83
Conclusions and Recommendations	84
Commuter and Intercity Bus	86
Private Company Intercity Bus Service	86
Regional Intercommunity Bus Service	87
Bus Facilities and Intermodal Centers	88
Commuter Bus Issues.....	88
Recommendations	89
Study Needs	90
Bicycle Transportation	91
Recommendations.....	94
Pedestrian Transportation	97
Recommendations	98
Airports	101
Recommendations	103
Freight and Intermodal	104
Regional Freight Issues	104
Seaports	105
Airports.....	111
Rail.....	111
Trucking.....	113
Recommendations	113
Environmental Coordination and Climate Change	115
Air Quality	117
Stormwater: The Geographic Roadway Runoff Inventory Program – GRRIP	118
Stream Continuity and Critical Linkages: The GRRIP/Stream Continuity Program.....	119

Flooding: Flood Inundation Hazard Studies	120
SRPEDD-EPA-RTWN and the Watershed Management Optimization Tool: WMOST.....	121
General Recommendations for Environmental Coordination in Transportation Planning	124
Performance Measures.....	126
Recommendations:	129
Air Quality in Transportation	130
Summary of Recommendations and Financial Constraint.....	132
Project Cost and Fiscal Constraint	134
Infrastructure Improvements	134

List of Figures

Figure 1	A GATRA Diesel / Electric Hybrid Bus
Figure 2	Culvert Flooding on Briggs Street in Dighton from a tributary of the Segregansett River in January of 2018.
Figure 3	Map of the SMMPO / SRPEDD Region
Figure 4-A	Public Survey Results
Figure 4-B	Public Survey Results
Figure 4-C	Public Survey Results
Figure 5	Map of 2020 Regional Transportation Plan Project Locations and Title VI / Environmental Justice
Figure 6	Percentage Increases in Population
Figure 7	Employment Trends for the SMMPO Region
Figure 8	Map of Bridges in the SMMPO / SRPEDD Region
Figure 9	Compared Structurally Deficient Bridges
Figure 10	Compared Bridge Sufficiency Rating
Figure 11	SRPEDD Bridge Sufficiency Rating
Figure 12	SRPEDD Bridge Funding Sources
Figure 13	Regional Pavement Management Comparisons
Figure 14	Map of the GATRA Service Area
Figure 15	Map of the SRTA Service Area
Figure 16	Map of Existing and Proposed Commuter Rail in SMMPO / SRPEDDD Region
Figure 17	Map of SMMPO Existing and Proposed Bicycle Facilities

List of Tables

Table 1	Comparison of Historical Growth & Projections for Regional Population
Table 2	Retail vs. Non-retail Employment Forecasts, 2010-2040
Table 3	Urban Center Employment Since 1980
Table 4	Town of Carver Business as Usual vs. Climate and Suitability Scenarios
Table 5	Journey to Work Trends
Table 6	Travel Time to Work
Table 7	Method of Travel to Work
Table 8	Results of the HH Travel Survey, SMMPO Region vs. Massachusetts
Table 9	Regional Traffic Growth 2008 to 2018
Table 10	Congestion Intersections
Table 11	Status of Identified Congestion Corridors and Intersections
Table 12	Pre-Timed Traffic Signals
Table 13	Location of Electric Fueling Stations
Table 14	Top 100 Most Dangerous Locations
Table 15	Bicycle Crash Corridors 2010-2012
Table 16	Environmental Partnering Agencies and Organizations since 1999
Table 17	Massachusetts Statewide Aggregate CO2 Estimated Emissions Impacts from Transportation (all emissions in tons per summer day)
Table 18	SMMPO Funding Guidance
Table 19	Funding Commitments in FFY2020-2024 TIP
Table 20	FFY2020 to 2024 TIP
Table 21	Non Target SMMPO projects FFY2020 to 2024
Table 22	Future Projects
Table 23	GATRA Vehicle Replacement Schedule

Table 24 GATRA Funding Estimates FFY2015 – FFY2040

Table 25 SRTA Vehicle Replacement Schedule

Table 26 SRTA Funding Estimates FFY2015 - FFY2040

Introduction

Transportation is one of our most basic human needs. It is as essential to our social fabric as it is to our financial system. People need transportation to live and to work, and transportation systems should focus on people rather than on vehicles or assets. Transportation needs are driven by an array of forces, including those we are familiar with, such as land use and where jobs are located; and some that are fairly new, such as technology, climate change and our rapidly changing population. These new forces are changing the way we plan transportation but that planning should also incorporate regional equity, social equity, and mode funding equity.

Technology is changing the landscape of transportation. Technology is utilized to manage traffic routing, and transit and traffic signal systems. It counts traffic, detects crashes, and automates the collecting of tolls and fares. It provides commuters with real-time traffic information and GPS, real-time transit arrival information, and a host of other services. Our roads are filled with electric and hybrid vehicles, and transit buses powered by hydrogen or biofuels. (See Figure 1.)

Mobility on demand (MOD) and public-private partnerships are becoming the future of transportation and it all works with technology. MOD is the integration of ride-sharing and ride-hailing services with transit operations. MOD provides individual travelers with transportation choices that include car-sharing, bike-sharing, ride-sharing, ride-sourcing, Transportation Network Companies (TNC) such as Uber and Lyft, as well as public transportation. Planning needs to keep pace with all of these new components of transportation, all while maintaining the existing infrastructure.



Figure 1: A GATRA Diesel / Electric Hybrid Bus

With the rising sea level, we need to make infrastructure resilient to climate change by anticipating and planning for future conditions, especially since nearly 5 million people in the U.S. live within 4 feet of the local high-tide level. Difficult decisions on how and where to invest resources to bolster, replace or move existing infrastructure will have to be made. Climate change considerations should be integrated into planning. Standards for the resilience of new infrastructure should be raised, and zoning changes that discourage development in vulnerable areas should be made. (See Figure 2.)



Figure 2: Culvert Flooding on Briggs Street in Dighton from a tributary of the Segregansett River in January of 2018.

Over the next 20 years, the U.S. population is projected to grow by about 46 million, with most of this growth occurring in cities. By 2040, one in five Americans will be over age 65. The SMMPO is expected to grow by 6% to 2040, with a majority of that population (baby boomers) reaching retirement age. Older Americans require mobility choices allowing them to age in place. Persons with disabilities comprise nearly 20% of the U.S. population, and one-third of people over the age of 65 have a disability that limits their mobility. The 2013 to 2017 American Community Survey reports that 34% of the SMMPO population 65 years or older has a disability. All people should have both the opportunity and the options to be independent and mobile.

In 2018, the Commission on the Future of Transportation in the Commonwealth released its two-part report on transportation needs and challenges facing the Commonwealth between 2020 and 2040. The report considers complex factors affecting the future of transportation such

as increasing electrification of the Commonwealth's transportation system, preparing transportation infrastructure for climate change and the intersection of land use, housing and transportation policies.¹

The report also mentions moving towards a transportation system that focuses on people rather than on vehicles or assets and that this paradigm shift can help to meet multiple goals at once: improving social equity and access to opportunities, reducing GHG emissions, and mitigating traffic congestion.

These are lofty goals that will need a major paradigm shift to reduce an 85% dependency on single occupancy vehicles used for commuting by residents of southeastern Massachusetts. The challenge with meeting these goals is to resolve the problem resulting from decades of suburban sprawl; many people from countless origins going to countless destinations. The desire to give up the automobile exists, but land use and the current transportation system does not allow this in the region. To begin to change the way we travel, requires a change in the way we live and develop within the region. If change can begin and be allowed to continue, it will lead to positive results such as access to opportunities, improving traffic congestion and air quality, and enhancing quality of life.

Goals & Objectives of the Regional Transportation Plan

The Southeastern Regional Planning and Economic Development District (SRPEDD) is a Regional Planning Agency serving 27 cities and towns in southeastern Massachusetts as shown in Figure 3. In the area of transportation planning, SRPEDD receives funding from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) through the Massachusetts Department of Transportation (MassDOT) to maintain a comprehensive, cooperative, and continuing (3C) planning process for the region. The Regional Transportation Plan (RTP) is part of this 3C effort.

SRPEDD serves as the primary technical and support staff to the Southeastern Massachusetts Metropolitan Planning Organization (SMMPO). The SMMPO is responsible for transportation policy and federal resource allocation decisions in the region. Projects included in the SMMPO's Regional Transportation Plan are projects that are considered significant to our region. This includes the projects that are fiscally constrained, or have funding sources, as well as a separate wish-list of projects that are also important to our region but have no funding source as of yet.

¹ Commission on the Future of Transportation in the Commonwealth

The Regional Transportation Plan (RTP) is a needs assessment of our transportation infrastructure, including the associated costs to maintain this system into the future to the year 2040 and it contributes to the comprehensive vision for the future of this region.

The transportation planning process is a continuous one that is influenced by many factors including technology, climate change, population growth and shifts, policies, the constraints of funding, and participation. This process and this vision is not static, but must be continuously revisited and revised based upon analysis of the system and public input. The ultimate goal is to establish the means to affordably maintain our transportation system, promote and increase the use of alternative forms of transportation, and reduce a dependence on the automobile, all while preserving our surrounding environment, now especially challenging with climate change at our doorsteps. This nation's greatest investment is the transportation infrastructure and it remains the largest system managed by federal, state and local government. As a society, we cannot continue to maintain this present system without a major paradigm shift.



Figure 3: Map of the SMMPO / SRPEDD Region

SRPEDD communities participated in a community-driven land use planning exercise to identify where they would like to see growth (Priority Development Areas), and areas they would like to preserve (Priority Protection Areas). This was all part of the 5-Year Update of the South Coast Rail Land Use and Economic Development Corridor Plan (2009). These community Priority Areas were the foundation of the process that determined Community Priority Development Areas of Regional Significance (Regional PDAs) and Community Priority Protection Areas of Regional Significance (Regional PPAs). These efforts contributed to making this region well prepared for the South Coast Rail project.

The SMMPO has continuously supported and assisted in the efforts for the extension of commuter rail to Southeastern Massachusetts region for well over 20 years. Those efforts were rewarded on April 22, 2019, when MassDOT and the MBTA announced that the South Coast Rail Program had reached two critical Phase 1 milestones with financing and permitting.

According to Stephanie Pollack, Transportation Secretary and MassDOT CEO, “We are now well on our way to offering passenger rail service to the South Coast in a few short years with the financing secure, major permits in hand and infrastructure being built.”²

In the meantime, early action steps are underway including infrastructure work and the acquisition of land for stations. Phase 1 will deliver service to the South Coast late in 2023, providing a one-seat ride from Taunton, Fall River and New Bedford to Boston by extending the existing Middleborough/Lakeville Commuter Rail Line using diesel-powered trains to New Bedford and Fall River.

At the same time, MassDOT will proceed with designing, permitting and funding of the Full Build project. This route will travel from Boston's South Station to Stoughton using a portion of the Northeast Corridor. The route continues south along a combination of inactive right-of-way and freight railroad before splitting south of Taunton for terminus stations in Fall River and New Bedford.

The themes from the corridor plan and the transportation planning factors from the Federal Highway Administration do not specify specific transportation projects; rather, they represent concepts that should guide us through the development of this plan.

The eight planning factors as defined by federal transportation legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), were continued by the Moving Ahead for Progress in the 21st Century Act (MAP-21) (P.L. 112-141). MAP-21 was signed into law by President Obama on July 6, 2012.

On December 4, 2015 President Obama signed into law **Fixing America’s Surface Transportation** (P.L. No. 114-94) (**FAST Act**). The eight original planning factors under SAFETEA-LU were unchanged with the passage of MAP-21, but two factors were added with the FAST Act legislation, bringing the planning factors from eight to ten and are as follows:

- ***Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;***
- ***Increase the safety of the transportation system for motorized and non-motorized users;***

² MassDOT: South Coast Rail Project

- ***Increase the security of the transportation system for motorized and non-motorized users;***
- ***Increase the accessibility and mobility options available to people and for freight;***
- ***Protect and enhance the environment, promote energy conservation, improve quality of life and promote consistency between transportation improvements and state and local planned growth and economic development patterns;***
- ***Enhance the integration and connectivity of the transportation system, across and between modes, for people and for freight;***
- ***Promote efficient system management and operation;***
- ***Emphasize the preservation of the existing transportation system;***
- ***Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and***
- ***Enhance travel and tourism.***

Performance Measures

To achieve national performance goals identified in MAP-21, the SMMPO developed agency goals and adopted statewide performance measures in the 2016 Regional Transportation Plan, annual Unified Planning Work Programs (UPWP) and Transportation Improvement Program (TIP) documents through a performance-driven, outcome-based approach that includes state and public transportation operators. SRPEDD agency initiatives include a plan to establish the cost of maintaining the roadways in our region, an inventory of transportation services and infrastructure that could be impacted by climate change resulting in rising sea levels and flooding, a comprehensive livability program that provides options, and links transportation and land use planning.

The FAST Act continues MAP-21's overall performance management approach requiring critical changes to the planning process by mandating that investment priorities assist in meeting performance targets that would address key areas such as safety, infrastructure condition, congestion, system reliability, emissions and freight movement. This called for the integration of a performance based approach to decision making in support of the national goals and a greater level of transparency and accountability. The goal is to improve project decision-making and assist in more efficient investments of Federal transportation funds. In 2016, FHWA passed a rule establishing three performance measures (PM1, PM2, and PM3) that State DOTs and MPOs

must track, as required by MAP-21 and the FAST Act. PM1 is improving safety, PM2 is maintaining pavement and bridge conditions and PM3 is improving efficiency of the system and freight movement, reducing traffic congestion and reducing emissions. The SMMPO adopted PM1 measures in January 2018 and PM2 and PM3 measures in November of 2018.

The Federal Transit Authority (FTA) requires any Regional Transit Agency (RTA) that owns, operates, or manages capital assets used to provide public transportation and receives federal financial assistance under 49 U.S.C. Chapter 53 to develop a Transit Asset Management (TAM) plan. TAM Plans outline how people, processes, and tools come together to address asset management policy and goals, provide accountability and visibility for furthering understanding of leveraging asset management practices and support planning, budgeting, and communications to internal and external stakeholders. GATRA and SRTA's TAM Plans, and their associated Annual Performance Measures and Targets were adopted by the SMMPO on March 19, 2019. (A complete description of Performance Measures can be found in Appendix O.) The SMMPO certifies that the 2020 Regional Transportation Plan meets the requirements set forth by the SAFETEA-LU legislation and continued in the MAP21 and FAST Act legislation. The plan will be extensively distributed and discussed with all interested parties and is consistent with all other regional and state growth plans.

Vision Statement - *The vision for our region has not changed. It is to have a balanced, equitable, safe and efficient transportation system that supports livability and sustainability and supports the health of our people and our economy. The system needs to address the needs and safety of all users, including people of all races, colors, national origins, ages, genders and incomes, as well as older adults and persons with disabilities. We need less congestion and more transportation options that provide integration of modes to enhances the flow of people and goods from neighborhoods to around the globe while adapting to new and emerging technology.*

Planning for the communities and neighborhoods within our region must consider and integrate economic development, land use, the protection of the environment, and promote sustainability through the minimization of sprawl. Determining these needs while considering unforeseen variables sometimes seems like an impossible undertaking but here is where scenario planning can be helpful. Modeling future growth in the region has usually been completed in the same way. This "Business as Usual" growth modeling has now become a baseline. SPREDD staff has created a "Climate & Sustainability" growth scenario, providing another useful perspective, or scenario, on which to consider when making planning decisions. (See Appendix B - Trends, Projections & Patterns for complete detail.)

The 2020 Regional Transportation Plan is a complete evaluation of the region's transportation infrastructure, including the associated costs to maintain the system into the future to the year 2040. The plan also contains a separate wish-list of projects that are also important to our region but have no funding source as of yet. The Plan is updated every 4 years and addresses every type of transportation in our region, including roads and bridges, public transportation, as well as freight and airports, and the connections between all these options. The Plan also includes patterns and predictions concerning housing, jobs, land use and the economic vitality of the region. It considers the environment and the livability of our neighborhoods and how all of this ties together to make our region the best it can be.

The Transportation Evaluation Criteria Process

The application of performance measures will be most effective during the project review process in the development of the Transportation Improvement Program (TIP). Transportation Evaluation Criteria was established by the SMMPO in the early 2000's and the most recent update of the evaluation criteria in late 2018/early 2019 allows SRPEDD staff to assign a range of 0 to 100-point score to each project. In turn, this score gives the SMMPO a way to prioritize and to properly fund projects under the fiscal constraints of the TIP. This process also monitors regional equity in the distribution of transportation funding. SRPEDD staff reviews and evaluates each project to determine its impacts from the following perspectives, or categories:

Community Impact & Support – reviews the community and public support of a project, including the support of residents and business owners, as well as federal, state, or local elected officials and designated representatives of the town. It requests documentation as proof of this support by documenting public participation and outreach and/or discussions with the affected surrounding residents and businesses. It also asks for determination on the impact of surrounding land uses and impact on Environmental Justice populations.

Maintenance & Infrastructure – examines the infrastructure to be repaired to determine if a project is correcting documented physical defects within the project's traveled way, including substandard pavement conditions, drainage issues and traffic control devices.

Safety & Security – seeks to rate improvements to all modes for safer operation. Considered is the inclusion of the project on High Crash Listings from SRPEDD or MassDOT and whether the primary safety concerns were identified through safety analysis. Also considered are bicycle and pedestrian safety issues, the proximity to an emergency evacuation route or access to emergency facilities.

Mobility/Congestion – seeks to rate improvements to the efficiency of transportation, including an existing or projected congestion problem, such as bottlenecks. This category also evaluates if the project improves mobility, connectivity or access for multi modes of travel, if it is part of an existing freight route or improves reliability for Transit/Emergency Vehicles and/or includes pre-emptive technologies.

Livability/Sustainable Development – examines the potential impacts to the surrounding land use, neighborhoods, and community, including the concepts of Complete Streets, access to Transit Oriented Developments (TOD), residential effects and quality of life, PPAs and PDAs.

Environmental & Resiliency– examines the positive/negative environmental impacts of the project, such as air quality, water quality, impacts to habitats and wildlife and any other environmental issues such as flooding and/or sea level rise.

Public Outreach

The goal of the SMMPO's Public Participation Program is to ensure that all citizens, regardless of race, color, national origin, age, gender, gender identity or expression, disability, religion, ancestry or ethnicity, sexual orientation, Limited English Proficiency (LEP) or veteran's status have an equal opportunity to participate in the SMMPO's decision-making process. This program is designed to develop partnerships with, and enhance the participation in the transportation planning process, by groups and individuals of traditionally underrepresented and underserved populations.

Public participation is an ongoing activity and an integral part of one-time activities, such as corridor studies, and also of regularly repeated activities, such as the annual Transportation Improvement Program (TIP) process and this long range Regional Transportation Plan update. A public outreach effort is initiated before the start of any new project to solicit feedback, garner support or consider objections. An array of public participation techniques are utilized to disseminate information and to seek feedback from the public. Some of these techniques include public meetings, open houses, legal ads, mailings, the SRPEDD newsletter, flyers, brochures and surveys, as well as the SRPEDD website and social media such as Facebook and Twitter. Other regular efforts include the conducting of meetings at times and locations that are accessible and on transit routes; the routine translations of documents, meeting materials and surveys; and the availability of SMMPO documents in non-technical, web-based or other easily accessible formats as necessary and appropriate for purposes of obtaining input and comment.

Several steps were taken to ensure public involvement, and questions and concerns were considered as part of the planning process. This included regular updates to various boards and committees including:

- **Joint Transportation Planning Group (JTPG)**, a collection of representatives appointed to the JTPG by the Mayor of each of the four cities or by the Board of Selectmen from each town. JTPG meetings typically occur on the second Tuesday of each month to discuss issues with the development of the RTP, the Unified Planning Work program for the SRPEDD transportation staff and the development of the transportation Improvement Program. The JTPG is the advisory committee to the SMMPO and the SRPEDD Commission. Although members are in regular attendance, representatives from other agencies, public committees and the general public are welcome and encouraged to attend the monthly meetings.
- **The SRPEDD Commission** – a collection of representatives with two appointed from each of the 27 SRPEDD communities as well as a selection of at-large commissioners that represent the environmental justice populations. Some SRPEDD Commissioners represent their communities as the appointed official to the JTPG and in certain cases, are a member of the SMMPO. The SRPEDD commission explores broader issues with regional planning and community development which include transportation, but also includes the concerns with land use, economic development, and environmental protection.
- **Southeastern Massachusetts Metropolitan Planning Organization (SMMPO)** - The SMMPO is responsible for transportation policy and federal resource allocation decisions in the region. Stephanie Pollack, Transportation Secretary and CEO of MassDOT, is the chair for this board. The board is also comprised of the mayor of each of the region's four cities, chair of the SRPEDD Commission, the administrators of the two Regional Transit Authorities (GATRA and SRTA) and 4 selectmen who represent the 23 towns of the SMMPO. The SMMPO's responsibilities include endorsement and oversight of this plan, the Unified Planning Work Program (UPWP), and the Transportation Improvement Program (TIP), the principal document responsible for programming federal and state expenditures for transportation improvements.

In addition to the JTPG, SRPEDD Commission and SMMPO participation, SRPEDD staff also conducted an extensive and inclusive public outreach effort for the development and update of the RTP.

Staff developed a Regional Transportation Survey to garner feedback from the public on various transportation issues in the region. The survey was translated and posted on SurveyMonkey in English, Portuguese, Spanish, and Haitian Creole. RTP public outreach materials included a traditional link to the survey as well as a QR codes for a direct link with the use of a Smart phone.

Posters, promotional pamphlets and postcards were designed to advertise the survey, encourage participation, and to garner feedback from the public. Materials included large font print and bright colors for greater readability and accessibility and to appeal to a wider audience. All public outreach materials were translated into Portuguese, Spanish and Haitian Creole. Translations of all the RTP public outreach materials were completed in-house for the Portuguese language and with the services of the Translation Lab at UMass Amherst for the Spanish and Haitian Creole translations.

These materials were distributed by staff to the public libraries and city/town halls of each community throughout the entire SRPEDD region, as well as to the RTA transit terminals. Posters and other materials were distributed to town officials at JTPG and SMMPO meetings to post at town offices and other locations.

Staff provided links to the English, Portuguese, Spanish and Haitian Creole versions of the on-line surveys through social media, such as Facebook and Twitter, through a webpage created for the RTP on the SRPEDD website and through written materials such as posters, pamphlets and postcards that were widely distributed in the region.

Survey Results - Most respondents were residents of the SMMPO/SRPEDD region (93%), with 61% of these having less than a 30-minute commute to work; 26% experiencing a commute from 30-60 minutes and 13% having a commute of over an hour. (The SMMPO average is 29.1 minutes.) 84% of respondents most often drive alone (the SMMPO average is 84.8%) but 16% use another form of transportation.

Although there are users of public transit, a majority 57% would only consider that or another form of transportation besides their car if there was one available near their home or workplace, or if it was easier or more convenient.

The top 3 responses to the roads and / or intersections that are avoided because there is too much traffic were Route 24, the Middleborough Rotary and Faunce Corner Road in Dartmouth. Two of these, the Middleborough Rotary and Route 24 were also mentioned in the question

concerning which roads and / or intersections to avoid because they are dangerous, as well as again in the comments sections. Other areas of concerns include Route 44 at Route 118 in Rehoboth, as well as many locations along the entirety of Route 6 in the region.

Finally, on the question of how to spend our transportation dollars, the first 3 choices were to repair and maintain existing roads and bridges, improve the existing system for walking, biking, and recreation (add sidewalks, bike lanes, trails, etc.), and rail service to Boston. These survey responses, as well as, public input and input from our communities, assisted in validating specific project needs that were identified in our analysis. Some of the results of the survey are illustrated in Figures 4A to 4C.

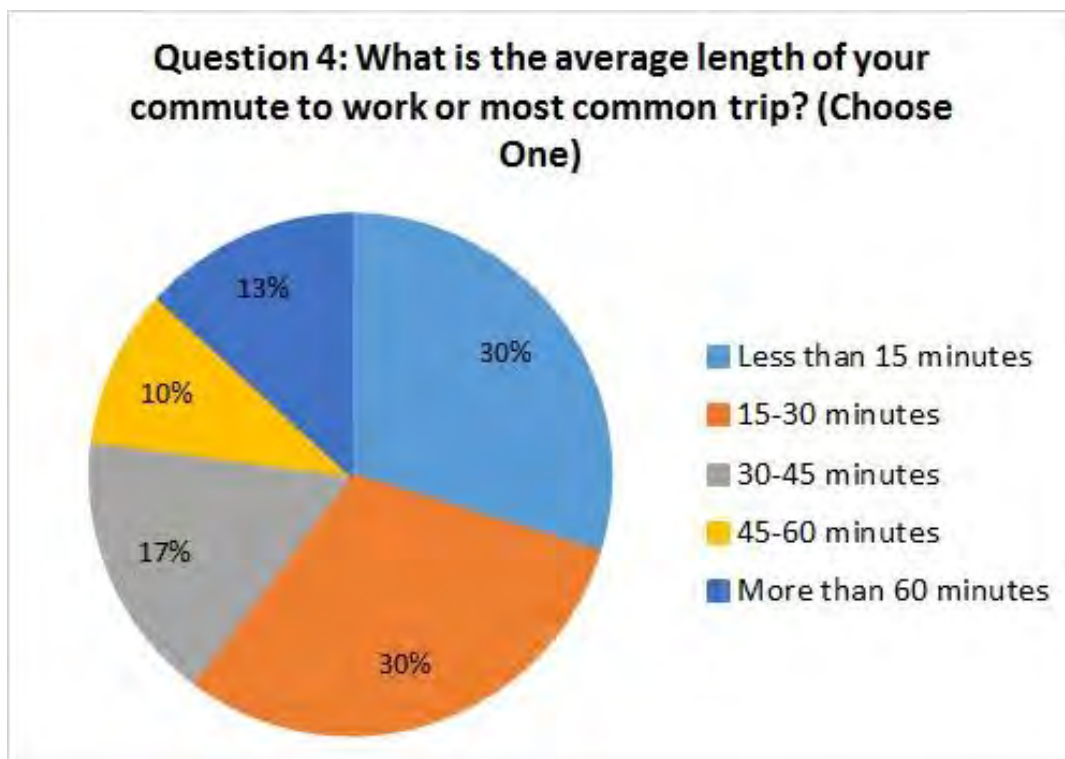


Figure 4-A: Public Survey Results

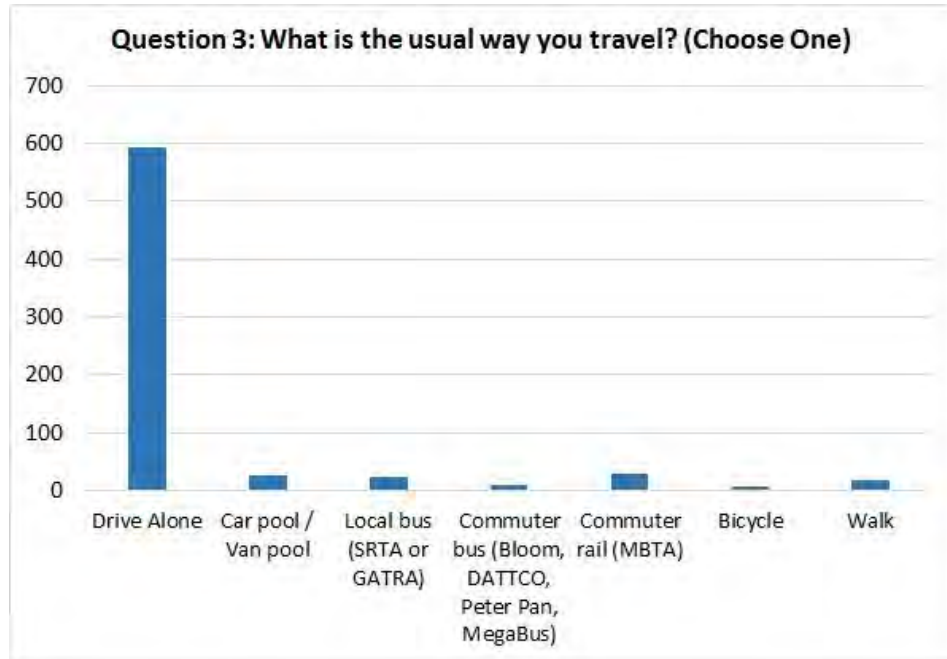


Figure 4-B: Public Survey Results

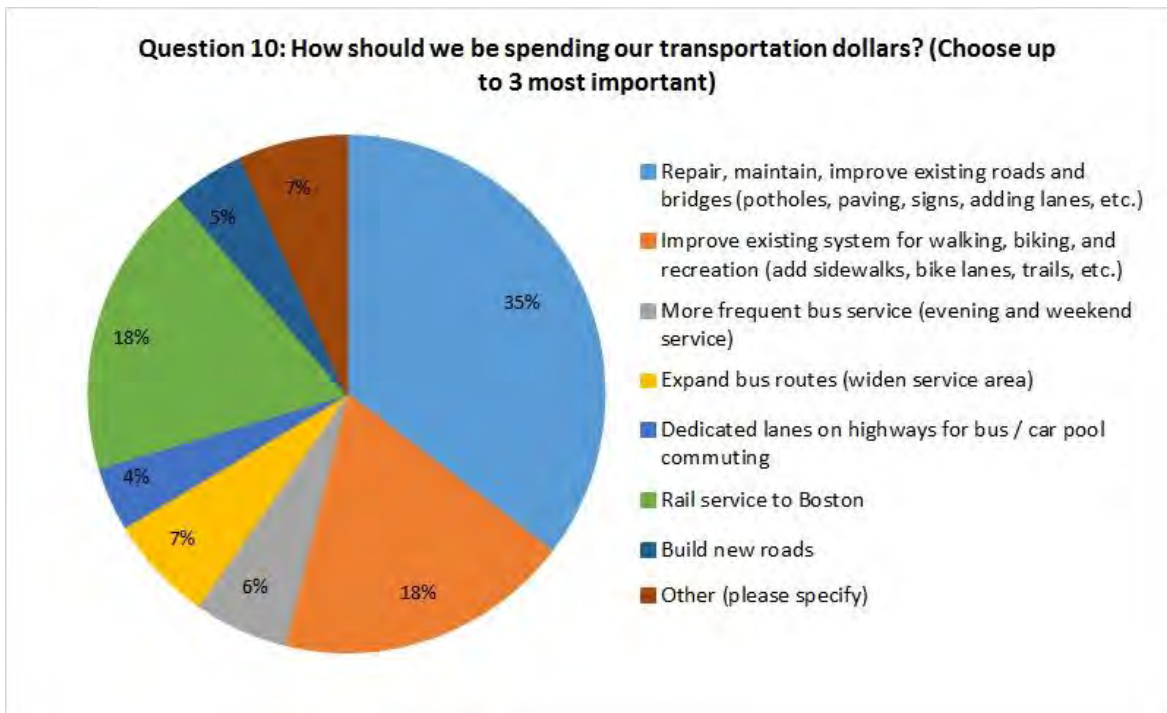


Figure 4-C: Public Survey Results

Additional RTP outreach included two listening sessions; the first held on February 13, 2019 in Taunton at the SRPEDD office and the second held on February 20, 2019 in Dartmouth at the Southworth Library. These sessions were widely advertised and allowed the public to learn more about the RTP and voice their concerns on existing and future transportation issues.

The Transit Division of the SRPEDD Transportation staff are also involved in a number of efforts that afford them opportunities for public outreach, particularly with underserved populations in our region.

SRPEDD staff are included in the Transportation Subcommittee of the city of New Bedford's Age Friendly Steering Committee, aiding the city's goals in making transportation more accessible for older adults. Staff is also a member of the McKinney-Vento Homeless Education Committee, offering support and services to homeless youth. SRPEDD staff also co-chair the South East Regional Coordinating Council on Transportation (SERCCOT). This group works to identify service gaps and barriers in the transportation system, and to create and facilitate out-of-the-box solutions to local transportation issues. SERCCOT is comprised of regional transit authorities and planning agencies, community and social service agencies and advocates representing elders, education, labor and independent living, as well as private transportation providers. Issues and comments determined from these efforts were included with the development of the RTP.

Staff has also developed a reminder guide for staff entitled "Public Outreach & Meeting Protocols for Staff" that includes a checklist of issues to keep in mind during all public outreach efforts. This guide will assist staff in outreach strategies and procedures, including Title VI and EJ specific efforts. Some of the issues included in the guide are: identification of Title VI & EJ areas and populations; outreach methods; meeting sites and accessibility; accessible meeting notices and display items; and translations and other LEP issues. This guide was submitted as part of our annual Title VI update in 2015 and was updated in August 2018.

A detailed list of all public outreach performed by staff since the last update, including outreach specific to the RTP, and Title VI specific outreach, and any public comments received can be found in Appendix A.

Title VI & EJ Demography and Equity Analysis

SRPEDD routinely maps minority, low-income (below poverty level) and LEP populations / areas for our Transportation Evaluation Criteria, for public outreach purposes, for the Title VI submissions of our regional transit agencies, for transit route equity analyses and evaluations, and for other general planning purposes. As part of the requirements for the Transportation

Improvement Program (TIP), the Unified Planning Work Program (UPWP) and the Regional Transportation Plan (RTP), and we have extended these efforts into a regional project distribution / Title VI equity analyses. This is a summary of the equity analysis performed for the 2020 RTP. (The entire 2020 RTP Equity Analysis can be found in Appendix Qa and the FFY2015-2019 Equity Analysis for the previous five years of TIP projects can be found in Appendix Qb.)

Methodology

This Equity Analyses is based on projects that are programmed in the future with regional target funds in the SMMPO region. SRPEDD defines a Title VI/EJ community and Title VI/EJ Census tracts as such if they are greater than the regional average for minority, Limited English Proficiency (LEP), and low-income (poverty).

Minority is defined as those persons who identify other than white in the 2010 Census and this includes Hispanics. This population is protected under Title VI of the Civil Rights Act. Limited English Proficient (LEP) refers to any person age 5 and older who reported speaking English 'less than very well' in the 2010 Census. The Census Bureau uses a set of dollar value thresholds that vary by family size and composition to determine who is low-income (in poverty). LEP and low-income (poverty) populations are protected under Title VI of the Civil Rights Act (LEP) and are ensured participation and consideration of their transportation needs with Federal Executive Order 12898, otherwise known as Environmental Justice (minority and low-income). For minority populations the SMMPO regional average is 10.98% and for LEP populations the SMMPO regional average is 7.4%. The low-income (or percent below the poverty level) for the SMMPO region is 12.13%.

Minority, low-income (or below poverty level) and LEP areas were mapped for each of the 27 communities in the SRPEDD region, with low income (or below poverty level) and LEP using 2010-2014 ACS data, and minority using 2010 Census data with the intent to determine the level of project distribution equity in areas designated as Title VI/EJ and in areas not designated as Title VI/EJ in our region. We mapped the geographical distribution of the projects included in the 2020 RTP and compared the number of projects in identified Title VI and EJ Census tracts versus the number in non-Title VI and EJ Census tracts.

If a 2020 RTP project was located directly adjacent to one of the areas designated as low-income (poverty), minority or LEP or if that project directly connected and /or served the designated area, we included the project as falling within one of these areas. Of the 27 total projects, there were 16 projects in the 2020 RTP that were located within or directly adjacent to these designated areas. (Please see map entitled 2020 the Regional Transportation Plan Project Locations and Title VI / Environmental Justice.)

We also determined the number of projects in a community, the total dollar amount of funding per community, and per capita per community to analyze the distribution of 2020 RTP projects and funding in our region. Both data sheets and mapping of project data was utilized.

Results

The total number of projects programmed in the 2020 RTP total 27 in 16 communities. This leaves 11 communities out of the 27 communities in the SRPEDD region with no projects in the 2020 RTP. However, 2 of these communities, North Attleborough and Westport, had projects programmed in the FFY2017 TIP.

Anecdotal observations are that the 9 remaining communities (Acushnet, Berkley, Carver, Fairhaven, Fall River, Freetown, Marion, Rochester, Somerset) with no projects, are absent from the funding process due to varying reasons. Fall River has recently experienced turnover on their staff, however, that community is actively working with SRPEDD on the identification and development of projects to be funded through the TIP process. Fairhaven has experienced both turnover and unfilled vacancies to their staff and prior to this were active participants in the JTPG and the funding process. The remaining communities (Acushnet, Berkley, Carver, Freetown, Marion, Rochester, Somerset) make little or no effort to attend Joint Transportation Planning Group (JTPG) meetings nor have they taken advantage of the array of services and technical assistance offered by the staff of the SMMPO.

SRPEDD has made extensive efforts to reach out to non-participating communities with little success. Our efforts have included personal invitations by phone call to attend our Joint Transportation Planning Group meetings, as well as continual distribution of our meeting notices and our TIP workshop. Unless the community has an identified issue that SRPEDD can assist with or current projects on the TIP, they are generally absent as participants in our process.

Of the 16 communities with projects in the 2020 RTP there are 10 communities with 1 project in the TIP. These communities are Attleboro, Dighton, Lakeville, Mattapoisett, Norton, Plainville, Raynham, Seekonk, and Wareham. There are 4 communities, Mansfield, Middleboro, Rehoboth, and Swansea with 2 projects each in the 2020 RTP. One community, Dartmouth, has 3 projects in the RTP. Two communities, New Bedford and Taunton, have 4 projects each in the 2020 RTP. (Please see maps entitled Number of 2020 Regional Transportation Plan Projects by Municipality and Number of 2020 Regional Transportation Plan Projects and Title VI / Environmental Justice.)

The location of each 2020 RTP project was mapped and overlaid with the areas that met the criteria previously discussed and designated as low-income (poverty), minority and LEP areas. As far as the geographical distribution of projects, out of the 27 total projects in the region, 16 projects fell within, directly connected or served areas designated as meeting the criteria for

low-income (poverty), minority or LEP populations. (Please see map entitled 2020 Regional Transportation Plan Project Locations and Title VI & Environmental Justice (Numbered) & please see Table entitled 2020 RTP Projects.) Please note that the projects included on the table that are both numbered 4 are actually one single project that spans 2 communities and project #25 also spans two communities.

Five of the SRPEDD communities met the criteria to be designated as Minority Municipalities. These communities are Attleboro, Fall River, New Bedford, Taunton and Wareham. (See map entitled Minority Municipalities.) Attleboro and Wareham have 1 project each in the 2020 RTP, New Bedford has 4, Taunton has 4, and Fall River has 0.

The median per capita spending for the 16 communities with projects programmed in the 2020 RTP is \$393. Three of the minority communities, New Bedford (\$158), Attleboro (\$164), and Wareham (\$239) show per capita spending below the median and one minority community, Taunton (\$443) is above the median per capita spending. The remaining minority community, Fall River, has no projects in the 2020 RTP. (See map entitled 2020 Regional Transportation Plan Project Expenditures per Capita in Minority Municipalities.)

Once again, the median per capita for 16 communities with projects programmed in the 2020 RTP is \$393. Among those communities, per capita spending ranges from \$158 per capita in New Bedford to \$1284 in Mattapoisett. (See the map entitled 2020 Regional Transportation Plan Project Expenditures Per Capita and the Table within the map showing Municipality Per Capita.)

Total project expenditures were calculated and mapped by community and per capita for minority municipalities, LEP and low-income (poverty) areas. (See maps entitled 2020 Regional Transportation Plan Project Expenditures per Capita in Minority Municipalities; 2020 Regional Transportation Plan Project Expenditures Per Capita and Title VI / Environmental Justice.)

