

# **Merrimack Valley Metropolitan Planning Organization**

## **Federal Fiscal Years 2017 to 2021**

## **Transportation Improvement Program**

### **Final Report**

### **August 2016**

### **Prepared by the Merrimack Valley Planning Commission**



This document was prepared by the Merrimack Valley Planning Commission under Contracts #75074, #MA-80-009 and #MA-80-010 with MassDOT and with the assistance of the Merrimack Valley Regional Transit Authority, MassDOT, the Federal Highway Administration and the Federal Transit Administration.

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## Table of Contents

Endorsement Page for Federal TIP - Signatures .....	1
Self Certification Compliance .....	3
Statement - Signatures .....	3
310 CMR 60.05: Global Warming Solutions Act – Signatures .....	5
Part A. Introduction .....	7
Part A. 1. TIP Development Process.....	7
Part A. 2. Prioritization .....	10
Part A. 3. Public Participation.....	11
Public Participation Plan Stakeholder List.....	11
Part A. 4. Amendment/Adjustment Procedures.....	14
Part A. 5. High Priority Projects.....	15
Part A. 6. Advance Construction .....	17
Part A. 7. Transportation Funding Programs.....	18
Highway Projects .....	18
Transit Projects.....	20
Organization of Project Listings – Highway Projects.....	21
Organization of Project Listings – Transit Projects .....	23
Part B. Project Listings.....	25
Highway Projects .....	25
Transit Projects.....	47
Summary of Highway Project Listings by Town .....	53
Summary of Highway Projects by Town (Regional Target Funds).....	54
Summary of Programmed Funds by Town (Regional Target Funds).....	55
Part C. Federal Requirements .....	57
Part C.1. Highway Program Financial Plan .....	58
Title 23 and Regional Target Funding FFYs 2017 to 2021 .....	59
Highway Program Financial Plan Table .....	74
Summary of Highway Funding Categories.....	75
MassDOT Estimated Highway Operating and Maintenance Expenditures FFY 2017 to 2021 .....	80
Part C. 2. Transit Program Financial Plan.....	113
Transit Program Financial Plan Table.....	114
Summary of Transit Funding Categories .....	115
MVRTA Transit Operations and Maintenance Summary Table .....	120
Part C. 3. Status on Implementation of FFY 2016 TIP Projects .....	123
FFY 2016 Highway Project List.....	123

Part C. 3. Status on Implementation of FFY 2016 TIP Projects .....	124
FFY 2016 Transit Project List .....	125
Part C. 4. Air Quality Conformity .....	131
Part C. 5. Special Efforts - ADA .....	144
Part C. 6. Title VI Notice to Beneficiaries .....	144
Part C. 7. Environmental Justice .....	145
Part C. 8. Equity Analysis.....	149
Page intentionally left blank. ....	152
Appendices .....	153
Appendix A Other Regional Priority Bridge Projects .....	154
Appendix B Other Regional Priority Roadway Projects .....	156
Appendix C Transportation Evaluation Criteria Summary .....	159
Appendix D Sample Project Evaluation Worksheet.....	167
Appendix E Greenhouse Gas (GHG) Monitoring and Evaluation.....	173
FFYs 2017 to 2021 Projects GHG Tracking Summary .....	179
Appendix F List of Completed Highway and Transit Projects.....	223
Appendix G Projects from MVRTA Capital Program FFYs 2017 - 2021 .....	227
Appendix H Key to Maps Showing Locations of Transportation Projects.....	257
Appendix I List of Acronyms.....	261
Appendix J Comments received on Draft FFY 2017-2021 TIP .....	267



## Endorsement Page for Federal TIP - Signatures



### Merrimack Valley Metropolitan Planning Organization Endorsement of the FFYs 2017-2021 Transportation Improvement Program

Whereas, the Merrimack Valley MPO has completed its review in accordance with Section 176(c) (4) of the Clean Air Act as amended in 1990 [42 U.S.C. 7251 (a)], and hereby certifies that the FFYs 2017-2021 TIP is financially constrained and that the implementation of the Merrimack Valley Metropolitan Planning Organization 2016 Regional Transportation Plan satisfies the conformity criteria specified in both 40 CFR Part 51 and 93 (8/15/1997) and 310 CMR 60.03 (12/30/1994).

Therefore, in accordance with 23 CFR Part 450 Section 322 (Development and content of the Metropolitan Transportation Plan) of the March 16, 2007 Final Rules for Statewide and Metropolitan Planning, the MPO hereby endorses the FFYs 2017-2021 Transportation Improvement Program.

**Signatory Certification:**

**Date: August 1, 2016**

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Stephanie Pollack  
Secretary/  
CEO Mass DOT

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Joseph Costanzo  
Administrator  
MVRTA Advisory Board

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James Fiorentini  
Mayor of Haverhill

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Thomas Tinlin  
MassDOT Highway  
Division Administrator

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William Buckley  
City of Methuen

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Daniel Rivera  
Mayor of Lawrence

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David Surface  
Town of Georgetown

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Neil Harrington  
Town of Salisbury

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Robert Snow  
Town of Rowley

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Dennis DiZoglio  
MVPC Director

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**Self Certification Compliance  
Statement - Signatures**

**Merrimack Valley Metropolitan  
Planning Organization**

Concurrent with the submittal of the proposed TIP to the FHWA and the FTA, the MPO Policy Board shall certify that the metropolitan transportation planning process is being carried out in accordance with all applicable requirements including:

1. 23 U.S.C. 134, 49 U.S.C. 5303, and this subpart;
2. In nonattainment and maintenance areas, sections 174 and 176 (c) and (d) of the Clean Air Act, as amended (42 U.S.C. 7504, 7506 (c) and (d)) and 40 CFR part 93;
3. Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d-1) and 49 CFR part 21;
4. 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity;
5. Section 1101 (b) of the SAFETEA-LU (Pub. L. 109-59) and 49 CFR part 26 regarding the involvement of disadvantaged business enterprises in USDOT funded projects;
6. 23 CFR 230, regarding the implementation of an Equal Employment Opportunity Program on Federal and Federal-aid Highway construction contracts;
7. The provisions of the American with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and 49 CFR parts 27, 37, and 38;
8. The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance;
9. Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender;
10. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities;
11. Anti-lobbying restrictions found in 49 USC Part 20. No appropriated funds may be expended by a recipient to influence or attempt to influence an officer or employee of any agency, a Member of Congress, in connection with the awarding of any Federal contract.

**Signatory Certification:**

**Date: August 1, 2016**

<hr/> Stephanie Pollack Secretary/ CEO Mass DOT	<hr/> Joseph Costanzo Administrator MVRTA Advisory Board	<hr/> James Fiorentini Mayor of Haverhill
<hr/> Thomas Tinlin MassDOT Highway Division Administrator	<hr/> William Buckley City of Methuen	<hr/> Daniel Rivera Mayor of Lawrence
<hr/> David Surface Town of Georgetown	<hr/> Neil Harrington Town of Salisbury	<hr/> Robert Snow Town of Rowley
<hr/> Dennis DiZoglio, MVPC Director		

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**310 CMR 60.05: Global Warming Solutions Act – Signatures**

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

*Self – Certification Compliance Statement for Metropolitan Planning Organizations*

This will certify that the FFYs 2017-2021 Transportation Improvement Program for the Merrimack Valley Metropolitan Planning Organization 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 the Metropolitan Planning Organizations (MPOs) to:

1. 310 CMR 60.05, 3(b)(1)(a): Evaluate and track the GHG emissions and impacts of RTPs and TIPs;
2. 310 CMR 60.05, 3(b)(1)(b): In consultation with MassDOT, develop and utilize procedures to prioritize and select projects in RTPs, TIPs, and STIPs based on factors that include GHG emissions and impacts;
3. 310 CMR 60.05, 3(b)(1)(c): Quantify net GHG emissions and impacts resulting from projects in RTPs and TIPs and have made efforts to minimize GHG emissions and impacts;
4. 310 CMR 60.05, 3(b)(1)(d): Determine in consultation with MassDOT that the appropriate planning assumptions used for 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, 4(a)(2)(e): Develop public consultation procedures for GHG reporting and related GWSA requirements consistent with current and approved regional public participation plans;
6. 310 CMR 60.05, 4(c): Prior to making final endorsements on the RTPs, TIPs, STIPs, and projects included in these plans, MassDOT and the MPOs shall include the GHG Assessment and information on related GWSA activities in RTPs and TIPs and provide an opportunity for public review and comment on the RTPs, and TIPs.
7. 310 CMR 60.05, 6(a): After a final GHG assessment has been made by MassDOT and the MPOs, MassDOT and the MPOs shall submit MPO-endorsed RTPs and TIPs within 30 days of endorsement to the Department for review of the GHG assessment.

**Signatory Certification:**

**Date: August 1, 2016**

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Stephanie Pollack  
Secretary/CEO Mass DOT

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Joseph Costanzo, Administrator  
MVRTA Advisory Board

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Mayor of Haverhill

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Town of Salisbury

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Robert Snow  
Town of Rowley

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Dennis DiZoglio  
MVPC Director

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# **Merrimack Valley Metropolitan Planning Organization FFYs 2017-2021 Transportation Improvement Program Final Report prepared August 2016**

## **Part A. Introduction**

### **Part A. 1. TIP Development Process**

Federal transportation authorization legislation establishes funding categories for transportation projects that may be eligible for Federal funding and sets maximum funding levels per category for each year of the legislation. Projects in this TIP are planned to be primarily funded through the federal transportation act titled “Fixing America’s Surface Transportation Act (FAST Act)” that was signed into law December 4, 2015. The FAST Act funds \$305 billion dollars for transportation for Federal Fiscal Years (FFYs) 2016 through 2020.