Of the 11 communities with no projects in the 2020 RTP, two of these (North Attleboro and Westport) had projects in the FFY2017 TIP. Of the 9 remaining communities (Acushnet, Berkley, Carver, Fairhaven, Fall River, Freetown, Marion, Rochester, Somerset), 6 of these communities (Berkley, Carver, Freetown, Marion, Rochester, Somerset) did not meet any of the criteria for minority, poverty or LEP. That leaves Acushnet, Fairhaven and Fall River. Fairhaven has been an active participant in the JTPG until recent staff vacancies in their planning staff. Fall River had recently experienced turnover on their staff, however, their new staff is actively working with SRPEDD on the identification and development of projects to be funded through the TIP process. That leaves Acushnet as the lone community with criteria for minority, poverty or LEP that has had limited or no presence at Joint Transportation Planning Group (JTPG) meetings or with the TIP process.

Out of the 27 SMMPO communities a total of 15 did not meet the criteria for Title VI or EJ populations, leaving 12 communities that did meet that criteria. (See map entitled Number of 2020 Regional Transportation Plan Projects and Title VI / Environmental Justice.)

Our results show that 19 out of the 27 projects in the 2020 RTP fall within a community that meets the criteria for Title VI or EJ populations, which is 70% of the projects, while 16 out of the 27 projects, which is 59% of the projects, fell directly within minority, low-income (poverty) and LEP areas. (See Figure 5 – a map of 2020 Regional Transportation Plan Project Locations and Title VI / Environmental Justice.)

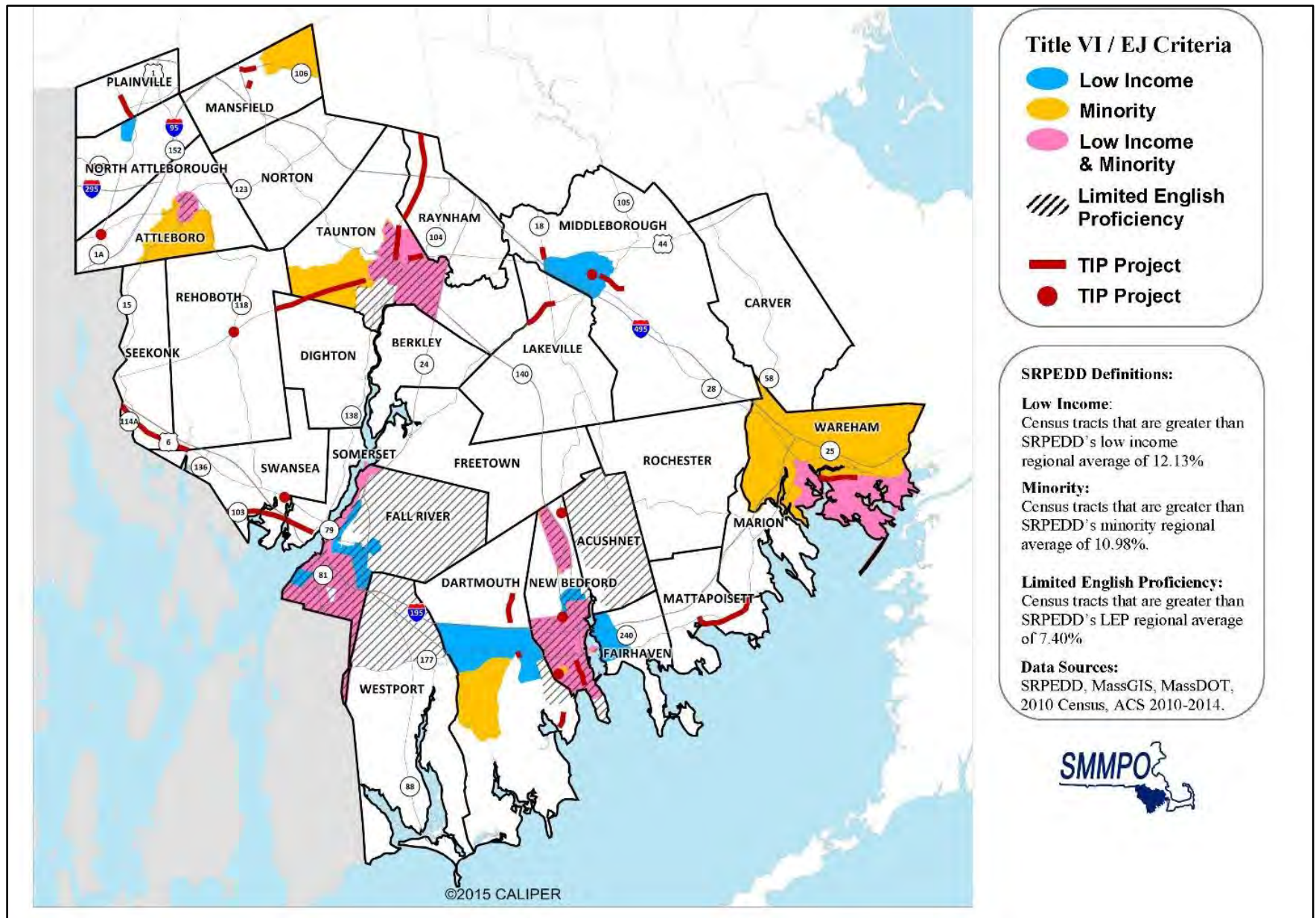


Figure 5: Map of 2020 Regional Transportation Plan Project Locations and Title VI / Environmental Justice

Trends

To understand how transportation operates within southeastern Massachusetts, an examination of the people who live and work in this region is necessary to identify trends with land use development and their means of travel.

Review of the region's growth in terms of population, housing units, and employment with an analysis at the community level and regional level was completed with the majority of this information provided by the U.S. Census Bureau, MassDOT and the UMASS Donahue Group. This analysis also provided projections for growth to the year 2040 which helps determine the transportation demands for the future.

Finally, to determine future needs and to adequately evaluate the region's existing transportation system, it is necessary to examine people's daily travel patterns from home to various destinations including work, school or shopping. An examination of the travel patterns determines the reasons for travel, the amount of time used for daily travel, and the various modes of transportation used for travel. It also examines the behavior of motorists with the operation of vehicles on the region's roads. Conclusions from this information provide insight on how our transportation system is used and where improvements are necessary.

Socio-Economic Trends & Projections

Population - The SMMPO region experienced population increases that exceeded the rate of growth statewide. Between 1990 to 2000 and shown in Figure 6, the total population of the 27 SMMPO communities experienced a 6.1 % increase. By comparison, the state population increased in the same period by 5.5%. Between 2000 and 2010, the region showed an increase of 3.2% compared to the statewide increase of 3.1% during the same period. Since the 2010 Census, population in the SRPEDD region has continued to increase. Based on the American Community Survey for 2015, the SRPEDD region has continued to grow at a rate of 1.1% (0.22% annually) since 2010 with a varying rate of 1.14% in Plainville and -0.04% in New Bedford.

Between 2000 and 2015, population increases varied within the region from a total increase of 19.0% in Middleborough to a decrease of -3.5% in Fall River. Although two of the four cities (Attleboro and Taunton) in the region gained population, the combined populations of the region's four urban centers have continued to decline as a percentage of the region's total population, from 47.5% in 2000 to 46% in 2010 and 45.6% in 2015. This is a result of the continued development of employment centers (industrial parks and shopping centers) away from urban populations with better access to highways and roads with greater carrying

capacities. Examples of this trend include suburban industrial parks such as Myles Standish near Exit 9 off I-495 in Taunton, Fall River's Bio Park near Exit 8B off of Route 24, New Bedford Industrial Park near Exit 7 off of Route 140 and the Route 1 Commercial Corridor in Attleboro/North Attleborough.

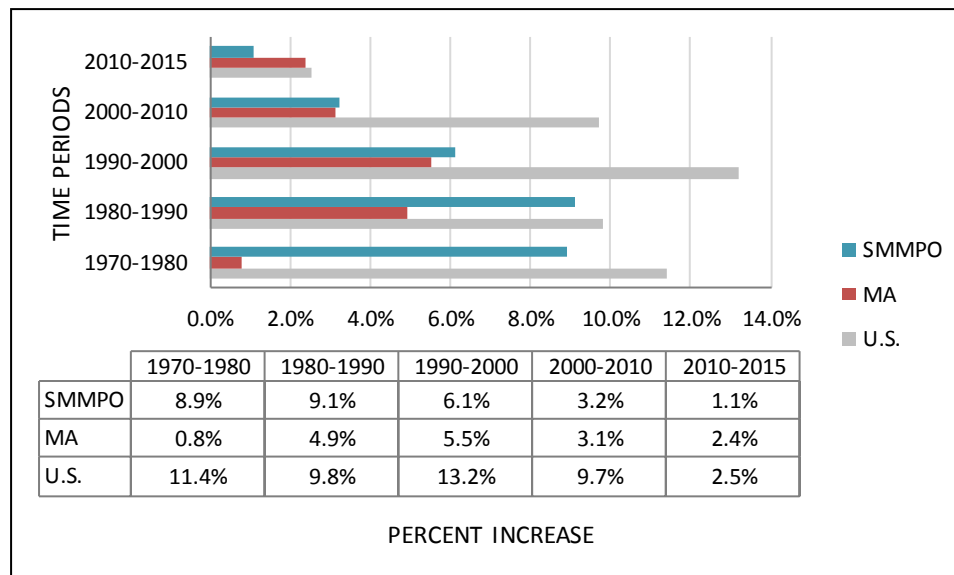


Figure 6: Percentage Increases in Population

As shown in Table 1, although the SMMPO region has historically grown at a rate greater than the Commonwealth as a whole, the region is expected to have a lower growth rate for the next 25 years when compared to the state and the nation.

Table 1: Comparison of Historical Growth & Projections for Regional Population

	Historical Growth			Growth Projections		
	1980-1990	1990-2000	2000-2010	2000-2020	2000-2030	2000-2040
SMMPO	7.4%	6.1%	3.2%	3.3%	5.7%	7.3%
State of Massachusetts	4.9%	5.5%	3.1%	3.8%	7.8%	10.2%
United States U.S. Census Bureau	9.8%	13.2%	9.7%	5.1%	12.9%	19.4%
Source: U.S. Census Bureau, Population Division, UMass Donahue Institute Population Projections V2015 pre-release February 10, 2015 RPA inputs to MAPC's development database: December 2014 -February 2015 MAPC's land use allocation model results, March 2015 MassDOT Planning staff calculations, March 2015.						

Housing - The region as a whole has experienced an increase in total housing units of 7.4% between 2000 and 2010, but the percentage of the total housing stock that was occupied dropped from 93.4% to 91.2%. This decrease in occupancy reflects a loosening of the housing market and the increase in vacant units is due to overbuilding and a record number of foreclosures caused by the recession.

The average size of households in the region has also decreased, sharing the same national trend. In addition, the rate of increase in the number of households is exceeding the rate of increase in population, resulting in a decrease in average household size. Nationally, household size decreased from 1990 to 2010, as there were more divorced couples, more childless households and an aging population. It is anticipated that the decline in average household size will continue through 2040, as the number of single person and no-children households increase.

Employment - During the decade of 1990-2000 regional job growth experienced a 14.4% increase, but from 2000-2009 suffered a 4.6% decrease. Fourteen communities experienced job losses during this time, but some communities such as Carver, Freetown and Wareham, were able to increase their job base. Since 2010, the region has seen a 6% increase in job growth. A total of nearly 13,602 new jobs are forecasted for the region from 2010 to 2040, an overall increase of 8% over the next 20 years and shown in Figure 7.

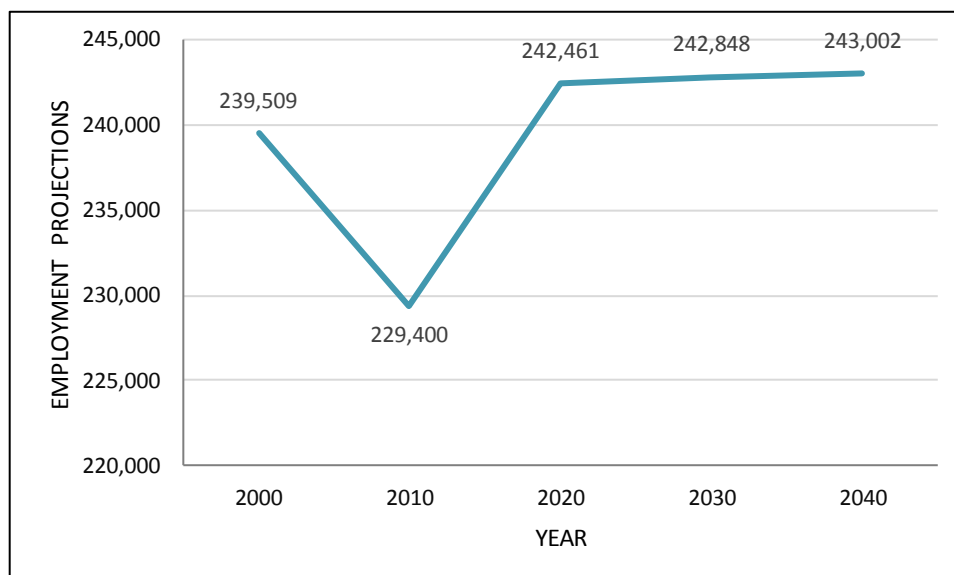


Figure 7: Employment Trends for the SMMPO Region

From a transportation point of view, not all jobs are the same since different sectors of the economy have different transportation impacts. Retail activity is a high trip generator, because

in addition to the employee trips, the trips associated with the consumers must also be considered. The region historically has trended towards a higher percentage of overall employment in the retail and service sector and less in the manufacturing sector. This trend had continued through 2015. From 2001-2015 the trade sector (retail) and non-trade sector continues to grow.

The percentage of retail and non-retail employment continues to climb and is expected to maintain this trend to 2040. Table 2 summarizes retail versus non-retail employment forecasts for the entire region. For more information, please see Appendix B.

Table 2: Retail vs. Non-retail Employment Forecasts, 2010-2040

	Total	Retail	%	Non Retail	%
2015	233,477	57,155	24.5%	176,322	75.5%
2020	242,456	59,212	24.4%	183,244	75.6%
2030	242,848	59,309	24.4%	183,539	75.6%
2040	243,004	59,347	24.4%	183,657	75.6%
2015-2020	8,979	2,057	-	6,922	-
% Change	4%	4%	-	4%	-
2020-2030	392	97	-	295	-
% Change	0%	0%	-	0%	-
2030-2040	156	38	-	118	-
% Change	0%	0%	-	0%	-
2015-2040	9,527	2,192	-	7,335	-
% Change	4%	4%	-	4%	-
Source: MassDOT Planning, SRPEDD Analysis					

As for Attleboro, Fall River, New Bedford and Taunton, the region continues to follow the trend established between 1980 and 1990 of a declining percentage of jobs, with the exception of Taunton due to several industrial parks. Since 2010, jobs in the urban center have experienced a slight increase or have remained status quo, but overall, only account for less than 50% of total employment within the region as shown in Table 3. From 2010 to 2040, employment in the region's four urban centers is projected to stay the same at 48.3% of the total regional employment.

Table 3: Urban Center Employment Since 1980

Community	1980	1990	2000	2010	2015
Attleboro	24,006	21,561	22,599	16,340	17,839
Fall River	40,861	38,056	40,299	34,132	35,314
New Bedford	48,824	41,121	37,146	35,791	38,283
Taunton	17,274	19,882	24,319	23,529	23,260
Urban Centers Total	130,965	120,620	124,363	109,792	114,696
SMMPO Regional Total	188,497	209,085	239,316	227,838	241,729
Urban Centers as % of Regional Total	69%	58%	52%	48%	47%
Source: MA EOLWD					

Regional Land Use Assessment

In 2018, SRPEDD’s Comprehensive Planning staff, in partnership with SRPEDD’s Transportation Department completed the Regional Land Use Assessment. The project’s goal was to allocate a community’s projected growth (provided by MassDOT and reviewed by SRPEDD staff) on a parcel-by-parcel basis by assessing which lots have remaining capacity under zoning (a Build-Out analysis) and where growth is most likely to occur (a Suitability Analysis). This project now allows staff to model land uses over time and to enhance scenario planning efforts.

The work relied on local parcel and assessors’ records, a wide variety of GIS data, MassDOT population & employment control totals, and extensive local knowledge to estimate where new dwelling units, retail jobs, and non-retail jobs (service, office, and industrial jobs) will take place at target years 2020, 2030, and 2040. SRPEDD created a “Climate & Sustainability” growth scenario to supplement the baseline, “Business as Usual” growth modeling and compared their results for the town of Carver.

“Business as Usual” Growth Examples

In Carver, the Build-Out process (specific steps are found in Appendix B) calculated the complete universe of possible buildings that could be constructed in town with remaining capacity to hold a dwelling unit or a commercial or industrial use; this is based on the existing layout of parcels town-wide, zoning regulations governing use and development intensity, and the presence or absence of existing development.

From there, the “Business as Usual” Suitability Factors were set to the neutral levels shown in the Suitability Factor Inputs Table. Suitability Score is an assigned value created from all of the factors

listed in the Suitability Factor Inputs Table (Appendix B). The score indicates how desirable and probable it is for a location to host new development in the future. It is a relative measure between locations that allows them to be compared throughout town.

Finally, the universe of possible building points is considered in light of the maximum amount of growth predicted for the town through the 2040 planning horizon. For example, Carver is predicted to gain 947 dwelling units, 12 retail jobs, and 55 non-retail jobs. This amount of growth can be accommodated in far fewer new buildings than the universe of possibilities calculated in the Adjusted Build-Out. Consequently, the predicted growth is allocated to those potential buildings with the highest suitability scores, allowing for a certain level of randomness. The last step of this final phase is to summarize all growth by Transportation Analysis Zone (TAZ), reporting dwelling units (DU), retail jobs (RET), and non-retail jobs (NRET). In turn, this data provides necessary inputs of the Regional Travel Demand Forecasting Model.

In general, the new modeling techniques projected similar growth in TAZs when compared to prior modeling efforts. Where there were significant changes (defined as +/-25%), staff explored the modeling in affected TAZs. The intent of this effort was to “truth check” the shifts by identifying key factors, such as a zoning change or new infrastructure, that successfully explained growth shifts between TAZs in each community. The result of this truth checking was high confidence in the new modeling approach and use of all output data.

Example of “Climate and Sustainability” Growth

The Climate and Sustainability Growth Scenario works from the same universe of potential buildings placed in Carver by the build-out process. In other words, the Build-Out and Adjusted Build-Out do not change between Scenarios. The difference between scenarios is created by weighing the Suitability Factors to best represent the suitability of land under different sets of assumptions. In this case, whereas the Business as Usual scenario demonstrates the likely location for growth to occur based on the existing physical and regulatory environment, the Climate and Sustainability Scenario demonstrates the most suitable location for growth to occur if factors related to sustainability and resiliency are weighted heavily in siting new development.

SRPEDD considered two main categories of factors related to resiliency and sustainability considerations as follows:

1. Factors Preserving Natural Features that Mitigate Climate Change Effects:

- Locate development outside of floodplains.
- Promote the sequestration of floodwaters and water quality by limiting development in aquifer recharge areas.

- Preserve prime habitat, prime farmland, and other open space areas that can sequester carbon.

2. Factors Encouraging Development Patterns with Less Climate Change Impacts

- Encourage new development to locate near existing development.
- Direct new growth to Priority Development Areas (PDAs).
- Encourage new growth near existing water and transportation infrastructure.

In Carver’s case, there were a number of environmental “push” factors that removed development from environmentally sensitive locations, particularly where these features overlap. But the suitability weighting seems particularly affected by the “pull” factor of proximity to sewer. Weighing this factor more highly in the context of a town where environmental push factors were relatively evenly dispersed pulled allocated growth from the southern portion of the town, where no sewer is present, toward the northern portion, where the infrastructure is present.

Change between the Business as Usual to Climate and Sustainability Scenarios in Carver by TAZ are shown in Table 4.

Table 4: Town of Carver Business as Usual vs. Climate and Suitability Scenarios

TAZ ID Number	Dwelling Unit Change	Retail Job Change	Non-Retail Job Change
358	5	0	-1
359	28	1	0
360	38	-1	-1
379	8	0	2
380	-248	0	2
381	-17	0	-2
382	-2	0	0
383	188	0	0

Because Suitability Scoring is a relative measure, results can change dramatically between towns. In Dighton, for example, there was a more nuanced displacement effect, with a stronger influence of “push” factors and more ambivalent shifts within the sewer service area, which itself overlapped with many environmental push features. In some towns, such as Mansfield, very minor changes were observed between Scenarios, given a clearer underlying break (less overlap) between areas with suitable and unsuitable characteristics in the context of the Climate Scenario weighting framework and more capacity for growth in highly suitable locations.

Overall, the Climate and Suitability Scenario produced minor changes in dwelling units, retail jobs and non-retail jobs when compared to the Business as Usual Scenario in the SRPEDD region. A key reason for this is because the comparison is shown at the TAZ level rather than parcel level. In other

words, when viewed at a smaller scale and in map form, the “shifts” of dwelling units and jobs are more apparent. Moreover, in many cases, these “shifts” within a community often occur away from, and to other areas within the same TAZ and therefore, the overall change within that TAZ is minimal or non-existent. Additional information including detailed maps that highlight the Climate and Suitability dwelling units and jobs “shifts” in Carver can be found in Appendix B.

Travel Patterns

According to the 1990 U.S. Census Journey-To-Work data, there were 302,413 one-way (home to work) work daily trips to, from, and within the SRPEDD communities. In 2000, this total increased to 334,558 and to 345,311 by 2010. In 2015, the total has decreased to 343,057. Work trips within and originating outside of the SMMPO Region has increased since 2010, the population within the region and employed outside of the region has decreased (Table 5).

Table 5: Journey to Work Trends

Destination	1990	Percent	2000	Percent	2010	Percent	2015	Percent
Works & Lives in SMMPO	182,787	60.44%	182,679	54.60%	185,749	53.80%	182,784	53.3%
Works in, but lives outside of SMMPO	40,646	13.44%	52,020	15.60%	51,744	15.00%	55,819	16.3%
Lives in, but works outside of SMMPO	78,980	26.12%	99,859	29.90%	107,818	31.20%	104,454	30.4%
Total	302,413		334,558		345,311		343,057	

Travel Time- Improved accessibility to jobs in the greater Boston area created by the extension of I-495 resulted in an increase in commuting time during the late 1980s and throughout the 1990s. By the year 2000, the average SMMPO commute time increased by 5 minutes, higher than the national and state averages, but consistent with travel trends. By 2015, the travel time for the SMMPO area increased by two minutes while the Massachusetts and National times have remained nearly the same (Table 6).

Table 6: Travel Time to Work

Journey to Work	Mean Travel Time (In Minutes)			
	1990	2000	2010	2015*
SMMPO	22.6	27.6	28.0	29.1
Massachusetts	22.7	27.0	27.3	28.7
United States	22.4	25.5	25.4	25.9
*2015 Statistics are based on the American Community Survey				

Method of Travel- The most popular mode of transportation throughout the nation, state and region continues to be the automobile (Tables 7 & 8). Furthermore, a majority of commuters still travel alone to places of employment. The U.S. Census reports that the percent of commuters carpooling in southeastern Massachusetts continues to decline.

Table 7: Method of Travel to Work

Method of Travel to Work	1990*	2000*	2010**	2015**
Drive Alone	80.8%	82.5%	80.3%	84.8%
Carpool	12.9%	10.6%	9.4%	7.2%
Public Transit	2.3%	2.5%	2.3%	1.9%
Taxi/Bicycled/Walk/Work at Home	4.0%	4.4%	2.9%	6.0%
*Source: CTPP Journey to Work Data, 1990 and 2000 US Census				
** Source: American Community Survey				

Table 8: Results of the HH Travel Survey, SMMPO Region vs. Massachusetts

Work Related Transportation			All Transportation		
Transportation Mode	SMMPO	Mass.	Transportation Mode	SMMPO	Mass.
Drive Alone	80.9%	72.0%	Drive Alone	58.4%	54.7%
Carpool	5.7%	2.8%	Carpool	20.0%	18.7%
Public Transit	4.0%	10.3%	Public Transit	7.8%	8.8%
Taxi/Bicycles/Walk	1.8%	5.5%	Taxi/Bicycles/Walk	13.6%	17.6%
Work at Home	5.7%	7.4%	Other	0.2%	0.2%
Other	1.9%	2.0%			
Source: Massachusetts Travel Survey - June 2012					

Examining work related transportation shows that the SRPEDD region heavily depends on the automobile for travel to work. This statistic supports the conclusion from the US Census Journey to Work data. When examining transportation use for all forms of travel, the breakdown by transportation mode for the SRPEDD region is equivalent to the rest of Massachusetts. It also indicates that the single occupancy vehicle, the automobile, remains a dominant choice in personal transportation.

Traffic Growth - Between 2008 and 2018, traffic on the region's roads experienced growth. Roads that experienced some growth included the interstate, divided highways and arterial roads amounting to 1 to 1.6% annually. Over the ten-year period, these roads saw an increase of volume of about 15%.

Minor arterial and collector roads experienced a decline in traffic with an annual rate of less than 1% and declining. Over the ten-year period, these roads saw a decrease of volume of about 4%. Growth on the divided highways and arterials roads are typical due to the SRPEDD population working outside of the region with part of that commute for most people being made on interstate highways. Contributing factors to this early slow growth or even a decline can be attributed to the economic recession resulting in higher unemployment that occurred late in the last decade as well as higher gas prices. However, recent increases in traffic coupled with a growing single occupancy vehicle rate and an increase in employment are factors to the recent increase in traffic. Table 9 shows traffic growth on the region's roads between 2008 and 2018.

Table 9: Regional Traffic Growth 2008 to 2018

Roadway Type	Annual Growth Rate
Interstate Highways	1.6%
Arterial Roads	0.96%
Minor Arterials & Collector Roads	-0.4%
Average Regional Growth	1.06%

Conclusions

Examination of the past and predicted socio-economic trends indicate that the region will experience an increase in health care service and retail jobs with a continued shift in both population and employment from urban areas to suburban and rural areas. This particular shift is the opposite of a national trend of young adults moving to urban areas as well as adults over 55 considering the development of retirement communities occurring in greater number within our rural towns. Compounding this issue is the continued development of medical facilities, such as seen on Faunce Corner Road in Dartmouth that forces patients to rely on the automobile due to the limitation of transit service to this particular area. If this trend continues, it will lead to more people having to rely on using the region's road network for travel. Additionally, with the location of this growth continuing outside of the region's four urban centers and in areas without transit service, it is expected that the continued reliance on the automobile as the only available option for transportation. This scenario will undoubtedly strain the region's transportation infrastructure and will generally increase total vehicle miles traveled as automobile travel increases.

This also supports the continued trend of population living in southeastern Massachusetts and commuting to work in greater Boston or Providence, Rhode Island. This trend is validated by

the rise in average travel times to work. The SMMPO population is willing to travel longer on their daily commute to live in more affordable communities.

The region heavily depends on the automobile for travel to work. Although the other modes presented vary from the US Census, the fact is that the region's lack of transit connections to major employers regionally, forces residents to continue to rely on the automobile as a principal means to work. In addition, a lack of multimodal connections such as bus transit to commuter rail further compounds the reliance on the automobile. The region's transit service covers an extensive geography suggesting a high potential for a modal switch from automobiles to buses and trains. However, service is limited on both regional transit authorities in terms of frequency and hours of operation while train service is primarily Boston-centric. Further compounding this issue is the lack of connectivity between all transit agencies; both public and private.

Although the other modes presented vary from the US Census, the fact is that the lack of transit connections between all urban centers, major employers and the Boston Metro region with southeastern Massachusetts force its residents to continue to rely on the automobile as a principal means to travel to work. Also significant is the fact that carpooling exceeded the use of public transportation as a principal means of travel to work in the region.

Recommendations

To offset the issues of urban sprawl, increasing fuel costs and the reliance on single occupancy vehicles, steps need to be established to develop a more reliable and sustainable transportation network. This includes continued support of Priority Development Areas/Priority Protection Areas (PDA/PPA) where communities change their economic and land use strategies to focus development near adequately designed and multi-modal transportation centers. Similar to Smart Growth planning efforts of the past, this encourages Transportation Oriented Development that includes bus terminals, train stations or multi-modal centers incorporating all facets of transportation and provides more choices for residents other than the Single Occupancy Vehicle (SOV). Much of this effort is being planned with the South Coast Rail effort to bring commuter rail to Fall River and New Bedford by 2022.

Promoting ridesharing programs must take place regardless of the proposed addition of commuter rail to Fall River and New Bedford. Future commuter rail expansion will primarily serve people commuting to Boston. There will remain a need for Park-and-Ride lots in the SRPEDD region to serve commuters who travel to employment centers throughout Massachusetts and Rhode Island.

The use of private lots (shopping centers, public buildings, etc) through lease agreements to accommodate commuter parking needs should continue to be explored. A lease agreement between MassDOT and a privately owned parking facility will have to meet specific requirements before the lease can be granted to the property owner. These requirements include, but are not limited to:

- Minimum of 50 spaces designated for park-and-ride;
- Fencing around the lot for security;
- Paved and well maintained asphalt surface with delineated parking spaces; and
- Clear of snow during the winter months.

The benefit is parking that is currently underused is being considered over the construction of new imperious paved parking facilities that contribute to increased runoff.

If a future goal is to lessen the burden of traffic congestion and become less dependent on the single occupancy vehicle, more work is needed to better inform and educate the general public on the benefits of ride sharing. Therefore, coordination between MassDOT, regional agencies and local government should be initiated with a more aggressive campaign to increase ride sharing in southeastern Massachusetts and throughout the state.

Traffic congestion cannot be solved by any one single solution. A reduction in traffic congestion can only be achieved with several different mode options to the single occupancy vehicle. Eventually, fossil fuels will become less abundant and more expensive, commuting through mass transit and ride sharing alternatives will become a necessity rather than an option. However, current land use, transportation systems and facilities do not support for alternative transportation choices. Educating the public today to the benefits of alternative modes of travel will only make the future transition to these alternative modes easier as we move further into the 21st century.

For additional information, please see Appendix B.

Congestion

Congestion Management is a systematic process for managing congestion on all aspects of the transportation system with the principal goal of alleviating existing or preventing future congestion, thereby enhancing the mobility of people and goods. It includes procedures to monitor the transportation system's performance, identify causes of congestion, evaluate alternative actions, implement cost-effective strategies, and determine the effectiveness of those strategies.

Traffic congestion adversely impacts the movement of people and goods. Motor vehicles excessively delayed operate less efficiently, waste fuel and expel greenhouse gases into the air we breathe. The region's carbon footprint greatly increases when congestion is regularly present. Alleviating congestion is important in providing an effective highway system, in reducing our reliance on fossil fuels and achieving the state and national goal of meeting clean air quality standards.

Normally, people associate congestion with heavy traffic volumes. Congestion, however, is not confined exclusively to roadways. Overcrowded buses, trains, and commuter parking lots are other examples of congestion.

Identification of Congestion – The SMMPO utilizes three methods to identify congestion in the region; 1) assessment of existing data, 2) collective knowledge of the region and 3) the Travel Demand Forecasting Model.

The first is through existing regional databases such as the traffic count file; road inventory file; traffic studies (conducted by SRPEDD or others), and the region's Signalized Intersection Inventory database.

The second approach is through collective knowledge of the region. This originates through the public participation process, which encompasses input from staff, local officials and the general public through the JTPG. Staff verification is an important component of this effort.

The third approach is the Travel Demand Forecasting Model, which provides a means of predicting future traffic conditions. The model calculates traffic flow to the year 2040, giving us an understanding of future traffic conditions based on current growth trends and land use policies.

Analyses - Every intersection or corridor possesses its own ability to effectively accommodate traffic. A capacity analysis measures that ability and determines the quality of traffic flow, referred to as Level of Service (LOS). There are six levels of service that are assigned the letters A through F. LOS A represents the best conditions while LOS F represents the worst.

Corridors and Road Segments - Along road segments, congestion is expressed as a Volume to Capacity Ratio (v/c). The v/c ratio is a measure of a road's traffic volume versus its' capacity, on a numerical scale, where a zero ratio equals no traffic and a ratio above 1.0 exceeds capacity. A v/c ratio above 0.8 is considered congested in the SMMPO region.

Intersections - In recent years, staff has compiled a comprehensive database consisting of all 361 signalized intersections in the region. For each intersection, the database provides the current level of service from a capacity analysis based on recent traffic volumes (turning movement counts), the existing lane configuration, and operational characteristics including signal timing and phasing. Each of the levels of service (A through F) represents an average delay for all vehicles traveling through the intersection during a peak travel period of the day. Table 10 lists and ranks the intersections within the SMMPO region that are considered congested based on average delay.

Table 10: Congestion Intersections

Location	Intersection	Year	Delay (Seconds)	LOS
Attleboro	Washington St. (Rte. 1) at Highland Ave. (Rte. 123)	2015	57	E
Dartmouth	GAR Hwy. at (Rte. 6) Slocum Rd.	2016	422	F
Dartmouth	GAR Hwy. (Rte. 6) at Tucker Rd. and Champion Terrace	2007	82	F
Dartmouth	GAR Hwy. (Rte. 6) at Faunce Corner Rd. and Old Westport Rd.	2006	58	E
Fairhaven	Huttleston Ave. (Rte. 6) at Route 240 and Sconticut Neck Rd.	2015	55	E
Fall River	South Main St. at Globe St. and Broadway (Globe 4 Corners)	2010	144	F
Fall River	Durfee St. and Milliken Blvd. at Central St. and Bedford St.	2014	90	F
Fall River	William S. Canning Blvd. at Newton St. and South Coast Market Place	2018	83	F
Middleboro	Route 44 at Plympton St. (Rte. 105)	2015	111	F
New Bedford	Mt. Pleasant St. at Nash Rd.	2011	70	E
New Bedford	Kempton St. and Mill St. at Pleasant St. and Purchase St. and Sixth St.	2009	57	E
Seekonk	Fall River Ave. (Rte. 6) at Mink St. (Rte. 114A)	2017	148	F

Past Experience-The SMMPO has regularly identified congestion issues in the region, starting in 1995 with a list of 26 congestion issues ranging from corridor-wide traffic flow problems to overcrowded commuter rail parking facilities. Subsequent Regional Transportation Plans for the region, (2000, 2003, 2007, 2012 and 2016) added to the list. This 2020 Regional Transportation Plan adds 5 locations to the list, consisting of existing and future congested corridors and signalized intersections identified as experiencing peak period levels of service E or F. Corridors are identified primarily through the Travel Demand Model while intersections are identified through the region's updated Signalized Intersection Database.

The region's travel demand forecasting model is used to evaluate the volume to capacity ratios for all road segments in the network in future years. The results of the effort identify roads within the region that are currently or expected to be congested through the year 2040. Overall, 63 congestion issues have been identified by this process: 35 of at intersections or interchanges and 28 along corridors. All of these congestion locations are listed in Table 11. It should be noted that a total of 28 congestion improvement projects identified in previous RTPs have been completed for the region since 2000.

Table 11: Status of Identified Congestion Corridors and Intersections

Community	Location	Status
Attleboro, Mansfield, N. Attleborough	I-95 from Attleboro/Rhode Island line to I-93 Interchange	Intermittent Improvements scheduled as needed at interchanges
Attleboro	N. Main St. (Rte. 152) at Holden St.	Studied (No commitment by the city)
Attleboro	Rte. 1/Rte. 123/Rte. 1A	TIP project in design, 2020-2024 TIP project
Attleboro	South Ave. (Rte. 123) from I-95 to Tiffany St.	Improvements Completed
Attleboro/N. Attleborough	Route 1	Under study from Rte. 123 to Rte. 120, In design for resurfacing and complete streets improvements
Dartmouth	Faunce Corner Rd. from I-195 to Old Fall River Rd.	In design
Dartmouth	I-195 and Faunce Corner Rd Interchange	Improvements Completed
Dartmouth	GAR Hwy. (Rte. 6) at Faunce Corner Rd. and Old Westport Rd.	Under Construction

Community	Location	Status
Dartmouth	GAR Hwy. (Rte. 6) at Tucker Rd. and Champion Terrace	In design to realign Tucker Rd. to meet Hathaway Rd. with signals
Dartmouth	GAR Hwy. (Rte. 6) at Slocum Rd.	Need Study
Fairhaven	Huttleston Ave. (Rte. 6) at Route 240 and Sconticut Neck Rd.	Need Study
Fall River	Brayton Ave. at Eastern Ave./Martine St. (Rte. 6)	Improvements Completed
Fall River	Broadway from I-195 Ramps to William St.	Need Study
Fall River	Mariano Bishop Blvd. at Newton St.	Studied (Improvements planned by City)
Fall River	Plymouth Ave. from Pleasant St. to Second St.	Improvements Completed
Fall River	Plymouth Ave. from Rodman to 2nd St.	Improvements Completed
Fall River	President Ave. at N. Main St.	Studied (To be addressed with Route 79 project)
Fall River	President Ave. at Robeson St.	Studied (Improvements planned by city)
Fall River	Relocation of Route 79	In Design, 2020-2024 TIP project
Fall River	Route 24 from Rhode Island Line to I-195	Needs Study
Fall River	Intersection of Bedford St., Central St., Durfee St. and Milliken Blvd.	Needs Study
Fall River	Intersection of Broadway, Globe St., and South Main St. (Globe 4 Corners)	Studied (Awaiting action by the city)
Fall River	Intersection of William S. Canning Blvd., Newton St. and South Coast Market Place Driveway	Needs Study
Lakeville, Middleborough	S. Main St. (Rte. 105) at I-495	Under Construction, signals operational
Mansfield	Chauncy St. (Rte. 106) Corridor	TIP 2020-2024
Mansfield	Chauncy St. at Route 140	TIP 2020-2024
Middleborough	I-495 from Route 24 to I-195	Studied (No commitment)
Middleborough	Route 44 Rotary	Interim improvements complete
Middleborough	Route 44 at Plympton St. (Rte. 105)	Need Study

Community	Location	Status
North Attleborough	E. Washington St. (Rte. 1) at Elm St.	Studied (Further evaluation needed)
North Attleborough	E. Washington St. (Rte. 1) at Elmwood St.	Studied (No commitment)
North Attleborough	E. Washington St. (Rte. 1) at Walmart Entrance	Studied (Further evaluation needed)
New Bedford	I-195 from Acushnet River to Route 140	Studied (No commitment)
New Bedford	Mt. Pleasant St. at Nash Rd.	Need Study
New Bedford	Rockdale Ave. at Allen St.	Need Study
New Bedford	Ashley Blvd. at Sawyer St.	Improvements underway
New Bedford	Brownell Ave. at Kempton St. (Rte. 6/Rte. 140)	Studied, Improvements Completed
New Bedford	Coggeshall St. from Purchase St. to Acushnet Ave.	Under construction
New Bedford	JFK Highway (Rte. 18)	Improvements (Phase 1 Complete, Phase 2 under construction)
New Bedford	Kings Highway Corridor	Project in TIP 2019
New Bedford	Route 140 from I-195 to Kings HWY	Needs Study
New Bedford	Intersection of Kempton St., Mill St., Pleasant St., Purchase St. and Sixth St. (The Octopus)	Studied by SRPEDD 2012, Improvements Completed
New Bedford/Fairhaven	Route 6 Bridge Replacement	Studied by MassDOT (No funding commitment)
Norton	Route 123 at Route 140	Studied by SRPEDD (Rte. 140 Corridor) Under study
Raynham	Broadway (Rte. 138) from Taunton to I-495 ramps	TIP 2020-2024
Raynham	Route 24 Corridor South of I-495	SRPEDD Study in 1990s, needs Further Study
Raynham	Interchange of Route 44 at Route 24	Under construction
Raynham	Route 44 from Route 24 to I-495	Studied (No commitment, Route 24 and Orchard St. Improvements completed)
Seekonk	Central St. at Newman Ave./Pine St. (Baker's Corner)	Improvements underway
Seekonk	Fall River Ave. (Rte. 6) at Mink St.	Safety and Signal Improvements

Community	Location	Status
	(Rte. 114A)	Complete, Needs Further Study
Seekonk	I-195	Needs Study
Seekonk	Route 44	Intersection Improvements Complete and resurfacing in design
Swansea	Route 6 at Route 136	Studied (No commitment)
Swansea	Route 6 at I-195 interchange	Studied (No commitment)
Taunton	County St. (Rte. 140) at Hart St.	Improvements Completed
Taunton	Dean St. from Arlington St. to S. Main St.	TIP 2020-2024
Taunton	Route 24 at Route 140 interchange	TIP 2020-2024
Taunton	Washington St. from Broadway to Oak St.	Improvements Completed
Taunton	Winthrop St. (Rte. 44) at Highland St.	Needs Study
Taunton	Taunton Green	Studied (Recent updates)
Taunton/Raynham	Broadway (Rte. 138) from Taunton Center to Easton Town Line	Studied (2 projects pursued by city/town)
Taunton/Raynham	Route 44 from Route 104 to Church St.	TIP 2020-2024
Wareham	Cranberry Highway (Route 28) at Toby Rd.	Improvements Completed (Improvements made by developers)
Wareham	I-195 from I-495 to Route 28	Studied (No further actions)

Major Congestion Projects

The following projects have been studied and are awaiting actions leading to implementation of corrective measures.

The Middleborough Rotary (Routes 44, 18 and 28) - For many years Route 44 has been considered for major improvements due to both congestion and safety issues at the Rotary and along the corridor to Route 24 in Raynham. Improvements must address existing problems and take into account the tremendous development potential of land in the vicinity of the Rotary and I-495 interchange. MassDOT completed a study of the rotary in 2013 and began preliminary engineering to construct a flyover for the Route 44 segment with access to a modified rotary for

access to Route 18 and 28 while maintaining connection to I-495. This long term solution to eliminate the rotary will be an expensive project, estimated at \$83 million.

In 2013, the JTPG elected to devote one year's target to this project as incentive for its design and implementation. However, the future long-term improvements may remain necessary with increased development to open space available in the vicinity of the rotary, as well as at several locations along Route 44 between the Rotary and the town of Plymouth. The interim improvements to the Rotary, included striping of lanes, new signage, geometric improvements at the access and exit points, re-grading the road surface and lane widening. Since completion of the improvements there has been positive feedback identifying a decrease in delays/congestion. However, there are still safety concerns with navigation through the rotary. A thorough analysis should be conducted in the near future to determine the effectiveness of the capacity and safety improvements.

Route 24 @ Route 140 Interchange, Taunton - The Route 24/140 interchange is the common routing for most trips from the greater New Bedford and Fall River areas to Boston. Heavy traffic volumes combined with inadequate acceleration/deceleration lanes at the interchange frequently result in crashes, mainly during commuting periods that result in lengthy traffic queues. The evening commute is regularly delayed by traffic control signals, necessary to stop southbound motorists, resulting in extensive backups onto Route 24 south. The morning commute is frequently affected by upstream crashes due to the sub-standard design of interchanges along the corridor. Traffic queues have been recorded in excess of 130 vehicles extending from Route 24 northbound back onto Route 140.

The interchange is currently operating at level of service F during the morning and evening peak traffic periods. A 1998 study recommended adding a Route 24 southbound off-ramp, extending Route 24 acceleration/deceleration lanes, widening Route 140 under Route 24, and widening Route 24 over Route 140. These measures would improve access and egress onto Route 24, and would simplify movements at the Route 140 intersections.

Congress provided the following earmarks for this project: in 2003, \$993,500 for interchange improvements; in 2004, \$940,419 for design and engineering; and in 2005, \$17 million for reconstruction. The first two earmarks were used for interim improvements to the interchange, which include a widening of Route 24 to extend the deceleration lanes for the southbound off-ramp, and a longer acceleration lane for the Route 140 northbound on-ramp onto Route 24. This project was advertised for construction bids in September of 2005 and finished construction in 2009.

The proposed project consists of improvements along 1.2 miles of Route 24 and 0.8 miles of Route 140 including modifications to the interchange system. Route 24 within the project limits will be reconstructed to provide improved shoulders, accommodate a future third travel lane and upgrade acceleration/deceleration lanes. Existing Route 24 bridges over Route 140 and the Middleborough Secondary rail line will be replaced to accommodate the proposed roadway section and provide increased vertical clearance. Modifications to the interchange include construction of a new off-ramp from Route 24 Southbound to Route 140 Northbound and providing two lane entrance ramps from Route 140. Route 140 will be widened to provide a new southbound bypass lane between the intersections of the Route 24 Southbound and Northbound ramps and additional turning lanes. Traffic signals along Route 140 will be upgraded/replaced. Minor improvements are also proposed at the Stevens Street interchange to accommodate the widening along Route 140. The work will be completed using staged construction that maintains two lanes of traffic in each direction on Route 24 and 140. (Source: MassDOT)

Route 6 Bridge Replacement, New Bedford/Fairhaven – MassDOT completed a feasibility study to replace the Route 6 Bridge over the Acushnet River as known as the Fairhaven/New Bedford Bridge. The bridge has long been a site of traffic flow problems due to the slow operation of the bridge opening and closing to maritime traffic and the resulting congestion on surrounding roadways as motorists use alternate routes in an attempt to bypass the bridge. The study examined the replacement of the existing swing span bridge with a Lift Bridge, Single-leaf bascule or a double-leaf bascule bridge with a wider channel to accommodate larger freight vessels accessing the North Terminal and encourage more economic development with the north harbor. Although the time necessary to open and close a new bridge will essentially equal the current time for the existing swing span, the difference with a new facility is increased reliability in the bridge operation, as well as opening up the north harbor. The bridge was recently rehabilitated; however, no additional plans or funding have been identified for the replacement of this existing swing span bridge.

Operational and Management Strategies - MAP-21 and FAST ACT requires transportation planning to include strategies that improve performance of existing facilities to reduce congestion, improve safety, and enhance mobility. Initiatives, through MassDOT, include the Commonwealth's Global Warming Solutions Act aimed to reduce GHG emission by 25% by 2020 at measurable levels from 1990. This is included with the statewide performance measure efforts and the evaluation criteria for TIP projects. A collective effort by all agencies to track and measure the reduction of GHG emissions will ultimately help achieve this goal.

SRPEDD staff continues to track these measures through efforts with the Signalized Intersection Database. Previous RTPs includes the identification and evaluation of antiquated traffic signal systems throughout the region that operate under a pre-time setting. This measure

identifies and recommends new, more sophisticated signal equipment with actuation, preemptive capabilities for emergency vehicles and generally capable of moving traffic efficiently while reducing vehicle delay.

A pre-timed signal is different from an actuated signal where the pre-timed signal has a fixed sequence and time allocated to each phase with no detectors and gap counters. No phases are skipped regardless of the vehicles or pedestrian are or are not presented at the intersection approaches. Pre-timed signals are common in downtown area and in certain cases, have existed for long periods of time. The 28 intersections summarized in Table 12 are located primarily in the urban communities where signal updates may be appropriate. The pre-timed signal does not adjust to the demand of traffic and does not effectively accommodate to varying traffic patterns. During off peak hours when traffic volumes are typically low, pre-timed signals add unnecessary delay and can encourage red light running. Furthermore, these added delays also generate unnecessary GHG emissions that are better managed by actuated or adaptive signal controls. SRPEDD intends to examine and analyze these types of signal system with consideration and recommendations for improvement. Funding for this undertaking is currently programmed in the SMMPO's FFY2020 UPWP in the Management Systems task.

Table 12: Pre-Timed Traffic Signals

Municipality	Intersection
Fall River	Broadway / Middle St.
Fall River	Eastern Ave. / Pleasant St.
Fall River	Globe St. / South Main St. / Broadway
Fall River	Mariano Bishop Blvd. / Newton St.
Fall River	Mariano Bishop Blvd. / William S. Canning Blvd.
Fall River	Pleasant St. / Seneca Dr. / Troy St.
Fall River	President Ave. / Davol St. North (2 intersections)
Fall River	President Ave. / Davol St. South (2 intersections)
Fall River	President Ave. / North Main St.
Fall River	President Ave. / Robeson St.
Fall River	South Main St. / Dwelly St.
Fall River	South Main St. / King Philip St.
Fall River	South Main St. / Middle St.
Fall River	South Main St. / Pocasset St. / Sullivan
Fall River	Sullivan St. / 3rd St.
New Bedford	Acushnet Ave. / Nash Rd.
New Bedford	Acushnet Ave. / Sawyer St.

Municipality	Intersection
New Bedford	Acushnet Ave. / Tarkiln Hill Rd.
New Bedford	Ashley Blvd. / Deane St.
New Bedford	Ashley Blvd. / Nash Rd.
New Bedford	Ashley Blvd. / Tarkiln Hill Rd.
New Bedford	Belleville Ave. / Coggeshall St.
New Bedford	County St. / Union St.
New Bedford	Dartmouth St. / Rockdale Ave.
New Bedford	Union St. / Pleasant St.
New Bedford	Union St. / Sixth St.
Taunton	Winthrop St. (Rte. 44) / High St.
Taunton	Winthrop St. (Rte. 44) / Highland St.

Recommendations

This Regional Transportation Plan recommends the following in order to reduce congestion and improve air quality in the region:

- Continue to develop planning and operational traffic databases, using the evaluation criteria process to prioritize and support the design and construction of all planned congestion mitigation projects in the region.
- Encourage MassDOT and local communities to begin the design of congestion mitigation projects currently awaiting action.
- Evaluate the need for increased capacity for the Route 24 corridor south of I-495.
- Implement transit signal prioritization on congested corridors and high-volume intersections to improve transit vehicle travel times and schedule adherence.
- Continue to offer assistance to communities with access management issues. Access management problems have become issues along several corridors in the SMMPO region. Commercial corridors with multiple retail driveways are especially problematic. These corridors could greatly benefit from driveway consolidation and new frontage roads linking adjacent developments including the Route 1 corridor in Attleboro/North Attleborough, Route 6 in Swansea and Seekonk, and Route 44 in Raynham are examples of corridors with poor access

management. Multiple curb cuts and driveways with unprotected left-turning movements are all issues along these corridors.

- Continue to support development of real-time driver information through traffic cameras, congestion mapping and Variable Message Boards (VMB) accessible by the general public. Innovative techniques for congestion mapping include on-road radars that measure average vehicle speed, copper loops that measure percentage of time cars are over each loop and tracking of cell phone location data through various smart phone applications. Overall, this continued development of technology will assist in congestion relief by providing motorists advanced warning of congestion or emergency situations, enabling them to choose alternate routes.
- The SMMPO should consider study of ITS Technologies for the development, promotion and implementation of Electric Vehicle charging stations at parking facilities to help in addressing air quality issues associated with traffic congestion. Funding for this undertaking will be considered in the future through the SMMPO's UPWP in the Intermodal Project Coordination, Freight Movement & Intelligent Transportation Systems (ITS) task. Current charging stations are listed in Table 13.

Table 13: Location of Electric Fueling Stations

Name	Address	Community
Colonial Honda of Dartmouth	225 State Rd.	Dartmouth
Brazilian Grill	464 State Rd.	Dartmouth
DCM Complex	107-199 Third St.	Fall River
DCM Complex	10 Lewiston St.	Fall River
Massachusetts DEP-SE Region Main Office	20 Riverside Dr.	Lakeville
Monogram Res	792 West St.	Mansfield
Mansfield Crossing-Tesla Supercharger	280 School St.	Mansfield
Mastria Nissan	1305 New State Hwy.	Raynham
Mastria VW	1619 New State Hwy.	Raynham
Depuy Synthes	325 Paramount Dr.	Raynham
Chili's	107 Taunton St.	Plainville
Station 1	111 South St.	Plainville
Nissan Village of North Attleboro	685 S. Washington St.	North Attleborough
Emerald Square Mall	999 S. Washington St.	North Attleborough
Public Infrastructure Lot	1105 Shawmut Ave.	New Bedford
New Bedford Neighborhoods Center	360 Coggeshall St.	New Bedford

Parker Street Lot	256 Parker St.	New Bedford
Black Whale Seafood	106 Co Op Wharf	New Bedford
Elm Street Parking Garage	51 Elm St.	New Bedford
Zeiterion Garage	684 Purchase St.	New Bedford
Plainridge Park Casino	301 Washington St.	Plainville
National Grid	107 Taunton St.	Plainville
Westport Town Hall	816 Main Rd.	Westport

[More information can be found at Energy.gov.](https://www.energy.gov/)

- Implementation of GPS/AVL systems within the region's transit authorities will help track vehicles and provide for opportunities to track congestion in addition to providing an important service during evacuations during emergencies.
- Identify commonly congested corridors that inhibit fixed route transit services from meeting their on-time performance. Encourage the implementation and use of new technologies that extend the green time of signals to allow public transit busses and help maintain their scheduled stops.
- Encourage local communities to concentrate development in Priority Development Areas as identified in SRPEDD's Smart Growth Scenario, while protecting open space in identified in Priority Protection Areas. This concentration of development will help to reduce vehicle miles traveled and support Commuter Rail extensions into the region.
- Implementation of the South Coast Rail to extend commuter rail services to Fall River and New Bedford via Taunton. This improvement will reduce the number of vehicle trips primarily traveling on Route 24 to the metro Boston area, thus improving to a certain extent, traffic congestion and reducing GHG emissions. Encouraging local communities to concentrate development in Priority Development Areas as identified in SRPEDD's Smart Growth Scenario as part of the South Coast Rail effort will help to reduce vehicle miles traveled and support Commuter Rail extensions into the region all while protection and preserving open space. Phase 1 will restore service to the region by the end of 2023.

For additional information, please see Appendix C.

Safety

Safety is considered the foremost element of a project's importance in the SMMPO region. SRPEDD considers safety problems to be pre-existing conditions that merit maximum consideration for corrective measures. Unfortunately, the majority of traffic crashes are caused by driver error. Driver error can be influenced by inadequate road design or ineffective traffic controls. One of the tasks of transportation officials is to identify locations where crashes occur in excessive numbers and investigate their causes. Further study can give us a clearer understanding of the reasons for frequent crashes. With sufficient data, it is possible to determine if the transportation network, its design, condition, traffic controls, etc. are contributing factors. Remedial steps can then be taken to correct the problem. Physical improvements to a roadway, traffic control devices or increased police enforcement can improve the safety of our region's roads.

Too often, modifications made to local roads and intersections are based on public pressure as motorists involved in crashes demand that local officials implement changes such as multi-way stop control, speed limit changes, crosswalks, pavement markings, etc. to address a perceived problem. In some instances, the suggested modification does not address the problem and can actually worsen it. Sometimes those suggestions are implemented without regard to appropriate engineering standards. Local and state officials must listen to the general public's opinion on traffic safety issues, but ultimately, decisions on improvements must be made with sound engineering judgment. This will ensure that recommended improvements will be successful to improve a problem.

As with the congestion management process and the initial step for performance based planning, SRPEDD regularly compiles crash data to determine the most dangerous intersections, corridors, highway interchanges, rotaries, etc. in southeastern Massachusetts. This information is the basis for our safety planning efforts between Regional Transportation Plan updates and is an important tool in initiating and prioritizing projects for inclusion in the Transportation Improvement Program (TIP). Table 14 displays the SRPEDD's Top 100 Most Dangerous Locations with their status.

Any intersection that exceeds either the regional Equivalent Property Damage Only (EPDO) index of 14.7 and/or the Accidents per Million Entering Vehicles rate (ACC/MEV) of .75 for signalized intersections and .57 for un-signalized intersections, is considered a priority for further implementation of measures to address safety problems.

A detailed review of crash types (fatalities, pedestrian, bicycle, and lane departure) was conducted to determine locations with a high frequency of specific crash types. A detailed list of these locations and safety projects can be found in the Appendix D.

Table 14: Top 100 Most Dangerous Locations

Rank	City/Town	Intersection		2014-2016 Total Crashes	2014-2016 EPDO
1	New Bedford	Kempton St. (Rte. 6)	Route 140/Brownell Ave.	78	78.0
2	Raynham	New State Hwy. (Rte. 44)	Orchard St.	80	57.3
3	Middleborough	Route 44	Plympton St. (Rte. 105)	63	49.0
4	Swansea	GAR Highway (Rte. 6)	J. Reynolds Rd./Market St. (Rte. 136)	60	45.3
5	Fall River	Plymouth Ave.	Rodman St.	53	40.3
6	Somerset	GAR Highway (Rte. 6)	Brayton Ave.	43	39.7
7	Taunton	County St. (Rte. 140)	Hart St.	55	38.3
8	Swansea	GAR Highway (Rte. 6)	Swansea Mall Dr. (Rte. 118)	54	38.0
9	Fall River	Bedford St.	Troy/High St.	42	36.7
10	Seekonk	Fall River Ave. (Rte. 114A)	Taunton Ave. (Rte. 44)	53	36.3
11	Attleboro	Washington St. (Rte. 1)	Highland Ave. (Rte. 123)	59	35.7
12	Mansfield	Route 140	School St.	59	35.7
13	Somerset	GAR Highway (Rte. 6)	Lees River Ave.	40	34.7
14	Taunton	Williams St.	Gordon Owen Riverway	35	34.3
15	Middleborough	East/West Grove St. (Rte. 28)	South Main St. (Rte. 105)	48	33.3
16	Mansfield	Chauncy St. (Rte. 106)	N. Main St.	45	32.3
17	Mansfield	Chauncy St. (Rte. 106)	Copeland Dr.	42	31.3

Rank	City/Town	Intersection		2014-2016 Total Crashes	2014-2016 EPDO
18	Raynham	New State Hwy. (Rte. 44)	Shaw's Plaza (#270-350)	40	30.7
19	Fall River	President Ave. (Rte. 6)	Highland Ave.	43	30.3
20	Mansfield	Chauncy St. (Rte. 106)	Route 140	43	29.0
21	Swansea	GAR Highway (Rte. 6)	Maple Ave.	31	29.0
22	N. Attleborough	E. Washington St. (Rte. 1)	Chestnut St.	40	28.0
23	New Bedford	Mount Pleasant St.	Nash Rd.	28	28.0
24	New Bedford	JFK Highway (Rte. 18)	Elm St.	34	27.7
25	New Bedford	Acushnet Av/JFK Hwy NB (Rte. 18)	Coggeshall St.	26	27.3
26	New Bedford	Kempton St. (Rte. 6)	Rockdale Ave.	35	26.3
27	Raynham	Broadway (Rte. 138)	Carver St.	27	26.3
28	Seekonk	Fall River Ave. (Rte. 114A)	Arcade Ave. / Mill (Grist Mill)	43	26.3
29	Taunton	Broadway (Rte. 138)	East Britannia St.	34	26.0
30	Taunton	Washington St.	East Britannia St.	37	25.7
31	New Bedford	JFK Highway (Rte. 18)	Potomska St.	32	25.3
32	Taunton	Broadway (Rte. 138)	Washington St.	27	25.3
33	Middleborough	Route 44	Plymouth St.	39	25.0
34	Somerset	GAR Highway (Rte. 6)	Brayton Point Rd.	34	24.7
35	Swansea	GAR Highway (Rte. 6)	Gardner's Neck Rd.	38	24.7
36	Fall River	President Ave. (Rte. 6)	Davol St. (NB & SB)	29	24.3
37	Fairhaven	Bridge St.	Alden Rd.	39	23.7
38	Rehoboth	Winthrop St. (Rte. 44)	Anawan/Bay State (Rte. 118)	38	23.3

Rank	City/Town	Intersection		2014-2016 Total Crashes	2014-2016 EPDO
39	Seekonk	Fall River Ave. (Rte. 6)	Mink St. (Rte. 114A) /Sam's Club	44	22.7
40	Seekonk	Taunton Ave. (Rte. 44)	Lincoln Ave.	28	22.7
41	Taunton	Dean St. (Rte. 44)	Longmeadow/G. Owen	28	22.7
42	Attleboro	Pleasant St. (Rte. 123)	Emory St.	27	22.3
43	Fairhaven	Bridge St.	Route 240	39	22.3
44	Fall River	Bedford St.	Rock/Third St.	27	22.3
45	New Bedford	Brock Ave./Cove Rd.	Rodney French Blvd.	31	22.3
46	Raynham	New State Hwy. (Rte. 44)	South St. West	39	22.3
47	Seekonk	Taunton Ave. (Rte. 44)	Arcade Ave.	43	22.3
48	Fall River	Davol St.	Central St.	24	21.3
49	N. Attleborough	S. Washington St. (Rte. 1)	Allen Ave/Emerald Sq. Mall	36	21.3
50	Seekonk	Fall River Ave. (Rte. 114A)	County St.	43	21.0
51	N. Attleborough	S. & E. Washington St. (Rte. 1/1A)	Hoppin Hill Rd. (Rte. 120)	33	20.3
52	New Bedford	Hathaway Rd.	Shawmut Ave.	25	20.3
53	Taunton	Washington/ Oak Sts.	Tremont St. (Rte. 140)	21	20.3
54	Wareham	Cranberry Hwy. WB (Rte. 6 & 28)	Glen Charlie Rd./Depot St.	29	20.3
55	Attleboro	N. Main St. (Rte. 152)	Toner Blvd.	28	20.0
56	New Bedford	Union St.	Pleasant St.	19	19.7
57	Lakeville	Bedford St. (Rte. 18)	Rhode Island Rd. (Rte. 79)	30	19.3
58	New Bedford	Ashley Blvd.	Wood St.	18	19.3
59	Attleboro	N. Main St. (Rte. 152)	Holden St.	24	19.0

Rank	City/Town	Intersection		2014-2016 Total Crashes	2014-2016 EPDO
60	New Bedford	Ashley Blvd/JFK Hwy SB (Rte. 18)	Coggeshall St.	24	19.0
61	Taunton	Summer St. (Rte. 140)	Spring/Church Green	21	19.0
62	Dartmouth	State Rd. (Rte. 6)	Slocum Rd.	24	18.7
63	Fall River	Pleasant St.	Quarry/County St.	35	18.3
64	Lakeville	Bedford St. (Rte. 18)	Main/Precinct (Rte. 105)	31	18.3
65	New Bedford	Church St.	Park Ave.	27	18.3
66	New Bedford	Church St.	Nash Rd.	19	18.3
67	New Bedford	JFK Highway (Rte. 18)	Union St./MacArthur Dr.	31	18.3
68	Attleboro	County St. (Rte. 123)	Thacher St.	34	18.0
69	Fairhaven	Main St.	Howland Rd.	30	18.0
70	Fall River	President Ave. (Rte. 6)	Robeson St.	18	18.0
71	New Bedford	Rockdale Ave.	Hawthorn St.	22	18.0
72	Taunton	School St.	Purchase St./Arlington St.	22	18.0
73	Attleboro	Washington St. (Rte. 1)	May St.	29	17.7
74	Plainville	Washington St. (Rt. 1)	Taunton St. (Rte. 152)	33	17.7
75	Swansea	Bark St.	Stevens St./Buffington St.	17	17.7
76	Attleboro	Pleasant St. (Rte. 123)	Peck St.	32	17.3
77	New Bedford	Belleville Ave.	Coggeshall St.	24	17.3
78	Plainville	Taunton St. (Rte. 152)	Messenger St. (Rte. 106)	40	17.3
79	Fall River	Broadway	Bradford Ave.	23	17.0
80	New Bedford	County St.	Mill St.	27	17.0
81	Raynham	Broadway (Rte. 138)	King Phillip St.	19	17.0

Rank	City/Town	Intersection		2014-2016 Total Crashes	2014-2016 EPDO
82	Seekonk	Fall River Ave. (Rte. 6)	Commerce Way/Seekonk Sq.	31	17.0
83	Attleboro	O'Neil Blvd.	Dunham St.	18	16.7
84	Somerset	GAR Highway (Rte. 6)	Stop & Shop (#815-887)	26	16.7
85	Taunton	Longmeadow St./Winter St.	School St./Floral St.	18	16.7
86	Fall River	Eastern Ave. (Rte. 6)	County St.	17	16.3
87	Fall River	Eastern Ave./Brayton Ave.	Martine St./DeValle St.	17	16.3
88	Plainville	South St. (Rte. 1A)	E. & W. Bacon St. (Rte. 106)	13	16.3
89	Fall River	Rodman St.	Second St.	24	16.0
90	Somerset	County St./Riverside Ave. (Rte. 138)	Read St./Riverside Ave.	24	16.0
91	Taunton	Washington St.	Jackson St.	20	16.0
92	Fairhaven	Huttleston Ave. (Rte. 6)	Alden Rd.	23	15.7
93	Fairhaven	Huttleston Ave. (Rte. 6)	Sconticut Neck Rd./Rte. 240	23	15.7
94	Attleboro	Newport Ave. (Rte. 1A)	Careltan/Pitas	21	15.0
95	Dartmouth	State Rd. (Rte. 6)	Hathaway Rd.	21	15.0
96	Somerset	Brayton Ave.	Read St.	17	15.0
97	Attleboro	Newport Ave. (Rte. 1A)	Highland Ave. (Rte. 123)	20	14.7
98	Fairhaven	Huttleston Ave. (Rte. 6)	Bridge St.	16	14.7
99	Mansfield	Chauncy St. (Rte. 106)	Forbes Blvd.	20	14.7
100	Somerset	Wilbur Ave.	Brayton Point Rd.	24	14.7

A review of climate change and its effects on safety was also considered to determine locations that are prone to flooding, experience standing water and over topping that contribute to unsafe travel. These locations are:

- Old Fall River Road/New Plainville Road at Turner Pond and Shawmut Avenue/High Hill Road at the New Bedford/Dartmouth line;
- School Street @ Hodges Brook in Mansfield;
- West Street @ the Bridge in Mansfield;
- The Balcom Street/Otis Street/Gilbert Street area, near the Wading River and Sweet's Pond in Mansfield;
- Walker Street, at the Wading River in Norton;
- Route 138 at Cobb Brook in Taunton;
- Buttonwood Brook area south of Buttonwood Park (Hawthorne Street/Allen Street area) in Dartmouth;
- Old Providence Road (either side of the bridge) and Pearse Road areas in Swansea; and
- Route 1 Corridor from Plainville to the Attleboro-Rhode Island line.

As the general public shifts in travel choices for commuting and recreational purposes, as well as healthier lifestyle choices, it is important to keep all roadway users safe. SRPEDD will work with local officials and MassDOT to compile the data, determine the circumstances influencing the high crash rates and offer solutions to improve safety along each corridor or location. SRPEDD will continue to provide assistance to the local communities in the identification and analysis of unsafe roadways and intersections throughout the region, leading to the implementation of corrective measures.

Recommendations

SRPEDD staff will continue to work with local officials and MassDOT to determine the circumstances influencing the high crash rates and offer solutions to improve safety along corridors or at locations. As part of a performance measure based planning effort and through

the Transportation Evaluation Criteria process, SRPEDD will implement and continue the following:

- Encourage safety enhancements in all projects seeking public funds;
- Assist local communities in their consideration of traffic control devices (i.e. all-way stop control, speed limit changes, etc.) and promote the use of sound engineering judgment in their decision making process on traffic control devices as assistance is requested through the SMMPO's UPWP Community Technical Assistance Task;
- Encourage, support and assist local communities in the implementation of access management (curb cut by-laws) and Drive-Thru Window standards to effectively reduce queuing on adjacent roadway corridors;
- Promote the addition of sidewalks as well as proper placement and regular maintenance of crosswalks in compliance with the American with Disabilities Act in areas that currently lack these facilities, particularly on roads that provide connections to schools and other pedestrian oriented destinations;
- Continue working with local and statewide bicycle groups promoting connectivity of bicycle accommodations (paths and separate bike lanes) throughout the region;
- Continue to support the pursuit of Red-Light-Running Camera Legislation in Massachusetts; and
- Support the maintenance or replacement of drainage structures to ensure roads are free of standing water and promote vehicular flow during inclement weather.

For additional information, please see Appendix D.

Bridges

Over 5,000 miles of road is currently maintained by MassDOT and the 27 communities of the SMMPO. Considering the automobile is the primary source of transportation for most residents along with the volume of heavy freight traffic and transit vehicles, the infrastructure that provides the ability to traverse the region is under constant physical pressure. Efforts to maintain, expand this infrastructure continue to be a significant challenge to MassDOT and local departments of public works.

There are **484** bridges within the SMMPO region including **373** bridges under the jurisdiction of the Massachusetts Department of Transportation (MassDOT) or other state agencies. The remaining **111** bridges are owned and maintained by SMMPO communities. (See Figure 8.) Because MassDOT is responsible for a majority of the bridge maintenance throughout the Commonwealth, they established a proactive preservation program to reduce the long-term costs for maintaining these facilities. On a regular basis, MassDOT personnel inspect each bridge and compile ratings based on acceptable federal standards. Each bridge is then classified as being within one of three categories: structurally deficient, functionally obsolete, or meeting standards.

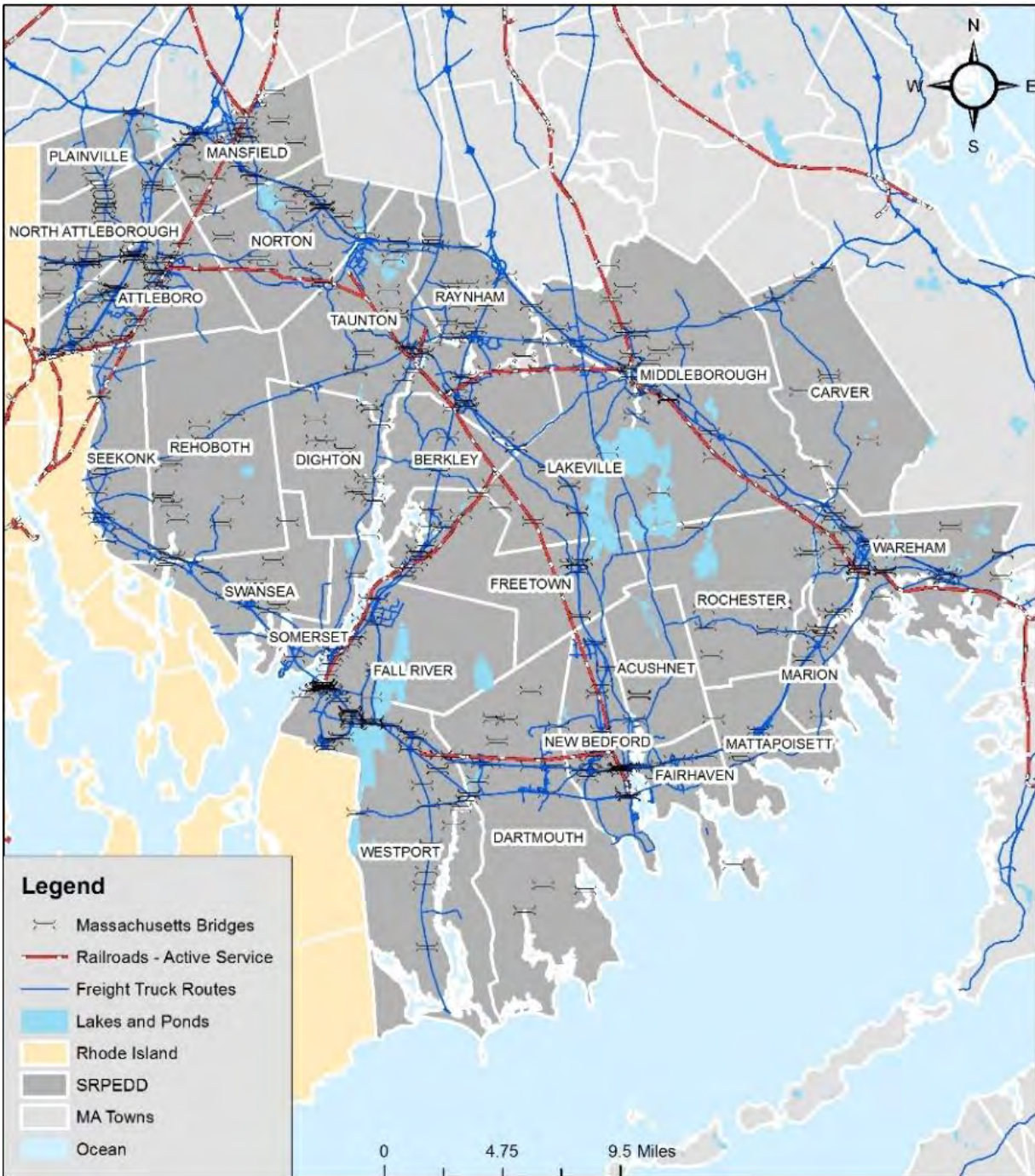


Figure 8: Map of Bridges in the SMMPO / SRPEDD Region

Structurally Deficient Bridges

Bridges requiring immediate attention for repair are those classified as structurally deficient. The Federal Highway Administration (FHWA) classifies a bridge as Structurally Deficient if the deck, superstructure, substructure, or culvert is rated in "poor" condition. In 2018, Massachusetts had a total of 470 bridges, 9.0% rated as structurally deficient with 33, of those bridges located in the SMMPO region, down from 44 in the 2016 Regional Transportation Plan. Nationally, the percentage of structurally deficient bridges was higher at 8.9%. The SMMPO percent of structurally deficient bridges was 6.8% as shown in Figure 9.

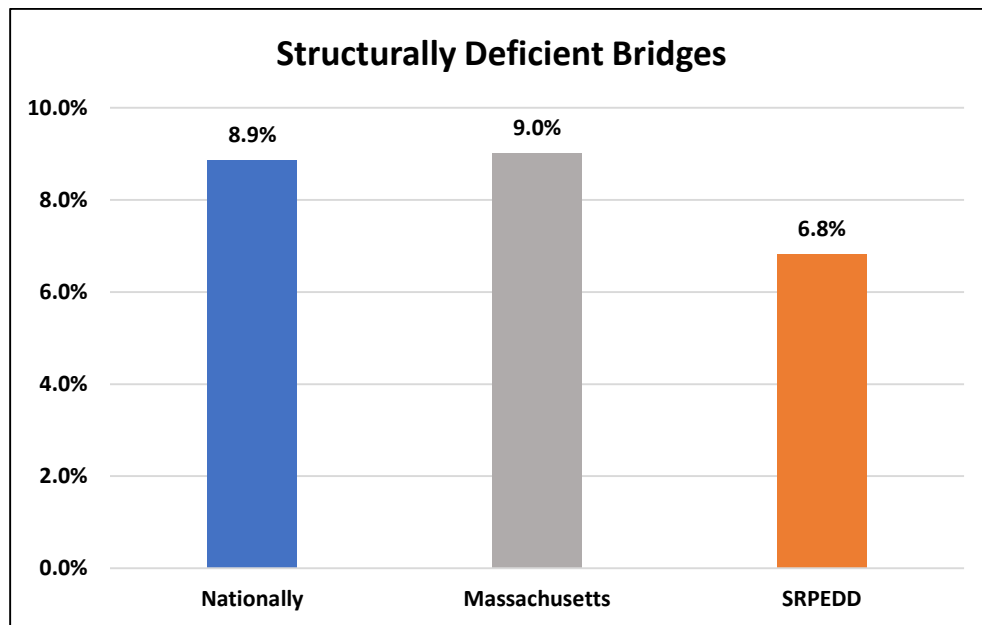


Figure 9: Compared Structurally Deficient Bridges

Of these 33 bridges, nine (9) are under construction or programmed for repairs through the TIP.

Accelerated Bridge Program

The Accelerated Bridge Program (ABP) has reduced the number of bridges in need of repair. This program created thousands of construction jobs. To complete this program, MassDOT and the Dept. of Conservation and Recreation (DCR) are using innovative techniques. More projects are completed on-time and on-budget, with minimum disruption to people and commerce.

The Accelerated Bridge Program has three construction projects currently underway that will replace three bridges by 2024 at an estimated total of \$287,272,500. Two of these bridges are currently under construction and the remaining bridge is in the preliminary design phase with construction to begin in 2021. As required as part of the Accelerated Bridge Program.

Bridge Sufficiency Rating

The Inventory is used for federal funding purposes. A "bridge sufficiency rating" is calculated, based 55% on the structural evaluation, 30% on the obsolescence of its design, and 15% on its importance to the public.

The national average age for bridges is 43 years old, Massachusetts makes the top three states with the oldest bridges with an average age of 57. Most bridges are designed to last 50 years before major overhaul or replacement, therefore MassDOT can expect a growing number of bridges to go on the repair list as fast as they are able to repair them. Its bridges also rank among the worst nationally when it comes to a measurement transportation officials use nationwide to help prioritize repair and replacement projects. The standard, called the sufficiency rating, is calculated for each bridge and provides a fairly comprehensive look at its overall status. The measure uses a detailed formula that considers the structure's condition, functionality, and importance, giving it a score from zero, the worst possible, to 100. On average, Massachusetts' bridges score 80.31 — the eighth-lowest average rating of any state and several points below the national average of 82.8. (See Figure 10.) As of 2008, a score of 80 or less is required for federal repair funding, and 50 or less for federal replacement funding.¹

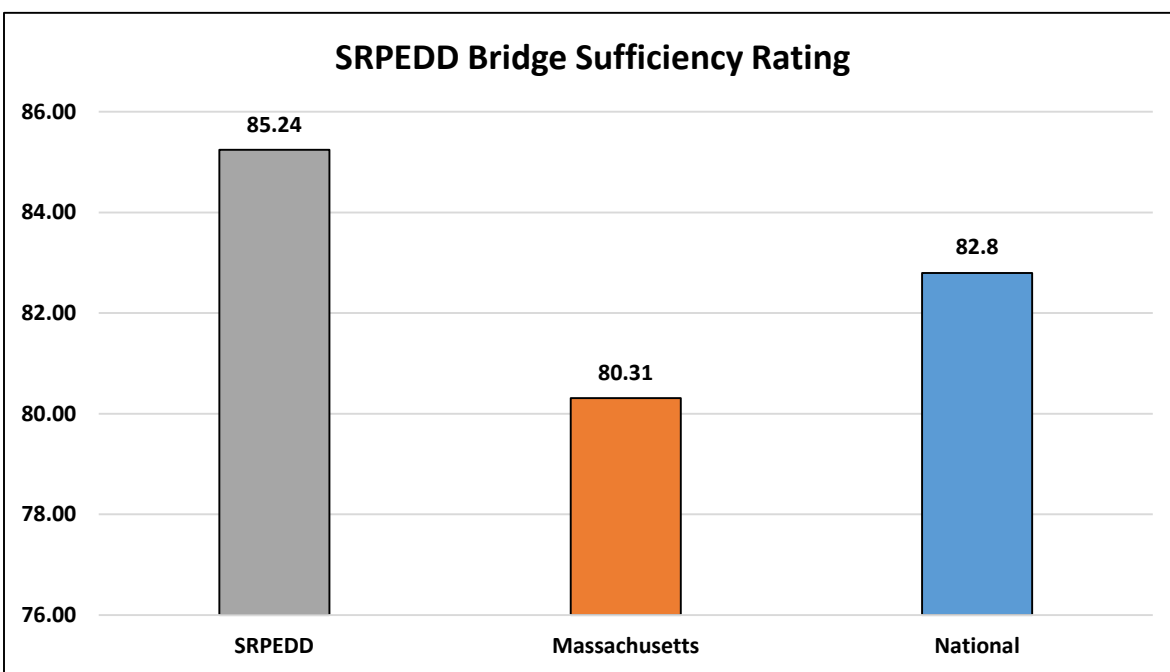


Figure 10: Compared Bridge Sufficiency Rating

¹ Boston Globe: Structurally Deficient Bridges

The sufficiency rating of an individual bridge on a scale of 0 to 100 is based on the structural adequacy and safety, essentiality for public use, and serviceability and functional obsolescence of the bridge. The sufficiency rating considers multiple aspects of a structure and its level of performance and is the basis for establishing eligibility and initial priority for replacement and rehabilitation of bridges under the Highway Bridge Replacement and Rehabilitation Program. In general, a low sufficiency rating for a structure will place that structure at a higher priority. Figure 11 compares the sufficiency rating between the SMMPO region, Massachusetts, and the nation.