The previous legislation “Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21)” established planning factors known as the “MAP-21 eight planning factors”. The FAST Act adds two new planning factors (numbers 9 and 10 in the list that follows), the FAST Act stipulates that the metropolitan planning process...

“ provide for consideration of projects and strategies that will-

- A) support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
- B) increase the safety of the transportation system for motorized and non-motorized users;
- C) increase the security of the transportation system for motorized and non-motorized users;
- D) increase the accessibility and mobility of people and for freight;
- E) 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;
- F) enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- G) promote efficient system management and operation;
- H) emphasize the preservation of the existing transportation system;

- I) improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- J) enhance travel and tourism.”

It is the responsibility of the Federal mandated, State designated, regional Metropolitan Planning Organizations (MPOs) to carry out the Federal transportation planning process in their respective urbanized areas and prepare many Federal transportation documents, including the Transportation Improvement Program (TIP). This process, and the MPOs themselves, were established with the intention to include local and regional input into the Federal transportation planning process.

Based on Federal regulations any transportation project funded through the Federal Highway Administration (FHWA), or the Federal Transit Administration (FTA) must be listed in the appropriate region's Transportation Improvement Program (TIP). MassDOT combines the 13 regional MPO TIPs with statewide projects to produce the Statewide TIP (STIP) from which Federal-aid highway and transit projects are chosen. Without such a listing, Federal Highway funds cannot be expended by the Massachusetts Department of Transportation (MassDOT) on local or State projects. Similarly, the Merrimack Valley Regional Transit Authority (MVRTA) can only receive federal funds for projects listed in the TIP and STIP.

**Merrimack Valley Metropolitan Planning Organization (MVMPO)**

The MVMPO was first created by the Governor of Massachusetts in 1972. The MVMPO covers the same 15-community geographic area that defines the MVPC region and the MVRTA service area. The current MVMPO membership is as follows:

- Secretary of MassDOT –Stephanie Pollack
- MassDOT Highway Division Administrator –Thomas Tinlin
- Merrimack Valley Planning Commission (MVPC) Director –Dennis DiZoglio
- Administrator Merrimack Valley Regional Transit Authority Advisory Board –Joseph Costanzo
- Mayor of Haverhill –James Fiorentini
- Mayor of Lawrence –Daniel Rivera
- Representing Region 1 (Amesbury, Newburyport, Salisbury) –Neil Harrington
- Representing Region 2 (Newbury, Rowley, West Newbury) –Robert Snow
- Representing Region 3 (Boxford, Georgetown, Groveland, Merrimac) –David Surface
- Representing Region 4 (Andover, Methuen, North Andover) –William Buckley



Ex officio, non-voting members of the MVMPO include:

- Federal Highway Administration –Massachusetts Division –Jeff M<sup>c</sup>Ewen
- Federal Transit Administration – Region I – Mary Beth Mello
- Rockingham Planning Commission MPO (NH), Chairman RPC –Phil Wilson
- Boston MPO, President MAPC –Keith Bergman
- Northern Middlesex MPO, Chairman NMCOG –Philippe Thibault
- Nashua MPO (NH), Chairman NRCP –David Hennessey

The TIP has been prepared in accordance with 23 CFR 450.324.

The development of the TIP starts with the Regional Transportation Plan (RTP). The MVMPO's RTP is a twenty-five year plan for transportation projects that can be programmed for implementation with Federal funds. The RTP is fiscally constrained and lists potential future projects in five year blocks. Projects were chosen for the RTP based on MAP-21 transportation planning factors, existing roadway conditions, problems identified through ongoing pavement, congestion, and safety analyses conducted by the MVMPO, local and state project priorities and fiscal factors. Each year, the MVMPO programs projects from the RTP that are 'ready-to-go' into its five-year Transportation Improvement Program (TIP). Only those projects that are specifically identified in the RTP, or are consistent with its recommendations, can be programmed in the TIP.

Only projects from the RTP first two banks of years (i.e., 2016 to 2020 and 2021 to 2025) are programmed in the TIP. Projects that appear in the TIP were initiated and selected from a number of sources. Bridge projects have been selected and developed by MassDOT's Bridge section largely based upon the results of their ongoing bridge maintenance program. The Department has made it a priority to develop projects that would correct problems in "Structurally Deficient" (SD) bridges. The region's Congestion Management Process is used to identify intersections and roadways where significant congestion exists, and measures the levels of congestion at these locations. This information has been used by local communities to develop roadway projects that are programmed in the TIP. Similarly, locations identified as having safety problems in the region's Safety Monitoring System, or identified as a "crash cluster" by MassDOT, are used by the Department and local communities to develop TIP projects.

## **Part A. 2. Prioritization**

The FFYs 2017-2021 Merrimack Valley Metropolitan Planning Organization's Transportation Improvement Program (TIP) contains Federal-aid project programming information for five years. For each year, gross estimates of project costs are listed in the federal fiscal year of the proposed advertise date. Federal fiscal years begin on October 1 and run through September 30. For example, FFY 2017 begins on October 1, 2016 and ends on September 30, 2017. The advertising dates shown for roadway projects were determined based on information provided by the Capital Expenditure and Program Office within MassDOT, the MassDOT District 4 Office, and MVMPO member communities. The MVRTA and MassDOT's Rail and Transit Division determined programming dates for transit projects.

Projects are programmed in the region's TIP based on a number of factors. These include the project's score based upon the MPO's Transportation Evaluation Criteria (TEC), project cost and the availability of STP, CMAQ, HSIP and TAP funding in the years covered in the document. Road and bridge project selection is also largely dependent upon the current and expected design status for each project, which can be affected by such factors as environmental permitting and Right-of-Way (ROW) status. For bridge projects, information from MassDOT's Bridge section is also given primary consideration when scheduling projects.

### **Transportation Evaluation Criteria**

In 2003, the MPOs worked with the then Massachusetts Executive Office of Transportation and Public Works (EOTPW) to develop objective evaluation criteria that could be applied to transportation projects in the Commonwealth. Early in 2004, EOTPW asked planning staff from the then MassHighway Planning, the MassHighway district offices and the regional planning agencies to apply these criteria to projects within their respective Metropolitan Planning Organizations (MPOs). Application of these criteria include not only an evaluation of the magnitude of improvement in the condition, mobility, and safety of transportation projects, but also an evaluation of their community effects and support, the land use and economic development impact, and the environmental effects. A score valued from -3 to 3 is assigned to each of the criteria. In fact, there is at least one score associated with each of the FAST Act ten planning factors.

The resulting Transportation Evaluation Criteria (TEC) scores for selected projects in the Merrimack Valley region that were derived by applying these criteria are shown in Appendix C and also in the 'Additional Information' column in the project listings. It is the goal of the MVMPO that these criteria ratings, along with information related to the readiness of projects, will make the planning process, and more specifically, the selection and

prioritization of projects, more transparent to the general public. A sample project evaluation sheet showing the various criteria is in Appendix D.

The use of these TEC scores also allows the Merrimack Valley MPO to meet FAST Act requirements for programming Transportation Alternatives (TA) funding (similar to TAP funding from the previous legislation). TA funding is a set-aside of Surface Transportation Block Grant Programming (STBG) through a competitive process and, in general, helps to manage performance by focusing available funding on the highest regional priorities. It also helps to draw attention to the reader that FAST Act is a very Performance Measure-oriented piece of legislation.

### **Part A. 3. Public Participation**

The principal objective of this document is the provision of an additional point for public access to and review of the transportation planning process. This FFYs 2017-2021 Transportation Improvement Program was developed in accordance with the Public Participation Process established for the Merrimack Valley Metropolitan Planning Organization (MVMPO). The MVMPO adopted its current Public Involvement Process in March of 2016, it is contained in the [MVMPO Public Participation Plan 2016](#). The Process applies to the development of the Transportation Improvement Program (TIP), the Regional Transportation Plan (RTP) and the Unified Planning Work Program (UPWP). The Public Involvement Process endorsed by the MVMPO is also used by the MVRTA as its public involvement process. The notice of public involvement and time established for review and comment for the development of this TIP satisfies the Program of Project requirements established by the Federal Transit Administration (FTA).

The Merrimack Valley MPO's 2016 Public Participation Plan, as amended, reflects the consultation requirements of SAFETEA-LU (23 CFR 450.316(3)(b) for the development of Regional Transportation Plans and Transportation Improvement Programs. This document identifies a number of new stakeholders to be consulted in developing these documents. In developing the Draft FFYs 2017-2021 Transportation Improvement Program, all MVMPO stakeholders were given notice that the process of developing the FFYs 2017-2021 TIP was beginning. Stakeholders were also notified of the availability of the document for public review and comment.

#### **Public Participation Plan Stakeholder List**

Listed below are categories of interested individuals, organizations and other stakeholders (Interested Parties) identified by the MVMPO for inclusion in the PPP. They are defined based on the individual groups identified in MAP-21 and the existing transportation planning

regulations developed by the U.S. Department of Transportation. The MVMPO continues to add individuals, organizations or other stakeholders to this list and their addition is not considered an act requiring the formal amendment of the PPP. Similarly, any of the individuals or organizations identified below may request to be removed from the mailing list and such action does not necessitate a formal PPP amendment.

The MVMPO conducts outreach to agencies and individuals including, but not limited to, those identified below:

**Citizens, including:**

- Interested Citizens
- Merrimack Valley Transportation Committee (MVTC)
- City/Town Clerks
- MVMPO Region Congressional Delegation
- MVMPO Region Legislative Delegation

**Affected public agencies, including:**

- Boards of Selectmen / City Councils
- Chief Elected Officials
- City and Town Engineers
- Federal Emergency Management Agency
- Federal Highway Administration
- Federal Transit Administration
- Greater Derry-Salem Cooperative Alliance for Regional Transportation (CART)
- Local Departments of Public Works
- Local Police Departments
- Local Traffic and Safety Committees
- MassRIDES
- Massachusetts Department of Environmental Protection
- MBTA Commuter Rail Officials
- Massachusetts Executive Office of Housing and Economic Development
- Massachusetts Executive Office of Public Safety and Security
- MassDOT
- Merrimack Valley Regional Transit Authority
- Metropolitan Area Planning Council
- Nashua Regional Planning Commission
- Rockingham Planning Commission
- U.S. Environmental Protection Agency

**Representatives of public transportation employees, including:**

- Truck Driver's Union Local #170

**Freight shippers, including:**

- P.J. Murphy Transportation
- JB Hunt
- Estes Express
- Shaheen Brothers
- ABF Freight
- PanAm Railways
- Bonney's Express

**Providers of freight transportation services, including:**

- United Parcel Service
- Federal Express

**Private profit and non-profit providers of transportation in the region, including:**

- Assist Incorporated
- C&J Transportation
- Cape Ann Transit Authority (CATA)
- Central Wheelchair and Van Transportation
- EMT Corporation
- Local Taxi Companies
- Northern Essex Elder Transportation (NEET)
- Other Transportation Providers Identified in the Regional Transportation Plan
- The Coach Company
- TransCare

The notices were sent directly to more than 1,000 addressees representing these groups, 750 via e-mail and 325 via traditional mail.

In addition to these direct mailings, and in accordance with this process, public notice of the Draft FFYs 2017-2021 Transportation Improvement Program was published in the *Lawrence Eagle Tribune*, *Newburyport Daily News*, *Haverhill Gazette* (Published Weekly) and *Rumbo News* informing the public of its right to comment on the document which would be available at the MVPC office, the MVPC website and local libraries from June 30, 2016 through July 29, 2016. It said that comments would be received through July 29, 2016 and that two separate public hearings on the document would take place on July 13, 2016 at 1:00 PM and at 6:00 PM at the MVPC office at 160 Main Street in Haverhill, MA. The MVMPO will

summarize comments that are received during the 30-day review and comment period and will include this summary in the Final FFYs 2017-2021 TIP.

Public input in developing the TIP was sought at the following meetings in 2016:

- January 27, 2016, March 30, 2016 and June 20, 2016 MVMPO Meetings;
- April 7, 2016, May 5, 2016 and June 2, 2016 MVRTA Advisory Board Meetings;
- April 21, 2016 and May 19, 2016 Merrimack Valley Planning Commission Meetings;
- May 19, 2016 Merrimack Valley Transportation Committee Meeting;
- May 4, 2016 DPW Directors Meeting;
- And July 13, 2016 Public Hearings (2).

The above meetings were held at the Merrimack Valley Planning Commission with the exception of the MVRTA Advisory Board meetings, which were held at the MVRTA Offices.

#### **Part A. 4. Amendment/Adjustment Procedures**

The following amendment/adjustment procedures are hereby adopted to consist of the following:

Minor adjustments to the TIP do not require formal MPO action and can be made via the administrative action of the Merrimack Valley MPO. These minor adjustments are limited to:

- .Moving a project from Fiscal Year 2 to Fiscal Year 1 (Annual Element);
- .Moving a project from Fiscal Year 2 or later to a later Fiscal Year;
- .Changing the scope and description of a project as long as they are minor changes;
- .Changing funding amounts that are less than a ten percent increase in project cost;
- .Changing funding sources.

Major changes continue to require MPO action through the formal amendment process. Major changes would require a thirty day public review and comment period that includes a public hearing. These changes include, but are not limited to:

- .Advancement of other than a Fiscal Year 2 project;
- .Ten percent or more increases in the construction cost estimate for a Fiscal Year 1 project;
- .Adding a new project.

## Part A. 5. High Priority Projects

SAFETEA-LU, contained a number of earmarked transportation projects that were to receive federal funding. Specific funding amounts were obligated to each of these projects, but no additional funding was included in SAFETEA-LU to complete them. Consequently, states with these projects must implement them within the annual federal authorization limits established in the legislation. The Merrimack Valley region contains eleven such projects which are shown below along with their status:

<b><u>Highway High Priority Projects</u></b>	<b><u>Status</u></b>
Amesbury/Newburyport – Rehabilitation of I-95 Whittier Bridge	Under Construction
Andover – Design, Engineering and Construction at I-93 The Junction Interchange, (Andover, Tewksbury, and Wilmington)	Draft EIR/EIS Being Developed
Haverhill – Construct Haverhill intermodal center access and vehicle capacity improvements.	Project Complete
Lawrence – Design and construct Canal and Union Street Corridor improvements.	Project Complete
Lawrence – Construct access improvements to the Lawrence Gateway Project.	Project Complete
Methuen – Design, engineering and construction of Methuen Rotary alternative at I-93 and Routes 110 and 113.	Under Construction
Newbury – Rehabilitation and paving of Parker River Road	Project Complete
North Andover – Improvements to Mass. Ave., Andover St., Osgood St., Salem St and Johnson St. in the Old Town Center of North Andover	Project Complete
Parker River National Wildlife Refuge – Preliminary engineering for Rehabilitation and paving of Sunset Drive in National Wildlife Refuge	Project Complete
Salisbury to Boxford – Design, Engineer, Permit and Construct “Border to Boston Bikeway” rail trail project	Project Under Design

<b><u>Transit Projects for Bus and Bus-Related Facilities and Clean Fuels Grant Program</u></b>	<b><u>Status</u></b>
Haverhill – Design and Construct Intermodal Transit Parking Improvements.	Project Complete (see above)
Lawrence – Gateway Intermodal and Quadrant Area Reuse Project.	Project Complete (see above)
Newburyport – Design and Construct Intermodal Facility	Project Under Design



## Part A. 6. Advance Construction

Advance Construction is a Federal-aid fund management tool, which as described by the Federal Highway Administration website:

“...allows states to begin a project even in the absence of sufficient Federal-aid obligation authority to cover the Federal share of project costs. It is codified in Title 23, Section 115. Advance construction eliminates the need to set aside full obligational authority before starting projects...At some future date when the state does have sufficient obligational authority, it may convert an advance-constructed project to a Federal-aid project by obligating the permissible share of its Federal-aid funds and receiving subsequent reimbursements.”

In other words, the state pays for the project with non-Federal-aid funds to begin with and can later seek reimbursement of the Federal share of the funding category’s project cost by obligating Federal-aid funding in future years.

Projects must meet the following criteria before they can be designated to use the Advanced Construction (AC) funding mechanism:

1. The project’s estimated Federal participating cost exceeds the **total** regional annual target (i.e. sum of HSIP, CMAQ, TA and Non HSIP/CMAQ/TA), and
2. Construction, based on an engineering review of the project, will take place during all the years for which federal funding is programmed.

The following projects are programmed in the FFY 2017-2021 TIP using this Advance Construction (AC) method:

Amesbury – Reconstruction of Elm Street  
Haverhill – Substructure Replacement, H-12-039, I-495 (NB & SB) over Merrimack River  
North Andover- Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop Driveway

## **Part A. 7. Transportation Funding Programs**

Projects listed in the TIP must show the sources of funding that will be used to complete the project. The projects in the FFYs 2017 -2021 TIP are slated to use funding from the following Federal-aid funding programs identified in the FAST Act federal transportation funding authorization. Please note that in some cases Federal-aid funding is from older funding programs established in earlier legislation such as SAFETEA-LU and MAP-21. Projects may also receive non-Federal Aid funding which is shown in the project listings.

### **Highway Projects**

Bridge Replacement and Rehabilitation ((BR) (continued in FAST Act)) - funds replacement and repair of Structurally Deficient or unsafe bridges in urban and rural areas on any public road. Bridges can be on the federal aid system (BR ON) or off system (BR OFF).

Funding: Federal - 80%, State - 20%

Congestion Mitigation and Air Quality Improvement Program ((CMAQ) (continued in FAST Act)) – funds projects that reduce congestion and improve air quality.

Funding: Federal - 80%, State - 20%

High Priority Projects (HPP) (Carryover from SAFETEA-LU) – funds up to 80% of the costs of specific transportation projects identified in SAFETEA-LU. These projects have a separate allocation, but do not receive additional funds, and are therefore subject to the state’s federal authorization limit.

Funding: Federal- 80%, State – 20%

Highway Safety Improvement Program ((HSIP) (continued in FAST Act)) - funds safety improvement projects at high crash locations and Railway-Highway Crossings.

Funding: Federal - 90%, State – 10%

National Highway Performance Program (NHPP) (continued in FAST Act) - funds projects on all National Highway System Roadways.

Funding: Varies, generally Federal - 80%, State – 20%, but for the Interstate System, Federal - 90%, State – 10%

Non-Federal Aid (NFA) - funds construction, reconstruction, and improvement projects on roads and bridges in urban and rural areas.

Funding: State - 100% (Transportation Bond Bill), or Private - 100%

## **Transportation Funding Programs - Highway Projects (Continued)**

STP Enhancements ((STP E) ((SAFETEA-LU; not continued in MAP-21)) - a portion of Surface Transportation Program funding for enhancement projects chosen by states and localities.

Funding: Federal -80%, State - 20%

Transportation Alternatives Program (TAP) – (MAP-21, replaced in FAST Act with Transportation Alternatives (TA) set- aside of STBG funds) - funds for projects which can be defined as transportation alternatives including bicycle and pedestrian facilities, enhanced mobility, community improvements, environmental mitigations, and various other types of transportation alternatives as defined in FAST Act.