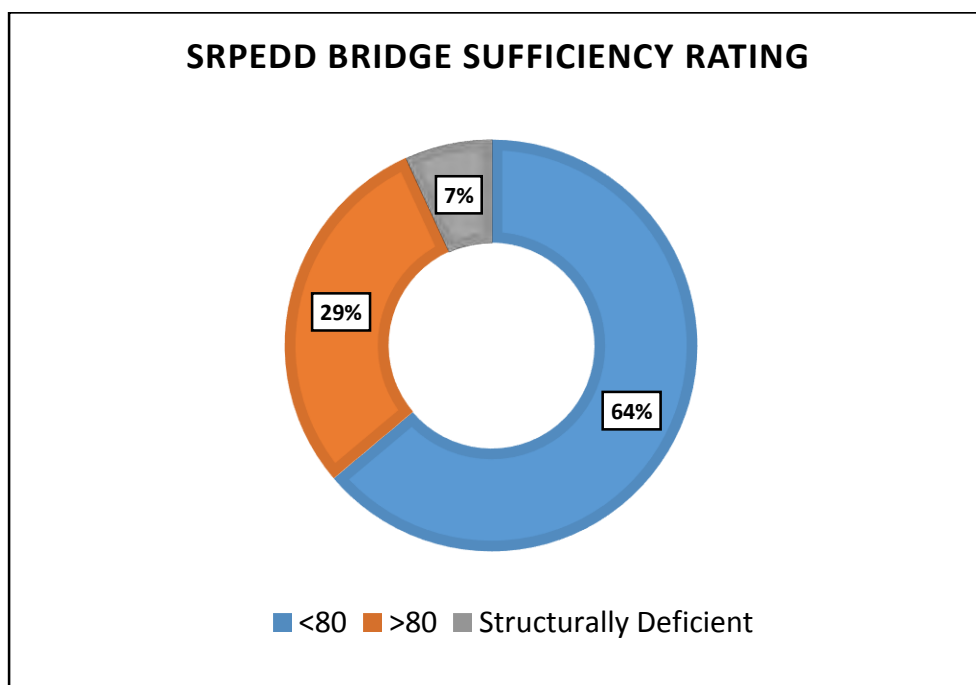


Figure 11: SRPEDD Bridge Sufficiency Rating

Regionally Significant Bridges

Although every bridge is important, there are 4 major facilities that regionally impact the SMMPO including the Brightman Street Bridge/Veterans Memorial Bridge, the New Bedford/Fairhaven Bridge, the Berkley/Dighton Bridge, and the Braga Bridge. These facilities are important to vehicular flow, freight movement, and the transport of goods and services are key links to the regions two seaports and are a vital part of regional evacuation routes. Failure to maintain and keep these bridges operational will have significant impacts to the region and throughout Massachusetts and Rhode Island.

The status of these particular bridges is as follows:

The Berkley/Dighton Bridge

Built in 1896 over the Taunton River. The swing span structurally deficient bridge had a weight limit of 3 tons, only one lane of traffic with signal control on either end. These restrictions limited the bridge to carry an average of 6,700 vehicles per day as the bridge is used as a connector between Route 138 and Route 24. The bridge was closed many times over the years due to its poor condition. In February 2007, MassDOT presented a plan to replace the bridge on the existing alignment and construction for a new bridge began in 2012. Construction on the new facility was completed in the Summer of 2016.

Brightman Street Bridge/Veterans Memorial Bridge

The former Brightman Bridge was a double-leaf bascule drawbridge spanning the Taunton River between Fall River and Somerset that was replaced with the Veterans Memorial Bridge which opened in 2011. The double bascule Veterans Memorial Bridge provides a 200-foot horizontal clearance and a 60-foot vertical clearance at the opening. Federal legislation currently prohibits the use of federal funds to demolish the Brightman Street Bridge which carries a maintenance cost of nearly \$1 million dollars. The legislation was a means to block the proposed Liquid Natural Gas (LNG) facility from being developed north of these bridges. The Brightman Street Bridge inhibits nautical traffic from proceeding north on the Taunton River due to constraints from the channel opening at the bridge. Legislators are aware of the necessity to demolish the bridge, as the maintenance is becoming burdensome, however, funding has not yet been secured for this undertaking. The Veterans Memorial Bridge was constructed with a wider channel and higher clearance that would necessitate fewer openings for the draw bridge for nautical traffic.

Braga Bridge

The Braga Bridge is a through truss bridge that carries Interstate 195 over the Taunton River between the town of Somerset and the city of Fall River, near the mouth of the Quequechan River at the confluence with Mount Hope Bay. At just over a mile long, it is one of the longest bridges in Massachusetts. Opened to traffic in 1966, it provides an important link between Providence, Rhode Island, New Bedford, and Cape Cod.

The Braga Bridge is over 1 mile in length and carries over 80,000 vehicles per day. An important east/west link for Southeastern Massachusetts, the Braga Bridge connects the City of Fall River to the town of Somerset. It is also an important crossing for commuters, commercial vehicles and vacationers traveling between Cape Cod and the Islands to Rhode Island and destinations further west.

As mentioned earlier in this chapter, a project is currently under way to replace the interchange ramp system known as “Spaghetti Ramps” for the numerous elevated connections to the nearby highway and local road network. As part of the project, bridge decking repairs to the Braga Bridge are being implemented to preserve and protect this important river crossing.

New Bedford/Fairhaven Bridge

The New Bedford/Fairhaven Bridge is the oldest operating swing span bridge in the United States and carries 18,000 vehicles per day as part of Route 6 over the Acushnet River. It has a horizontal clearance of 94 feet at the west span and 95 feet at the east span and a vertical clearance, when the bridge is open to vehicular traffic, of 6 feet at mean high water. Bridge openings have increased considerably over the last 30 years, from 559 (1975) to 4,733 (2007) to 5,524 (2013). Since 2013, bridge openings have remained relatively steady with openings from May 2018 through April 2019 totaling 5,212. Over 40% of the vessels passing through the bridge opening are fishing vessels.

Ocean going freight vessels are returning to the harbor because of maintenance dredging of the channel and turning basin south of Route 6 and the demand on the harbor docks continues to grow. The importance of the New Bedford/Fairhaven Bridge as a key component to the movement of freight is necessary to consider through project development. The potential expansion to the north harbor is inhibited primarily from the presence of the existing Route 6 Bridge with an existing horizontal clearance of only 95 feet. This limits the size of vessels that can serve the industries north of the bridge.

Presently, the existing bridge is structurally adequate, but has a long history of mechanical problems that have required closing the bridge to vehicular traffic. The swing-span structure is also slow to open and close, sometimes stopping traffic on Route 6 for up to 20 minutes.

As of December 2014, the proposed solutions to replace this bridge include a single-bascule, double-bascule or a vertical lift bridge. The goal of a new facility is to maximize the channel as much as possible, but no less than 150 feet. This would match the current opening width of the hurricane barrier in the southern portion of the harbor. The other factor is to maintain an unlimited vertical clearance at the bridge to allow all vessels to access the north harbor area. Preliminary estimates for the replacement of this bridge range from \$60 million to \$160 million, depending on the bridge type.

Funding Sources

There are a variety of different funding sources to fund the maintenance and replacement of bridges across the SRPEDD region. Total funding (Non Federal Aid, Surface Transportation Program (STP), BR Replacement Off Systems, Accelerated Bridge Program (ABP)) for bridges completed in the SMMPO region totals \$144,027,189.00. Total funding (BR Replacement Off Systems, Accelerated Bridge Program (ABP), No Funding Category Assigned) for bridge repairs in the SRPEDD region from 2015 to 2021 totals \$229,586,088. While the funding for bridge

repairs are listed annually on the TIP, the selection, funding and implementation of those improvements are at the discretion of MassDOT. Figure 12 illustrates the project funding sources.

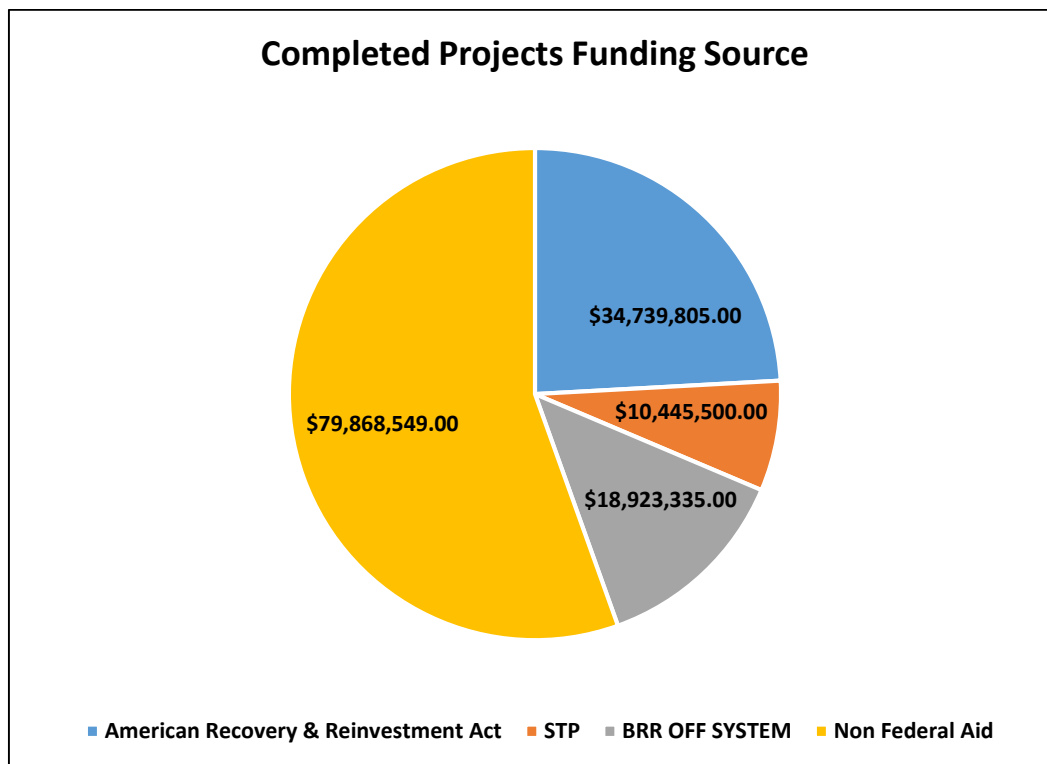


Figure 12: SRPEDD Bridge Funding Sources

Recommendations

As recommended in the 2012 and 2016 RTP, MassDOT should consider the implementation of a bridge maintenance program where annual maintenance is completed for all bridges in the Commonwealth to prevent them from deteriorating into a state of structural deficiency. The implementation of such a program would require MassDOT and its district offices to develop a capital improvement plan to repair and maintain all the bridges in good to excellent condition.

Similar to the concepts of Pavement Management, maintaining these structures in a state of good condition will be less expensive over time than the option of waiting for these structures to fail when more expensive repairs are necessary. Unfortunately, this type of program is currently not possible due to a lack of resources. However, MassDOT has the ability to inspect bridges every two years with an overall goal to rehabilitate structurally deficient bridges before the condition worsens to the point of full bridge replacement.

SRPEDD will continue to support the replacement of the New Bedford/Fairhaven Bridge.

Until the funding for the replacement of the New Bedford/Fairhaven Bridge a preferred alternative resulted from the feasibility study and working group and continued repairs to all structurally deficient bridges throughout the SMMPO region. Priority should be given to bridges that are part of major highway corridors, freight routes, and evacuation routes. Finally, the continued evaluation and improvements to bridges below an efficiently functioning sufficiency threshold as well as bridges within other regions that play a major role transportation across the region. Finally, SRPEDD will continue to support the replacement of the New Bedford/Fairhaven Bridge and the continued repairs to all Structurally Deficient bridges throughout the SMMPO.

For additional information, please see Appendix E.

Pavement Management

Pavement Management is a process in which a network of roads is evaluated and rated to determine a schedule of maintenance to keep the roads in good to excellent condition. The ultimate goal of a pavement management program is to maintain these good to excellent road conditions into the future in the most cost effective manner.

Deterioration of pavement over time is inevitable because of wear and tear caused by traffic and the elements such as rain, sunlight and chemicals that come into contact with the pavement surface. Asphalt deterioration begins immediately. Even in normal conditions substantial deterioration can begin to take place after 3 to 5 years. When asphalt pavement is constructed and maintained properly it wears out slowly and can last up to 25 years or more. Proper maintenance is vital to protecting it from the external factors that wear it out. The cost of repairs increases dramatically if not completed at the appropriate time, so it is therefore less expensive to keep presently good roads in good shape.

Local Pavement Management - SRPEDD provides assistance to our communities in developing a local pavement management program. The program includes training of staff on data collection methods, data collection by the municipality and analysis of data by SRPEDD. The final product is a pavement management report that includes a summary of all road conditions, recommended repairs, and a priority list of roads needing repair with cost estimates.

Regional Pavement Management - The regional pavement management program consists of collecting, evaluating, and reporting on the pavement conditions of all federal aid eligible roads. This survey does not include roads classified as Interstate Highways or roadways that are part of the National Highway System which are completed by MassDOT. As of 2018, 16% of federal aid eligible roadways were found to be in excellent condition, 49% in good condition, 12% in fair condition, and 23% in poor condition.

Roads in excellent condition require no maintenance or routine maintenance. Roads in good condition require relatively inexpensive treatments, such as crack sealing or patching and/or preventative maintenance such as chip sealing to maintain their good condition. In general, roads in fair condition require rehabilitation, while roads in poor condition require reconstruction. These repairs are typically more expensive.

A comparison of pavement management results from 2015 and 2018 indicates that over 1/3 of the pavement conditions in the region fall under fair or poor conditions but that there was

a minor improvement of the roadway system as shown in Figure 13. This improvement can be justified with the change in Pavement Management Software and difference in rating systems and criteria rated in the previous years. The ratings for example in the previous software considered the PCI for excellent conditions to be rated between 100 and 97 whereas the new software rates it between 100 and 93. Additional criteria such as bleeding has been included in the new software whereas conditions such as drainage have no effect on the rating. Roadways considered in excellent condition increased by 5%, while roads in good condition remained the same. Fair condition roads increased by 1% while the percentage in poor condition decreased by 6%.

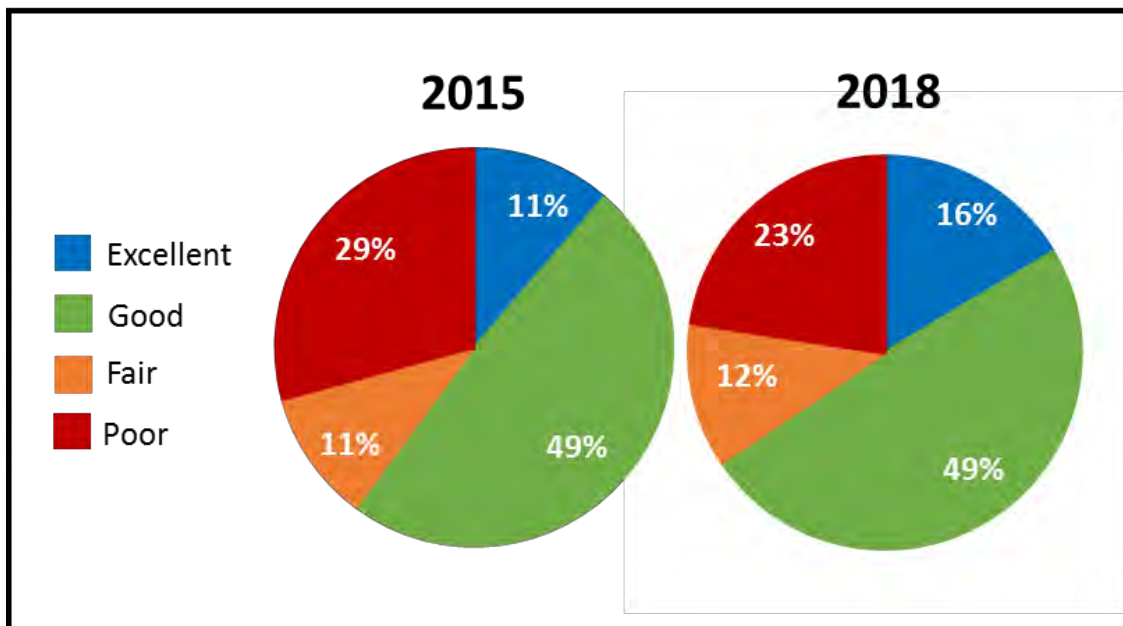


Figure 13: Regional Pavement Management Comparisons

It is estimated that a onetime cost of approximately \$156 million is needed to improve all federal aid eligible roads in the SRPEDD region to excellent condition and of which, \$141 million is necessary to repair roads in fair or poor condition. An additional \$15 million is needed to maintain roads in good or excellent condition.

Estimated 5-year and 10-year investment plans to bring all the locally maintained federal-aid eligible roads up to maintainable levels were developed using a forecasting model that takes into account pavement deterioration. The 5-year plan recommends a “Best First” approach (concentrates on preventative maintenance) with an estimated \$75 million investment per year for 5 years. After the initial 5-year investment, the network would require an estimated \$2.5 million per year to maintain. This would cost a total of \$387.5 million over the next 10 years. The 10-year plan recommends a best-first approach with an estimated \$40 million per year for 10 years. This would cost a total of \$400 million over the next 10 years. After the

initial 10-year investment the network would require an estimated \$2.5 million per year to maintain. Utilizing the 5-year investment plan would reduce costs by 12.5 million over the next 10 years. These investment plans are not adjusted for inflation.

The Chapter 90 program reimburses municipalities for documented expenses allocated to roadway projects. Communities within the region are given an apportionment, which can be spent immediately or saved up over time. Chapter 90 funds can also be used to build bikeways, purchase equipment, construct salt sheds and garages, pay for design needs, lighting, landscaping and much more. Chapter 90 funding costs available in the SRPEDD region were approximately 18 million in 2012. In 2015 Chapter 90 funding in the region saw an increase to over \$27 million and decreased back to over \$18 million the following year and has remained the same until present year.

In the selection of highway projects competing for limited funds, it has been the SMMPO's policy to give precedence to projects that address safety and mobility issues, causing a simple reconstruction or rehabilitation project to have less significance and take years to be programmed into the TIP. Though these roads qualify for federal funding, they are subject to federal design standards including complete streets which include the consideration of accommodations (sidewalks & bike paths) which also increase the cost of a project. In some cases, waivers are possible, but often these roads are repaired through Chapter 90 funding or non-federal aid programs because of cost effectiveness and less stringent design standards.

Recent advances in pavement technologies are working to increase the service life of pavement as well as use more environmentally friendly and sustainable methods. Technology advances include the recycling of materials such as shingles and tires, and the reduction of temperatures used in the paving process reduce both the cost of materials and process. A policy to incorporate the use of these technologies could significantly improve the overall service life, provide more sustainable and ecologically sound alternatives, and significantly decrease costs associated with paving projects.

Recommendations

The SMMPO recommends the following for improving the pavement conditions in Southeastern Massachusetts:

- The continuous update of pavement conditions for all federal aid eligible roads in the SMMPO region. This would include a continuation of data collection of the region's road conditions over a four-year period cycle, beginning in the SRPEDD FFY 2019

Unified Planning Work Program. The results from this effort will continue to provide a tool for local communities, planners, engineers, and MassDOT Highway Division to protect and maintain the investment in our road network for the foreseeable future.

- Communities should consider incorporating safety, congestion, and other elements (i.e. improved drainage, and Complete Streets) into road reconstruction and rehabilitation projects to be more competitive for federal funding. SRPEDD's Geographic Roadway Runoff Inventory Program (GRRIP), Safety Management Program and Congestion Management Program are valuable tools in this effort.
- The amount of state and federal funds available for the maintenance of roads needs to be increased to keep pace with the rising costs of materials and labor. The rate at which roads are currently deteriorating shows a dire need for increased maintenance. This deficiency requires drastic fiscal measures, such as dedicated sources of revenue to be reserved solely for transportation improvements throughout the state. Additional funding for maintenance, rehabilitation and reconstruction is necessary to achieve the goal of a good, sound road network that will last for many years.
- Communities should consider using advanced pavement technologies to significantly improve the overall service life, provide more sustainable and ecologically sound alternatives, and significantly decrease costs associated with paving projects.
- Communities should consider the implementation of quality control guidelines for all paving projects and may consider hiring a quality control inspector to guard against premature pavement deterioration due to construction error.

For additional information, please see Appendix F.

Public Transit

Existing Services

Southeastern Massachusetts is served by two Regional Transit Authorities (RTAs) that provide both fixed route and demand response transit services. Service is provided in the northern portion of the SMMPO by the Greater Attleboro Taunton Regional Transit Authority (GATRA), and the southern portion is served by the Southeastern Regional Transit Authority (SRTA). Fixed route service refers to a transit service that operates on regularly scheduled bus routes on a published time table. Fixed route service is generally found in the more urbanized areas of the region where population densities are higher and a greater number of destinations are located. Demand response service refers to a flexible transit service in which customers schedule a trip in advance and the vehicle is dispatched based on the demands of the customers for the day. Demand response is primarily used by older adults and/or individuals with disabilities that may not otherwise be able to use regular fixed route transit services.

Public transit is not strictly limited to or solely operated by the RTAs; the SMMPO region is also served by two MBTA Commuter Rail lines and four private commuter bus carriers. For more information regarding the MBTA Commuter Rail lines, refer to Appendix H – Commuter Rail, and more information regarding the commuter bus service is found in Appendix I – Commuter and Intercity Bus.

GATRA and SRTA Characteristics

The characteristics of the communities served by both RTAs are very different and present separate challenges for providing transit services. The GATRA communities are generally more suburban and include two small cities, Attleboro and Taunton, whereas the SRTA communities are much more urban and include two medium sized cities, Fall River and New Bedford.

GATRA Service

GATRA serves 28 communities (see Figure 14) in southeastern Massachusetts. Fifteen of the twenty-eight communities are within the SMMPO region: Attleboro, Berkley, Carver, Dighton, Lakeville, Mansfield, Middleborough, North Attleborough, Norton, Plainville, Raynham, Rehoboth, Seekonk, Taunton, and Wareham.

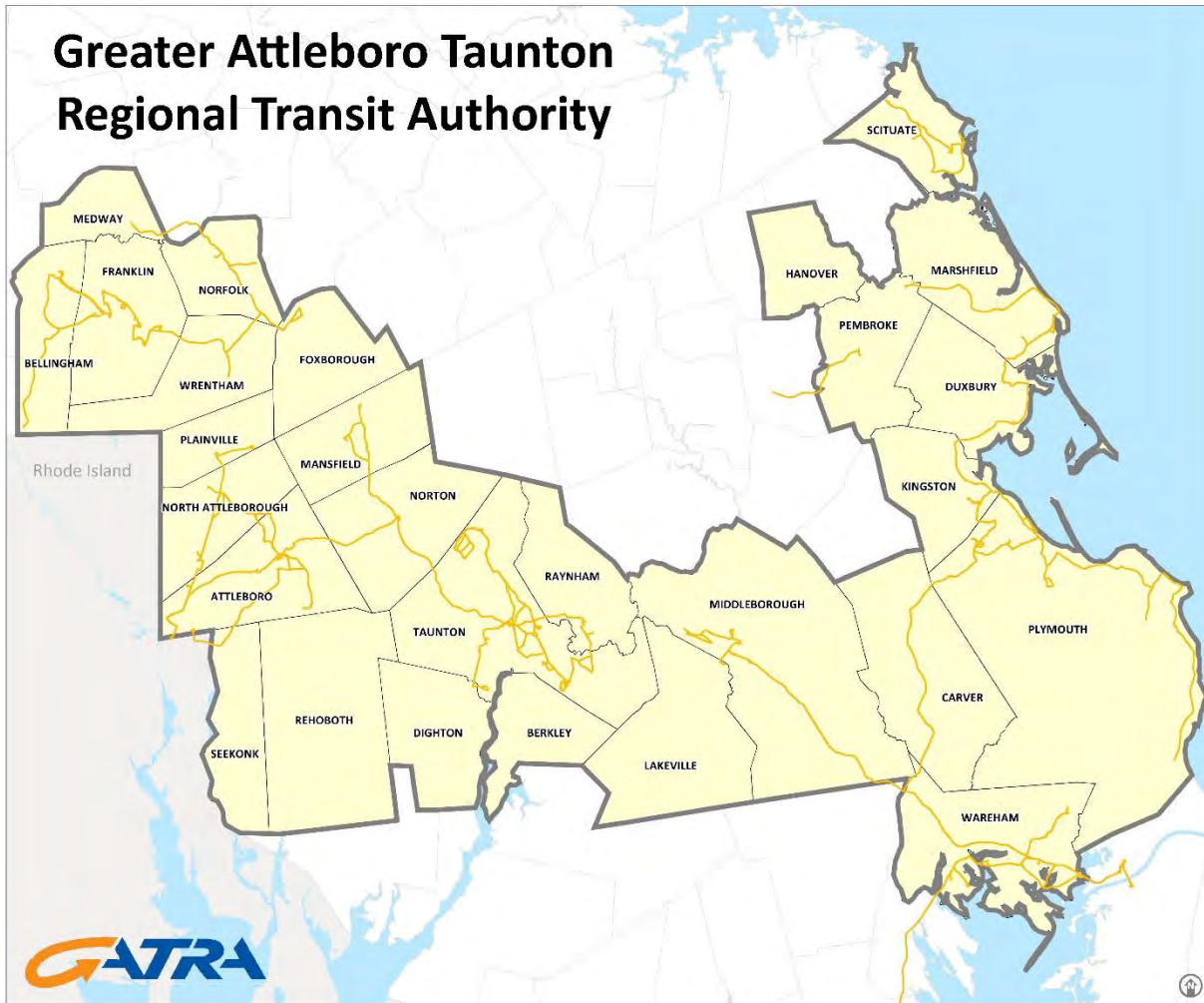


Figure 14: Map of the GATRA Service Area

GATRA provides fixed route service in nine of the fifteen communities of the SMMPO region and in eleven communities outside the SMMPO region. The SMMPO communities are Attleboro, Mansfield, Middleborough, North Attleborough, Norton, Plainville, Raynham, Taunton, and Wareham. An intercity route operates between Taunton and Attleboro, an inter-community route operates between Kingston, Marshfield, and Duxbury, an inter-community route operates between Norfolk, Wrentham, Foxboro, and Franklin, and commuter shuttles provide service to MBTA Commuter Rail stations in Bellingham, Medway, Norfolk, and Pembroke. Most routes operate with one-hour headways (interval of time between bus arrivals), and generally operate Monday through Saturday from 6:00 AM to 6:00 PM; the Route 140 is the only GATRA service operated on Sundays and only while Wheaton College is in session. Saturday schedules typically start later and end earlier than weekday service.

GATRA has added new service in our region since the last update of this plan. The Wareham-New Bedford Connection began service in 2017. The route connects Wareham and New Bedford along the Route 6 corridor and serves as a lifeline service for Wareham residents to access social services in New Bedford. The route is currently grant funded and long term funding has yet to be identified.

Demand response service is offered in each of the twenty-eight communities GATRA serves. Demand response service is available for people who are 60 years or older and for people with disabilities. The service is provided either by a private operator or the local Councils on Aging. In communities with fixed route service, GATRA provides paratransit service as required by the Americans with Disabilities Act for eligible riders whose origin and destination are within $\frac{3}{4}$ of a mile of a fixed route bus route. GATRA has seen demand response ridership increase by 21% between 2013 and 2017.

GATRA is the Massachusetts Human Service Transportation broker for 43 communities in southeastern Massachusetts and includes communities served by the Brockton Area Transit Authority and the Southeastern Regional Transit Authority. The brokerage transportation services are for consumers of the Massachusetts Department of Medical Assistance, Department of Public Health, Department of Developmental Services, Massachusetts Commission for the Blind, and the Massachusetts Rehabilitation Commission. GATRA contracts with more than 49 vendors to provide trips.

GATRA's brokerage service is significant. Between 2014 and 2018 GATRA provided 7,806,845 trips. The service continues to grow, seeing a 21% increase between 2014 and 2018.

Following a fare equity analysis in February 2019 GATRA raised their fares, and fixed route one-way fares are now \$1.50. Students, senior citizens, people with disabilities, and Medicare card holders are eligible for a half priced fare. Due to the relatively low population density and development patterns of the GATRA service area, they are challenged with providing access to vital resources and employment for its communities at a rate that is affordable to the customers that rely upon the service.

SRTA Service

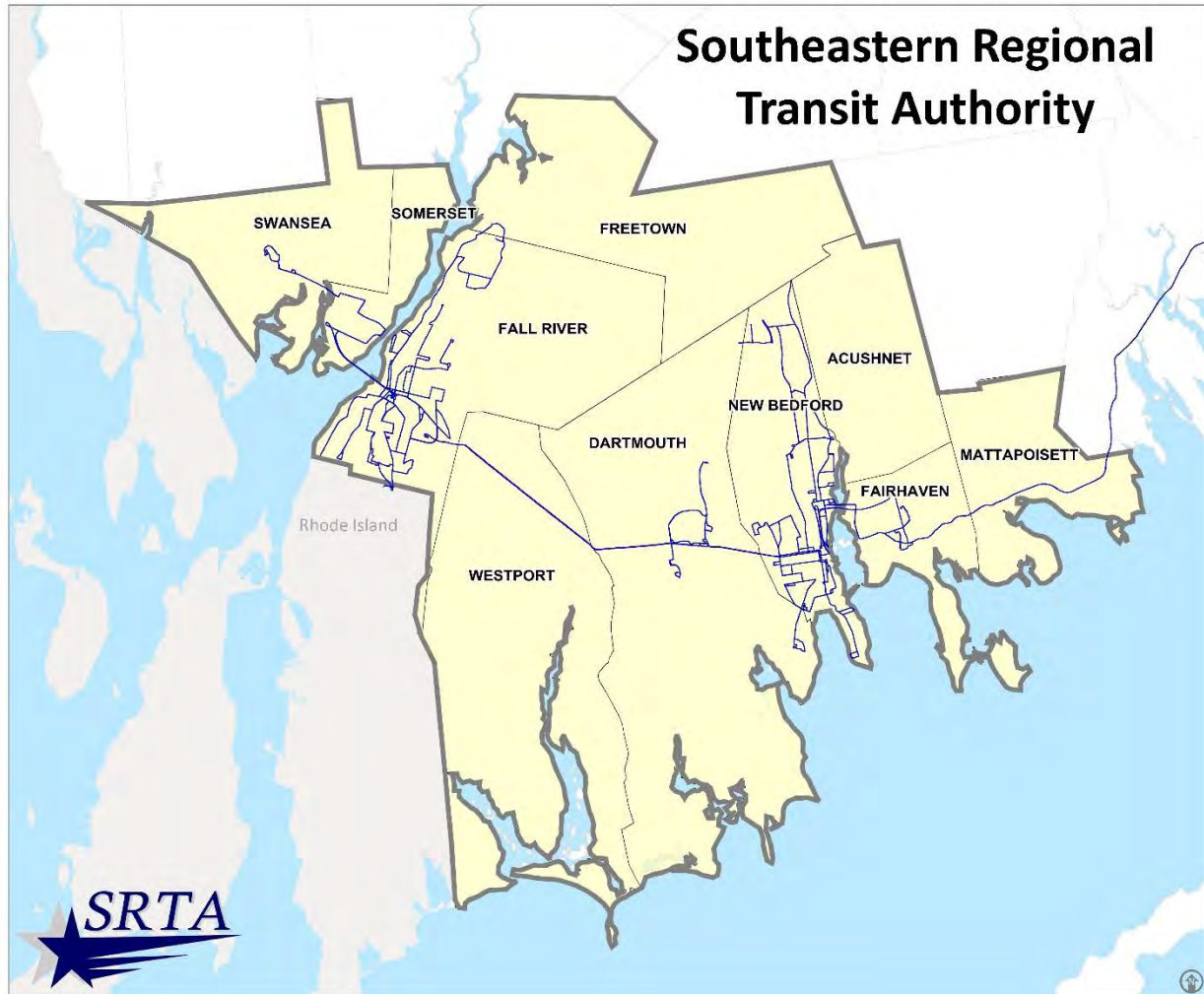


Figure 15: Map of the SRTA Service Area

The SRTA service area is comprised of 10 communities in southeastern Massachusetts: the cities of New Bedford and Fall River, as well as Acushnet, Dartmouth, Fairhaven, Freetown, Mattapoisett, Somerset, Swansea, and Westport (see Figure 15). Fixed route service is concentrated in Fall River and New Bedford, with individual routes extending into Fairhaven, Dartmouth, Somerset, and Swansea. An intercity route travels Route 6 between Fall River and New Bedford through Westport and Dartmouth. Acushnet, Freetown, and Mattapoisett are not served with fixed route bus service. SRTA headways (interval of time between bus arrivals) vary from 20 minutes to 60 minutes. In 2018, SRTA carried 2,632,136 fixed route passenger trips and saw a 2.74% increase from 2014 to 2018 in fixed route trips.

SRTA Demand Response services extend beyond the $\frac{3}{4}$ mile of fixed route requirement of the Americans with Disabilities Act and include service to anyone located anywhere within the ten

communities of the service area, so long as the passenger meets the ADA guidelines for eligibility. SRTA demand response service represents approximately 2.7% of total SRTA passenger trips. Each member SRTA community provides transportation for those 60+ through the local Councils on Aging.

In 2018 SRTA initiated an ITS project aimed at adding automatic vehicle location (AVL), onboard announcements, real time passenger information, and automatic passenger counters (APCs) to their fixed route buses. The project is in progress and will be completed by the end of 2019.

The Transit Deficiency

Lack of transit connectivity is a barrier to mobility within the SRPEDD region. The GATRA and SRTA systems only intersect in Wareham by utilizing the Wareham-New Bedford Connection and the only other intra-regional connections are made through commuter and intercity bus lines. Intercity bus fares can be cost prohibitive to many transit riders, the schedules do not align which makes intercity travel time consuming, and in some cases, the connections simply do not exist.

The transit deficiency is exemplified by the complete lack of a direct connection between downtown Fall River and downtown Taunton. The only way to make the trip is to use the SRTA Intercity route to New Bedford, use the DATTCO intercity bus to the Silver City Galleria in Taunton, and then board the GATRA Route 8 to complete the trip to downtown Taunton. The minimum time to make this one-way trip is 2 hours and 45 minutes assuming all connections can be made. By comparison, the same trip between downtown Fall River and downtown Taunton would take 1 hour and 30 minutes by bicycle and 30 minutes by car.

Transit in the region is most intense in the four cities (Attleboro, Fall River, New Bedford, Taunton), with only limited service into the suburban communities of the region. As the job market has shifted from being centralized in the urban cores to decentralized suburban industrial parks, commercial strip malls, and shopping plazas, transit struggles to adequately meet the needs of the workforce. The dense nature of the urban core is where transit is more cost efficient, however the disperse development of the suburban areas make fixed route transit more costly to operate, and more time consuming to ride.

Streamlining transit along the Route 6 corridor that connects New Bedford and Fall River by adding express bus service to the Intercity Route would assist the business community and the workforce by reducing the trip time by half. This service would also offer students of Bristol Community College a faster route between campuses.

Transit deficiency is not only a disconnect between the region's cities and towns, but also in the availability of transit at different times of the day or days of the week. Neither GATRA nor SRTA operate service on Sunday, which creates a barrier to employment for many in the region's workforce. Moreover, the span of service for both RTAs limits workforce access for second and third shift workers. GATRA span of service is generally 6 AM to 6PM Monday through Saturday; SRTA span of service is 6 AM to 6 PM Monday through Friday on most routes with night service extended to 9 PM on select routes; SRTA Saturday span of service is from 6 AM to 6 PM. Even within the times that the service is available, the headways (interval of time between bus arrivals) can be as much as an hour for most GATRA routes, and ranges from 15 minutes to one hour for SRTA routes.

Needs Identified by the Southeastern Massachusetts Coordinated Human Services

Transportation Plan - The Southeastern Massachusetts Coordinated Human Services Transportation Plan identifies existing transportation needs, gaps, and barriers through ongoing public participation in the form of surveys, public meetings, and discussions throughout the region. In February 2014, GATRA, SRTA, SRPEDD, and BAT (Brockton Area Transit Authority) conducted a survey to obtain and record unmet transportation needs in Southeastern Massachusetts. The same survey was conducted again in 2018.

The agency survey identified the top ten towns in Southeastern Massachusetts with the highest unmet transportation needs (in order of priority) as: Fall River, New Bedford, Taunton, Wareham, Norton, Somerset, Marion, Fairhaven, Swansea, Mattapoisett, Dighton, Dartmouth, and Attleboro.

When asked if there are destinations in Southeastern Massachusetts that people could not reach because of the lack of transportation, 84% of the agencies and 50% of the individuals who responded to the question answered yes. Respondents identified the following destinations/needs that could not be reached because of a lack of transportation:

- Medical Appointments in general and specifically in Dartmouth
- Job Interviews specifically in Taunton from the south
- Boston Hospitals
- Travel between Taunton and Brockton (for access to courts, hospitals, and Massasoit Community College)
- Travel between Taunton and Fall River (for access to courts, hospitals, and Bristol Community College)
- VA hospital in Providence
- Department of Transitional Assistance (DTA) (locations in Brockton and New Bedford specifically)

- Registry of Motor Vehicles
- MassHealth office in Taunton
- Immigration office in Boston
- More Service to Myles Standish Industrial Park in Taunton and New Bedford Industrial Park
- Later service for 2nd and 3rd shift workers in the industrial parks
- Patriot Place in Foxborough for employment
- Plymouth/Wareham and Cape Cod Community College in Hyannis
- Additional transportation between Wareham and New Bedford

Survey Trends

- The overall need for transportation is increasing
- There is a need for expanded night and weekend (Sunday) hours
- Transit routes in different regions need to link up
- In some areas there is a lack of long distance medical transportation
- More direct routes between cities in Southeastern Massachusetts (i.e. Attleboro to Fall River; Taunton to Brockton; Taunton to Fall River; Fall River to Providence)
- Medical and Employment transportation needs stood out as the most urgent

Changing Characteristics and Issues

An Aging Population and an Increase in Population with Disabilities - As the population of persons over 65 with a disability increases, the demand for specialized transportation service will increase. Specialized transportation services such as door-to-door and door-through-door place a higher demand on RTA demand response services. An increase in outpatient radiation and dialysis treatment also adds the need for extra assistance for people traveling home from appointments.