Funding: Federal - 80%, State - 20%

## Transit Projects

Projects from the following Federal-aid (FAST Act) and non-Federal-aid funding categories are shown in the FFY 2017-2021 TIP.

Section 5307 (SECT-07) (Capital and Planning)(continued in FAST Act) - funds routine capital projects and planning assistance in urban areas. This is an urban formula grant program for MVRTA Preventative Maintenance and ADA costs.

Funding: Federal - 80%, State - 20% (Bond Issue Funds) (capital and planning expenses)

State funding for the MVRTA's operating budget is provided through an agreement with the Transit Division of MassDOT. Local funds are derived from community assessments based on the number of route miles and special services operated within each community.

The Merrimack Valley Planning Commission will provide the 20% match for the planning activities it will conduct for the Merrimack Valley Regional Transit Authority under its Section 5307 transit planning contract with the Authority.

Section 5309 ((SECT-9) (continued in FAST Act) - funds capital projects in urban areas which can be characterized as major capital investments in public transportation equipment and facilities. This is a discretionary grant program.

Funding: Federal - 80%, State - 20% (Transportation Bond Issue)

Section 5310 ((SECT-10)(continued in FAST Act))- provides capital funds, through the State, to private non-profit corporations and organizations to assist them in providing transportation services to meet the special needs of elderly and disabled persons.

Funding: Federal - 80%, Funding Applicant - 20%

## **Organization of Project Listings – Highway Projects**

The TIP includes sections that identify the MPO's priority road and bridge projects using a format prescribed by MassDOT's Office of Transportation Planning. For federally funded projects, the Merrimack Valley MPO has established the following programming categories:

### Section 1A

- Federal-Aid HSIP Projects Using MVMPO Target
- Federal-Aid CMAQ Projects Using MVMPO Target
- Federal-Aid TAP (now set aside of STBG funding) Projects Using MVMPO Target
- Federal-Aid STBG Projects Using MVMPO Target Authority (STBG, STBGP-TA)

### Section 1B

- Federal-Aid State Category Bridge Projects (provided by MassDOT)

### Section 1C

- Federal-Aid Non-target Projects (federally-funded non-target regional projects such as HPP, federal discretionary, Omnibus 330, Section 115, etc.)

### Section 1D

- Federal-Aid major infrastructure and other state category projects, i.e., Major Infrastructure, Interstate Maintenance, statewide CMAQ, National Highway System, etc.)

Non-federally funded projects have been assigned to one of the following categories:

### Section 2A

- Non-Federal-Aid Other Projects (only projects for which NFA funds have been specifically made available)

### Section 2B

- Non-Federal-Aid Bridge Projects (provided by MassDOT)

### Appendices A and B

- Other Regional Priorities (projects for which funding has not been identified)

Each highway project in the TIP contains the following information:

Amendment/Adjustment Type – used to identify the type of amendment when changes are made to the document.

MassDOT Project ID - project identification numbers given by MassDOT for each highway and bridge project.

MPO – identifies the Metropolitan Planning Organization within which the project is located.

Municipality Name – identifies the community where the project is located.

MassDOT Project Description–includes the community, or communities, in which the project is located and a brief description of work to be funded under the project. This description is exactly the same as MassDOT has input to its project information pages.

MassDOT District -MassDOT highway district number (Merrimack Valley MPO is part of District 4);

Funding Source - abbreviation for the funding category from which funding is expected. (Funding categories and abbreviations are explained starting on page 17.);

Total Programmed Funds- estimated cost of project in Fiscal Year in which advertising is expected; \*

Federal Funds – portion of Total Programmed Funds provided by Federal Funding;

Non-Federal Funds– portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds in order to receive Federal Funds;

\* Inflation increases project costs and therefore **the project costs** have been increased by **4% each** future year of the TIP.

## Organization of Project Listings – Highway Projects (Cont.)

Additional Information– such as:

- Total Project Cost if project is being Advance Constructed (AC), and the number of years the AC funding is to be reimbursed and which year of AC the listing refers to;
- For years beyond the first year of the TIP, the total project cost in the Year of Expenditure which includes an inflation rate of 4% per year from 2016 dollars;
- The TEC Score – Transportation Evaluation Criteria (TEC) score as described in Part A.2. above;
- Whether the funding is for Construction or Design of the project;
- Whether Federal funding is from more than one funding category;
- Category of project for determining “Operating and Maintenance” versus “Capital and Other” cost.

The notation is O, M, C, or N representing: (O) operating costs, (M) maintenance costs, (C) capital costs, or (N) other costs, such as planning.

## Organization of Project Listings – Transit Projects

Each transit project in the TIP contains the following information:

FTA Program – abbreviation for the Federal Funding program from which funding is expected. (Transit Funding categories and abbreviations are explained on page 19.);

Regional Transit Authority – MVRTA (Merrimack Valley Regional Transit Authority) is the regional transit authority;

Project Description – a brief description of work to be funded under the project;

Carryover or Earmark Details – indicates whether Carryover or a specific year’s Earmark funding is being used;

Federal Funds – Portion of Total Programmed Funds provided by Federal Funding;

## **Organization of Project listings Transit Projects (Cont.)**

State Match Sources – portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds in order to receive Federal Funds, coming from State Sources subdivided into the following categories of State Funding:

RTACAP –Regional Transit Authority State Capital Assistance;

MAP – Mobility Assistance Program;

ITCCAP – Intermodal Transportation Center Capital;

TDC –Transportation Development Credits, and

SCA – State Contract Assistance.

RTA Funds – portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds in order to receive Federal Funds, coming from MVRTA funding sources other than State funding sources.

Total Cost - estimated total cost of project.



## **Part B. Project Listings**

### **Highway Projects**

## 2017 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
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► Section 1A / Federal Aid Target Projects

► HSIP - Highway Safety Improvement Program

				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
HSIP Subtotal ►							\$ -	\$ -	\$ -	◀ 90% Federal + 10% Non-Federal

► CMAQ - Congestion Mitigation and Air Quality Improvement Program

	607573	Merrimack Valley	Haverhill	HAVERHILL - RECONSTRUCTION ON ROUTE 97 (BROADWAY), FROM SILVER BIRCH LANE TO RESEARCH DRIVE	4	CMAQ	\$ 738,397	\$ 590,718	\$ 147,679	Total Project Cost = \$6,526,912 FY 2017 STP + CMAQ (Construction) TEC = 7.25 out of 18. (C)
	604585	Merrimack Valley	N/A	FLEX TO FTA FOR MVRTA NEW BUS UPGRADE TO CLEANER FUEL BUSES	4	CMAQ	\$ 645,840	\$ 516,672	\$ 129,168	Total Project Cost = \$645,840 Transfer to FTA (C)
CMAQ Subtotal ►							\$ 1,384,237	\$ 1,107,390	\$ 276,847	◀ 80% Federal + 20% Non-Federal

► TAP - Transportation Alternatives Program

	606669	Merrimack Valley	Amesbury	AMESBURY - POWWOW RIVERWALK CONSTRUCTION	4	TAP	\$ 344,036	\$ 275,229	\$ 68,807	Total Project Cost = \$671,207, FY 2017 STP + TAP (Construction) TEC = 3.40 out of 18 (C) Project Proponent = City of Amesbury
TAP Subtotal ►							\$ 344,036	\$ 275,229	\$ 68,807	◀ 80% Federal + 20% Non-Federal

► Non-CMAQ/HSIP/TAP (Other)

	606669	Merrimack Valley	Amesbury	AMESBURY - POWWOW RIVERWALK CONSTRUCTION	4	STP	\$ 327,171	\$ 261,737	\$ 65,434	Total Project Cost = \$671,207, FY 2017 STP + TAP (Construction) TEC = 3.40 out of 18 (C) Project Proponent = City of Amesbury
	607573	Merrimack Valley	Haverhill	HAVERHILL - RECONSTRUCTION ON ROUTE 97 (BROADWAY), FROM SILVER BIRCH LANE TO RESEARCH DRIVE	4	STP	\$ 5,788,515	\$ 4,630,812	\$ 1,157,703	Total Project Cost = \$6,526,912 FY 2017 STP + CMAQ (Construction) TEC = 7.25 out of 18. (C)
Non-CMAQ/HSIP/TAP (Other) Subtotal ►							\$ 6,115,686	\$ 4,892,549	\$ 1,223,137	◀ 80% Federal + 20% Non-Federal

► Section 1A / Fiscal Constraint Analysis

Total Federal Aid Target Funds Programmed ►	\$ 7,843,959	\$ 9,194,653	◀ Total Target	\$ 1,350,694	Target Funds Available
Total Non-CMAQ/HSIP/TAP (Other) Programmed ►	\$ 6,115,686	\$ 7,023,424	◀ Max. Non-CMAQ/HSIP/TAP	\$ 907,738	Non-CMAQ/HSIP/TAP (Other) Available
Total HSIP Programmed ►	\$ -	\$ 442,956	◀ Min. HSIP	\$ 442,956	HSIP Recommended Not Met
Total CMAQ Programmed ►	\$ 1,384,237	\$ 1,384,237	◀ Min. CMAQ	\$ -	CMAQ Recommended Met
Total TAP Programmed ►	\$ 344,036	\$ 344,036	◀ Min. TAP	\$ -	TAP Recommended Met

Remaining HSIP, CMAQ, and TAP Funds \$ 442,956

## 2017 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Section 1B / Federal Aid Bridge Projects</b>										
<b>► Statewide Systematic Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► On System</b>										
	605306	Merrimack Valley	Haverhill	HAVERHILL- SUPERSTRUCTURE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	\$ 12,000,000	\$ 9,600,000	\$ 2,400,000	AC Yr 1 of 3: \$12,000,000 = sum of year 1. Total Cost = \$50,772,179. (Construction) (M)
							\$ -	\$ -	\$ -	
On System Subtotal ►							\$ 12,000,000	\$ 9,600,000	\$ 2,400,000	◄ 80% Federal + 20% Non-Federal
<b>► Off-System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Off-System Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Bridge Inspection Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Inspection Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Section 1C / Federal Aid Non-Target Projects</b>										
<b>► Other Federal Aid</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Other Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◄ Funding Split Varies by Funding Source
<b>► Section 1D / Federal Aid Major &amp; State Category Projects</b>										
<b>► Regional Major Infrastructure</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Regional Major Infrastructure Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Americans with Disability Act Implementation Plan</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ADA Implementation Plan Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Congestion Mitigation and Air Quality</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide CMAQ Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal

## 2017 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide HSIP Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide HSIP Program Subtotal ►							\$ -	\$ -	\$ -	◀ 90% Federal + 10% Non-Federal
<b>► Statewide Infrastructure Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Infrastructure Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Interstate Maintenance Program</b>										
	607561	Merrimack Valley	Multiple	ANDOVER- METHUEN- INTERSTATE MAINTENANCE & RELATED WORK ON I-93	4	NHPP	\$ 9,622,257	\$ 8,660,031	\$ 962,226	Total Cost = \$10,357,600 = IM + Stormwater. (Construction) (M)
							\$ -	\$ -	\$ -	
Statewide Interstate Maintenance Program Subtotal ►							\$ 9,622,257	\$ 8,660,031	\$ 962,226	◀ 90% Federal + 10% Non-Federal
<b>► Statewide Intelligent Transportation Systems</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ITS Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide National Freight Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide National Freight Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide National Highway System Preservation Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide NHS Preservation Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Planning Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Planning Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Railroad Grade Crossings</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide RR Grade Crossings Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Safe Routes to Schools Program</b>										
	608002	Merrimack Valley	Lawrence	LAWRENCE- SAFE ROUTES TO SCHOOL (BRUCE ELEMENTARY)	4	TAP	\$ 2,016,148	\$ 1,612,918	\$ 403,230	Total Project Cost = \$2,016,148 (Construction) (C) Project Proponent City of Lawrence
							\$ -	\$ -	\$ -	
Statewide Safe Routes to Schools Program Subtotal ►							\$ 2,016,148	\$ 1,612,918	\$ 403,230	◀ Funding Split Varies by Funding Source

## 2017 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide Stormwater Retrofits</b>										
	607561	Merrimack Valley	Multiple	ANDOVER- METHUEN- INTERSTATE MAINTENANCE & RELATED WORK ON I-93	4	STP-TE	\$ 735,343	\$ 588,274	\$ 147,069	Total Cost = \$10,357,600 = IM + Stormwater. (Construction) (M)
							\$ -	\$ -	\$ -	
Statewide Stormwater Retrofits Subtotal ►							\$ 735,343	\$ 588,274	\$ 147,069	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Transportation Enhancements</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Transportation Enhancements Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Other Statewide Items</b>										
				ABP GANS Repayment			\$ -	\$ -	\$ -	
				Award Adjustments, Change Orders, Project Value Changes, Etc.			\$ -	\$ -	\$ -	
				DBEs, FAPO, Pavement Lab Retrofits, and Misc. Programs			\$ -	\$ -	\$ -	
				Planning			\$ -	\$ -	\$ -	
				Statewide Design and Right of Way			\$ -	\$ -	\$ -	
				Statewide Recreational Trails			\$ -	\$ -	\$ -	
Other Statewide Items Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Section 2A / Non-Federal Projects</b>										
<b>► Non Federal Aid</b>										
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
Non-Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◀ 100% Non-Federal
<b>► Section 2B / Non-Federal Bridge Projects</b>										
<b>► Section 2B / Non-Federal Bridge Projects</b>										
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
Section 2B / Non-Federal Bridge Projects Subtotal ►							\$ -	\$ -	\$ -	◀ 100% Non-Federal

## 2017 Merrimack Valley Region MPO TIP Summary

	TIP Section 1: ▼	TIP Section 2: ▼	Total of All Projects ▼	
Total ►	\$ 32,217,707	\$ -	\$ 32,217,707	◀ Total Spending in Region
Federal Funds ►	\$ 26,736,391	\$ -	\$ 26,736,391	◀ Total Federal Spending in Region
Non-Federal Funds ►	\$ 5,481,316	\$ -	\$ 5,481,316	◀ Total Non-Federal Spending in Region

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects / 701 CMR 7.00 (the Regulation) was promulgated and became law on October 3, 2008. Under this Regulation, the CMR is applicable to any Public Works Project that is performed within the limits of, or that impact traffic on, any Public Road. The Municipal Limitation referenced in this Regulation is applicable only to projects where the Municipality is the Awarding Authority. For all projects contained in the TIP, the Commonwealth is the Awarding Authority. Therefore, all projects must be considered and implemented in accordance with 701 CMR 7.00, and the Road Flagger and Police Detail Guidelines. By placing a project on the TIP, the Municipality acknowledges that 701 CMR 7.00 is applicable to its project and design and construction will be fully compliant with this Regulation. This information, and additional information relative to guidance and implementation of the Regulation can be found at the following link on the MassDOT Highway Division website: <http://www.massdot.state.ma.us/Highway/Flaggers/main.aspx>

## 2018 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
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► Section 1A / Federal Aid Target Projects

► HSIP - Highway Safety Improvement Program

	606159	Merrimack Valley	North Andover	NORTH ANDOVER- INTERSECTION & SIGNAL IMPROVEMENTS AT ROUTE 125 & MASSACHUSETTS AVENUE	4	HSIP	\$ 442,956	\$ 398,660	\$ 44,296	Total Project Cost = \$3,785,640 inflated 4% from 2017 cost of 3,640,038. FY 2018 STP + HSIP (Construction) TEC = 7.7 out of 18. (C)
							\$ -	\$ -	\$ -	
HSIP Subtotal ►							\$ 442,956	\$ 398,660	\$ 44,296	

► CMAQ - Congestion Mitigation and Air Quality Improvement Program

	605020	Merrimack Valley	Salisbury	SALISBURY - MULTI-USE TRAIL EXTENSION (BORDERS TO BOSTON TRAIL)	4	CMAQ	\$ 5,304,302	\$ 4,243,442	\$ 1,060,860	Total Project Cost = \$6,155,240 cost inflated 4% from 2017 cost of \$5,918,500. FY 2018 CMAQ + TAP + SW CMAQ (Construction) TEC = 6.08 out of 18. (C) Project Proponent is the Town of Salisbury
							\$ -	\$ -	\$ -	
CMAQ Subtotal ►							\$ 5,304,302	\$ 4,243,442	\$ 1,060,860	

► TAP - Transportation Alternatives Program

	605020	Merrimack Valley	Salisbury	SALISBURY - MULTI-USE TRAIL EXTENSION (BORDERS TO BOSTON TRAIL)	4	TAP	\$ 350,938	\$ 280,750	\$ 70,188	Total Project Cost = \$6,155,240 cost inflated 4% from 2017 cost of \$5,918,500. FY 2018 CMAQ + TAP + SW CMAQ (Construction) TEC = 6.08 out of 18. (C) Project Proponent is the Town of Salisbury
							\$ -	\$ -	\$ -	
TAP Subtotal ►							\$ 350,938	\$ 280,750	\$ 70,188	

► Non-CMAQ/HSIP/TAP (Other)

	606159	Merrimack Valley	North Andover	NORTH ANDOVER- INTERSECTION & SIGNAL IMPROVEMENTS AT ROUTE 125 & MASSACHUSETTS AVENUE	4	STP	\$ 3,342,684	\$ 2,674,147	\$ 668,537	Total Project Cost = \$3,785,640 inflated 4% from 2017 cost of 3,640,038. FY 2018 STP + HSIP (Construction) TEC = 7.7 out of 18. (C)
							\$ -	\$ -	\$ -	
Non-CMAQ/HSIP/TAP (Other) Subtotal ►							\$ 3,342,684	\$ 2,674,147	\$ 668,537	

► Section 1A / Fiscal Constraint Analysis

<b>Total Federal Aid Target Funds Programmed ►</b>	\$ 9,440,880	<b>\$ 9,549,018</b>	<b>◀ Total Target</b>	<b>\$ 108,138</b>	<b>Target Funds Available</b>
Total Non-CMAQ/HSIP/TAP (Other) Programmed ►	\$ 3,342,684	\$ 7,647,735	<b>◀ Max. Non-CMAQ/HSIP/TAP</b>	<b>\$ 108,138</b>	Non-CMAQ/HSIP/TAP (Other) Available
Total HSIP Programmed ►	\$ 442,956	\$ 442,956	<b>◀ Min. HSIP</b>	\$ -	HSIP Recommended Met
Total CMAQ Programmed ►	\$ 5,304,302	\$ 1,107,389	<b>◀ Min. CMAQ</b>	<b>\$ (4,196,913)</b>	CMAQ Recommended Met
Total TAP Programmed ►	\$ 350,938	\$ 350,938	<b>◀ Min. TAP</b>	\$ -	TAP Recommended Met

HSIP, CMAQ, TAP Overprogrammed \$ (4,196,913)

## 2018 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Section 1B / Federal Aid Bridge Projects</b>										
<b>► Statewide Systematic Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► On System</b>										
	605306	Merrimack Valley	Haverhill	HAVERHILL- SUPERSTRUCTURE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	\$ 23,000,000	\$ 18,400,000	\$ 4,600,000	AC Yr 2 of 3; \$23,000,000 = sum of year 2. Total Cost = \$50,772,179. (Construction) (M)
							\$ -	\$ -	\$ -	
On System Subtotal ►							\$ 23,000,000	\$ 18,400,000	\$ 4,600,000	◀ 80% Federal + 20% Non-Federal
<b>► Off-System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Off-System Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Bridge Inspection Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Inspection Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Section 1C / Federal Aid Non-Target Projects</b>										
<b>► Other Federal Aid</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Other Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Section 1D / Federal Aid Major &amp; State Category Projects</b>										
<b>► Regional Major Infrastructure</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Regional Major Infrastructure Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Americans with Disability Act Implementation Plan</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ADA Implementation Plan Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal

## 2018 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide Congestion Mitigation and Air Quality</b>										
	607737	Merrimack Valley	Multiple	AMESBURY- SALISBURY- TRAIL CONNECTOR @ I-95	4	CMAQ	\$ 2,677,798	\$ 2,142,238	\$ 535,560	Total Project Cost = \$2,677,798 inflated 4% from 2017 cost. (Construction) TEC = 6.25 out of 18. (C)
	605020	Merrimack Valley	Salisbury	SALISBURY - MULTI-USE TRAIL EXTENSION (BORDERS TO BOSTON TRAIL)	4	CMAQ	\$ 500,000	\$ 400,000	\$ 100,000	Total Project Cost = \$6,155,240 cost inflated 4% from 2017 cost of \$5,918,500. FY 2018 CMAQ + TAP + SW CMAQ (Construction) TEC = 6.08 out of 18. (C) Project Proponent is the Town of Salisbury
Statewide CMAQ Subtotal ►							\$ 3,177,798	\$ 2,542,238	\$ 635,560	◄ 80% Federal + 20% Non-Federal
<b>► Statewide HSIP Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide HSIP Program Subtotal ►							\$ -	\$ -	\$ -	◄ 90% Federal + 10% Non-Federal
<b>► Statewide Infrastructure Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Infrastructure Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Interstate Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Interstate Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◄ 90% Federal + 10% Non-Federal
<b>► Statewide Intelligent Transportation Systems</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ITS Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide National Freight Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide National Freight Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide National Highway System Preservation Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide NHS Preservation Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Planning Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Planning Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Railroad Grade Crossings</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide RR Grade Crossings Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal



## 2018 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide Safe Routes to Schools Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Safe Routes to Schools Program Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Statewide Stormwater Retrofits</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Stormwater Retrofits Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Transportation Enhancements</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Transportation Enhancements Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Other Statewide Items</b>										
				ABP GANS Repayment			\$ -	\$ -	\$ -	
				Award Adjustments, Change Orders, Project Value Changes, Etc.			\$ -	\$ -	\$ -	
				DBEs, FAPO, Pavement Lab Retrofits, and Misc. Programs			\$ -	\$ -	\$ -	
				Planning			\$ -	\$ -	\$ -	
				Statewide Design and Right of Way			\$ -	\$ -	\$ -	
				Statewide Recreational Trails			\$ -	\$ -	\$ -	
Other Statewide Items Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Section 2A / Non-Federal Projects</b>										
<b>► Non Federal Aid</b>										
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
Non-Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◀ 100% Non-Federal
<b>► Section 2B / Non-Federal Bridge Projects</b>										
<b>► Section 2B / Non-Federal Bridge Projects</b>										
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
Section 2B / Non-Federal Bridge Projects Subtotal ►							\$ -	\$ -	\$ -	◀ 100% Non-Federal

## 2018 Merrimack Valley Region MPO TIP Summary

	TIP Section 1: ▼	TIP Section 2: ▼	Total of All Projects ▼	
Total ►	\$ 35,618,678	\$ -	\$ 35,618,678	◀ Total Spending in Region
Federal Funds ►	\$ 28,539,238		\$ 28,539,238	◀ Total Federal Spending in Region
Non-Federal Funds ►	\$ 7,079,440	\$ -	\$ 7,079,440	◀ Total Non-Federal Spending in Region

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects / 701 CMR 7.00 (the Regulation) was promulgated and became law on October 3, 2008. Under this Regulation, the CMR is applicable to any Public works Project that is performed within the limits of, or that impact traffic on, any Public Road. The Municipal Limitation referenced in this Regulation is applicable only to projects where the Municipality is the Awarding Authority. For all projects contained in the TIP, the Commonwealth is the Awarding Authority. Therefore, all projects must be considered and implemented in accordance with 701 CMR 7.00, and the Road Flagger and Police Detail Guidelines. By placing a project on the TIP, the Municipality acknowledges that 701 CMR 7.00 is applicable to its project and design and construction will be fully compliant with this Regulation. This information, and additional information relative to guidance and implementation of the Regulation can be found at the following link on the MassDOT Highway Division website: <http://www.massdot.state.ma.us/Highway/Flaggers/main.aspx>

## 2019 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
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► Section 1A / Federal Aid Target Projects

► HSIP - Highway Safety Improvement Program

				No Projects Programmed				\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
HSIP Subtotal ►							\$ -	\$ -	\$ -	◀ 90% Federal + 10% Non-Federal

► CMAQ - Congestion Mitigation and Air Quality Improvement Program

	MV0001	Merrimack Valley	N/A	FLEX TO FTA FOR MVRTA NEW BUS UPGRADE TO CLEANER FUEL BUSES	4	CMAQ	\$ 698,541	\$ 558,833	\$ 139,708	Total Project Cost = \$698,541 cost inflated 8% from 2017 cost of \$645,840 (C)
	608027	Merrimack Valley	Haverhill	HAVERHILL - BRADFORD RAIL TRAIL EXTENSION, FROM ROUTE 125 TO RAILROAD STREET	4	CMAQ	\$ 408,848	\$ 327,078	\$ 81,770	Total Project Cost = \$1,176,240 cost inflated 8% from 2017 cost of \$1,087,500. FFY 2019 CMAQ + TAP + STP (Construction) TEC = 6.65 out of 18. (C) Project Proponent is the City of Haverhill
CMAQ Subtotal ►							\$ 1,107,389	\$ 885,911	\$ 221,478	◀ 80% Federal + 20% Non-Federal

► TAP - Transportation Alternatives Program

	608027	Merrimack Valley	Haverhill	HAVERHILL - BRADFORD RAIL TRAIL EXTENSION, FROM ROUTE 125 TO RAILROAD STREET	4	TAP	\$ 345,082	\$ 276,066	\$ 69,016	Total Project Cost = \$1,176,240 cost inflated 8% from 2017 cost of \$1,087,500. FFY 2019 CMAQ + TAP + STP (Construction) TEC = 6.65 out of 18. (C) Project Proponent is the City of Haverhill
TAP Subtotal ►							\$ 345,082	\$ 276,066	\$ 69,016	◀ 80% Federal + 20% Non-Federal

► Non-CMAQ/HSIP/TAP (Other)

	602418	Merrimack Valley	Amesbury	AMESBURY- RECONSTRUCTION OF ELM STREET	4	STP	\$ 3,337,520	\$ 2,670,016	\$ 667,504	AC Year 1 of 2. \$3,337,520= Sum of Year 1. Total Project Cost = \$9,726,521 cost inflated 8% from 2017 cost of \$8,992,715. FY 2019 STP + 2020 STP (Construction) TEC = 5.98 out of 18. (C)
	605753	Merrimack Valley	Groveland	GROVELAND- RECONSTRUCTION OF ROUTE 97 (SCHOOL STREET) FROM PARKER STREET TO GARDNER STREET	4	STP	\$ 3,893,760	\$ 3,115,008	\$ 778,752	Total Project Cost = \$3,893,760 inflated 8% from 2017 cost of \$3,600,000. (Construction) TEC = 5.1 out of 18. (C)
	608027	Merrimack Valley	Haverhill	HAVERHILL - BRADFORD RAIL TRAIL EXTENSION, FROM ROUTE 125 TO RAILROAD STREET	4	STP	\$ 422,310	\$ 337,848	\$ 84,462	Total Project Cost = \$1,176,240 cost inflated 8% from 2017 cost of \$1,087,500. FFY 2019 CMAQ + TAP + STP (Construction) TEC = 6.65 out of 18. (C) Project Proponent is the City of Haverhill
Non-CMAQ/HSIP/TAP (Other) Subtotal ►							\$ 7,653,590	\$ 6,122,872	\$ 1,530,718	◀ 80% Federal + 20% Non-Federal

► Section 1A / Fiscal Constraint Analysis

Total Federal Aid Target Funds Programmed ►	\$ 9,106,061	\$ 9,549,017	◀ Total Target	\$ 442,956	Target Funds Available
Total Non-CMAQ/HSIP/TAP (Other) Programmed ►	\$ 7,653,590	\$ 7,653,590	◀ Max. Non-CMAQ/HSIP/TAP	\$ -	Non-CMAQ/HSIP/TAP (Other) Available
Total HSIP Programmed ►	\$ -	\$ 442,956	◀ Min. HSIP	\$ 442,956	HSIP Recommended Not Met
Total CMAQ Programmed ►	\$ 1,107,389	\$ 1,107,389	◀ Min. CMAQ	\$ -	CMAQ Recommended Met
Total TAP Programmed ►	\$ 345,082	\$ 345,082	◀ Min. TAP	\$ -	TAP Recommended Met