Dialysis, in particular, has critical transportation concerns because it is a matter of life and death and because it requires a reliable ride three times per week. The return trip after a 4-hour dialysis appointment can be problematic for public transportation services when the patient is not stable enough to return home or medical problems arise enroute. The increase in specialized transportation services coupled with stagnant funding to provide these services has strained RTA demand response services budgets.

The 2013 to 2017 American Community Survey reports that 34% of the SMMPO population 65 years or older has a disability. As seniors age in place and lose the ability to drive, they will

increasingly rely on demand response services offered by the RTAs. These services become more costly to provide when the aging population lives in the more rural parts of the RTA service area.

The Americans with Disabilities Act mandates that providers of federally funded fixed route transit provide demand response services for people who are unable to access the fixed route bus wherever a fixed route bus operates. The law mandates that demand response services be provided within a minimum corridor of $\frac{3}{4}$ mile on either side of the fixed route bus route. Demand response services are more flexible than fixed route service and do not operate on a regular route or schedule; passengers schedule a trip in advance through the RTA. Demand response trips are costly for the RTAs; a GATRA average demand response trip cost in 2018 was \$22.66 which was more than double the \$9.84 average trip cost for fixed route; a SRTA average demand response trip cost in 2018 was \$38.43 which was more than seven times higher than the \$5.06 average trip cost for fixed route.

Development and Employment Characteristics of the Region - The SMMPO region has seen the job market shift from being centralized in the urban cores to decentralized suburban office parks. Providing fixed route transit services to suburban office parks is much more challenging and costly than serving the higher density development of the region's cities. Transit operates most efficiently in an urban setting where the routes are shorter, headways are shorter, and fewer buses are needed to meet the demands of urban residents. To meet the changing demands of suburban development and provide access to employment centers, the routes grow in length and so to do the headways. Extending routes into low-density suburban developments to meet the changing needs of customers adds time and miles to existing routes, however the RTAs do not have a mechanism that provides additional compensation for the extended service. The lack of coordination between land use planning and transit needs is financially unsustainable.

The suburban development pattern has extended transit routes further from the urban core, the shift in the regional economy and workforce to more health care and retail employment is also making transit less effective. These jobs do not typically offer the traditional shifts that transit can serve well; more commonplace are rotating work shifts, evening and weekend hours, and non-traditional start and end times. The current span of service from 6 AM to 6 PM for fixed route transit with less frequent service means that many of the region's employees are unable to use transit as a viable commuting option.

Expanding hours and days of operations for the RTAs would require additional funding for operations or, alternatively, would result in reductions of service during the day or eliminating existing service. In the absence of additional funds, the options to reduce headways or eliminate service will be detrimental to transit riders that rely on the service currently in place.

The reduction of headways makes the system much less attractive because of the longer times between buses, and the elimination of service will place a disproportionate burden on low income or elderly riders that may have no access to alternate modes of transportation.

Green Transportation – As part of the need to reduce emissions, investment in public transit is vital throughout the region and state. Implementing a “complete streets” approach to roadway corridor design encourages increased transit use because transit amenities are included in the design and can improve transit operations through more efficient traffic flow while improving the customer experience by providing amenities such as sidewalks leading to bus stops, bus shelters, and crosswalks. Improved roadway design and increased funding for transit services only address the supply side of transit economics. For the region to truly embrace a transformation into a transit rich region, land use patterns will have to change to support transit use. Projects that incorporate transit oriented development (TOD) principles will increase density in the areas around transit hubs providing greater opportunities to expand upon existing transit services.

Inadequate Funding System for Transit - Current funding levels are inadequate for regional transit authorities to fully meet the needs of the riding public. The RTAs are funded through several mechanisms and include federal, state, local, and fare revenue. Federal and state sources provide both operating and capital, whereas local funding is limited to operating costs.

The current funding climate at the federal and state levels introduces uncertainty for future service programming. Fixing America’s Surface Transportation (FAST) Act was enacted on December 5, 2015. The previous federal transportation bill MAP-21 was enacted in 2012 and expired in September of 2014; the bill was extended six times before the FAST Act was signed into law. Prior to that, SAFETEA-LU was enacted in September of 2005 and expired in September of 2009; the bill was extended ten times before MAP-21 was signed into law. State funding for the RTAs are even less certain than federal funds; the funds are appropriated annually through the budget process and are subject to change based on factors that are well out of the control of the RTAs.

The trend of continuing resolutions for federal transportation funding and annual budget appropriations for state funding introduces an uncomfortable level of uncertainty for future funding availability. Without the assurance that funding will be available, planning future service expansion is challenging. RTAs are hesitant to introduce new services without the assurance that funds will continue to be awarded at current levels. Implementing a new route, or expanding service on existing routes is costly, and RTA budgets are stretched as far as possible to provide as much service as possible.

Recommendations

- For RTAs to continue to expand service, upgrade infrastructure, and purchase replacement and additional vehicles, a long term predictable funding source is necessary. Both the federal and state funding agencies can provide a greater level of certainty to RTAs by adopting multi-year funding programs rather than the year to year method of funding. While increased funding would be beneficial to the RTAs, the assurance that the funding available this year will at the very least be available at the same level for future years. This certainty would provide a greater level of confidence when planning new service, or expanding upon existing service.
- The SMMPO region needs increased levels of service for fixed route transit. Transit routes need to operate later into the evening and on Sundays. Sunday service is an absolute necessity and should be implemented as funding allows. Operating later into the night will provide the region's workforce with a viable mode for commuting. GATRA service that ends at 6 PM can make using transit for a traditional 9 AM to 5 PM work shift a challenge if the rider needs to transfer buses. SRTA operates evening service on five routes in New Bedford, five routes in Fall River, and the intercity route that connects the two cities.
- Work to close service gaps between the cities of the SMMPO region and beyond. GATRA and SRTA operate within defined service markets and only intersect in Wareham utilizing the Wareham-New Bedford Connection. The only other method to travel between GATRA and SRTA service areas is on an intercity commuter bus which is costly and not always offered at convenient times. The lack of connections between Fall River and Taunton and Fall River and Providence have been well documented in numerous studies yet remains as an unmet need. Addressing these connections will provide more opportunities for intra-region travel.
- Improve connections to the region's MBTA Commuter Rail Stations. GATRA connects with the MBTA in Attleboro, Mansfield, and Middleborough; however, bus schedules and train schedules are not aligned to provide meaningful feeder bus service. Addressing the scheduling issues will extend the reach of both the MBTA Commuter Rail system and the GATRA bus network. SRTA does not connect at all with commuter rail, leaving the residents of the southern portion of the SMMPO region with only intercity bus connections to Boston. While it may not make sense for SRTA to serve the Middleborough/Lakeville station, when South Coast Rail is introduced, schedules should be aligned to provide a feeder service to the commuter rail.

- Improve customer information service through implementing information technology systems. Modern technology systems are quickly making the old paper schedules a thing of the past by providing real time information for bus arrivals via mobile applications. When passengers have real time information, they can make better decisions about when to leave to meet a bus, or how long the wait will be until the next bus arrival. SRTA is working on achieving this goal by the end of 2019.
- Improve passenger data collection system with technology upgrades. Automatic Vehicle Location and Automatic Passenger Counters (APCs) provide a depth and breadth of information that is either very costly and time consuming to collect through manual data collection, or simply cannot be collected through manual data collection. The highly detailed data can be used to improve service through improved analysis of ridership trends. SRTA is installing APCs on their fixed route buses and is currently collecting stop level data.
- Increase the use of electronic fare collection systems where available and implement electronic fare collection where it is not in use. In 2013, SRTA implemented the Charlie Card, an electronic fare collection system that can either store a value on the card or serve as a multi-day transit pass. Due to funding limitations, GATRA has yet to implement an electronic fare collection system but should pursue opportunities to implement this type of system in the future.
- Encourage RTAs to improve passenger amenities at stops with high boardings and those identified in the Bus Stop Capital Improvement Plan. Even a simple improvement like a bus shelter at a stop with high boardings can improve the passenger experience by providing shelter from the weather while waiting for a bus to arrive. Connecting the sidewalk network to bus stops will improve safety for passengers as they walk to meet their bus, so do locating bus stops near cross walks to ensure safe passage across busy streets. The Bus Stop Capital Improvement Plan can be found in the Regional Transit Studies task in the FFY2020 UPWP.
- Develop best practices and design guidelines for implementing passenger amenities that include bus shelters, landscaping, signage, and accessibility improvements. Identify and prioritize sites where improvements should be implemented.

- Improve pedestrian access to transit stops. All transit passengers are pedestrians prior to boarding and after exiting the transit system; accommodations must be in-place to improve the safety of passengers using the transit system.
- Include the consideration of transit needs at the earliest stages of planning for development and redevelopment projects. All too often the needs of transit are considered as an afterthought for developments and the RTAs may not always be able to provide adequate service as a result. Including transit in the earliest stages of the development process will ensure that if transit is requested on-site that the site can accommodate the large and heavy transit vehicles. Design considerations need to include bus pull-offs, wider turning radii at corners, and higher density paving materials designed to handle the weight of transit vehicles. This will make providing transit to new developments a much more viable alternative.
- Local land use decisions should consider transit in addition to other modes of transportation. Transit functions best in densely developed areas with connected pedestrian networks. When municipalities permit low density development, the cost of providing transit increases dramatically and the efficiency of the transit system suffers as a result. Promoting higher density development in the Priority Development Areas will ensure that transit can operate as efficiently as possible and provide a higher quality service than if the same amount of development were spread across a greater area.
- Implement and upgrade security features including transit facility design, lighting, camera, communications equipment, security personnel, and on-board equipment.

Study Needs

1. Identify areas where Transit Oriented Development (TOD) is appropriate and develop a plan to implement TOD where appropriate. This study will be programed in a future UPWP.
2. Identify underserved populations and sub-regions and provide the RTAs with a transit development plan to improve service. This study will be programed in a future UPWP.
3. Study congested corridors for the implementation of transit signal prioritization. This study is programed in the regional transit studies task of the FFY2020 UPWP.
4. Evaluate demand response services to identify where fixed route transit may be able to meet the demand of passengers. This study is programed in the regional transit studies task of the FFY2020 UPWP.

5. Study locations for bicycle and pedestrian infrastructure improvements to connect with transit. This study will be programmed in a future UPWP.

6. Identify and develop potential service plans for additional intercity connections within and extending beyond the SRPEDD region. This study is programmed in the regional transit studies task of the FFY2020 UPWP.

7. As part of the Route 6 Corridor Study, SRPEDD plans to identify transit needs and address them. This is included in the Management Systems task in the FFY2020 UPWP.

For additional information, please see Appendix G.

Commuter Rail

Existing Service in the Region

The MBTA currently provides commuter rail service along two branches with stations in Southeastern Massachusetts. The first branch is the Providence/Stoughton Line which extends service from Boston through Attleboro to Providence, RI and Green Regional Airport. The double tracked line, (two parallel tracks which permit bi-directional travel) also supports limited freight operations CSX, Amtrak Northeast Regional passenger trains, and the Acela Express high speed passenger service between Boston and Washington, D.C. This line has three stations within the SMMPO region in Mansfield, Attleboro Center and South Attleboro. Historically, this line has the highest ridership of any of the commuter rail lines operated out of Boston. (See Figure 16.)

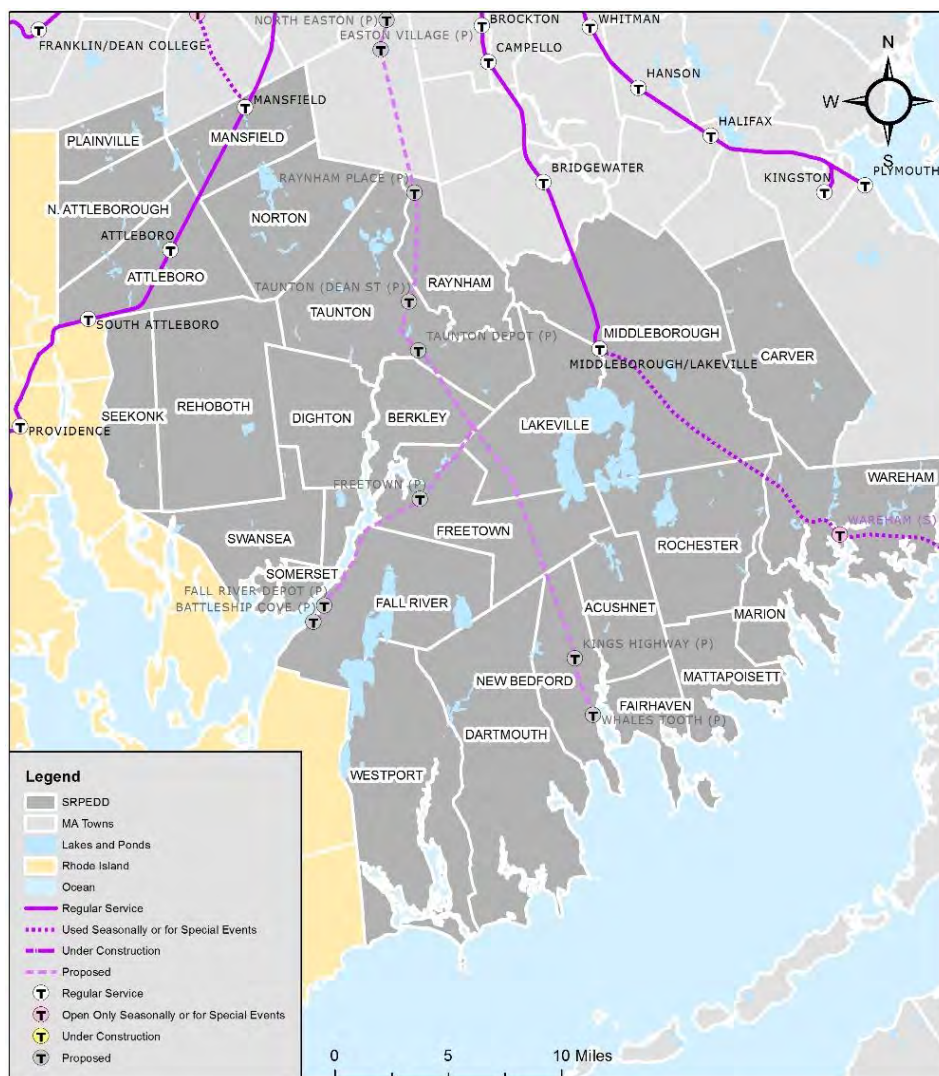


Figure 16: Map of Existing and Proposed Commuter Rail in SMMPO / SRPEDDD Region

The second branch of commuter rail service is the Middleborough/Lakeville Line which opened in the fall of 1997. It connects the towns of Middleborough and Lakeville directly to Boston and to Wareham via a GATRA commuter shuttle. The station is located on the town line near the junction of I-495 and Route 105.

This line is part of the MBTA Old Colony branch lines and is a single track with passing sidings that also support CSX freight trains for the entire southeastern portion of the state. The route comes off the “Shore Line” in downtown Attleboro and head east through Taunton into the Middleborough yard. The Middleborough yard serves as the main freight yard for all of southeastern Massachusetts.

A partnership between the MBTA and the Cape Cod Regional Transit Authority in 2013 created a weekend, summer train service between Boston and Hyannis via the Middleborough/Lakeville Line, known as the “Cape Flyer”.

Ridership/Parking Trends

Ridership on the MBTA commuter rail in Southeastern Massachusetts has fluctuated between 2003 and 2013; the peak occurred in 2008 with 9,651 boardings, the low occurred in 2007 with 5,787 boardings. The best performing station was Middleborough/Lakeville with a 7% growth rate.

In 2018, the Providence/Stoughton Line saw daily ridership for inbound trains at 4,651 and outbound trains at 5,053. The Middleboro/Lakeville Line saw daily ridership at 867 for inbound trains and 899 for outbound trains.

The MBTA ranked stations by boarding in the month of April 2013 for all commuter rail stations and three stations in our region ranked in the top 10 of 133 stations. Mansfield ranked 5th in, Attleboro ranked 6th, South Attleboro ranked 9th and the Middleborough/Lakeville station was ranked 25th, placing all 4 stations in the region within the top 25% of the MBTA commuter rail station boardings. This confirms the vital importance of this service in our region.

The 2017 SRPEDD passenger survey at the Middleborough/Lakeville station revealed that 79% of respondents drove alone to the station. This figure demonstrates the nature of commuter rail ridership and implies that for ridership to grow, so too must the parking capacity.

The restoration of commuter rail to the south coast has been proposed and extensively studied for over twenty years. The SMMPO has continuously supported the extension of commuter rail to our region during that time. In June 2009, MassDOT published the South Coast Rail Economic Development and Land Use Corridor Plan (Corridor Plan). The report plans for the restoration of passenger rail transportation to connect Boston to the greater Taunton, Fall River and New Bedford areas.

According to the Corridor Plan, New Bedford and Fall River are the 6th and 10th largest cities in Massachusetts respectively, and along with Taunton, are the only cities within 50 miles of Boston that are not served by commuter rail. Along with the positive economic, environmental and transportation benefits, it will address transportation inequities by extending MBTA service to urban areas with large Environmental Justice populations (minority, low-income and Limited English Proficiency [LEP]) that are unable to benefit from access to this public service.

Planning for land use along the proposed South Coast Rail corridor has resulted in the identification and designation of Priority Development Areas (PDA) and Priority Protection Areas (PPA), as well as technical assistance to the communities within the corridor, including zoning, housing development, open space preservation and economic development.

Multi-Modal Connections

GATRA provides fixed route bus transit service to three of the four stations. South Attleboro is the only station not served by a fixed route bus. One route, the Middleboro-Wareham Link, provides service designed to meet the MBTA Commuter Rail AM inbound trains and the PM outbound trains at the Middleboro/Lakeville station.

Aligning service at the Attleboro and Mansfield stations is a challenge for GATRA; bus service operates on a set “clock-face” schedule, whereas the MBTA train schedules do not. “Clock-face” departure times occur at even intervals at a specific time during the hour (i.e. On the hour, quarter-hour, etc.) MBTA trains arrive at irregular intervals, so aligning the GATRA schedule with the MBTA schedule is a challenging task. In addition to the irregular train intervals, the MBTA and GATRA modify timetables independent of each other, further complicating the task of aligning the timetables.

The Attleboro station offers the most connections to GATRA service with four possible connections. The Mansfield station is served by a single fixed route bus, and the Middleboro/Lakeville station is served by two routes.

Future Commuter Rail in the Region - The South Coast Rail Project

Phase 1 of the South Coast Rail Program

On April 22, 2019, MassDOT and the MBTA announced that the South Coast Rail Program has reached two critical Phase 1 milestones: a finance plan has been completed and will be fully funded in the Commonwealth’s Capital Investment Plan and the U.S. Army Corps of Engineers (USACE) has approved the final federal permit required for the program to advance.

Meanwhile, early action steps are underway including infrastructure work and the acquisition of land for stations.

The South Coast Rail Program will be built in phases. Phase 1 will deliver service to the South Coast late in 2023, years before service is possible under the Full Build Stoughton Electric Service Project. Phase 1 will provide a one-seat ride from Taunton, Fall River and New Bedford to Boston by extending the existing Middleborough/Lakeville Commuter Rail Line using diesel-powered trains to New Bedford and Fall River.

At the same time, MassDOT will proceed with designing, permitting and funding of the Full Build project. This route will travel from Boston's South Station to Stoughton using a portion of the Northeast Corridor. The route continues south along a combination of inactive right-of-way and freight railroad before splitting south of Taunton for terminus stations in Fall River and New Bedford.

Phase I includes the reconstruction of approximately 37 miles of active Right of Way (ROW) from the Town of Middleborough southwest to New Bedford and Fall River, as well as 28 at-grade crossings (22 fully reconstructed; 6 with equipment upgrades), 14 bridges, work at 63 culverts, 6 new commuter rail stations (new Middleborough Station at Pilgrim Junction, East Taunton, Freetown, Fall River Depot, King's Highway, and Whale's Tooth) and 2 new overnight layover facilities. The stations will comply with the Americans with Disability Act (ADA) Standards, including 800-foot high-level platforms for "all doors" boarding.

The layover facilities, Fall River (Weaver's Cove) and New Bedford (Wamsutta), are sites for storing the trains at night when they are not in use, near each terminus station. The train sets start and end each service day from these facilities. Each will include six storage tracks, crew quarters, a maintenance shed and parking facilities. For Phase 1 service, South Coast Rail will also use the existing Middleborough Layover facility.

Phase 1 service will include a total of 26 trains (each-way) for weekday service. The MBTA will operate three morning peak trains and three evening peak trains to both New Bedford and Fall River. Taunton and Middleborough will see up to six morning and six evening peak trains because all of the service will pass through those communities. During off-peak periods, the trains will operate on a less frequent service. Operations details will be confirmed as design advances.

Extension of Commuter Rail to Wareham

Efforts to extend commuter rail service from Middleborough/Lakeville over the existing rail line to Wareham and possibly Cape Cod have been proposed for several years. The particular rail line is presently being used by freight trains. The On-Cape segment from Sagamore bridge to Hyannis is used by excursion trains during summer months. Thru service from Boston to Cape Cod was last opened in 1959. In 2013, the MBTA operating the Cape Flyer between Memorial Day weekend and Labor Day weekend. The train originates at Boston South Station, making

stops in Braintree, Middleborough/Lakeville, Wareham Village, Buzzard's Bay and Hyannis with trips on Friday, Saturday, and Sunday. To accommodate this service, upgrades to the track and signal systems were installed.

If the commuter rail proposal is not feasible, consideration to enhanced transit service or commuter bus should be viewed as another option. These services would provide a less expensive alternative to train operation through the use of buses on the existing road network. Currently, Peter Pan Bus Lines – Providence Division operates daily service from Wareham to Logan Airport, see Appendix I (Intercity and Commuter Bus) for more information.

Conclusions and Recommendations

Commuter rail is an integral part of the southeastern Massachusetts transportation network and this will only increase with Phase 1 of the South Coast Rail Project underway. The existing service is well used with station boardings among the highest in the entire MBTA Commuter Rail system. Continued growth will require continued investment to maintain the stations and track currently in use today and to expand the system throughout the southeast.

For existing stations and service, several recommendations are necessary to maintain and improve the stations. The following recommendations apply to the four stations within the SMMPO region: Mansfield, Attleboro Center South Attleboro, and Middleborough /Lakeville.

- Continued maintenance of train stations by repaving parking lots, improve sidewalk connections, improve pedestrian access and ensure ADA compliance, and improve lighting and security systems at the stations and parking lots.
- Improve connections between GATRA fixed route transit bus service and the MBTA commuter rail service.
- Expand Transit Oriented Development (TOD) in the areas around the stations.
- Coordinate with SRTA and GATRA to develop an intermodal system that is safe, reliant, environmentally conscientious and is resilient to the effects of climate change.
- Continue to provide and support a commuter rail network that is well maintained, reliable, efficient, and safe for all workers and users.

As for new commuter rail service, the expansion of service to Fall River and New Bedford will improve the multi-modal travel options for residents and visitors of the SMMPO region. On April 22, 2019, MassDOT and the MBTA announced that the South Coast Rail Program has reached two critical Phase 1 milestones: a finance plan has been completed and will be fully funded in the Commonwealth's Capital Investment Plan and the U.S. Army Corps of Engineers (USACE) has approved the final federal permit required for the program to advance.

Meanwhile, early action steps are underway including infrastructure work and the acquisition of land for stations with the estimated date for start of service projected to be in late 2023.

SRPEDD will continue to support the South Coast Rail Plan and will continue its work in making it a reality. For additional information, please see Appendix H.

Commuter and Intercity Bus

Intercity bus service provides scheduled connections between cities within the Commonwealth of Massachusetts and to cities in neighboring states. In the SMMPO region, two public Regional Transit Authorities (RTA) provide local service with connections to private intercity bus service. Both the Greater Attleboro Taunton Regional Transit Authority (GATRA) and the Southeastern Regional Transit Authority (SRTA) provide intercity connections among the region's cities.

Intercity bus service operated by private carriers is also referred to as commuter bus service in that they provide scheduled service during peak commuting hours. Commuter bus service operates on fixed routes with stops at regional park and rides as well as private parking lots.

Three private carriers operate intercity service in the SMMPO region: Bloom Bus Lines, DATTCO, and Peter Pan Bus Lines. Bloom Bus Lines operates service between Taunton and Boston; DATTCO operates service between New Bedford and Boston via Taunton; and Peter Pan Bus Lines provides service from Fall River and Wareham to Boston, and from Fall River, New Bedford, and Wareham to Cape Cod, Rhode Island, and New York.

Private Company Intercity Bus Service

Bloom Bus Lines has provided service from Taunton to Boston since 1979. Service operates on weekdays between the Bloom Bus Terminal in Taunton to the South Station area stop located at 162 Lincoln Street as well as to the Park Square area located at 212 Stuart Street in Boston. The route stops at the Raynham Dog Track Park and Ride and the Route 106 & Route 24 Park and Ride in West Bridgewater. Bloom operates flag stops at the Liberty & Union Plaza on Broadway in Taunton and at the corner of Route 138 and Route 106 in Easton. Bloom Bus Lines' weekday service begins at 5:15 AM and ends at 7:57 PM.

DATTCO, with a local office in Fairhaven, operates commuter service between Fairhaven and Boston's South Station via New Bedford. Intermediate stops include the Mt. Pleasant Street Park and Ride lot in New Bedford and the Silver City Galleria Park and Ride lot in Taunton. Limited service is available from UMass Dartmouth during the academic year and seasonal service connects with the Seastreak ferry to Martha's Vineyard. Select arrivals in Boston will also drop off in Copley Square. DATTCO's weekday service begins at 4:30 AM and ends at 12:15 AM.

In 2019, DATTCO, through its partnerships Megabus, extended one roundtrip daily service to provide connecting service from South Coastal Massachusetts to Montpelier and Burlington, Vermont.

Peter Pan Bus Lines offers several commuter service lines in Southeastern Massachusetts. Service between Boston and Woods Hole stops in Wareham (commuter service only), Buzzard's Bay (commuter service only), Bourne, and Falmouth. Service between Boston and Hyannis stops in Sagamore and Barnstable Airport and Barnstable Park & Ride. The New York to Cape Cod and the Albany, NY to Cape Cod lines both stop in Providence, Fall River, New Bedford, and Bourne; the Newport to Boston line stops in Fall River, and the New York to Newport line stops in Providence and Fall River. Peter Pan also provides transportation from Fall River and New Bedford to the region's two major airports, T.F. Green Airport in Warwick, Rhode Island and Boston's Logan Airport. Peter Pan has also expanded into Cape Cod to provide service between Hyannis and Provincetown, with daily connections to Boston, Boston Logan Airport and Providence/New York City. The Fall River stop is located at the Louis D. Pettine Transportation Center located at 118 4th Street and the New Bedford stop is located at the New Bedford SRTA Terminal located at 134 Elm Street. The Wareham stop is located at the Park and Ride located at US-6/MA-28 and MA-25 at Exit 2.

Regional Intercommunity Bus Service

Greater Attleboro Taunton Regional Transit Authority - The Greater Attleboro Taunton Regional Transit Authority (GATRA) contracts with Professional Transit Management (PTM), a division of TransDev, to operate a route from the Taunton bus terminal to downtown Attleboro via Norton, as well as an intercommunity bus route between Norton and Mansfield, connecting to the Mansfield MBTA station. PTM also provides intercommunity bus service between Wareham and Lakeville, connecting at the Middleborough/Lakeville MBTA station. Beginning in February of 2017, GATRA contracted with SRTA to provide intercommunity bus service between Wareham and New Bedford. This service brought much needed connection to those residing in Wareham to connect with social services in New Bedford.

Southeastern Regional Transit Authority - The Southeastern Regional Transit Authority (SRTA) contracts with SouthCoast Transit Management, a division of First Transit Incorporated, to operate the Intercity Route between New Bedford and Fall River via US-6. As mentioned above, SRTA is the operator for GATRA's Wareham to New Bedford bus route.

Bus Facilities and Intermodal Centers

Bus facilities in the SMMPO region include intermodal terminals in Fall River, New Bedford, Taunton, and Attleboro. Intermodal centers provide passengers a safe and convenient location to transfer between intercity bus service and local bus service as well as commuter rail services. Intermodal centers also include ticket counters for both intercity and local bus service; in addition, customer service representatives are available to assist passengers with their travel needs. Intermodal centers provide parking for passengers, and may offer food concessions as well. In the SMMPO region, intermodal centers are located in the urban cores with convenient pedestrian access to downtown areas.

Commuter Bus Issues

Traffic Congestion - Commuter bus service provides an excellent alternative to single occupancy vehicle travel, especially for commuting purposes. Intercity buses however, are subject to the same traffic congestion and delays experienced by private automobiles due to the fact that they operate in mixed traffic on the region's roadway network. As the region's roadways become more congested, the reliability of the intercity bus network will diminish, resulting in less predictability in arrival time.

Traffic congestion on Route 24 between Taunton and Randolph is a problem for intercity bus carriers. The daily peak hour congestion increases travel times and reduces the reliability of scheduled arrival times. The congested condition not only delays travel, it limits the ability of the intercity carriers from increasing the frequency of service without deploying additional buses. Once the intercity buses reach the HOV lane on the Southeast Expressway in Quincy, they are able to travel at a much more predictable speed into Boston.

The difference in travel times is significant. A peak hour commuter bus trip between Taunton and Boston South Station is scheduled for one hour and fifteen minutes; the same trip mid-day is scheduled for one hour. The difference of fifteen minutes between peak and off peak travel times reflects the level of congestion experienced on Route 24.

Joint Ticketing with MBTA - Joint ticketing remains an unresolved issue between the region's intercity bus carriers and the MBTA. Joint ticketing would permit a passenger to use a monthly commuter bus pass for MBTA transit services in the same manner that an MBTA Commuter Rail monthly pass holder can access the MBTA transit services using the pass. As of April 2019, an MBTA Zone 8 Monthly Pass, which includes trips from the Lakeville-Middleborough MBTA station and full use of the MBTA transit services costs \$363. By comparison, a monthly pass for intercity service on DATTCO between New Bedford and Boston costs \$349, however to access

the MBTA transit system, the passenger would be required to pay a separate fare. Joint ticketing would eliminate the distinction between commuter rail and intercity passengers and eliminate the inequity in modal choice.

In 2013, SRTA implemented the MBTA Charlie Card fare payment system. Charlie Cards with stored value (daily, weekly, and monthly passes are excluded) can be used on both the SRTA and MBTA systems. A similar arrangement could be made between the intercity bus carriers and the MBTA so that at no point in a commuter's journey would a separate fare payment system be required.

Lack of Connectivity - Despite a well-developed network of intercity bus routes throughout the SMMPO region, gaps in service remain. One main gap that is often voiced through public outreach efforts is service between downtown Fall River and downtown Taunton. Although the real need is documented, this connection does not exist through a direct one seat ride.

Implementation of South Coast Rail will address this need by late 2023. In the interim, efforts need to be made with the intercity carriers to address the unmet need and provide a more convenient and timely connection between downtown Fall River and downtown Taunton.

Recommendations

The RTP recommends implementation of the following measure for improved transit services in the SMMPO region:

- The absence of joint ticketing creates a disparate financial burden for intercity bus commuters in southeastern Massachusetts. An agreement between the MBTA and the intercity bus carriers to permit joint ticketing will remove the financial burden placed on commuters that require the use of intercity commuter bus and MBTA transit service to reach their destination.
- With South Coast Rail scheduled to begin in late 2023, coordination between commuter bus companies and MassDOT should be considered in order to achieve hourly service. Schedule changes should be considered for commuter bus during hours when South Coast Rail does not serve. The use of joint ticketing will enable this program.
- A connection between downtown Fall River and downtown Taunton should be made via a single seat ride on an intercity bus. The need for this connection is well documented and should be explored further for implementation in the near term.
- Continued implementation of modern vehicles equipped with Wi-Fi, increased leg room, on-board restrooms, and 110V power outlets will make commuter bus service much more attractive and help to increase ridership.

- Use of HOV lanes on Route 24 will also assist with on-time performance, however, this is a major investment that MassDOT currently has not programmed.

Study Needs

Further study is needed to develop a connection between Fall River and Taunton. Commuter bus companies operate as private entities and make determinations on service availability and frequency consistent with their corporate strategy. The intercity bus companies operate as private carriers, however, as the recipient of public funds and a provider of public transportation services, they must also operate with the best interest of the public in mind. Service between Fall River and Taunton is an achievable goal that will benefit both the private carrier through additional fares and the traveling public through improved regional connectivity.

For additional information, please see Appendix I.

Bicycle Transportation

Bicycling is one of the most economical, healthiest, sustainable and environmentally friendly forms of transportation. Bicycling has negligible emissions, negligible operating costs and extensive health benefits. Investing in bicycle infrastructure can also have a positive economic impact on a community as well as the region. Bicycle infrastructure also carries less long-term maintenance requirements compared to motor vehicle infrastructure as bicycles have significantly smaller loading and therefore create less wear and tear.

Planning for adequate and regionally connected bicycle facilities is essential to regional transportation planning given the efficiency and positive characteristics of this mode choice. Providing the public with safe infrastructure on which to bike will not only enhance these modes for existing users, but attract new users. In conjunction with the RTP, SRPEDD is developing a Regional Bicycle Plan (RBP) to identify and propose development of a regional bicycle network that will encourage and permit commuting by bicycle and link important destinations within and between communities. Both the RTP and RBP incorporates MassDOT's Healthy Transportation Policy Directive and Complete Streets to ensure all state or federally funded transportation projects are designed and implemented to provide safe and healthy transportation options.

Existing Conditions – In the SMMPO region, approximately 558 or (0.2%) of workers age 16 or above specifically commuted to work by bicycle as a primary form of transportation according to the 2011-2015 American Community Survey (ACS). These numbers do not differentiate non-commuting trips such as recreational or shopping nor does it indicate end user trips such as commuters who ride to a transit stop. The communities with the highest numbers of bicycle commuters are Taunton, New Bedford, North Attleborough, and Fall River. CS data is collected by sample and as such includes a range of uncertainty and is subject to sampling error. Please see Figure 17 for existing and proposed bicycle facilities in the SMMPO region.

Bike Lanes – Since the 2012 RTP, SMMPO communities have adopted the practice and concept of bicycle lanes. There are currently 52 miles of bicycle lanes in the SMMPO, up from 8.5 miles listed in the 2012 RTP.

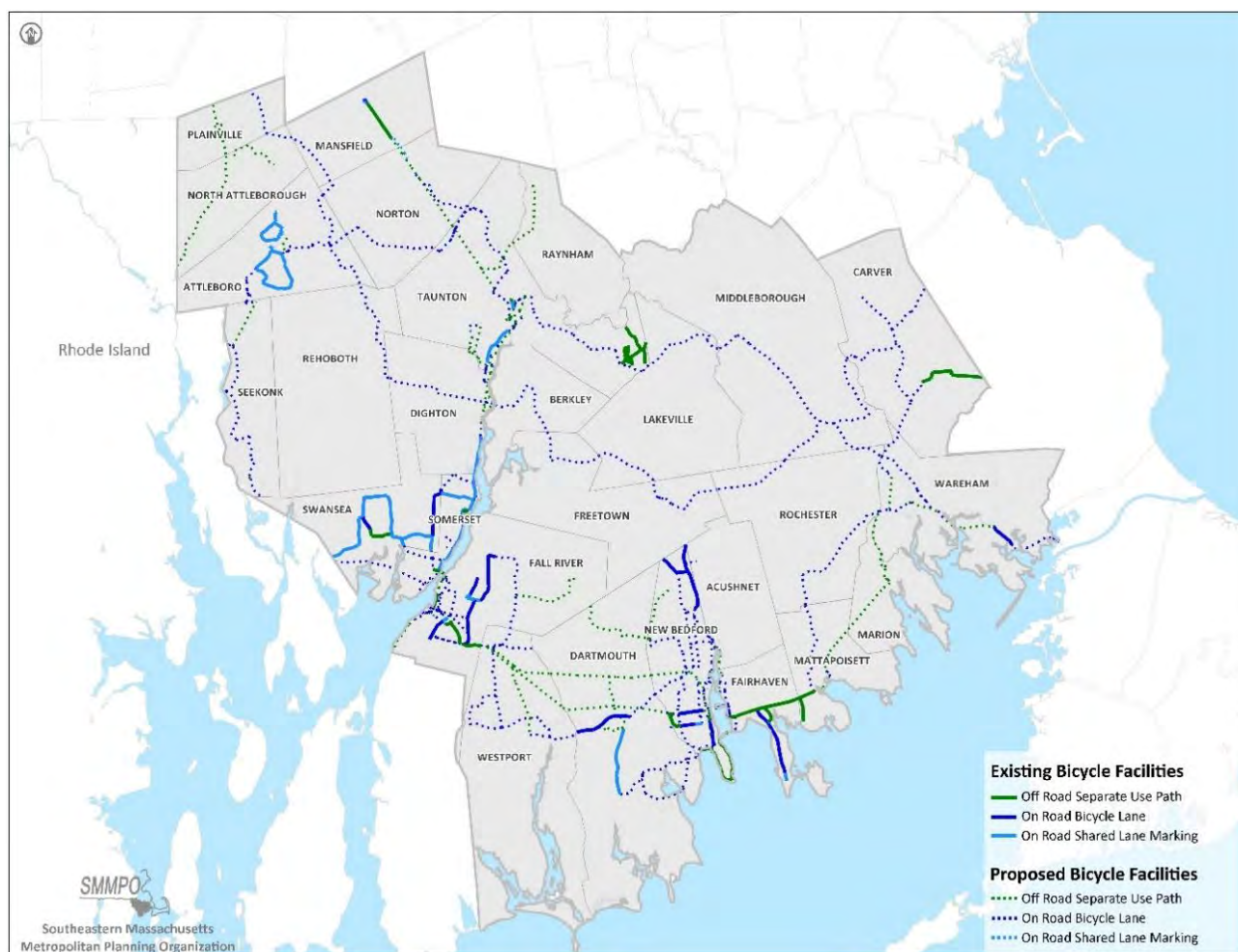


Figure 17: Map of SMMPO Existing and Proposed Bicycle Facilities

Bicycle Safety – Between 2014 and 2016, 335 crashes were reported involving a motor vehicle and a bicycle resulting in 257 injuries and four deaths. 156 (47%) of the 2014-2016 crashes occurred along roadway sections, and 179 (53%) occurred at intersections. Many of these crashes were concentrated along specific corridors in the region. Table 15 lists corridors with significant crash history and the number of crashes that occurred along each corridor.

Table 15: Bicycle Crash Corridors 2010-2012

Community	Corridor	Crashes at Intersections	Crashes at Mid-Block Locations	Total Crashes
Wareham	Cranberry Highway	3	7	10
New Bedford	County Street	9	0	9
New Bedford	Purchase Street	4	4	8
Taunton	Broadway	5	3	8
Fall River	Pleasant Street	5	2	7
Fall River	Bedford Street	4	2	6
Fall River	South Main Street	3	3	6
New Bedford	Acushnet Avenue	6	0	6
New Bedford	Rockdale Avenue	3	3	6
Attleboro	Washington Street	2	3	5
Mansfield	East Street	2	3	5
New Bedford	Union Street	4	1	5
Attleboro	Maple Street	4	0	4
Fall River	North Main Street	1	3	4
New Bedford	Pleasant Street	4	0	4
Rehoboth	Fairview Avenue	0	3	3

Although efforts to add bicycle lanes along roads has increased, a majority of existing roads do not have proper bicycle accommodations and force bicyclists to share lanes with heavy traffic or utilize sidewalks. Route 6 in Dartmouth and Fairhaven and the Cranberry Highway (Route 28) in Wareham are especially problematic due to their high vehicle speeds and multiple lane layouts with limited or no adequately striped shoulders.

Challenges/Barriers - As part of the development of the Regional Bicycle Plan, participants indicated the destinations they would like to access by bicycle. Transit connections, employment, health and retail designations were identified as the highest priority among participants. This effort also identified major barriers to bicycle transportation:

- County Road through Marion, Rochester, Wareham
- Route 6 through Seekonk to Wareham
- Route 28 through Middleborough and Wareham
- Route 44 from Seekonk to Plymouth
- Route 123 through Attleboro and Norton
- Trail Crossings for proposed multi use trails at high volume highways and arterial roads
- Routes that pass through interchanges for Interstate and divided Highways

These locations should be considered priorities for future infrastructure due to frequency of use and importance in relation to other bicycle planning efforts and community needs.

Integration with Transit - While bicycle transportation is an efficient and healthy mode of transportation by its own merit, it is an important connection mode for transit. Improved access to bus stations, commuter rail and transit services can increase the effectiveness of transit stations while reducing parking demand and congestion.

As part of the station planning process with the proposed South Coast Rail, bicycle access to these facilities is a key element of station development. The planning process intends to include the following as this project develops:

- Prioritize routes connecting major origins/destinations and connections to existing facilities;
- Consider using separated facilities (such as bike boulevards) and traffic calming measures on neighborhood streets to encourage bicycling;
- Create bicycle parking at major origins/destinations; and
- Install proper signage to direct bicyclists at stations and intersections.

As for the existing commuter rail stations, there are presently limited accommodations and access for bicycles.

Recommendations

In order to develop a regionally connected bicycle system, SMMPO staff recommends the following for an improved bicycle network. Specific Projects are currently under design and for potential project development with MassDOT and the SMMPO.

Norton Rail Trail – This proposed trail is an extension of the World War II Memorial Trail in Mansfield, MA through the town of Norton, MA. This is a 4.7-mile trail with a 10 to 12-foot wide multi-use path. The trail follows an abandoned rail line and Mansfield Sewer right-of-way with detours to safely traverse over Interstate 495. It has the potential of connecting the Mansfield Commuter Rail Station to the Myles Standish Industrial Park once complete. It is currently programmed in the TIP for FY2022 at \$3.8 million with Statewide Congestion Management Air Quality (CMAQ) funds.

Marion Pathway Phase I – This trail extends from the Mattapoissett town line along abandoned railroad right-of-way to Point Road for 3.8 miles. The project is currently programmed in the TIP for FY2023 at \$3.4 million with Statewide CMAQ funds.

Wareham Pathway Phase II – The Class I trail extends from Depot Street along Minot Road for 1.4 miles and a Class II trail extends down Narrows Road for nearly 0.5 miles. The project is currently programmed in the TIP for FY2023 at \$3.4 million with Statewide CMAQ funds.

Mattapoisett Phase 2A and 2B – Phase 2A extends from Acushnet Road along an abandoned Fairhaven Industrial Track to North Street and Phase 2B follows Industrial Road to the remainder of the abandoned track to the Marion Town Line for a total of approximately 2 miles. The town is currently investigating funding sources for the project.

The following projects are not currently under design or have filed paperwork for project development with MassDOT. Furthermore, although these plans are conceptual, no definitive routing has been developed and is likely to consist of a culmination of on and off road accommodations.

South Coast Bikeway - The proposed South Coast Bikeway is a 50-mile continuous system of Class I (separate use paths) and Class II (bicycle lanes) facilities that will connect to existing paths in Rhode Island and Cape Cod. Communities included in this plan are those located along the Narragansett/Mount Hope Bay and Buzzards Bay region of the south coast of the SMMPO, with several segments existing in these communities. The South Coast Bikeway was designated as part of an East Coast Greenway route from Providence to Provincetown in 2011 and is part of the Massachusetts Bay State Greenway, MassDOT's proposed long distance bicycle transportation network.

Taunton River Trail - The proposed Taunton River Trail is a 22-mile network of off and on road facilities connecting Somerset north along the Taunton River through the city of Taunton. The highlight of the trail is a 2-mile segment through Sweets Knoll State Park (Dighton).

North/South connection – This north/south routing proposes connections between the communities of Mansfield to the north with Somerset to the south. It is a culmination of proposed paths including the Norton Rail Trail and the Taunton River Trail. These routes will provide connection to major destinations as previously mentioned and to other multi-use paths such as the existing East Bay Bike Path (East Providence, RI) and Warren Bike Path (Warren, RI), Swansea Bike paths and the Veteran's Memorial Bridge over the Taunton River. These connections are also part of the proposed South Coast Bikeway.

Fall River – This proposal intends to connect the Veterans Memorial Bridge with new infrastructure near the Braga Bridge/Heritage Cove area and the Alfred J Lima Quequechan Rail Trail and is dependent on the proposed Route 79 Boulevard project in Fall River. A connection of downtown Fall River to the South Coast Bikeway is proposed along with the Quequechan River Rail Trail to the proposed Aquidneck Island Bikeway in Rhode Island. The connection is likely be a combination of Class I and Class II accommodations and include a 2- mile section along the partially active Mount Hope Bay rail corridor currently estimated at \$1.2 million. The project is not currently programmed for any implementation of funds as cooperation is needed from Rail Division and a private rail lease holder, and final routing has not been determined due to construction on the Route 79/Route 138 Interchange Project.

Seekonk/Attleboro – The intent is to provide a connection to the Mansfield bike path, the Blackstone River Bikeway and the Ten Mile River Greenway in Rhode Island. No specific routing or project has been identified. This would connect the communities of Seekonk and Attleboro into networks that would allow for commuting between neighborhoods and employment, health and retail centers.

Policy Recommendations – As part of the development of the 2016 RTP, the JTPG proposed and the SMMPO approved a goal to dedicate a minimum 10% from the annual TIP target funds for bicycle and pedestrian infrastructure improvements. It is recommended that this goal be fully funded and in addition, re-institution of the JTPG Enhancements Sub-committee to assist with the prioritization of bicycle and pedestrian projects within the region.

For additional information, please see Appendix J.

Pedestrian Transportation

The safe and efficient conveyance of pedestrians has become a prominent and important aspect of transportation planning and this prominence also reflects the fact that every automobile, bus, train, plane and even bicycle trip ultimately involves walking. In other words, everyone is a pedestrian.

Planning for adequate and connected pedestrian facilities is essential to regional transportation given the efficiency and positive characteristics of this mode choice. Providing the public with safe infrastructure will not only enhance walking for existing users but will attract new users. The SMMPO Regional Pedestrian Plan, developed in 2019 and shown in Appendix K, describes the current pedestrian needs in southeastern Massachusetts and provides a strategy for achieving a walkable south coast.

The 27 communities that make up the SMMPO region vary widely when it comes to walking conditions, from wide open rural areas with no pedestrian facilities, to small towns with intermittent sidewalks and/or compact town centers, to cities with vast sidewalk networks. In order to assess the needs of pedestrians in the region, staff analyzed how the existing walking conditions in the region contribute to walkability, which is the measure of how friendly an area is for walking. Population statistic data shows that almost everyone can benefit from improved pedestrian infrastructure and connectivity, especially traditionally underserved population groups and neighborhoods, older adults and transit users.

Results from a general public survey showed that many of the respondents are interested in walking but also encounter obstacles such as lack of facilities, perception of safety and concern with safely crossing streets. The majority of respondents also replied that they would like more or better sidewalks, followed by feeling safer while walking including better lighting, safer areas, less or slower traffic, better maintenance such as snow removal and improved crossing conditions such as new or improved crosswalks or features to increase the safety of crossing like signage or crossing beacons.

Results from a municipally aimed survey showed that the majority of communities that responded are interested in improving the walkability of their communities. Many of them have plans in place that could improve walking conditions, but a good number do not have specific plans and/or are not taking advantage of programs such as the Massachusetts Complete Streets Program that can provide assistance and funding to improve infrastructure. Lack of budget and manpower were identified as the main obstacles to improving and/or maintaining pedestrian related infrastructure.

Walkability and mode choice are heavily influenced by safety conditions. Nationally, statewide, and locally pedestrian crashes are on the rise while other types of vehicle related crashes are decreasing. The National Highway Traffic Safety Administration (NHTSA) reported that nationally “On average, a pedestrian was killed every two hours and injured every seven minutes in traffic crashes” in their 2014 Traffic Safety Facts publication. The Governor’s Highway Safety Association’s 2016 Pedestrian Traffic Fatalities by State publication notes that pedestrian related crashes now account for the largest proportion in traffic fatalities.

In Southeastern Massachusetts from 2013 to 2015, there were 771 vehicle crashes involving pedestrians, of which 17 were fatal and 628 resulted in injuries. This shows a 5% decrease in total pedestrian crashes, a 3% decrease in crashes resulting in an injury, and a decrease of 22% in crashes resulting in a fatality from the last period studied, 2010-2012.

The locations of these crashes are important to note in order to prioritize safety improvements related to pedestrian travel. 239 (31%) of these pedestrian crashes occurred at intersections, while 532 (69%) occurred at mid-block locations. Lack of pedestrian facilities and safe crossing locations at pedestrian generators, as well as behavior of pedestrians and motorists contribute to the high rate of mid-block crashes. The top crash intersections and corridors were identified and are listed in Appendix L: Pedestrian and Appendix D: Safety.

Pedestrian transportation facilities that meet ADA guidelines should be an integral part of the overall transportation network. Pedestrian access to transit, community facilities, educational institutions, medical facilities, retail centers and employment centers should become a state and local priority in future transportation planning. To this end, SRPEDD developed a list of Priority Sidewalk Locations and Community Walkability Maps to help communities plan and prioritize pedestrian infrastructure improvements which can be found in the 2018 Regional Pedestrian Plan in Appendix K.

The Massachusetts Department of Transportation (MassDOT) released a draft Statewide Pedestrian Plan in 2018. As part of the efforts surrounding the Statewide Pedestrian Plan, a Municipal Guide for Walkability was also released in 2018 to aid communities with developing pedestrian projects and facilities.

Recommendations

Recommendations from the 2018 SMMPO Regional Pedestrian Plan (2018 RPP) and supported by the 2020 Regional Transportation Plan include:

- Improvements in the forms of new/improved sidewalks, pedestrian-actuated signals, striping of crosswalks, raised table crosswalks, bump-outs, pedestrian refuge medians, sharpened street corners, “no turn on red” or “yield to pedestrian” signage and improved lighting should be considered at all intersections along corridors with high numbers of pedestrian crashes identified in the 2018 RPP. Pedestrian crash corridors should be studied to identify specific needs in coordination with municipalities with the goal of project development.
- Improvements to streets where high rates of pedestrian crashes occur at non-intersection locations, including mid-block crosswalks, improved lighting and new/improved sidewalks should be implemented. Mid-block crossings should be studied further to see if they are correctly placed or potentially creating unsafe conditions for pedestrians, especially in locations that could be experiencing multiple threat crashes.
- Sidewalk construction and/or improvement should be prioritized at collector and arterial roadways within a half-mile of any school, child/elderly service and transit hub, as well as along routes that have fixed transit service and between residential areas and commercial areas. This includes those roadways and gaps identified in the 2018 RPP. Developers along these roadways should be encouraged to construct sidewalks to connect to pedestrian destinations. New construction on roadways should also consider transit pull off areas.
- In major employment centers where transit stops are located at a distance from the destination points, sidewalks should be included along internal roadways in order to provide safe access to and encourage the use of transit facilities.
- Access to the existing and proposed commuter rail and commuter bus stations in the SMMPO region, including each stations walkshed, should be studied with the goal of improving and encouraging pedestrian access.
- Sidewalks built to MassDOT Design Guide and ADA standards (including appropriate curb ramps, etc.) should be included with new road construction, road improvements and in private developments.
- In large retail developments where storefronts are setback from the street by parking lots, sidewalks and crosswalks should be considered to provide pedestrian access from surrounding streets in logical locations where pedestrian traffic would be the heaviest. This includes sidewalks along any internal circulators with crosswalks at each internal intersection. In urban areas, retail developments should be encouraged to design access with minimal interaction between parking cars and pedestrians, preferably placing parking to the side or rear, to avoid the necessity of pedestrians having to transverse large and potentially dangerous parking lots.

- Increased enforcement related to pedestrian safety, especially related to pedestrian right-of-way in crosswalks. Pedestrian crossing and awareness signs along with education campaigns are strongly encouraged. Potential locations for this signage and enforcement should include locations identified in the tables of this plan.
- Encourage local school districts to form partnerships with Safe Routes to School in order to fund infrastructure projects and educational programs regarding pedestrian safety around schools.
- Encourage communities to participate in the Massachusetts Complete Streets Certification Program to potentially qualify them for additional complete streets funding and to help promote complete streets design principles in SRPEDD communities.
- Support the recommendations of the 2018 Massachusetts Statewide Pedestrian Plan as it relates to the SMMPO Region.

Expanding and improving pedestrian infrastructure in the region will make pedestrian travel safer and more efficient and encourage more people to utilize walking as a form of transportation. Communities that are walkable allow for more convenience and less use of the single occupancy vehicle. They also can be better served by transit as they allow for higher densities. These factors make for a more livable and sustainable community.

For additional information, please see Appendix K.

Airports

Air transportation helps to drive economic development and is an important part of the region's intermodal transportation system. Of the Commonwealth's 39 public airports, 26 are municipally owned and 11 are privately owned. In the SMMPO area, four public municipal airports service the region's 27 communities each with its own unique airport identification code and MassDOT Aeronautics defined role:

- New Bedford Regional Airport (EWB) (commercial service)
- Taunton Municipal Airport (TAN) (general aviation)
- Mansfield Municipal Airport (1B9) (general aviation)
- Plymouth Municipal Airport (PYM) (corporate/business)

The Massachusetts Department of Transportation Aeronautics Division (MassDOT Aeronautics) and the Federal Aviation Administration (FAA) oversee federal and state compliance of airport operations at all municipally owned airports in the Commonwealth. All four airports in the SMMPO region are included in the FAA's *National Plan of Integrated Airport Systems (NPIAS)*, thus making them eligible for federal funding through the Airport Improvement Program (AIP).

MassDOT Aeronautics allocates funds to airports through the AIP. The AIP provides grants to public agencies for the planning and development of airports and funds 95% of eligible project costs. The remaining cost is typically split between MassDOT Aeronautics and the local airport at 2.5% each.

Airport Master Plans - The Airport and Airways Development Act of 1970 provides funding for the development of airport master plans. Completed master plans are a requirement for airports seeking federal funding for any capital improvements under this act. In general, airport master plans are prepared every five to ten years, depending on the capital needs of the airport. Airport Master Plan Updates (AMPUs) were completed for Mansfield, New Bedford, and Taunton in 2014 and in 2017 for Plymouth. Mansfield's Airport Master Plan is currently in the process of being updated.

Economic Development and Airports in the SRPEDD Region - In 2013 the public airports (excluding Boston Logan Airport) contributed over \$16.6 billion in economic activity and provided nearly 162,000 jobs, contributing over \$6.1 billion in wages to employees. The relative impact of SRPEDD's four regional airports to the State's economy is as follows: \$32.4 million for

the New Bedford, \$3.26 for Taunton, \$9.15 million for Mansfield and \$47.86 million for Plymouth.

Land Use and Environmental Protection - The land use surrounding the airports in the region varies from a state forest with large tracts of open space, extensive wetlands, and mixed-use areas of residential, industrial and commercial properties. Airports require large areas of land to be set aside for operations.

In recent decades, growth surrounding airports has led to infringement on the operating ability of airports and decreased the potential for expansion. While certain commercial and industrial developments are assets to local airports, residential developments in close proximity to these facilities limit their ability to grow both physically and economically, as residents often oppose airport operations and expansions. In order to take further steps to avoid encroaching land uses around them, each of the region's airports have proposed several different strategies. The New Bedford Regional Airport Manager has proposed mandatory airport disclosure forms into purchase agreements when houses are sold near the airport. The Town of Plymouth has zoned the land "Airport" surrounding its facility, thus excluding residential development.

Safety and Security - In the past, the FAA has not held general aviation airports to the same security standards required of commercial service airports. However, due to the rising concern for airport security following the events on September 11, 2001, general aviation airport security has become a top priority to daily operations. As a result, all airports in the region have a MassDOT Aeronautics approved security plan and have control measures in place for accessing the Air Operations Area. Recent security improvements in the region include installation of security cameras and updated lighting at the Mansfield Municipal Airport and TSA federalization of the New Bedford Regional Airport in September of 2017.

10 Year Growth Analysis of SRPEDD Region's Four Municipal Airports – Since 2008, operations at the Taunton, Mansfield and Plymouth Airports have decreased and have only recently begun to stabilize. The New Bedford Airport has experienced a growth in operations due to a runway expansion project completed in 2016 that allowed for an increase in Business/Corporate jet traffic. General Aviation trends nationwide decreased significantly during the Great Recession and have not recovered to pre-recession numbers. Regional decreases can be attributed not only to lasting effects of the recession but also due to the declining pilot population/pilot shortages and the increase in costs associated with flying, specifically the price of fuel. In the past few years, operations have begun to stabilize at many of the airports, and could increase if investments are made wisely. Total operations at the region's airports are forecasted to

increase by over 36% by 2030, with the largest projected increase at the New Bedford Regional Airport at 70%.

The use of Unmanned Aerial Systems (UAS) or “drones” has risen significantly in recent years, both for personal and professional use. The long-term impacts to the regional airports from the increased use of this technology remains to be seen, however; short-term impacts include the addition of pilot licensing program at Plymouth Municipal Airport, decrease in the need for traditional aircraft for services such as aerial photography, and mitigation of potential interaction between UAS and other aircraft.

Recommendations

The following recommendations should be considered with regards to Airports in the SMMPO region:

- Implementation of capital improvements as outlined by the Taunton, Mansfield, Plymouth and New Bedford Airport’s Master Plans, Master Plan Updates and this report;
- Road infrastructure improvements that service airports as outlined under the individual airports’ capital improvement plans; and
- Interconnectivity to other modes of transportation in the region.

For additional information, please see Appendix L.

Freight and Intermodal

Intermodal transportation refers to the integration of transportation systems. It is the transport of passengers and freights in such a way that all the parts of the process, including information exchange, are efficiently connected and coordinated to offer all users maximum flexibility. Intermodal transportation is customer oriented. It is the facility, hardware, and equipment involved with the movement of freight and people as well as the logistics of the movement. The intermodal assets within the SMMPO region include:

- Highway network, which is comprised of internal arteries and land based connections to the rest of the country;
- Rail, the historic freight movers and re-invented movers of people;
- Seaports, the base of the fishing industry and connection to ocean ports throughout the world; and
- Airports, which connect the region to other parts of the nation and world when speed is essential.

Intermodal transportation planning explores the interdependency of these assets to each other by examining existing transportation modes, their linkages, and their need for improvements to achieve the economic goals set forth by past and present transportation legislation. The movement of freight is highly dependent on the intermodal transportation system, as it relies more heavily on all four modes than passenger transportation.

Freight movements have unlimited potential to become more sustainable, and less costly via the use of water and rail for shipping. These two modes use significantly less fossil fuels per ton of freight shipped than trucking and air transport. The SMMPO region has assets in both of these modes, with direct water access to major ocean shipping lines via Buzzards Bay and over 115 miles of rail. The potential to reduce truck traffic along the congested I-95 corridor is a significant one for this region, as goods could effectively be shipped between Fall River or New Bedford and other East Coast ports via water, a concept known as Short Sea Shipping.

Regional Freight Issues

The efficiency of intermodal transportation is extremely important in the transfer of freight. Whether it's seafood or other time sensitive products, the speed and cost of moving freight dictates how the product is delivered. Therefore, it is important to have a regional intermodal system that is efficient enough and flexible to accommodate the shipment and transfer of freight.

The Massachusetts Department of Transportation Freight Plan was completed in 2018. The Massachusetts Department of Transportation Freight Plan was prepared by Cambridge Systematics with Regina Villa Associates under MassDOT with input from the Regional Planning Agencies. The MassDOT Freight plan lays out a vision for a multimodal freight system that is safe, secure, resilient, efficient, reliable, and sustainable, and one that catalyzes economic development while supporting the continued competitiveness of the Commonwealth. The strategies identified in this plan have been developed through a risk-aware, scenario-based process and are believed to be appropriate responses to whatever the future holds.

Seaports

The regions two major ports are the New Bedford/Fairhaven Harbor on the Acushnet River and the Fall River/Somerset Harbor on the Taunton River. Each harbor contains water, rail and highway access, making them truly intermodal locations. Each harbor has prepared Master Plans with funds from the Seaport Bond Bill as provided by the Seaport Advisory Council. The New Bedford/Fairhaven Municipal Harbor Plan was completed in 2010 and prepared by Fort Point Associates, Inc. Apex Companies, LLC The Urban Harbors Institute, and FXM Associates under the City of New Bedford.

The Plan supports the improvement of freight operations through continued use and expansion of existing freight handling facilities and creation of new freight handling locations. Short sea shipping is one method the Plan proposed for freight expansion. The Plan recognizes that effective short sea shipping will not only require infrastructure on the waterfront for vessels, but also infrastructure for rail service and truck operations including a truck staging area away from the immediate waterfront. Increased public appreciation of the Harbor is an overriding theme inherent to several initiatives included in the Plan, including a desire to increase public access throughout the waterfront while fully recognizing the challenges of allowing public access in the marine industrial portions of the Harbor. The Plan also supports continued development of a harbor-wide water shuttle service, the expansion of tourism activities—specifically those that present opportunities for people to observe an authentic working port—and efforts to integrate the arts community into the working waterfront through murals, sculpture, monuments, and artwork that celebrates and highlights the working port and help the community to better appreciate and support the port activities. Included in this effort is the continuation and expansion of events such as New Bedford’s Working Waterfront Festival. The most critical need for both ports has been dredging. Shipping operations by larger vessels have been hampered by a lack of water channel depths.

Fall River/Somerset

The *Fall River Waterfront Urban Renewal Plan* was prepared by Harriman Inc., Fitzgerald and Halliday, FXM Associates, and Bonz and Company, under the City of Fall River.

The primary purpose of The *Fall River Waterfront Urban Renewal Plan* is to address the future development of the parcels created by the realignment of the current Route 79/Davol Street road and highway system, a project under the purview of the Massachusetts Department of Transportation (MassDOT). Once the realignment is complete, approximately ten acres of land stretching along Fall River's waterfront will be available for development.

The goals of the *Fall River Waterfront Urban Renewal Plan*:

- Activation of the waterfront with new residential, retail, and commercial uses;
- Physical connection of the existing neighborhoods to the waterfront;
- The provision of new multifamily housing to supplement the City's existing older housing stock; and
- The provision of new space for office, retail, and other commercial uses to supplement the older spaces offered in the Downtown

State Pier

The port of Fall River continues to be designated at the national level as a major node in the anticipated emergence of Short Sea Shipping. As a consequence, the Seaport Advisory Council has been funding major improvements to the state pier. Most significantly a total rebuild of the west face was completed in 2006 providing for a doubling of the berth size, single level deck areas, and heavy lift capacity.

The City of Fall River is in the process of hiring a consultant for a proposed redesign and to create conceptual designs and permitting services for dockage and moorings for the soon-to-be public recreational boating facility. The scope of the transient dockage would be north of the city pier to The Cove Restaurant and from the city pier to Bicentennial Park.

Route 79/Davol Street

A feasibility study was to develop alternatives that will foster economic development along the Fall River waterfront while improving multimodal accessibility between the waterfront and the neighborhoods. MassDOT's study proposed changing Route 79 from a limited access highway to an "at grade" urban arterial for approximately 3,000 feet. A portion of Route 79, specifically Davol Street North and Davol Street South, would be combined into a four-lane urban boulevard with a large landscaped median separating northbound and southbound lanes with a cost of \$66 million.

The range of alternatives that underwent analysis by MassDOT includes:

1. Elevated Route 79 with Cross Connections

2. At-Grade Urban Boulevard
3. At-Grade Urban Boulevard with Reduced Cross Section
4. At-Grade Boulevard with Frontage Roads

In addition to the Route 79 project, MassDOT restructured the Route 79 interchange with I-195. The coordinated bridges were considered structurally deficient and were replaced through the Accelerated Bridge Program.

New Bedford/Fairhaven Harbor

The port of New Bedford is located on the Acushnet River approximately three miles north of Buzzard's Bay. The port is managed by the New Bedford Harbor Development Commission. The port includes facilities in New Bedford on the west side of the river and in Fairhaven to the east. The 6.5-acre State Pier acts as the main general cargo facility, with approximately 140,000 square feet of enclosed storage space.

In 2016, the port of New Bedford completed an Economic Impact Study, the study set out to measure the local and regional economic impacts generated by maritime and seafood activity in the New Bedford Harbor.

In total, there were 36,578 jobs generated by Port activity; 6,225 Direct jobs, 4,101 Induced jobs, 2,512 indirect jobs, and 23,739 related jobs. The port generated 9.8 billion of total economic value; 6.1 billion of related output, 3.3 billion of direct business revenue, and 429.4 million of re-spending of direct income and local consumption purchases. The port contributed 1.2 billion of federal, state, and local taxes; 150.5 million direct, induced and indirect, 358.1 million direct, induced and indirect federal, 200.7 million in related local taxes, and 534.7 million of related federal taxes.

The 6,225 direct jobs are generated by the seafood activity, marine cargo and marinas. The fishing and seafood industry at the port of New Bedford creates 5,635 jobs while the cargo, maritime services and marina activity create an additional 590 jobs.

The total economic value to the Commonwealth resulting from the maritime activity at the port in 2015 was estimated at 9.8 billion. This consists of direct business revenue, local consumption and related user output. The influence of processors, cargo operators, maritime services, ferries, harbor tours, and marinas accounts for 2% of the \$527.45 billion of the gross domestic product for the Commonwealth.

In 2016, the port's fishing industry maintained its rank as the richest fishing port in the country for 17 consecutive years with 106.6 million pounds of fresh seafood valued at \$326.5 million. It's primary dollar value catch is sea scallops, with nearly 50 million pounds landing at the New Bedford docks every year.

Tourism is of grave importance for the harbor. New England Fast Ferry provides service to Martha's Vineyard and carries passengers, along by transporting break-bulk freight. The Cuttyhunk Ferry carries passengers and freight. Additionally, there are 8 marinas in the port with 950 moorings and 961 slips for recreational boating. There are frequent sailing tours and yacht races. American Cruise Lines uses the harbor for ports of call.

Dredging

The port of New Bedford was awarded a \$1.6 million grant for the design and permitting of Phase V dredging. The anticipated cost of Phase V dredging is \$650,000. The additional \$950,000 will go to the design for the navigational dredging. Dredging has been the number 1 economic goal of the port for the past 6 years. The cost of Phase V dredging is estimated at \$19.6 million. To dredge the federal channel too, the cost rises to \$35 million.

Phase V dredging involves about 25 docking areas. Some are in use and others are not. When dredged, the available water space would lead to nearly 400 direct jobs in the harbor and nearly 900 total. Dredging of the port would lead to more than \$250 million in business revenue and \$11.5 million in state and local taxes. The federal channel has not been dredged since the 1950's. In order to unlock the full potential of the New Bedford Port dredging the inner harbor an additional 4 feet is necessary. The US Army Corps of Engineers (USACE) and the National Oceanic and Atmospheric Administration (NOAA) requires the average channel depth during low tides to be 30 feet. Currently, the depth sits at 28.5 feet.

The cost for continued dredging of the harbor is expected to be \$35 million, which was set aside by the state in 2014 but has yet to be appropriated. The current study is expected to decrease the \$35 million, as it will provide a more accurate figure.

Planned Projects by the Harbor Development Commission

Since 2007, over \$157.4 million in grants have come to the New Bedford Port Authority for harbor improvements.

Current projects underway are:

Commercial Fishing

- *Commercial Fish Pier Repair & Expansion (\$650,000 Seaport Council)* - This project repairs Steamship Wharf and Leonard's Wharf
- *Shore-side Power on Commercial Fishing Piers (\$540,000 CMAQ; \$1,000,000 EPA)* - This project electrifies the commercial fishing piers so that industry does not need to run diesel generators when idle
- *Commercial Pump-out Facility (\$21,325 CZM Coastal Pollution Remediation Grant)* - This project is for a commercial pump-out facility to be located on the NE corner of Pier 3
- *Bilge Water Transfer Station (Assessment Funded by NBPA; Seeing Funds for Construction)* - This project develops a bilge water transfer and treatment program for the Port
- *Commercial Fishing Pier Lighting and Light House Improvements (\$500,000 Seaport Council)*- This project improves pier lighting and fixes light houses

Shipping

- *New Bedford Marine Commerce Terminal (\$1.6 Million Engineering MassCEC)* - This project develops a 28.3-acre facility to support offshore energy development; Import/export trade; and American Marine Highway Trade
- *East Coast Marine Highway Initiative (\$310,000 MARAD)* – This project is to build an actionable American Marine Highway Network (New Bedford, Baltimore, NJ, Canaveral)
- *Market Study for State Pier (\$17,000 Seaport Council)* - This project builds a business plan for State Pier
- *Import/Export Study (\$30,000 Seaport Council)* – This project builds the case for freight rail and builds a business plan for import/export trade

Recreational

- *BIG Grant (\$95,000 - Division of Marine Fisheries (DMF))* – This provided funds for transient recreational boating infrastructure
- *Recreational Boating Launch and Dinghy Docks (\$75,000 Seaport Council Grants)* - This project included improvements for accommodating recreational boaters
- *Gifford Street and Back Bay Moorings (\$37,521.25 Dredge Account)* – This project regrids moorings at Gifford Street and Back Bay (as displaced and impacted by navigational dredging and Confined Aquatic Disposal (CAD) construction)
- *Hurricane Barrier (\$50,000 Seaport Council)* - This project pilots paving the Hurricane Barrier (Phase one of Hurricane Barrier Walkway Project)
- *Pump out Boat (\$69,400 DMF)* – This project provides a new pump out vessel

- Sawyer Street Docks (\$300,000 Seaport Council) - This project builds a launch for rowing programs and events
- *Harbor Trustee Projects (\$3 Million Harbor Trustee - City Managed, \$50,000 Seaport Council to support Palmer's Island Project)* – These projects include developing the Upper River Walk as well as providing access and restoration to Palmer's Island
- *The Massachusetts Development Finance Agency (MassDevelopment)* - as a designated recipient of the formula based Ferry Boat Program funds, intends to procure, design, and engineer services and the subsequent rehabilitation and repairs to the New Bedford State Pier in support of the Seastreak Ferry Passenger Service.

General Navigation, Port Security, Safety and Harbor Clean-Up

- *Harbor Coordinator Grant (\$50,000 Seaport Council)* - This funding supports oversight and project management
- *Tonneson Park Marina (\$265,000 Seaport Council)* – This project builds slips for port security vessels and harbor excursion boats
- *Intelligent Technology Grant (ITS Grant) (\$1,600,000 MA DOT)* – This project is building a truck appointment system, vessel tracking system, and has engineered the port camera surveillance system
- *Port Security Grants (\$3.6 Million FEMA)* – This project has ramped up the port's security capabilities with patrol vessels (Harbormaster vessel, fireboat and police boats); port camera system; radios; surveillance robotic equipment; fire & police personnel; and security gear & equipment
- *Phase IV Dredging (Dredge Account; Future Ask to Seaport Council)* – This project continues the navigational dredging program for the Port US Army Corps Federal Channel Dredging (\$466,000 USACE) - This project dredges the federal channel into the Port
- *EPA Lower CAD Cell (\$9M EPA)* – This project builds a CAD cell in the lower harbor to support superfund clean-up
- *EPA Superfund Clean-up (\$15M Annually EPA)* – This project cleans contaminated sediment from the Harbor ¹

New Bedford-Fairhaven Bridge

As discussed earlier in the RTP, the most significant transportation project related to the Port of New Bedford is the replacement of the Route 6 Bridge. Replacing the existing swing span drawbridge with a single or double leaf bascule bridge will double the channel opening to at least 150 feet providing greater shipping access to the North Harbor. Currently, a single leaf

¹ New Bedford Harbor Development Commission

bascule, a double-leaf bascule and vertical lift bridge alternatives have been proposed and at the time of this plan with preliminary estimates ranging between \$50 million to as much as \$160 million, depending on the bridge type.

New Bedford Ferry Terminal

The Harbor Development Commission operates the New Bedford Terminal located on the north side of State Pier. The ferry terminal bridge allows intermodal transfers of waterborne freight and freight carried by truck and rail. The HDC operates a shuttle service to transport ferry passengers a short distance from the lot to the terminal at state pier.

New Bedford Marine Commerce Terminal

According to the Massachusetts Clean Energy Commission, The Massachusetts Clean Energy Center manages the New Bedford Marine Commerce Terminal, a multi-purpose facility designed to support the construction, assembly, and deployment of offshore wind projects, as well as handle bulk, break-bulk, container shipping and large specialty marine cargo. The first of its kind in North America, the Terminal has been engineered to be the most versatile heavy-lift cargo facility in the nation.

Strategically located in the heart of New England on the Atlantic Coast of the United States, the Terminal has easy access to open water and is in a prime position to take advantage of both domestic and international shipping opportunities.²

Airports

As previously discussed on the Airport section, three public municipal airports serve the SMMPO region, including the New Bedford Regional Airport, the Taunton Municipal Airport, the Mansfield Municipal Airport. The SMMPO region is also home to four privately owned airports; Berkely-Myricks, Allen's Pond, Westport, and Bulljump.

Rail

The Massachusetts State Rail Plan was completed in 2018. The Massachusetts State Rail Plan was prepared by HDR, AECOM and Fitzgerald & Halliday, Inc.

The Massachusetts State Rail Plan sets out to:

- Set forth Commonwealth policy involving freight and passenger rail transportation;

² Massachusetts CEC, Offshore Wind

- Establish policies, priorities and strategies to enhance rail services in the Commonwealth that provide benefits to the public;
- Serve as the basis for federal and state rail investments within Massachusetts;
- Establish the means and mechanism to coordinate with adjoining states, private parties and the federal government in projects of regional and national significance, including corridor planning and investment strategies; and
- Meet the planning requirement established by the Federal Railroad Administration.

Massachusetts' rail carriers provide essential transportation connections in support of domestic and international trade. The major products shipped in Massachusetts by rail include pulp and paper, frozen fish, cranberries, building materials, chemicals, scrap, and metal. In 2013, 7,489,130 tons of goods were shipped by rail into, out of, within or through Massachusetts (Massachusetts State Rail Plan Page 5).

The SMMPO contains 13 active rail links totaling 117 miles. Most carry freight only, with the exception of the Northeast corridor, which carries passengers only, and the Middleborough Line which carries both passengers and freight. All of the active rail lines in the region have a 263,000-pound capacity with the exception of the Middleborough Line which has a 273,000-pound capacity.

A number of businesses in the SMMPO region utilize rail to ship goods. These properties, along with the region's seaports and the New Bedford Regional Airport, serve as intermodal connection points between freight moving by truck and freight moving by rail, sea, or air. The roadway connections to these properties, known as "intermodal connectors", are some of the most important roadways serving the freight industry.

South Coast Rail

The South Coast Rail project will restore commuter rail service between Boston and southeastern Massachusetts. Taunton, Fall River and New Bedford are the only major cities within 50 miles of Boston that do not currently have commuter rail access to Boston. South Coast Rail will reconnect this region to jobs and generate economic development. Phase 1 will restore service to the region by the end of 2022.

As the project progresses, significant work has been and continues to be completed to facilitate this future rail service as well as to accommodate transport of freight via this route.

Trucking

The majority of freight moved in Massachusetts is done so by truck, and almost every good shipped in the state at one point or another is done so on a truck. Truck routes are important freight corridors, that are vital to the movement of goods in the region. Overall, 96% of freight that travels through the SMMPO is achieved through the trucking industry. This factor regards highways as the greatest influence on freight movement. Issues regarding traffic congestion, poor pavement conditions, poor roadway geometry, bottlenecks, and a lack of adequate truck parking areas were all identified as deficiencies affecting the movement of trucks.

- **Congestion** – increases truck travel time, increasing the cost on shippers
- **Poor Pavement Conditions** – Can cause damage to goods being shipped and necessitate lengthy detours, increasing truck travel time
- **Poor Roadway Geometry** – Poor roadway geometry can lead to unnecessary crashes or lengthy detours, increasing travel time, placing the economic burden on the seller
- **Bottlenecks** – Results in slower speed, decreased reliability, and resiliency causing large statewide economic impacts for shippers.
- **Lack of Truck Parking** – A truck driver is limited to 11 hours of driving, followed by 10 hours of rest. When the time limit approaches, drivers must find a legal place to pull over, and it is not legal to do that on highway shoulders.

Recommendations

The efficient flow of freight to, from, and through the SMMPO is crucial to its economic growth. Enhancing infrastructure with accompanying policy changes will contribute to a better flow of truck, rail, air planes, freighters, and barges. The RTP provides a series of recommendations for consideration.

Infrastructure/Service Improvements:

- Double track the New Bedford Secondary and Fall River Branch Rail Lines. Providing double tracks allow the cohabitation of both freight and commuter rail to operate with maximum efficiency.
- Upgrade all rail corridors to 286,000-pound capacity.
- Continue with Phase V of Harbor Dredging, providing greater depth to barges entering the harbor.
- Pursue state funds for a multi-use terminal in Fall River which will increase Short Sea Shipping infrastructure and supporting facilities.

- Leverage economic development through waterfront planning and harbor initiatives that focus on bringing people to the waterfront.
- Develop infrastructure in New Bedford to facilitate Short Sea Shipping from the port
- Increase truck parking within the freight corridor.
- Repair, reopen, and expand the rest areas of I-95, I-195, and Route 24
- Prioritize improvements at heavy bottleneck areas.
- Prioritize areas with deficient bridges, limited access roads, weight restricted areas to alleviate roadway congestion while also improving safety.
- In accordance with the Massachusetts Future of Transportation Plan continue to work with movers of freight to develop new transportation technologies have the potential to improve safety, speed and efficiency; expand mobility options; and reduce greenhouse gas emissions.

Policy Improvements

- Work with policy makers to delegate Brownfields within designated freight corridors as areas that can be used to increase truck rest areas, and pull-offs.
- Work with local, state, and national legislators to change policy and allow profit-oriented businesses to manage and locate in rest areas along interstate highways. This will allow the SMMPO region to develop PPP's with profit-oriented businesses that will provide services to traveling patrons. PPP's will off-set the costs normally required to construct these facilities.
- Place an emphasis on site locations that have rail access utilizing these site locations will help alleviate the costs. Incentives at the state and local level should be provided for using rail opposed to trucks.
- Work with policy makers to incentivize the development of an Industrial Rail Access Program at the state level to provide cost sharing through the public and private sector.