Remaining HSIP, CMAQ, and TAP Funds \$ 442,956

## 2019 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Section 1B / Federal Aid Bridge Projects</b>										
<b>► Statewide Systematic Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► On System</b>										
	605306	Merrimack Valley	Haverhill	HAVERHILL- SUPERSTRUCTURE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	\$ 15,772,179	\$ 12,617,743	\$ 3,154,436	AC Yr 3 of 3. \$15,772,179 = sum of year 3. Total Cost = \$50,772,179. (Construction) (M)
							\$ -	\$ -	\$ -	
On System Subtotal ►							\$ 15,772,179	\$ 12,617,743	\$ 3,154,436	◀ 80% Federal + 20% Non-Federal
<b>► Off-System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Off-System Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Bridge Inspection Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Inspection Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Section 1C / Federal Aid Non-Target Projects</b>										
<b>► Other Federal Aid</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Other Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Section 1D / Federal Aid Major &amp; State Category Projects</b>										
<b>► Regional Major Infrastructure</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Regional Major Infrastructure Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Americans with Disability Act Implementation Plan</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ADA Implementation Plan Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Congestion Mitigation and Air Quality</b>										
	607541	Merrimack Valley	Multiple	GEORGETOWN- BOXFORD- BORDER TO BOSTON TRAIL, FROM GEORGETOWN ROAD TO WEST MAIN STREET (ROUTE 97)	4	CMAQ	\$ 1,874,028	\$ 1,499,222	\$ 374,806	Total Project Cost = \$1,874,040 inflated 8% from 2017 cost. (Construction) TEC = 4.97 out of 18. (C)
Statewide CMAQ Subtotal ►							\$ 1,874,028	\$ 1,499,222	\$ 374,806	◀ 80% Federal + 20% Non-Federal

## 2019 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide HSIP Program</b>										
	608187	Merrimack Valley	Multiple	HAVERHILL- MERRIMAC- AMESBURY- TRAFFIC & GUIDE SIGN REPLACEMENT ON A SECTION OF I-495	4	HSIP	\$ 4,807,449	\$ 4,326,704	\$ 480,745	Total Project Cost = \$4,807,449 inflated 8% from 2017 cost. (Construction) (M)
							\$ -	\$ -	\$ -	
Statewide HSIP Program Subtotal ►							\$ 4,807,449	\$ 4,326,704	\$ 480,745	◄ 90% Federal + 10% Non-Federal
<b>► Statewide Infrastructure Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Infrastructure Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Interstate Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Interstate Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◄ 90% Federal + 10% Non-Federal
<b>► Statewide Intelligent Transportation Systems</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ITS Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide National Freight Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide National Freight Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide National Highway System Preservation Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide NHS Preservation Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Planning Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Planning Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Railroad Grade Crossings</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide RR Grade Crossings Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Safe Routes to Schools Program</b>										
				No Projects Programmed		SRTS	\$ -	\$ -	\$ -	
				No Projects Programmed		SRTS	\$ -	\$ -	\$ -	
Statewide Safe Routes to Schools Program Subtotal ►							\$ -	\$ -	\$ -	◄ Funding Split Varies by Funding Source
<b>► Statewide Stormwater Retrofits</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Stormwater Retrofits Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal

## 2019 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide Transportation Enhancements</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Transportation Enhancements Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Other Statewide Items</b>										
				ABP GANS Repayment			\$ -	\$ -	\$ -	
				Award Adjustments, Change Orders, Project Value Changes, Etc.			\$ -	\$ -	\$ -	
				DBEs, FAPO, Pavement Lab Retrofits, and Misc. Programs			\$ -	\$ -	\$ -	
				Planning			\$ -	\$ -	\$ -	
				Statewide Design and Right of Way			\$ -	\$ -	\$ -	
				Statewide Recreational Trails			\$ -	\$ -	\$ -	
Other Statewide Items Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source

### ► Section 2A / Non-Federal Projects

#### ► Non Federal Aid

				No Projects Programmed	NFA	\$ -	\$ -		
				No Projects Programmed	NFA	\$ -	\$ -		
Non-Federal Aid Subtotal ►							\$ -	\$ -	◀ 100% Non-Federal

### ► Section 2B / Non-Federal Bridge Projects

#### ► Section 2B / Non-Federal Bridge Projects

				No Projects Programmed	NFA	\$ -	\$ -		
				No Projects Programmed	NFA	\$ -	\$ -		
Section 2B / Non-Federal Bridge Projects Subtotal ►							\$ -	\$ -	◀ 100% Non-Federal

## 2019 Merrimack Valley Region MPO TIP Summary

	TIP Section 1: ▼	TIP Section 2: ▼	Total of All Projects ▼	
Total ►	\$ 31,559,717	\$ -	\$ 31,559,717	◀ Total Spending in Region
Federal Funds ►	\$ 25,728,519		\$ 25,728,519	◀ Total Federal Spending in Region
Non-Federal Funds ►	\$ 5,831,199	\$ -	\$ 5,831,199	◀ Total Non-Federal Spending in Region

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects / 701 CMR 7.00 (the Regulation) was promulgated and became law on October 3, 2008. Under this Regulation, the CMR is applicable to any Public works Project that is performed within the limits of, or that impact traffic on, any Public Road. The Municipal Limitation referenced in this Regulation is applicable only to projects where the Municipality is the Awarding Authority. For all projects contained in the TIP, the Commonwealth is the Awarding Authority. Therefore, all projects must be considered and implemented in accordance with 701 CMR 7.00, and the Road Flagger and Police Detail Guidelines. By placing a project on the TIP, the Municipality acknowledges that 701 CMR 7.00 is applicable to its project and design and construction will be fully compliant with this Regulation. This information, and additional information relative to guidance and implementation of the Regulation can be found at the following link on the MassDOT Highway Division website: <http://www.massdot.state.ma.us/Highway/flaggersmain.aspx>

## 2020 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
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► Section 1A / Federal Aid Target Projects

► HSIP - Highway Safety Improvement Program

				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
HSIP Subtotal ►							\$ -	\$ -	\$ -	◀ 90% Federal + 10% Non-Federal

► CMAQ - Congestion Mitigation and Air Quality Improvement Program

	608298	Merrimack Valley	Groveland	GROVELAND- GROVELAND COMMUNITY TRAIL, FROM MAIN STREET TO KING STREET	4	CMAQ	\$ 1,107,389	\$ 885,911	\$ 221,478	Total Project Cost = \$2,672,677 cost inflated 12% from 2017 cost of \$2,376,000. FY 2020 CMAQ + TAP + STP (Construction) TEC = 4.87 out of 18. (C)
CMAQ Subtotal ►							\$ 1,107,389	\$ 885,911	\$ 221,478	◀ 80% Federal + 20% Non-Federal

► TAP - Transportation Alternatives Program

	608298	Merrimack Valley	Groveland	GROVELAND- GROVELAND COMMUNITY TRAIL, FROM MAIN STREET TO KING STREET	4	TAP	\$ 382,924	\$ 306,339	\$ 76,585	Total Project Cost = \$2,672,677 cost inflated 12% from 2017 cost of \$2,376,000. FY 2020 CMAQ + TAP + STP (Construction) TEC = 4.87 out of 18. (C)
TAP Subtotal ►							\$ 382,924	\$ 306,339	\$ 76,585	◀ 80% Federal + 20% Non-Federal

► Non-CMAQ/HSIP/TAP (Other)

	602418	Merrimack Valley	Amesbury	AMESBURY- RECONSTRUCTION OF ELM STREET	4	STP	\$ 6,389,001	\$ 5,111,201	\$ 1,277,800	AC Year 2 of 2. \$6,389,001 = Sum of Year 2. Total Project Cost = \$9,726,521 cost inflated 8% from 2017 cost of \$8,992,715. FY 2019 STP + 2020 STP (Construction) TEC = 5.98 out of 18. (C)
	608298	Merrimack Valley	Groveland	GROVELAND- GROVELAND COMMUNITY TRAIL, FROM MAIN STREET TO KING STREET	4	STP	\$ 1,182,364	\$ 945,891	\$ 236,473	Total Project Cost = \$2,672,677 cost inflated 12% from 2017 cost of \$2,376,000. FY 2020 CMAQ + TAP + STP (Construction) TEC = 4.87 out of 18. (C)
Non-CMAQ/HSIP/TAP (Other) Subtotal ►							\$ 7,571,365	\$ 6,057,092	\$ 1,514,273	◀ 80% Federal + 20% Non-Federal

► Section 1A / Fiscal Constraint Analysis

Total Federal Aid Target Funds Programmed ►	\$ 9,061,678	\$ 9,775,158	◀ Total Target	\$ 713,480	Target Funds Available
Total Non-CMAQ/HSIP/TAP (Other) Programmed ►	\$ 7,571,365	\$ 7,841,889	◀ Max. Non-CMAQ/HSIP/TAP	\$ 270,524	Non-CMAQ/HSIP/TAP (Other) Available
Total HSIP Programmed ►	\$ -	\$ 442,956	◀ Min. HSIP	\$ 442,956	HSIP Recommended Not Met
Total CMAQ Programmed ►	\$ 1,107,389	\$ 1,107,389	◀ Min. CMAQ	\$ -	CMAQ Recommended Met
Total TAP Programmed ►	\$ 382,924	\$ 382,924	◀ Min. TAP	\$ -	TAP Recommended Met

Remaining HSIP, CMAQ, and TAP Funds \$ 442,956

## 2020 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>▶ Section 1B / Federal Aid Bridge Projects</b>										
<b>▶ Statewide Systematic Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Maintenance Program Subtotal ▶							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>▶ On System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
On System Subtotal ▶							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>▶ Off-System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Off-System Subtotal ▶							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>▶ Statewide Bridge Inspection Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Inspection Program Subtotal ▶							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>▶ Section 1C / Federal Aid Non-Target Projects</b>										
<b>▶ Other Federal Aid</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Other Federal Aid Subtotal ▶							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>▶ Section 1D / Federal Aid Major &amp; State Category Projects</b>										
<b>▶ Regional Major Infrastructure</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Regional Major Infrastructure Subtotal ▶							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>▶ Statewide Americans with Disability Act Implementation Plan</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ADA Implementation Plan Subtotal ▶							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>▶ Statewide Congestion Mitigation and Air Quality</b>										
	607542	Merrimack Valley	Multiple	GEORGETOWN-NEWBURY- BORDER TO BOSTON TRAIL (NORTHERN GEORGETOWN SECTION)	4	CMAQ	\$ 4,341,120	\$ 3,472,896	\$ 868,224	Total Project Cost = \$4,341,120 cost inflated 12% from 2017 cost. (Construction) TEC = 5.22 out of 18. (C)
							\$ -	\$ -	\$ -	
Statewide CMAQ Subtotal ▶							\$ 4,341,120	\$ 3,472,896	\$ 868,224	◀ 80% Federal + 20% Non-Federal