For additional information, please see Appendix M.

Environmental Coordination and Climate Change

SRPEDD's Environmental Program has always relied on the types of partnership and consultation alluded to in the MAP-21 requirements. A list of the agencies, programs, and organizations that have partnered with SRPEDD's Environmental Program, and an overview of the services that they've provided, is summarized in Table 16. These partnerships have allowed SRPEDD to become acutely aware of our region's outstanding natural, cultural, and historic resources as well as to maximize the use of its staff and agency resources in developing studies, data, adaptation, mitigation, and resiliency strategies and projects throughout the region.

Table 16: Environmental Partnering Agencies and Organizations since 1999

Name	GRRIP/Flood Hazard/Resiliency Task(s) and Partner Services	Type(s) of Assistance
Massachusetts Geographic Information Systems (MassGIS)	Mapping/ongoing updates	All relevant state data layers
Department of Environmental Protection (DEP)	Mapping and initial review	Water resource, quality, and supply data
Coastal Zone Management (CZM)	Mapping and initial review	Coastal resources data
Division of Marine Fisheries (DMF)	Mapping and initial review; cooperative fieldwork; monitoring	Critical areas after storm event, coastal and riverine; anadromous fish runs, shellfish beds
MA Fish & Game (DCR)	Mapping and periodic review	Coldwater fisheries data; statewide map of certified coldwater streams
MA Division of Ecological Restoration, DER (formerly Riverways); U.S. Fish & Wildlife	Mapping and periodic review; cooperative fieldwork; project evaluation; monitoring	Dams and obstructions data; restoration project data and mapping

Name	GRRIP/Flood Hazard/Resiliency Task(s) and Partner Services	Type(s) of Assistance
National Oceanic and Atmosphere Administration (NOAA)	Mapping and initial review; cooperative fieldwork	Rare or Sensitive species data; sea level rise data
Massachusetts Dept. of Transportation, (MassDOT)	Mapping and periodic review	All road, highway, and bridge data,
United States Dept. of Agriculture (USDA)	Mapping and periodic review	All soils; agricultural program(s) related data
The Nature Conservancy (TNC), Taunton River Watershed Alliance (TRWA), The Westport River Watershed Alliance (WRWA), Taunton River Stewardship Council (TRSC) ¹ , Save the Bay(STB), Mass Audubon; Manomet, Nature Serve, North Atlantic Aquatic Connectivity Collaborative, The Wildlands Trust; Old Colony History Museum; U.S. EPA; Narragansett Bay Project (NBEP); Buzzards Bay Project (BBP); National Park Service (NPS); Local Planning, Conservation, and Public Works officials	Mapping, cooperative fieldwork, ongoing and periodic review, site specific project origination, public meetings; monitoring; data development; model development; project evaluation; grants writing; site and structural assessment; planning support; public workshops; provide relevant local, regional, state, and federal planning documents	Data for GRRIP points; fish and wildlife obstructions and culvert, bridge, and stream crossing mapping and assessments; unique habitat; conservation lands; site specific land use data/concerns; marsh assessment mapping and rating ; cultural and historic resources; green infrastructure mapping and assessment tools; resilient habitat mapping and ranking ; public education materials; evaluation of goals, objectives, challenges, and actions outlined in local, regional, state, and federal plans

¹ The TRSC is the entity created by public law concurrent with the federal designation of the Taunton River as Wild & Scenic. The TRSC membership includes representatives from ten (10) cities and towns located along the Taunton River as well as delegates from regional non-profits, the MA Executive Office of Energy and Environmental Affairs, the Inter-tribal Indian Council, SRPEDD, and the National Park Service.

Air Quality

Transportation planning for mobile air quality issues is largely tied into computer modeling and conformity attainment (adherence to standards). SRPEDD's staff employs its transportation/traffic modeling and air quality analysis tools in cooperation with federal, state, and local partners in planning for the region.

Massachusetts was the first state in the nation to set greenhouse gas emission standards for power plants in an attempt to reduce air pollution from stationary sources. Massachusetts is also part of the Regional Greenhouse Gas Initiative (RGGI), a cooperative effort of the Northeast and Mid-Atlantic states to reduce greenhouse gas emissions (Massachusetts' air quality is impacted by wind and weather in the northeast corridor from Pennsylvania to Massachusetts). The Massachusetts Department of Environmental Protection (DEP) also provides grants to cities and towns for work related to waste reduction, greenhouse gas emission reduction, energy saving measures, and other activities related to reducing emissions from stationary sources.

Massachusetts has also advanced other policies, programs and legislation in order to reduce our negative impact on air quality, such as: The Global Warming Solutions Act, a comprehensive regulatory program focused on greenhouse gases and climate change; the Toxics Use Reduction Act (TURA) and the state's Office of Technical Assistance (OTA) have helped to reduce the amount of toxic air pollutants over the last two decades through improved industrial practices and pollution mitigation of stationary sources; the Transportation Emission Cap and Trade Interstate Agreement, with goals of reducing climate changing pollution, creating economic opportunity, and improving transportation equity; Smart Growth initiatives promoted by the state to address mobile and stationary sources of pollution through improved land use, transit, and transportation planning.

According to the DEP's most recent report on air quality trends, greenhouse gas emissions decreased by approximately 20% between 1990 and 2011, from approximately 94 million metric tons (MMT) to 75 MMT. This trend is a result of many factors- economic downturn, fuel prices, coal burning power plant closures, promotion of alternative energy sources (wind and solar), and the implementation of energy efficiency measures- as well as the policies and practices mentioned above. A discussion of regional air quality prepared by MassDOT is included in the appendices of this plan.

Stormwater: The Geographic Roadway Runoff Inventory Program – GRRIP

SRPEDD's Geographic Roadway Runoff Inventory Program (GRRIP) was created as a joint effort between the Transportation and Environmental Planning Programs in 1998. GRRIP was initially created to provide an analysis of roadway drainage facilities, located in environmentally sensitive areas on state and local roads. The root assumption of the initial GRRIP study was that the majority of the current stormwater collection and treatment practices employed on our road systems are based on hydrological assumptions circa 1935-1965. With the rate of development during those years, coupled with the rapid development from the 1970s to the present, these existing stormwater facilities have become functionally obsolete due to the increased stormwater loads. In fact, these facilities may cause more harm to environmentally sensitive areas and greater concern for transportation safety because of polluted discharge and flooding when they become overwhelmed (such as collection systems and end-of-pipe stormwater treatment structures located in floodplains).

GRRIP is a computer based mapping product which includes twenty-two separate categories of environmental information (including all available natural, cultural, historic, open space data) and data with other base map layers, to create an overview of a town's environmental and road network information. SRPEDD worked with numerous federal, state, local and non-profit organizations to compile the initial GRRIP database (we continue to update the GRRIP data with input from many of these same partners).

To date, SRPEDD staff has inventoried and field checked approximately two hundred potential GRRIP sites in the region, over two dozen of which have been addressed through mitigation or remediation (including culvert replacement, tide gates, streambank/buffer area restoration, improved drainage facilities, dam removal, and signage). Some of the outstanding project needs based upon GRRIP field work include:

- Discharge at Coles River in Swansea;
- Walker Street culverts in Norton;
- Balcom/Otis/Gilbert Streets, culverts/drainage (west side flooding);
- Briggs Street culverts in Dighton;
- Arnold Road at Scott's Brook in North Attleboro;
- Culverts at Benson Brook and Doggett's Brook (Route 105) in Marion;
- Taunton Street culvert in Lakeville;
- Wilmarth and Peckham Streets in Attleboro (at a branch of the Chartley Brook); and
- North Walker Street in Taunton (at Fall Brook).

Stream Continuity and Critical Linkages: The GRRIP/Stream Continuity Program

After the first GRRIP effort was completed in 2000, subsequent versions of this program have evolved to incorporate new focus areas, data, and working partnerships, such as: GRRIP 5, 2008, stream crossing, continuity, and fish/wildlife passage at culverts and bridges with The Nature Conservancy (TNC) and Save The Bay (RI); GRRIP 6, 2011, dams/flood hazards in proximity to roads and bridges, as well as ecological restoration opportunities that also improve transportation safety and efficiency, with the MA Division of Ecological Restoration (DER), NOAA, US Fish & Wildlife, and several others.

The culverts and stream crossings elements of the program has recently expanded to include Mass Audubon, Save The Bay, and the Taunton River Watershed Alliance in a working group that has met to coordinate field work and discuss results. This group has merged the data collected by the UMass Amherst Stream Continuity/Critical Linkages/North Atlantic Aquatic Connectivity Collaborative Project with local field data, MA Natural Heritage & Endangered Species Program (NH&ESP) data, TNC Critical Landscapes data, GRRIP data (including MA Bio Map II data), and programmed TIP data. in order to determine future priority sites and potential projects. These cooperative efforts will hopefully lead to improved stream flows, transportation safety, ecological restoration, and the preservation of our regional green infrastructure, all of which contribute to our regional resiliency.

The MA DER's new Stream Continuity Coordinator has also been working through this group to survey local DPWs regarding culverts, existing conditions, and methods and means for potential culvert replacement.

In the context of its GRRIP/Stream Continuity Program, SRPEDD has also been working to promote greater awareness of significant coldwater streams/fisheries. While always noted in SRPEDD's GRRIP maps from the beginning, coldwater fisheries data was based upon field observation by SRPEDD staff and partnering groups and organizations.

Some of the project areas with the greatest need and significant potential impact through ecological restoration, as determined through this collaborative effort, include:

- Attleboro, Peckham Street and Wilmarth Street at a branch of the Chartley Brook;
- Taunton, Bay Street at Watson Pond/Lake Sabbatia (two sites);
- Norton, Walker Street at the Wading River (two sites);
- Taunton, North Walker Street at Fall Brook; and
- Fall River, Bell Rock Road at Mill Brook.

Flooding: Flood Inundation Hazard Studies

Once the GRRIP 6 plan of work and report was completed, the program was further expanded to look at Flood Inundation Hazards in our coastal communities and along tidally influenced rivers in Buzzards Bay and Mount Hope/Narragansett Bay.

All five previous phases of the ongoing Flood Hazard Inundation Studies, were conducted to enhance the understanding of the potential risks posed by coastal flooding associated with climate change, sea level rise, storm surge, and tidal encroachment. The phases of the studies associated with Narragansett Bay also looked at the loss of coastal and estuarine salt marsh and other green infrastructure (wetlands, floodplain forest, and other coastal and riparian corridor habitat) that helps to buffer our coastlines and estuaries, as well as dissipate wave energy associated with storm surge.

All studies were conducted in partnership with local, state, regional, and federal agencies and organizations. Our colleagues at DER, MA Coastal Zone Management, and the Buzzards Bay Project (National Estuary Program) were particularly helpful in the Buzzards Bay study. SRPEDD worked directly with our partners at Save The Bay, The Narragansett Bay (National Estuary Program) and others on the Narragansett Bay study.

All of these studies looked at sites, including past GRRIP sites, that fit one or more of the following criteria: coastal and inland areas of high public use; areas in proximity to recent public infrastructure investment; areas within the limit of tidal influence on coastal rivers; areas where a convergence of factors (dams, channelization, river/stream crossing, culverts, at-grade bridges, poor drainage facilities) combine to create flood hazard/drainage problems during storm events.

The studies also looked at green infrastructure and storm water management projects that could be cost-effective for mitigating problems in flood prone areas (including land acquisition and ecological restoration, and marsh propagation, where appropriate). In certain areas, staff discussed other potential adaptation strategies including managed retreat/managed realignment (gradual, orderly, planned abandonment of sites that would eventually succumb to the impacts of sea level rise). These discussions remain open in both Buzzards Bay and Narragansett Bay study communities.

A list of projects, based upon need, the interest of municipal partners, and the potential engagement of other partnership agencies and organizations to address the projects, was compiled from all phases of the project, to date, and includes:

- Old Providence Road Bridge in Swansea (raise the road/approach; signage);

- Route 6 at the Venus De Milo Restaurant in Swansea (culvert);
- Marsh preservation and enhancement along the Palmer River in Swansea and Rehoboth, as well as at Broad Cove in Dighton and Somerset;
- East Branch of the Westport River in Westport impact on the Head of Westport at Old County Road (debris removal from channel under bridge);
- Front Street area in the Town of Marion (sea level rise and resiliency planning);
- Kickemuit River flood impact on Swansea Police Station and Fire Station #4 on Route 6 in Swansea (river restoration and full or partial dam and berm removals). SRPEDD will work with our communities that have identified issues through SRPEDD's Flood Hazard, GRRIP, Municipal Vulnerability Preparedness (MVP) Plans, or other relevant planning processes, to assist in the process of project initiation upon request.

SRPEDD-EPA-RTWN and the Watershed Management Optimization Tool: WMOST

The EPA developed the Watershed Management Optimization Tool (WMOST), to help water resource managers and planners identify cost-effective, environmental and economically sustainable decisions to improve water quality and quantity.

WMOST supports integrated water management by allowing users to consider stormwater, drinking water, waste water, and land conservation management practices to find solutions. The newly released WMOST version 3 includes a water quality module that allows users to identify the most cost-effective management practices for reducing pollution. It also has a module that helps users reduce overflows from combined sewer systems, a common problem for these types of systems. EPA conducted two case studies to test and refine WMOST version 3.

The Taunton River Watershed

In the first case study, EPA researchers used WMOST to analyze two sub-watersheds in the upper Taunton River Watershed, the second largest watershed in Massachusetts. The watershed faces challenges such as flooding, storm surges, and sea level rise.

Researchers wanted to identify strategies to reduce phosphorous levels in lakes and flowing waters in the watershed, as well as nitrogen levels in Mt. Hope Bay, a portion of the Narragansett Bay estuary located at the mouth of the Taunton River. They also wanted to maintain a minimum low flow in streams throughout the watershed to create a stable water supply and support local fish populations.

To achieve these goals, EPA researchers considered "green" or nature-based watershed management options such as land conservation, green infrastructure, and riparian buffer restoration-planting trees along a stream. The team also considered "grey" or traditional infrastructure options like repairing water infrastructure leaks, upgrades to the wastewater treatment system, water conservation, and aquifer storage and recharge options. Researchers also employed the newly developed SRPEDD land use/growth model and supporting data, as integrated into SRPEDD's regional transportation model.

SRPEDD's model inputs include:

Build out model inputs:

- Future projections and control totals down to the Transportation Analysis Zone (TAZ) level.
- Future development scenarios ranging from small-scale zoning changes to big shifts due to factors such as climate change.
- SRPEDD's existing traffic model with more detailed, granular inputs for corridor studies.

Build out model Process

- Build-out Estimates ("Supply"): create a parcel-by parcel build out for each town based upon existing zoning.
- Suitability Scoring ("Demand"): Examine every parcel from different perspectives to understand where development is more or less likely.
- Allocate Growth ("When and Where"): Combine MassDOT control totals, trends, current characteristics, and results from "Supply" and "Demand" to estimate growth projections.

After using WMOST to analyze the options, researchers found that infiltration basins-a green infrastructure option for stormwater management-were the most cost-effective option to meet the watershed's water quality goals. The researchers are currently working with partners to identify the best options in the case of future growth and climate related effects. The findings from this stage of the research will be shared with the communities before any of the options are implemented.

The Resilient Taunton Watershed Network (RTWN), is a partnership of regional, state, non-profit, and federal representatives, including SRPEDD. RTWN will be one of the first groups applying WMOST version 3 to future growth and climate scenarios to identify the

most cost-effective management actions. RTWN will share initial results from future growth scenarios with communities before considering potential management options. In addition, RTWN member Manomet, is taking part in a series of WMOST v3 trainings designed to support communities, states, tribes, and watershed organizations wishing to apply WMOST to their own case studies.

Going forward, SRPEDD, in conjunction with its partners in the RTWN, should:

- Work with Mansfield, Taunton, and Norton to assess the recommendations of the initial WMOST application (Norton has previous experience with constructed stormwater infiltration treatment on Crane Street adjacent to the Three Mile River in a state designated Area of Critical Environmental Concern – ACEC);
- Work with our partners at Manomet and the EPA to apply the WMOST models in other sub-watershed priority areas.

Resiliency: The Resilient Taunton Watershed Network

For the past two years, SRPEDD has been working with and hosting meetings of The Resilient Taunton Watershed Network (RTWN). RTWN is a partnership of: Bridgewater State University; Horsley Witten Group; Manomet ; MA DEP; MA DER; MA Executive Office of Energy and Environmental Affairs; Mass Audubon; MAPC; Narragansett Bay Estuary Program; National Park Service; TNC; OCPC; Save The Bay; SRPEDD; Taunton River Watershed Alliance; US EPA Region I; US Geological Survey, and; The Wildlands Trust.

The goal of the RTWN is to promote the resiliency of the Taunton Watershed in the face of climate change and development, considering ecological outcomes as well as economic, social, and environmental justice issues. According to statistics from Mass Audubon's *Losing Ground: Planning for Resilience (2014)*, of Massachusetts thirty-two (32) major watersheds, between 2005 and 2013, the Taunton Watershed is ranked first in: total area of developed land; total area of new development; total amount of natural land converted to development, and; total amount of open land converted to development. The RTWN also reviewed the Manomet Center's *Taunton River Watershed Climate Change Adaptation Plan (2013)*. All of these land use factors, as well as socioeconomic data, were considered by the RTWN partners when selecting the Taunton as a pilot study watershed for resiliency planning.

A resilient watershed is one that has the capacity to adjust to stresses and disturbances while still being able to provide valuable ecosystem services and functions, such as the provision of clean water and flood protection. RTWN is working together to identify and implement the most promising solutions that advance both ecological and economic wellbeing by protecting

existing green infrastructure, promoting ecological restoration, integrating climate change concerns, and supporting programs that use land and infrastructure efficiently.

Some of the strategies that are being considered for the Taunton River Watershed include:

- Integrating regional green infrastructure considerations into local planning practices;
- Avoid new infrastructure investment in floodplain, floodway, and flood prone areas;
- Incorporate climate change data, adaptation, and mitigation strategies into transportation, open space, and master planning documents in order to adequately prepare for events related to climate change;
- Make necessary changes to zoning, health, and building codes in order to address projected climate change/climate change related conditions;
- Employ LID stormwater management design when and where appropriate;
- Restore ecosystems/natural hydrology in order to reduce flooding, increase recharge, and address public and environmental health and safety.

The RTWN has also been actively looking for pilot projects that reflect the above-mentioned strategies. Currently, two of SRPEDD's past priority GRRIP sites have been selected by RTWN as projects for which to pursue grant funding for implementation: Crane Street in Norton, an LID stormwater management/drainage project, and; culvert replacement/stormwater management at Cobb Brook in Taunton. RTWN plans to look at SRPEDD's Transportation Plan and TIP for other future potential network projects.

General Recommendations for Environmental Coordination in Transportation Planning

SRPEDD offers the following recommendations to improve environmental coordination in our transportation planning efforts in the coming years:

- Continue field work in order to better track indicators of change predicted in various models and studies;
- Reassess our community Master Plans, Open Space Plans, Municipal Vulnerability Preparedness (MVP) Plans, Hazard Mitigation Plans, flood maps, and related land use and natural resource planning documents, in order to adequately plan for and address the needs of vulnerable areas and populations;
- Our ability to forge lasting partnerships is our strength. Continue to encourage strong multidisciplinary partnerships, when and where appropriate, in order to maximize our ability to confront the complex issues associated with tidal flooding, sea level rise, and

climate change, as well as to maximize the impact of physical and financial resources that we allocate to these issues;

- Continue to take a holistic, watershed based, long-term approach to planning for resiliency, incorporating social, economic, and infrastructure investments and concerns
- Continue to support projects that will maintain and restore our critical landscapes in order to ensure long-term ecosystem health and enhance regional resiliency.

For additional information, please see Appendix N.

Performance Measures

To achieve national performance goals established in MAP-21, the SMMPO developed Agency Measures in the 2016 Regional Transportation Plan (RTP) through a performance-driven, outcome-based approach that included state and public transportation operators. Although MAP-21 was replaced by the FAST Act, Agency Measures developed under MAP-21 are still required. Agency Measures were developed using the following goals as required under MAP-21:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users.
4. Increase the accessibility and mobility options available to people and for freight.
5. Protect and enhance the environment, promote energy conservation, improve quality of life and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and for freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.

The FAST Act continues MAP-21's overall performance management approach, requiring critical changes to the planning process by mandating that investment priorities assist in meeting performance targets that would address key areas such as safety, infrastructure condition, congestion, system reliability, emissions and freight movement. To this end, two additional goals were added to the MAP-21 goals as follows:

9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
10. Enhance travel and tourism.

The FAST Act changes now necessitate the integration of a performance based approach to decision making in support of the national goals and a greater level of transparency and accountability. The goal is to improve project decision-making and assist in more efficient investments of Federal transportation funds. To this end, in 2016, FHWA passed a rule establishing three performance

measures (PM1, PM2, and PM3) that State DOTs and MPOs must track, as required by MAP-21 and the FAST Act. PM1 is improving safety, PM2 is maintaining pavement and bridge conditions and PM3 is improving efficiency of the system and freight movement, reducing traffic congestion and reducing emissions. To incorporate this change and to meet federal requirements the SMMPO adopted PM1 measures in January 2018 and PM2 and PM3 measures in November of 2018.

The Federal Transit Authority (FTA) requires any Regional Transit Agency (RTA) that owns, operates, or manages capital assets used to provide public transportation and receives federal financial assistance under 49 U.S.C. Chapter 53 to develop a transit asset management (TAM) plan. TAM Plans outline how people, processes, and tools come together to address asset management policy and goals, provide accountability and visibility for furthering understanding of leveraging asset management practices and support planning, budgeting, and communications to internal and external stakeholders. GATRA and SRTA's TAM Plans, and their associated Annual Performance Measures and Targets were adopted by the SMMPO on March 19, 2019.

For the purpose of this document, we have categorized the performance measures for the SMMPO into two categories – Agency Measures and Statewide Measures. Agency Measures incorporate the measures created under MAP-21 and adopted as part of the 2016 RTP and are discussed, including progress towards meeting the measures, starting on Page 3. Statewide Measures refer to the goals identified by MassDOT at the state level that the SMMPO has adopted and are discussed starting on page 18. In general, Agency Measures reflect measures that are within SRPEDD purview, while Statewide Measures are measures that the SMMPO contributes to meeting and provides reporting. Detailed information on performance measures and progress for both categories can be found in Appendix O of this document.

The SMMPO recognizes these performance measures and the requirement for these measures to be included in the Regional Transportation Plan (RTP). The role of the SMMPO and SRPEDD will continue to be planning, promoting and supporting improvements to the transportation network. The difference will be the requirement for documented evidence to justify the improvement needs and the federal funds expended for their implementation. Opportunities for a more thorough and non-biased process will ensure that projects demonstrate that the investments are justified. The role of the SMMPO becomes more important with a need to demonstrate accountability.

The requirements and policy initiatives concerning performance measurements were presented to the SMMPO in the process of adopting Statewide goals and producing the 2016 and 2020 Regional Transportation Plans. These measures have and will continue to utilize many ongoing data collection and analysis tasks as part of the SRPEDD annual work program to

identify and evaluate projects to ensure corrective measures are warranted. The tasks include the Pavement Management Program, Geographic Roadway Runoff Inventory Program (GRRIP), Flood Hazard Mitigation, Bicycle Planning, Regional Transit Planning Activities, Congestion and Safety Management, Mobility Management and ITS/Freight/Intermodal Planning.

Under the FAST Act, the Statewide and Metropolitan Planning Rule provides direction and guidance on requirements for the performance-based planning and programming provisions, including forecasting performance, target-setting, documentation in the long-range plan and TIP, and a requirement for an annual System Performance Report. To implement PBPP, each highway agency, and the providers of public transportation in the region have jointly agreed upon and signed documentation, Letters of Agreement (LOAs) for the coordinated processes involving collection of performance data, selection of performance targets for the metropolitan area, reporting of metropolitan area targets, and reporting of actual system performance (related to those targets).

To this end, the state of Massachusetts developed the Performance Based Planning and Programming Agreement by and among the Berkshire Metropolitan Planning organization, the Boston Region Metropolitan Planning Organization, the Cape Cod Metropolitan Planning Organization, the Central Massachusetts Metropolitan Planning Organization, the Franklin Transportation Planning Organization, the Martha's Vineyard Commission, the Merrimack Valley Metropolitan Planning Organization, Montachusett Metropolitan Planning Organization, the Nantucket Planning and Economic Development Commission, the Norther Middlesex Metropolitan Planning Organization, the Old Colony Metropolitan Planning Organization, the Pioneer Valley Metropolitan Planning Organization, the Southeastern Metropolitan Planning Organization, the Commonwealth of Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), Berkshire Regional Transit Authority (BRTA), Brockton Area Transit Authority (BAT), Cape Ann Transit Authority (CATA), Cape Cod Regional Transit –Authority (CCRTA), Franklin Regional Transit Authority (FRTA), Greater Attleboro Taunton Regional Transit Authority (GATRA), Lowell Regional Transit Authority (LRTA), Montachusett Area Regional Transit Authority (MART), Metrowest Regional Transit Authority (MWRTA), Merrimack Valley Regional Transit Authority (MVRTA), Nantucket Regional Transit Authority (NRTA), Pioneer Valley Transit Authority (PVRTA), Southeastern Regional Transit Authority (SRTA), Vineyard Transit Authority (VTA), and the Worcester Regional Transit Authority (WRTA).

The Massachusetts Performance-Based Planning and Programming agreement outlines mutual responsibilities in carrying out performance-based planning and programming among applicable metropolitan planning organizations, states, and public transportation operators.

The Southeastern Massachusetts Metropolitan Planning Organization (SMMPO) signed the Massachusetts PBPP Agreement on April 16, 2019. Full text of the agreement can be found at the end of Appendix O.

Recommendations:

- The SMMPO, through SRPEDD, continue to strive towards meeting both Agency and Statewide goals through use of performance measures and evaluation criteria.
- The SMMPO, through SRPEDD, continue to monitor and report on progress towards meeting Agency and Statewide goals in all applicable documents.

For additional information, please see Appendix O.

Air Quality in Transportation

MassDOT and the MPOs continue their work to achieve greenhouse gas (GHG) reduction goals as outlined in state regulations applicable to Massachusetts. This “progress report” estimates future carbon dioxide (CO₂) emissions from the transportation sector as part of meeting the GHG reduction goals established through the Commonwealth’s Global Warming Solutions Act (GWSA). The Global Warming Solutions Act of 2008 requires statewide reductions in greenhouse gas (CO₂) emissions of 25 percent below 1990 levels by the year 2020, and 80 percent below 1990 levels by 2050.

The Commonwealth’s thirteen metropolitan planning organizations (MPOs) are involved in helping to achieve greenhouse gas reductions mandated under the GWSA. The MPOs work closely with the Massachusetts Department of Transportation (MassDOT) and other involved agencies to develop common transportation goals, policies, and projects that would help to reduce GHG emission levels statewide, and meet the specific requirements of the GWSA regulation.

Meeting the requirements of this regulation is being achieved through the transportation goals and policies contained in the 2020 RTPs, the major projects planned in the RTPs, and the mix of new transportation projects that are programmed and implemented through the TIPs.

The GHG evaluation and reporting processes enable the MPOs and MassDOT to identify the anticipated GHG impacts of the planned and programmed projects, and also to use GHG impacts as a criterion in prioritizing transportation projects. This approach is consistent with the greenhouse gas reduction policies of promoting healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments; as well as supporting smart growth development patterns through the creation of a balanced multi-modal transportation system. All of the MPOs and MassDOT are working toward reducing greenhouse gases with “sustainable” transportation plans, actions, and strategies that include (but are not limited to):

- Reducing emissions from construction and operations
- Using more fuel-efficient fleets
- Implementing and expanding travel demand management programs
- Encouraging eco-driving
- Providing mitigation for development projects
- Improving pedestrian, bicycle, and public transit infrastructure and operations (healthy transportation)

- Investing in higher density, mixed use, and transit-oriented developments (smart growth)

MassDOT's statewide estimates of CO₂ emissions resulting from the collective list of all recommended projects in all of the Massachusetts RTPs combined are presented in Table 17 below. Emissions estimates incorporate the latest planning assumptions including updated socio-economic projections consistent with the 2020 RTPs:

Table 17: Massachusetts Statewide Aggregate CO₂ Estimated Emissions Impacts from Transportation
(all emissions in tons per summer day)

Year	CO ₂ Action Emissions	CO ₂ Base Emissions	Difference (Action – Base)
2016	86,035.6	86,035.6	n/a
2020	75,675.6	75,865.9	-190.3
2040	54,484.2	54,702.2	-218.0

As shown above, collectively, all the projects in the RTPs in the 2020 Action scenario provide a statewide reduction of over 190 tons of CO₂ per day compared to the base case. The 2040 Action scenario estimates a reduction of 218 tons per day of CO₂ emissions compared to the base case.

These results demonstrate that the transportation sector is expected to continue making positive progress in contributing to the achievement of GHG reduction targets consistent with the requirements of the GWSA. MassDOT and the MPOs will continue to advocate for steps needed to accomplish the Commonwealth's long-term goals for greenhouse gas reductions.

Summary of Recommendations and Financial Constraint

When comparing this current plan to the state of the transportation system described in the previous RTP (2016), the overall conclusion is that there are considerable improvements to be completed to move the region forward towards a sustainable network. Furthermore, many of the major problems identified in 2016 still remain and although there have been strides in fixing the outstanding problems such as with the I-195/Route 79/Route 138 “Spaghetti” Ramp Interchange in Fall River, many other issues remain unresolved. The SMMPO and this RTP continue to support the need to replace and repair deficiencies identified in previous studies with the development of this RTP.

Transportation problems that have been or are currently under study to determine improvements to resolve congestion and safety issues include:

- The Middleborough Rotary, (Interim improvements completed 2018)
- Route 24 at Route 140 Interchange (25% design, programmed for funding)
- The Fairhaven / New Bedford Route 6 Bridge
- Route 24 between I-495 and Route 140
- South Coast Rail (Programmed and to begin operation 2023)
- The I-95 Corridor

In addition, other locations have been identified and studied for improvements to support economic development and community enhancement. These projects include:

- The JFK Highway, New Bedford
- Route 79 Boulevard, Fall River (25% Design and programmed for funding)
- South Coast Bikeway
- Taunton River Trail
- Norton Bicycle Path (Programmed for funding)

Despite these major projects, numerous smaller projects also require the need for improvement as presented in the Congestion and Safety analysis of this plan. The current steps needed to resolve these issues, specifically through the TIP, requires the state or in many instances, the community, to initiate a project. Over the years, SRPEDD staff has conducted studies of high crash and congested locations to determine the issues and have assisted communities in project initiation. SRPEDD will continue to provide this assistance upon request.

Finally, and certainly not last among the numerous issues facing the transportation system, is a need for changes in policy, perception and attitude. Existing political and financial barriers prohibit expansion and connectivity within the transportation system to allow for growth and sustainability for the future. These barriers include:

- Transit Connections between major urban areas that are able to cross political boundaries for state, county, regional planning agencies and regional transit agencies;
- Expansion and coordination for multi modal connections, between public and private agencies;
- Increase funding to preserve existing infrastructure;
- Increase funding to expand the operations of existing and proposed transit services;
- Dedicated funding sources for improvement to multi modes of transportation.

There is a growing need to address all of these issues identified in this plan, yet legislation and society as a whole, continue to overlook these problems citing the lack of funding or a willingness of doing what is affordable rather than doing what is needed. This continued reluctance from investing into the transportation system, especially with mode shift alternatives, will continue to perpetuate reliance on the single occupancy vehicle (SOV), the use of fossil fuels and jeopardize the goal established in the Global Warming Solutions Act (GWSA) to reduce GHG emissions.

The following presents a financial plan for the highway and transit projects identified in the 2016 Regional Transportation Plan (RTP). Federal and state investments in improvements are provided through apportionments from the Federal Highway Administration (FHWA) and Federal Transit Administration. These apportionments generally provide 80% of the funds needed for a project, with the Commonwealth of Massachusetts providing a 20% match. In certain cases, with FTA funds, 100% of the costs are federally funded.

The primary source of federal funds is the Highway Trust Fund whose receipts are derived mainly from gasoline tax revenues. The Commonwealth provides capital funds through state sponsored Transportation Bonds and makes the principal and interest payments with either gasoline tax revenues or general tax funds.

For our Regional Transit Authorities, funds from the Federal Transit Administration (FTA) are received directly or are passed through the Massachusetts Department of Transportation (MassDOT). Section 5307 funds provide both capital assistance and some operating assistance subsidies to our transit authorities. Capital funding is usually 80% federal with the 20% match from the State and local governments. Operating funds are formula driven with the maximum

federal share of 50%. Section 5309 funds are capital funds usually earmarked by Congress.

Project Cost and Fiscal Constraint

The project costs listed in this section are estimates and are not to be considered final. However, since these cost estimates are used to program limited fiscal resources and considering the RTP and TIP must be financially constrained, every effort is made to ensure that the estimates are up-to-date and reliable. When inflation in the cost of labor, equipment, and raw materials contributes to changes in project cost estimates, the adjustments in the cost carried in the TIP are made administratively. When the project cost changes because of a change in the scope of work proposed, MassDOT must agree to the change. In addition, competitive forces in the construction industries could affect project costs during the bidding process.

The project descriptions listed are only intended to identify the project and to describe its general character. The presence or absence of any specific element, policy issue, or design detail in the description is usually not significant.

As required for this plan and for the TIP, these documents reflect the “Year of Expenditure” funding based on reasonable financial principles and information developed cooperatively by Massachusetts MPOs, MassDOT and Public Transportation Operators. The project costs in this RTP as well as the TIP are adjusted to account for inflation at 4% per year.

The total cost of the projects presented in the RTP and TIP must not exceed the anticipated amount of federal and state funds available for each of the fiscal years. When proposed spending and available funds are matched, the RTP and TIP are considered to be "Fiscally Constrained". MassDOT Office of Transportation Planning provides each region with yearly targeted federal funding levels for transportation improvements to infrastructure and transit operations.

Infrastructure Improvements

Investments in infrastructure help the SMMPO towards a goal of attaining a reliable transportation system that is safe and efficient for all users and modes. These financial investments are key to improving and expanding a system to support the movement of people and goods by all means possible.

The following is a list of the federal and state funding categories available for transportation improvements. Although designed for specific improvements to the transportation infrastructure, programs within these categories do provide some flexibility to be applied for different types of improvements. These funding categories are:

Bridge (BR) - Federal-aid bridge funding is used to rehabilitate or replace bridges based upon the structure's adequacy, safety, serviceability, age and public usage. Bridge funding is sub-allocated for projects that are on the federal-aid system (a road classified as a collector or higher) (BR-On) and those that are not (BR-Off). Funding: Federal - 80%, State - 20%.

Congestion Mitigation/Air Quality (CMAQ) - CMAQ provides a flexible funding source for transportation investments and programs to help meet the requirements of the federal Clean Air Act. Funding is available to help reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas). Prior to programming, proposed CMAQ investments are reviewed by the CMAQ Consultation Committee, which is responsible for determining whether a project shows an air quality benefit and is eligible for CMAQ funding. The members of the Committee include representatives from MassDOT, Massachusetts Department of Environmental Protection (DEP), United States Department of Transportation (USDOT), U.S. Environmental Protection Agency (EPA), and the MPOs. Funding: Federal - 80%, State - 20%.

Earmarks - Certain funding categories are project-specific, i.e. funds are 'earmarked' only for use in the development of that project. Previously, earmarks were included in federal Transportation bills by a state's congressional delegation. This practice has since ended in Congress, though some earmarks are still available for certain designated investments. These include, among others, Sections 115, 117, 129 and 125 categories. Funding: Federal - 100%,

Emergency Relief (ER) - A special program from the Highway Trust Fund for the repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of (1) natural disasters or (2) catastrophic failures from an external cause. This program supplements the commitment of resources by States, their political subdivisions, or other Federal agencies to help pay for unusually heavy expenses resulting from extraordinary conditions. Funding: For Interstate highways, the Federal share is 90 percent. For all other highways, the Federal share is 80 percent. The Federal share for permanent ER repairs may amount to 90 percent if the combined eligible ER expenses incurred by the State in a Federal fiscal year exceeds the annual apportionment of the State under 23 U.S.C. section 104 for the fiscal year in which the disasters or failures occurred.

Federal Lands Access Program (FLAP) - The Federal Lands Access Program was established under MAP-21 §1119; 23 USC 201, 204 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. The Federal share is 100%.

Ferry Boat Formula Program (FBP) - The FBP program provides formula-based funding for ferry facilities (either vehicular or passenger) that are on a non-Interstate public road and are publicly owned, publicly operated, or majority publicly owned providing substantial public benefits. The FBP was created under MAP-21 and continued under the FAST Act, replacing the previous Ferry Boat Discretionary Program (FBD).

Highway Safety Improvement Program (HSIP) - The HSIP funds safety improvement investments to reduce the number and severity of crashes at dangerous locations. A highway safety improvement investment is any strategy, activity, or project on a public road that is consistent with each state's data-driven State Strategic Highway Safety Plan (SHSP) and corrects or improves a hazardous road location or addresses a highway safety problem. Funding: Federal - 90%, State - 10%.

National Highway Freight Program (NHFP) - NHFP was established in December 2015 through the FAST Act to improve the efficient movement of freight on the National Highway Freight Network (NHFN). The Commonwealth's Freight Plan was approved by FHWA on July 13, 2018. As the Freight Plan continues to develop, program sizes will be proposed in future STIPs according to need and appropriations. Funding: The Federal share is generally 80%, subject to the upward sliding scale adjustment for States containing public lands. Funding: The Federal share for projects on the Interstate system (except projects that add lanes that are not high-occupancy-vehicle or auxiliary lanes) is 90%, subject to the upward sliding scale adjustment. For projects that add single occupancy vehicle capacity, that portion of the project that increases single occupancy vehicle capacity will revert to the 80% Federal share participation level.

National Highway Performance Program (NHPP) – NHPP provides support for the condition and performance of the National Highway System (NHS), including Interstate and non-Interstate routes and 26 bridges. These investments ensure that federal-aid funds in highway construction are on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and that they are consistent with Metropolitan and Statewide planning requirements. The federal share for projects on the Interstate System is 90%, with a 10% match coming from the state. Any Interstate System project that increases single occupancy vehicle capacity will revert to the 80 percent Federal share participation level. Funding: Federal - 90%, State - 10%.

Non-Federal Aid (NFA) - This funding category contains all those projects not receiving federal funds. Various categories of state funding are included in this group including bikeways and highway construction and maintenance (Chapter 497). This category is included in the TIP for informational purposes only. Funding: State - 100 %.

Railroad Highway Crossing Program (Section 130) - The Railway-Highway Crossings (Section 130) Program (formerly RRHE and RRPD) provides funds for the elimination of hazards at railway-highway crossings. The 2015 Fixing America's Surface Transportation Act (FAST Act) continues the annual set-aside for railway-highway crossing improvements under 23 USC 130(e). The funds are set-aside from the Highway Safety Improvement Program (HSIP) apportionment. Funding: Federal - 90%, State – 10%

Surface Transportation Block Grant Program (STBG) - Funding under this category may be expended for construction, reconstruction, rehabilitation, resurfacing, restoration, operational and safety improvements on roads classified higher than urban local or rural minor collectors in the urbanized areas of the region as shown on the map (Figure 8) on page 28. In addition to federal-aid roads, capital costs for transit projects are also eligible. Additional eligible activities are defined under 23 U.S.C. 133(b). Funding: Federal - 80%, State - 20%.

Surface Transportation Block Grant Program – Transportation Alternatives (STBG-TA) The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of Surface Transportation Block Grant (STBG) program funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. Funding: federal - 80%, state - 20%.

Funding of projects is managed and distributed by MassDOT through the SMMPO with the development of the Transportation Improvement Program or through the Capital Investment Plan (CIP).

The funding share is projected to increase in 2029, when the Grant Application Notes (GANs) payments associated with the Accelerated Bridge Program is complete. During the previous RTPs, GANs were provided by the Federal Highway Administration essentially as a loan to MassDOT to reduce the number of structurally deficient bridges within the commonwealth. Repayment of GANs can come from state revenues or subtracted from the annual apportionment provided to Massachusetts by FHWA. Bridge projects funded through this program are due to complete construction before 2020.

The forecast of available infrastructure funds to 2040 for the SMMPO region is shown in Table 18.

Table 18: SMMPO Funding Guidance

	2020-2024	2025-2029	2030-2034	2035-2039	2040	TOTAL
Interstate Pavement	\$29,611,684	\$37,391,545	\$45,911,975	\$50,886,573	\$10,823,475	\$174,625,252
Non Interstate Pavement	\$23,009,555	\$27,390,136	\$33,631,539	\$37,275,542	\$7,928,435	\$129,235,207
Non Federal Aid Bridges	\$44,800,500	\$45,786,111	\$46,793,405	\$47,822,860	\$9,774,993	\$194,977,869
Statewide Programs	\$100,569,742	\$113,025,342	\$138,780,480	\$153,817,452	\$32,716,673	\$538,909,689
Regional Discretionary Funding	\$111,183,192	\$127,472,704	\$156,519,970	\$173,479,029	\$36,898,652	\$605,553,547

MassDOT Office of Transportation Planning has provided programming assumptions to be used by MPO's in developing the FFY2020 Regional Transportation Plans. For the preparation of the FFY2020-2024 Transportation Improvement Program (TIP) the anticipated apportionment to Massachusetts for the FFY2020 to 2024 period is presented in Table 19.

In addition to providing the required match to Federal Highway funds, MassDOT also provides Non-Federal Aid (NFA) dollars for road and bridge construction. These funds are provided through Transportation Bond Issues and general tax operating funds. At a minimum \$197,709,931 per year is expected to be available statewide for NFA highway and bridge projects until 2040.

Table 19: Funding Commitments in FFY2020-2024 TIP

Federal Fiscal Year	Federal Aid Targets
2020	\$ 21,370,281
2021	\$ 21,802,827
2022	\$ 22,246,785
2023	\$ 22,732,674
2024	\$ 22,030,625
2020-2024 Total	\$ 110,183,192

Massachusetts also provides Chapter 90 funds to communities for the maintenance of local roads. The level of funding is annually set by State Legislators and is made available on a

reimbursement basis. Funding is distributed by formula based on road mileage, population and employment for road maintenance, improvements or other transportation related use. Since the last update of this plan, the total Chapter 90 funds for the SMMPO region ranged between \$28 and \$18.7 million per year from 2015 to 2019 respectively. Although eligible for federal aid, Chapter 90 funds allow communities greater flexibility on road maintenance with less stringent requirements as associated with federal funding. Because this is a state funded program, Chapter 90 funds are not subject to the financial constraints in this plan.

All of the financial totals presented in Table 20 reflect the amounts from the FFY2020-2024 Transportation Improvement Program that are part of the SMMPO annual target of funds committed to by MassDOT for construction. All projects presented in the FFY2020-2024 TIP are financially constrained.

Table 20: FFY2020 to 2024 TIP

FFY2020 TIP Financially Constrained Projects					
Municipality	Project Description	Funding Source	Federal Funds	Non-Federal Funds	Total Funds
TAUNTON	CORRIDOR IMPROVEMENTS & RELATED WORK ON BROADWAY (ROUTE 138), FROM LEONARD STREET NORTHERLY TO PURCHASE STREET (PHASE 1)	STBG	\$4,871,290	\$1,217,823	\$6,089,113
		TAP	\$393,944	\$98,486	\$492,430
DIGHTON & TAUNTON	RESURFACING AND RELATED WORK ON ROUTE 44	STBG	\$4,636,800	\$1,159,200	\$5,796,000
NEW BEDFORD	INTERSECTION IMPROVEMENTS AT HATHAWAY ROAD, MOUNT PLEASANT STREET AND NAUSET STREET	CMAQ	\$2,297,478	\$574,370	\$2,871,848
MIDDLEBOROUGH	INTERSECTION IMPROVEMENTS & RELATED WORK AT JOHN GLASS SQUARE	STBG	\$2,000,359	\$500,090	\$2,500,449
TOTAL			\$14,199,872	\$3,549,968	\$17,749,840

FFY2020 Fiscal Constraint Analysis

Total Federal Aid Funds Programmed	\$17,749,840
Total Target	\$21,370,281
Balance	\$3,620,441

FFY2021 TIP Financially Constrained Projects					
Municipality	Project Description	Funding Source	Federal Funds	Non-Federal Funds	Total Funds
NEW BEDFORD	INTERSECTION IMPROVEMENTS AND RELATED WORK AT ROCKDALE AVENUE AND ALLEN STREET	HSIP	\$1,772,712	\$196,968	\$1,969,680
LAKEVILLE	RECONSTRUCTION AND RELATED WORK ON RHODE ISLAND ROAD (ROUTE 79), FROM THE TAUNTON CITY LINE TO CLEAR POND ROAD	STBG	\$8,188,746	\$2,047,187	\$10,235,933
RAYNHAM	RESURFACING AND RELATED WORK ON ROUTE 138	STBG	\$5,928,104	\$1,482,026	\$7,410,130
REHOBOTH	INTERSECTION IMPROVEMENTS & RELATED WORK AT WINTHROP STREET (ROUTE 44) AND ANAWAN STREET (ROUTE 118)	STBG	\$1,747,200	\$436,800	\$2,184,000
TOTAL			\$17,636,762	\$4,162,981	\$21,799,743

FFY2021 Fiscal Constraint Analysis

Total Federal Aid Funds	
Programmed	\$21,799,743
Total	
Target	\$21,802,827
Balance	\$3,084

FFY2022 TIP Financially Constrained Projects					
Municipality	Project Description	Funding Source	Federal Funds	Non-Federal Funds	Total Funds
TAUNTON	RECONSTRUCTION OF ROUTE 44 (DEAN STREET), FROM ARLINGTON STREET TO ROUTE 104 (SOUTH MAIN STREET)	STBG	\$4,608,013	\$1,152,003	\$5,760,016
		HSIP	\$806,409	\$89,601	\$896,010
		CMAQ	\$1,200,000	\$300,000	\$1,500,000
ATTLEBORO	INTERSECTION IMPROVEMENTS AT ROUTE 1 (WASHINGTON STREET)/ROUTE 1A (NEWPORT AVENUE) AND ROUTE 123 (HIGHLAND AVENUE)	STBG	\$3,212,446	\$803,111	\$4,015,557
		HSIP	\$806,409	\$89,601	\$896,010
		CMAQ	\$1,792,021	\$448,005	\$2,240,026

FFY2022 TIP Financially Constrained Projects					
NEW BEDFORD	INTERSECTION IMPROVEMENTS ON ACUSHNET AVENUE AT PECKHAM ROAD/SASSAQUIN AVENUE	STBG	\$1,297,037	\$324,259	\$1,621,296
DARTMOUTH	CORRIDOR IMPROVEMENTS ON DARTMOUTH STREET AND PROSPECT STREET	STBG	\$3,456,069	\$864,017	\$4,320,086
TOTAL			\$17,178,403	\$4,070,598	\$21,249,001

FFY2022 Fiscal Constraint Analysis

Total Federal Aid Funds Programmed	\$21,249,001
Total Target	\$22,246,785
Balance	\$997,784

FFY2023 TIP Financially Constrained Projects					
Municipality	Project Description	Funding Source	Federal Funds	Non-Federal Funds	Total Funds
NEW BEDFORD	CORRIDOR IMPROVEMENTS AND RELATED WORK ON COUNTY STREET FROM NELSON STREET TO UNION STREET	STBG	\$6,864,496	\$1,716,124	\$8,580,620
DARTMOUTH	REALIGNMENT OF TUCKER ROAD TO ROUTE 6 AND HATHAWAY ROAD, INCLUDING INTERSECTION SIGNALIZATION	STBG	\$3,383,642	\$845,911	\$4,229,553
		CMAQ	\$1,200,000	\$300,000	\$1,500,000
MATTAPOISETT	CORRIDOR IMPROVEMENTS AND RELATED WORK ON MAIN STREET, WATER STREET, BEACON STREET AND MARION ROAD	STBG	\$6,208,640	\$1,552,160	\$7,760,800
TOTAL			\$17,656,779	\$4,414,195	\$22,070,973

FFY2023 TIP Financially Constrained Projects

FFY2023 Fiscal Constraint

Analysis

Total Federal Aid Funds	
Programmed	\$22,070,973
Total Target	\$22,732,674
Balance	\$661,701

FFY2024 TIP Financially Constrained Projects

Municipality	Project Description	Funding Source	Federal Funds	Non-Federal Funds	Total Funds
TAUNTON	CORRIDOR IMPROVEMENTS AND RELATED WORK ON BROADWAY (ROUTE 138), FROM PURCHASE STREET TO JACKSON STREET (PHASE 2)	STBG	\$4,908,749	\$1,227,187	\$6,135,936
MANSFIELD	RECONSTRUCTION ON CHAUNCY STREET (ROUTE 106)	STBG	\$3,748,000	\$937,000	\$4,685,000
		CMAQ	\$2,400,000	\$600,000	\$3,000,000
WAREHAM	CONSTRUCTION OF BIKE LANES ALONG NARROWS ROAD AND A SHARED USE PATH ADJACENT TO MINOT AVENUE INCLUDING RELATED WORK	CMAQ	\$2,088,000	\$522,000	\$2,610,000
		TAP	\$2,088,000	\$522,000	\$2,610,000
SWANSEA	IMPROVEMENTS ON ROUTE 6 (GRAND ARMY OF THE REPUBLIC HIGHWAY) AT GARDNERS NECK ROAD	HSIP	\$2,815,146	\$312,794	\$3,127,940
TOTAL			\$18,047,895	\$4,120,981	\$22,168,876

FFY2024 Fiscal Constraint

Analysis

Total Federal Aid Funds	
Programmed	\$22,168,876
Total	
Target	\$23,030,625
Balance	\$861,749

Highway and bridge projects programmed by MassDOT are not reflected in the SMMPO's regional targets. MassDOT is responsible for the fiscal constraint of these projects in relation to the total available statewide funding. Table 21 lists FFY2020 to 2024 projects by funding category that is within or impact the SMMPO district. These projects are part of the Statewide Transportation Improvement Program which is fiscally constrained and does not impact the SMMPO.

Table 21: Non Target SMMPO projects FFY2020 to 2024

National Highway Performance Program (NHPP)					
Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2020	MIDDLEBOROUGH	PAVEMENT PRESERVATION AND RELATED WORK ON I-495	\$2,548,800	\$283,200	\$2,832,000
2021	SEEKONK	RESURFACING AND RELATED WORK ON ROUTE 44	\$3,637,208	\$909,302	\$4,546,510
2021	MANSFIELD	INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUNCEY STREET)	\$1,180,036	\$295,009	\$1,475,045
2022	NORTH ATTLEBOROUGH & ATTLEBORO	INTERSTATE MAINTENANCE AND RELATED WORK ON I-295	\$8,285,639	\$920,627	\$9,206,266
2022	FALL RIVER	CORRIDOR IMPROVEMENTS ON ROUTE 79/DAVOL STREET	\$640,000	\$160,000	\$800,000
2022	TAUNTON	INTERCHANGE IMPROVEMENTS AT ROUTES 24 & 140, INCLUDING REPLACING T-01-045 AND T-01-046	\$20,706,866	\$5,176,717	\$25,883,583
2023	ATTLEBORO & NORTH ATTLEBOROUGH	RESURFACING AND RELATED WORK ON US ROUTE 1	\$13,607,194	\$3,401,798	\$17,008,992
2023 - 2024	FALL RIVER	CORRIDOR IMPROVEMENTS ON ROUTE 79/DAVOL STREET	\$46,526,292	\$11,631,573	\$58,157,865

National Highway Performance Program (NHPP)

Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2023 - 2024	NEW BEDFORD	SUPERSTRUCTURE REPLACEMENT, N-06-020, I-195 (EB & WB) RAMP C & F OVER ST 18, COUNTY STREET, STATE STREET, MASS COASTAL RAILROAD, PURCHASE STREET, WELD STREET, INCLUDES REPLACING N-06-046, I-195 (EB) RAMP F OVER WELD STREET	\$30,356,021	\$7,589,005	\$37,945,027
Total			\$127,488,057	\$30,367,231	\$157,855,288

Highway Safety Improvement Program (HSIP)

Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2020	FALL RIVER & WESTPORT	INSTALLATION OF SIGN PANELS AND SUPPORTS AT EIGHT LOCATIONS ON I-195 AND ROUTE 24	\$900,000	\$100,000	\$1,000,000
2023	ATTLEBORO & NORTH ATTLEBOROUGH	GUIDE AND TRAFFIC SIGN REPLACEMENT ON INTERSTATE 295	\$353,166	\$39,241	\$392,407
2023	PLAINVILLE	INTERSECTION IMPROVEMENTS AT WASHINGTON STREET (ROUTE 1) AND GEORGE STREET	\$3,024,000	\$336,000	\$3,360,000
2024	DARTMOUTH to RAYNHAM	GUIDE AND TRAFFIC SIGN REPLACEMENT ON SECTIONS OF I-195 AND I-495	\$7,325,381	\$813,931	\$8,139,312
2024	SWANSEA	TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT THREE INTERSECTIONS ON ROUTE 6	\$7,162,831	\$795,870	\$7,958,702
Total			\$18,765,379	\$2,085,042	\$20,850,421

Congestion Mitigation & Air Quality Program (CMAQ)

Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2022	NORTON & MANSFIELD	RAIL TRAIL EXTENSION (WORLD WAR II VETERANS TRAIL)	\$3,197,192	\$799,298	\$3,996,490
2023	MARION	SHARED USE PATH CONSTRUCTION (PHASE 1), FROM THE MARION-MATTAPOISETT T.L. TO POINT ROAD	\$2,354,531	\$588,633	\$2,943,164
Total			\$5,551,723	\$1,387,931	\$6,939,654

Surface Transportation Block Grant Program – Transportation Alternatives (STBG-TA)

Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2022	FALL RIVER	CORRIDOR IMPROVEMENTS ON ROUTE 79/DAVOL STREET	\$1,868,268	\$467,067	\$2,335,335
Total			\$1,868,268	\$467,067	\$2,335,335

Bridge (BR)

Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2021	TAUNTON	BRIDGE REPLACEMENT, T-01-024, SCADDING STREET OVER SNAKE RIVER	\$874,640	\$218,660	\$1,093,300
2021	MANSFIELD	BRIDGE REPLACEMENT, M-03-003 & M-03-045, BALCOM STREET OVER THE WADING RIVER	\$712,704	\$178,176	\$890,880
2021	REHOBOTH	BRIDGE REPLACEMENT, R-04-004, REED STREET OVER PALMER RIVER	\$1,132,160	\$283,040	\$1,415,200
2021	FALL RIVER	BRIDGE REPLACEMENT, F-02-019, WEAVER STREET OVER MASSACHUSETTS COASTAL RAILROAD	\$4,280,029	\$1,070,007	\$5,350,036

Bridge (BR)					
Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2024	FALL RIVER	BRIDGE REPLACEMENT, F-02-114, JEFFERSON STREET OVER SUCKER BROOK	\$1,300,685	\$325,171	\$1,625,856
Total			\$8,300,218	\$2,075,054	\$10,375,272

Surface Transportation Block Grant Program (STBG)					
Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2022	FALL RIVER	CORRIDOR IMPROVEMENTS ON ROUTE 79/DAVOL STREET	\$21,200,000	\$5,300,000	\$26,500,000
Total			\$21,200,000	\$5,300,000	\$26,500,000

Earmark or Discretionary Grant Funded Projects					
Fiscal Year	Municipality	Project Description	Federal Funds	Non-Federal Funds	Total Funds
2021	TAUNTON	INTERCHANGE IMPROVEMENTS AT ROUTES 24 & 140, INCLUDING REPLACING T-01-045 AND T-01-046	\$67,911,818	\$16,977,954	\$84,889,772
2022	TAUNTON	INTERCHANGE IMPROVEMENTS AT ROUTES 24 & 140, INCLUDING REPLACING T-01-045 AND T-01-046	\$17,025,076	\$4,256,269	\$21,281,345
Total			\$84,936,894	\$21,234,223	\$106,171,117

Beyond 2024, projects recommended by this plan are listed in the future element of the FFY2020–2024 TIP. These projects must also be financially constrained with their projected implementation costs within the projected target for Regional Discretionary Funds in the RTP. These projects are displayed in Table 22.

In the past, Major Infrastructure Projects or High Priority Projects (HPP) focused on regionally significant roadways and bridges repairs that exceeded annual target for the TIP. One example

of a Major Infrastructure Project is the Veteran's Memorial Bridge replacing the Brightman Street Bridge over the Taunton River between Fall River and Somerset.

Beginning in FFY2015, the funding category for Mega projects was no longer available as part of the infrastructure programming. To replace this category, MassDOT developed the Capital Investment Plan (CIP) designed to address the major infrastructure needs throughout the commonwealth. The CIP is intended to make long term investments to create growth and economic opportunity that covers highway and municipal infrastructure, regional airports, and multi-modal capital investments including the MBTA and RTAs throughout the state. South Coast Rail that plans to extend commuter rail service to New Bedford and Fall River are part of the current CIP.

Studies have been completed or are underway for five major infrastructure projects within the SMMPO. These are considered regionally significant projects due in part to their estimated costs exceed at least 2 or more years of the annual target in the TIP and because these facilities are owned and maintained by MassDOT. These projects include the following:

- **Middleborough, Rotary Improvements** – Significant traffic congestion and safety issues have existing for many years at the Middleborough Circle Rotary. Anticipated economic development activities in the vicinity of the area will add to these problems. For many years Route 44 has been considered for major improvements due to both congestion and safety issues at the Rotary and along the corridor to Route 24 in Raynham. Improvements must address existing problems and take into account the tremendous development potential of land in the vicinity of the Rotary and I-495 interchange. The current improvement proposes the construction of a Flyover for Route 44 to bypass the rotary and access I-495. Ramp connections to and from the rotary will enable traffic on Route 18 and 28 to access Route 44. A design was being pursued through the town and MassDOT with an estimated cost of approximately \$83 million. In 2013, the JTPG voted to commit one year of the region's TIP target towards improvement of this facility. In 2018, interim improvements were completed to the Rotary that included striping of additional lanes, new signage, geometric improvements at the access and exit points, re-grading the road surface and lane widening. These interim improvements appear to have resolved the existing congestion issues experienced during the peak hours. However, the long-term improvements that includes the flyover may remain necessary with the forecasted development of open space in the vicinity of the rotary as well as at several locations along Route 44 towards the town of Plymouth. It remains the top priority of this plan and should be considered for inclusion with future iterations of the CIP.

Table 22: Future Projects**FFY2025 - 2029 PROJECT LIST****Estimate at Year of Expenditure**

Municipality	Project Description	2020 Cost Estimate	Proposed Year	Federal Funds	Non-Federal Funds	Total Funds
Plainville	RECONSTRUCTION OF SOUTH STREET (ROUTE 1A), FROM SHARLENE LANE TO EVERETT STREET AND RELATED WORK	\$6,400,037	2025	\$6,144,035	\$1,536,009	\$7,680,044
Middleborough	RECONSTRUCTION AND RELATED WORK ON WAREHAM STREET AND WOOD STREET	\$4,800,000	2025	\$4,608,000	\$1,152,000	\$5,760,000
Norton	INTERSECTION IMPROVEMENTS AT WEST MAIN STREET (ROUTE 123), NORTH WORCESTER STREET AND SOUTH WORCESTER STREET	\$3,121,000	2025	\$2,996,160	\$749,040	\$3,745,200
Mansfield	CORRIDOR IMPROVEMENTS AND RELATED WORK ON SCHOOL ST, FROM SPRING ST TO WEST ST	\$2,825,000	2025	\$2,712,000	\$678,000	\$3,390,000
New Bedford	INTERSECTION IMPROVEMENTS ON ACUSHNET AVENUE AT PECKHAM ROAD/SASSAQUIN AVENUE	\$1,501,200	2025	\$1,441,152	\$360,288	\$1,801,440
Dartmouth	RECONSTRUCTION & RELATED WORK OF FAUNCE CORNER ROAD, FROM OLD FALL RIVER ROAD SOUTHERLY TO THE MASSDOT OWNED RAILROAD CROSSING	\$7,311,930	2026	\$7,253,434	\$1,813,359	\$9,066,793

FFY2025 - 2029 PROJECT LIST

				Estimate at Year of Expenditure		
Lakeville	RESURFACING AND RELATED WORK ON COUNTY STREET	\$5,000,000	2026	\$4,960,000	\$1,240,000	\$6,200,000
Seekonk & Rehoboth	RESURFACING & RELATED WORK ON ROUTE 6	\$4,500,000	2026	\$4,464,000	\$1,116,000	\$5,580,000
Middleborough	RECONSTRUCTION OF ROUTE 18/28 (BEDFORD STREET) BETWEEN ROUTE 18/28/44 CIRCLE AND ROUTE 18/28/CAMPANELLI DRIVE	\$600,000	2026	\$595,200	\$148,800	\$744,000
Swansea	RESURFACING AND RELATED WORK ON ROUTE 103	\$4,600,000	2027	\$4,710,400	\$1,177,600	\$5,888,000
TOTAL				\$45,819,486	\$11,454,871	\$57,274,357

FFY2025-2029 Fiscal

Constraint Analysis

Total Federal Aid Funds

Programmed

\$57,274,357

Total

Target

\$127,472,704

Balance

\$70,198,347

FFY2030 - 2034 PROJECT LIST				Estimate at Year of Expenditure		
Municipality	Project Description	2020 Cost Estimate	Proposed Year	Federal Funds	Non-Federal Funds	Total Funds
TOTAL				\$0	\$0	\$0

FFY2025-2029 Fiscal Constraint Analysis

Total Federal Aid Funds Programmed \$0
Total Target \$156,519,970
Balance \$156,519,970

FFY2035 - 2039 PROJECT LIST				Estimate at Year of Expenditure		
Municipality	Project Description	2020 Cost Estimate	Proposed Year	Federal Funds	Non-Federal Funds	Total Funds
TOTAL				\$0	\$0	\$0

FFY2025-2029 Fiscal Constraint Analysis

Total Federal Aid Funds Programmed \$0
Total Target \$173,479,029
Balance \$173,479,029

FFY2040 PROJECT LIST				Estimate at Year of Expenditure		
Municipality	Project Description	2020 Cost Estimate	Proposed Year	Federal Funds	Non-Federal Funds	Total Funds
TOTAL				\$0	\$0	\$0

FFY2025-2029 Fiscal Constraint Analysis

Total Federal Aid Funds Programmed \$0
Total Target \$36,898,652
Balance \$36,898,652

- **Taunton, Replace or Reconstruct Route 24 / Route 140 Interchange** – This interchange continues to have significant congestion and safety issues as identified earlier in the plan. A 25% design public meeting was held in 2012 and again in 2019 to discuss the improvements to this facility. The interchange was part of the negotiations with the Wampanoag tribe who were proposing to construct a resort casino on adjacent property. It was proposed that as part of the mitigation for the casino, the tribe would also fund the improvements to the interchange. However, with the proposed casino stalled in litigation within the federal government, the development of the proposal has not been pursued any further. In 2019, MassDOT elected to pursue the improvements considering the regional significance of this interchange for mobility and economic development. In addition, MassDOT is utilizing two earmarks from congress that were dedicated for this particular interchange.
- **Taunton/Raynham, Widen Route 24 to 3 lanes between Route 140 and I-495** – This particular improvement was recommended as part of the 2007, 2012 and 2016 Regional Transportation Plans. Significant congestion occurs along the northbound segment during the AM peaks hours while the southbound segment sees similar congestion during the PM peak hours. The problem in the southbound direction is compounded with a merge from 3 travel lanes to two immediately south of the interchange with I-495. The problems are also exacerbated and subjected to additional delay with traffic crashes or other traffic incidents. It has been estimated that the implementation of the South Coast Rail will assist in the reduction of traffic demand that contributes to this problem by removing trips destined for Boston from the Route 24 traffic flow. Further study and engineering is necessary to determine the specific benefits as well as the economic and environmental feasibility to widen this corridor.
- **The Route 6 Fairhaven / New Bedford Bridge** – This swing span draw bridge as previously mentioned in the plan has been the subject of congestion, safety and an impediment to the economic development of the New Bedford harbor. A study was completed in 2015 to replace the swing span facility with three options for consideration; a vertical lift bridge, single-leaf rolling bridge or a double-leaf bascule bridge. All three (3) alternatives are estimated at a cost of \$50 to \$160 million. Considering the age of the bridge and its importance for mobility and economic development, this project should be considered for the CIP.

Transit Funding

Regional Transit Programs

The Federal Transit Administration (FTA) supplies funding to the Regional Transit Authorities GATRA and SRTA, as part of the MAP-21 legislation. Those funding categories include:

Federal Funding Programs:

Section 5307: Urbanized Area formula grants that provides funds for capital projects, planning, job access and reverse commute projects, and operating costs of equipment and facilities. Section 5307 funds will provide 80% of the cost of a capital improvement project and 50% of the cost of operating expenditures.

Section 5337: This funding is available for state of good repair projects associated with fixed guideway transit service. GATRA receives funding through this program for their maintenance of the Attleboro Intermodal Center.

Section 5339: This funding is available for bus and bus facilities and awarded to both GATRA and SRTA. The funding can be used to replace, rehabilitate, and purchase buses and related equipment, and construct bus-related facilities. Section 5339 funds provide 80% of the cost of capital projects.

State Funding Programs:

Regional Transit Authority Capital Assistance Program: This funding program is awarded by the Commonwealth of Massachusetts and is used to provide the 20% local match requirement associated with the use of federal funds.

State Contract Assistance: This funding program provides a 50% reimbursement for the total net cost of service provided by the RTAs.

Locally Generated Funds:

Local Assessments: The amount assessed to each municipality which receives transit services. Under current state law, the RTA can assess up to 50% of the total net cost of providing transit service to the municipality.

Revenue from Operations: These funds include money collected through fares at the fare box, sales of passes, advertising revenue, parking revenue, and any other source of revenue collected through normal operations.

GATRA's Funding Needs:

GATRA's fleet of one hundred fifty-eight vehicles and their replacement years are shown in Table 23.

Table 23: GATRA Vehicle Replacement Schedule

Vehicles in Active Fleet	Type	Manufacturer Year	Manufacturer	Service Life	Year to Replace	Age	Cost to Replace	Years to Replace	Deferred Need
6	Bus 30 FT	2006	GIL-Gillig Corporation	10	2016	14	\$2,250,000	-4	\$2,250,000
2	Bus 30 FT	2008	GIL-Gillig Corporation	10	2018	12	\$750,000	-2	\$750,000
3	Bus 30 FT	2015	FIL-Flyer Industries Ltd (aka New Flyer Industries)	10	2025	5	\$1,125,000	5	
2	Bus 30 FT	2015	GIL-Gillig Corporation	10	2025	5	\$750,000	5	
1	Bus Std 35 FT	2015	FIL-Flyer Industries Ltd (aka New Flyer Industries)	10	2025	5	\$375,000	5	
7	Bus 30 FT	2015	FIL-Flyer Industries Ltd (aka New Flyer Industries)	10	2025	5	\$2,625,000	5	
2	Bus Std 35 FT	2018	GIL-Gillig Corporation	10	2028	2	\$750,000	8	
4	Bus < 30 FT	2009	CMD-Chevrolet Motor Division - GMC	10	2019	11	\$1,500,000	-1	\$1,500,000
4	Bus < 30 FT	2010	CMC-Champion Motor Coach Inc.	10	2020	10	\$1,500,000	0	

Vehicles in Active Fleet	Type	Manufacturer Year	Manufacturer	Service Life	Year to Replace	Age	Cost to Replace	Years to Replace	Deferred Need
4	Bus < 30 FT	2010	GIL-Gillig Corporation	10	2020	10	\$1,500,000	0	
2	Bus < 30 FT	2012	CMC-Champion Motor Coach Inc.	10	2022	8	\$750,000	2	
2	Bus < 30 FT	2011	CMC-Champion Motor Coach Inc.	10	2021	9	\$750,000	1	
2	Bus 35 FT	2019	GIL-Gillig Corporation	10	2029	1	\$750,000	9	
3	Bus < 30 FT	2010	FRD-Ford Motor Corporation	7	2017	10	\$216,000	-3	\$216,000
1	Bus < 30 FT	2011	FRD-Ford Motor Corporation	7	2018	9	\$72,000	-2	\$72,000
6	Bus < 30 FT	2012	FRD-Ford Motor Corporation	7	2019	8	\$432,000	-1	\$432,000
11	Bus < 30 FT	2013	FRD-Ford Motor Corporation	7	2020	7	\$792,000	0	
4	Bus < 30 FT	2019	FRD-Ford Motor Corporation	7	2026	1	\$288,000	6	
10	Van	2010	FRD-Ford Motor Corporation	5	2015	10	\$630,000	-5	\$630,000
2	Van	2011	FRD-Ford Motor Corporation	5	2016	9	\$126,000	-4	\$126,000
7	Van	2012	FRD-Ford Motor Corporation	5	2017	8	\$441,000	-3	\$441,000
6	Van	2013	FRD-Ford Motor Corporation	5	2018	7	\$378,000	-2	\$378,000
12	Van	2014	FRD-Ford Motor Corporation	5	2019	6	\$756,000	-1	\$756,000
1	Van	2015	FRD-Ford Motor Corporation	5	2020	5	\$63,000	0	
22	Van	2016	FRD-Ford Motor Corporation	5	2021	4	\$1,386,000	1	

Vehicles in Active Fleet	Type	Manufacturer Year	Manufacturer	Service Life	Year to Replace	Age	Cost to Replace	Years to Replace	Deferred Need
13	Van	2017	FRD-Ford Motor Corporation	5	2022	3	\$819,000	2	
11	Van	2018	FRD-Ford Motor Corporation	5	2023	2	\$693,000	3	
8	Van	2019	FRD-Ford Motor Corporation	5	2024	1	\$504,000	4	
158							\$22,971,000		\$7,551,000

Table 24 displays GATRA’s funding estimates, funding needs and unfunded needs through 2040. Funding estimates assume that annual funding provided by state and federal sources will increase between 2.08% and 3.83% annually, along with fare box revenues at 1.5% annually; local assessments are assumed to remain level funded through 2040.

Table 24: GATRA Funding Estimates FFY 2015 – FFY 2040

Federal Fiscal Year	Federal Urbanized Area Formula Section 5307	Federal State of Good Repair Formula Section 5337	Federal Bus and Bus Facilities Formula Section 5339	Local Funds (Assessments and Revenue from Operations)	Total Annual Funding (State, Federal, and Local)
FFY2020	\$3,380,411	\$1,141,481	\$282,845	\$5,504,646	\$10,309,383
FFY2021	\$3,450,724	\$1,161,114	\$293,678	\$5,520,396	\$10,425,912
FFY2022	\$3,522,449	\$1,181,085	\$304,926	\$5,536,383	\$10,544,843
FFY2023	\$3,595,767	\$1,201,400	\$316,604	\$5,552,609	\$10,666,380
FFY2024	\$3,670,559	\$1,222,064	\$328,730	\$5,569,078	\$10,790,431
FFY2025	\$3,746,906	\$1,243,083	\$341,321	\$5,585,795	\$10,917,105
FFY2026	\$3,824,842	\$1,264,464	\$354,393	\$5,602,762	\$11,046,461
FFY2027	\$3,904,399	\$1,286,213	\$367,966	\$5,619,984	\$11,178,562
FFY2028	\$3,985,610	\$1,308,336	\$382,060	\$5,637,464	\$11,313,470
FFY2029	\$4,068,511	\$1,330,839	\$396,692	\$5,655,206	\$11,451,248
FFY2030	\$4,153,136	\$1,353,730	\$411,886	\$5,673,214	\$11,591,966
FFY2031	\$4,239,521	\$1,377,014	\$427,661	\$5,691,493	\$11,735,689
FFY2032	\$4,327,703	\$1,400,699	\$444,040	\$5,710,045	\$11,882,487
FFY2033	\$4,417,719	\$1,424,791	\$461,047	\$5,728,876	\$12,032,433
FFY2034	\$4,509,608	\$1,449,297	\$478,705	\$5,747,990	\$12,185,600
FFY2035	\$4,603,408	\$1,474,225	\$497,040	\$5,767,390	\$12,342,063

Federal Fiscal Year	Federal Urbanized Area Formula Section 5307	Federal State of Good Repair Formula Section 5337	Federal Bus and Bus Facilities Formula Section 5339	Local Funds (Assessments and Revenue from Operations)	Total Annual Funding (State, Federal, and Local)
FFY2036	\$4,699,159	\$1,499,582	\$516,076	\$5,787,081	\$12,501,898
FFY2037	\$4,796,901	\$1,525,375	\$535,842	\$5,807,068	\$12,665,186
FFY2038	\$4,896,677	\$1,551,611	\$556,365	\$5,827,354	\$12,832,007
FFY2039	\$4,998,528	\$1,578,299	\$577,674	\$5,847,945	\$13,002,446
FFY2040	\$5,102,497	\$1,605,445	\$599,799	\$5,868,844	\$13,176,585
Total	\$87,895,035	\$28,580,147	\$8,875,350	\$119,241,622	\$244,592,154

Funded Needs

Operating & Maintenance Expenses	\$221,621,154
Bus Replacements	\$22,971,000
Total Funding Needed through 2040	\$244,592,154

Unfunded Needs

Operating & Maintenance Expenses	\$216,378,846
Other Capital Needs	\$20,800,000
Total Unfunded Needs Through 2040	\$237,178,846

SRTA's Funding Needs:

SRTA's fleet of ninety -eight revenue vehicles and their replacement years are shown in Table 25.

Table 25: SRTA Vehicle Replacement Schedule

Vehicles in Active Fleet	Model Year	Manufacturer	Model	Service Life	Year to Replace	Cost to Replace	Years to Replace	Deferred Need
6	2012	Ford	E350	5	2017	\$364,602	-3	\$364,602
3	2012	Ford	E450	7	2019	\$182,301	-1	\$182,301
2	2013	Ford	E350	5	2018	\$121,534	-2	\$121,534
5	2014	Ford	E350	5	2019	\$303,835	-1	\$303,835
2	2014	Ford	E450	7	2021	\$121,534	1	
3	2016	Ford	E350	5	2021	\$182,301	1	

Vehicles in Active Fleet	Model Year	Manufacturer	Model	Service Life	Year to Replace	Cost to Replace	Years to Replace	Deferred Need
7	2016	Ford	E450	7	2023	\$425,369	3	
2	2017	Ford	E350	5	2022	\$121,534	2	
1	2018	Ford	E350	5	2023	\$60,767	3	
1	1995	Transportation Manufacturing Company (TMC - RTS)	Transbus	12	2007	\$453,000	-13	\$453,000
2	1998	Transportation Manufacturing Company (TMC - RTS)	Transbus	12	2010	\$906,000	-10	\$906,000
7	2008	Gillig	Transbus	12	2020	\$3,171,000	0	
2	2008	Gillig	Transbus - Hybrid	12	2020	\$906,000	0	
10	2009	Gillig	Transbus	12	2021	\$4,530,000	1	
12	2010	Gillig	Transbus	12	2022	\$5,436,000	2	
9	2012	Gillig	Transbus	12	2024	\$4,077,000	4	
8	2013	Gillig	Transbus	12	2025	\$3,624,000	5	
11	2016	Gillig	Transbus	12	2028	\$4,983,000	8	
5	2018	Gillig	Transbus	12	2030	\$2,265,000	10	
98						\$32,234,777		\$2,331,272

In addition to the vehicle replacement schedule, SRTA has identified the need to replace the Fall River maintenance facility and estimates the cost at \$30 million. SRTA is also currently undergoing a feasibility study for constructing a new terminal in New Bedford. The estimated cost for the new terminal is \$27 million.

Table 26 displays SRTA's funding estimates, funding needs and unfunded needs through 2040. Funding estimates assume that annual funding provided by state and federal sources will increase between 2.08% and 3.83% annually, along with fare box revenues at 1.5% annually; local assessments are assumed to remain level funded through 2040.

Table 26: SRTA Funding Estimates FFY2015 - FFY2040

Federal Fiscal Year	Federal Urbanized Area Formula Section 5307	Federal Bus and Bus Facilities Formula Section 5339	Local Funds (Assessments and Revenue from Operations)	Total Annual Funding (State, Federal, and Local)
FFY2020	\$7,563,040	\$174,192	\$5,994,477	\$13,731,709
FFY2021	\$7,720,351	\$180,863	\$6,054,422	\$13,955,636
FFY2022	\$7,880,934	\$187,791	\$6,114,966	\$14,183,691
FFY2023	\$8,044,858	\$194,983	\$6,176,116	\$14,415,957
FFY2024	\$8,212,191	\$202,451	\$6,237,877	\$14,652,519
FFY2025	\$8,383,004	\$210,205	\$6,300,256	\$14,893,465
FFY2026	\$8,557,371	\$218,255	\$6,363,258	\$15,138,884
FFY2027	\$8,735,364	\$226,615	\$6,426,891	\$15,388,870
FFY2028	\$8,917,059	\$235,294	\$6,491,160	\$15,643,513
FFY2029	\$9,102,534	\$244,306	\$6,556,071	\$15,902,911
FFY2030	\$9,291,867	\$253,663	\$6,621,632	\$16,167,162
FFY2031	\$9,485,138	\$263,378	\$6,687,848	\$16,436,364
FFY2032	\$9,682,429	\$273,465	\$6,754,727	\$16,710,621
FFY2033	\$9,883,823	\$283,939	\$6,822,274	\$16,990,036
FFY2034	\$10,089,407	\$294,814	\$6,890,497	\$17,274,718
FFY2035	\$10,299,266	\$306,105	\$6,959,402	\$17,564,773
FFY2036	\$10,513,491	\$317,829	\$7,028,996	\$17,860,316
FFY2037	\$10,732,172	\$330,002	\$7,099,286	\$18,161,460
FFY2038	\$10,955,401	\$342,641	\$7,170,279	\$18,468,321
FFY2039	\$11,183,273	\$355,764	\$7,241,981	\$18,781,018
FFY2040	\$11,415,885	\$369,390	\$7,314,401	\$19,099,676
Total	\$196,648,858	\$5,465,945	\$139,306,814	\$341,421,617

Funded Needs

Operating & Maintenance Expenses	\$309,186,840
Bus Replacements	\$32,234,777
Total Funding Needed through 2040	\$341,421,617

Unfunded Needs

Operating & Maintenance Expenses	\$253,011,056
New Bedford Terminal Relocation	\$27,000,000
Fall River Maintenance Facility Relocation	\$30,000,000
Other Capital Needs	\$51,114,255
Total Unfunded Needs Through 2040	\$361,125,311