## 2020 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide HSIP Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide HSIP Program Subtotal ►							\$ -	\$ -	\$ -	◀ 90% Federal + 10% Non-Federal
<b>► Statewide Infrastructure Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Infrastructure Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Interstate Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Interstate Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◀ 90% Federal + 10% Non-Federal
<b>► Statewide Intelligent Transportation Systems</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ITS Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide National Freight Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide National Freight Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide National Highway System Preservation Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide NHS Preservation Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Planning Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Planning Program Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Railroad Grade Crossings</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide RR Grade Crossings Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Statewide Safe Routes to Schools Program</b>										
				No Projects Programmed		SRTS	\$ -	\$ -	\$ -	
				No Projects Programmed		SRTS	\$ -	\$ -	\$ -	
Statewide Safe Routes to Schools Program Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Statewide Stormwater Retrofits</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Stormwater Retrofits Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal



## 2020 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide Transportation Enhancements</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Transportation Enhancements Subtotal ►							\$ -	\$ -	\$ -	◀ 80% Federal + 20% Non-Federal
<b>► Other Statewide Items</b>										
				ABP GANS Repayment			\$ -	\$ -	\$ -	
				Award Adjustments, Change Orders, Project Value Changes, Etc.			\$ -	\$ -	\$ -	
				DBEs, FAPO, Pavement Lab Retrofits, and Misc.			\$ -	\$ -	\$ -	
				Planning			\$ -	\$ -	\$ -	
				Statewide Design and Right of Way			\$ -	\$ -	\$ -	
				Statewide Recreational Trails			\$ -	\$ -	\$ -	
Other Statewide Items Subtotal ►							\$ -	\$ -	\$ -	◀ Funding Split Varies by Funding Source
<b>► Section 2A / Non-Federal Projects</b>										
<b>► Non Federal Aid</b>										
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
Non-Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◀ 100% Non-Federal
<b>► Section 2B / Non-Federal Bridge Projects</b>										
<b>► Section 2B / Non-Federal Bridge Projects</b>										
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
				No Projects Programmed		NFA	\$ -	\$ -	\$ -	
Section 2B / Non-Federal Bridge Projects Subtotal ►							\$ -	\$ -	\$ -	◀ 100% Non-Federal

## 2020 Merrimack Valley Region MPO TIP Summary

	TIP Section 1: ▼	TIP Section 2: ▼	Total of All Projects ▼	
Total ►	\$ 13,402,798	\$ -	\$ 13,402,798	◀ Total Spending in Region
Federal Funds ►	\$ 10,722,238	\$ -	\$ 10,722,238	◀ Total Federal Spending in Region
Non-Federal Funds ►	\$ 2,680,560	\$ -	\$ 2,680,560	◀ Total Non-Federal Spending in Region

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects / 701 CMR 7.00 (the Regulation) was promulgated and became law on October 3, 2008. Under this Regulation, the CMR is applicable to any Public works Project that is performed within the limits of, or that impact traffic on, any Public Road. The Municipal Limitation referenced in this Regulation is applicable only to projects where the Municipality is the Awarding Authority. For all projects contained in the TIP, the Commonwealth is the Awarding Authority. Therefore, all projects must be considered and implemented in accordance with 701 CMR 7.00, and the Road Flagger and Police Detail Guidelines. By placing a project on the TIP, the Municipality acknowledges that 701 CMR 7.00 is applicable to its project and design and construction will be fully compliant with this Regulation. This information, and additional information relative to guidance and implementation of the Regulation can be found at the following link on the MassDOT Highway Division website: <http://www.massdot.state.ma.us/Highway/Flaggers/main.aspx>

## 2021 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
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► Section 1A / Federal Aid Target Projects

► HSIP - Highway Safety Improvement Program

	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	HSIP	\$ 442,956	\$ 398,660	\$ 44,296	AC Year 1 of 3. \$9,775,158 = Sum of Year 1. Total Project Cost = \$ 18,188,961 inflated 16% from 2017 cost of \$15,548,000. FFY 2021 STP + HSIP + CMAQ + TAP + FFY 2022 + FFY 2023 (Construction) TEC = 11.17 out of 18. (C)
							\$ -	\$ -	\$ -	
HSIP Subtotal ►							\$ 442,956	\$ 398,660	\$ 44,296	◀ 90% Federal + 10% Non-Federal

► CMAQ - Congestion Mitigation and Air Quality Improvement Program

	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	CMAQ	\$ 1,107,389	\$ 885,911	\$ 221,478	AC Year 1 of 3. \$9,775,158 = Sum of Year 1. Total Project Cost = \$ 18,188,961 inflated 16% from 2017 cost of \$15,548,000. FFY 2021 STP + HSIP + CMAQ + TAP + FFY 2022 + FFY 2023 (Construction) TEC = 11.17 out of 18. (C)
							\$ -	\$ -	\$ -	
CMAQ Subtotal ►							\$ 1,107,389	\$ 885,911	\$ 221,478	◀ 80% Federal + 20% Non-Federal

► TAP - Transportation Alternatives Program

	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	TAP	\$ 308,876	\$ 247,101	\$ 61,775	AC Year 1 of 3. \$9,775,158 = Sum of Year 1. Total Project Cost = \$ 18,188,961 inflated 16% from 2017 cost of \$15,548,000. FFY 2021 STP + HSIP + CMAQ + TAP + FFY 2022 + FFY 2023 (Construction) TEC = 11.17 out of 18. (C)
							\$ -	\$ -	\$ -	
TAP Subtotal ►							\$ 308,876	\$ 247,101	\$ 61,775	◀ 80% Federal + 20% Non-Federal

► Non-CMAQ/HSIP/TAP (Other)

	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	STP	\$ 7,915,937	\$ 6,332,750	\$ 1,583,187	AC Year 1 of 3. \$9,775,158 = Sum of Year 1. Total Project Cost = \$ 18,188,961 inflated 16% from 2017 cost of \$15,548,000. FFY 2021 STP + HSIP + CMAQ + TAP + FFY 2022 + FFY 2023 (Construction) TEC = 11.17 out of 18. (C)
							\$ -	\$ -	\$ -	
Non-CMAQ/HSIP/TAP (Other) Subtotal ►							\$ 7,915,937	\$ 6,332,750	\$ 1,583,187	◀ 80% Federal + 20% Non-Federal

► Section 1A / Fiscal Constraint Analysis

Total Federal Aid Target Funds Programmed ►	\$ 9,775,158	\$ 9,775,158	◀ Total Target	\$ -	Target Funds Available
Total Non-CMAQ/HSIP/TAP (Other) Programmed ►	\$ 7,915,937	\$ 7,915,937	◀ Max. Non-CMAQ/HSIP/TAP	\$ -	Non-CMAQ/HSIP/TAP (Other) Available
Total HSIP Programmed ►	\$ 442,956	\$ 442,956	◀ Min. HSIP	\$ -	HSIP Recommended Met
Total CMAQ Programmed ►	\$ 1,107,389	\$ 1,107,389	◀ Min. CMAQ	\$ -	CMAQ Recommended Met
Total TAP Programmed ►	\$ 308,876	\$ 308,876	◀ Min. TAP	\$ -	TAP Recommended Met

Remaining HSIP, CMAQ, and TAP Funds \$ -

## 2021 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Section 1B / Federal Aid Bridge Projects</b>										
<b>► Statewide Systematic Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► On System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
On System Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Off-System</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Off-System Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Bridge Inspection Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Bridge Inspection Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Section 1C / Federal Aid Non-Target Projects</b>										
<b>► Other Federal Aid</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Other Federal Aid Subtotal ►							\$ -	\$ -	\$ -	◄ Funding Split Varies by Funding Source
<b>► Section 1D / Federal Aid Major &amp; State Category Projects</b>										
<b>► Regional Major Infrastructure</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Regional Major Infrastructure Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Americans with Disability Act Implementation Plan</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ADA Implementation Plan Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Congestion Mitigation and Air Quality</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide CMAQ Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal

## 2021 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide HSIP Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide HSIP Program Subtotal ►							\$ -	\$ -	\$ -	◄ 90% Federal + 10% Non-Federal
<b>► Statewide Infrastructure Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Infrastructure Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Interstate Maintenance Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Interstate Maintenance Program Subtotal ►							\$ -	\$ -	\$ -	◄ 90% Federal + 10% Non-Federal
<b>► Statewide Intelligent Transportation Systems</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide ITS Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide National Freight Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide National Freight Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide National Highway System Preservation Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide NHS Preservation Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Planning Program</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Planning Program Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Railroad Grade Crossings</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide RR Grade Crossings Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Statewide Safe Routes to Schools Program</b>										
				No Projects Programmed		SRTS	\$ -	\$ -	\$ -	
				No Projects Programmed		SRTS	\$ -	\$ -	\$ -	
Statewide Safe Routes to Schools Program Subtotal ►							\$ -	\$ -	\$ -	◄ Funding Split Varies by Funding Source
<b>► Statewide Stormwater Retrofits</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Stormwater Retrofits Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal

## 2021 Merrimack Valley Region MPO Transportation Improvement Program

Amendment/ Adjustment Type ▼	MassDOT Project ID ▼	MPO ▼	Municipality Name ▼	MassDOT Project Description ▼	MassDOT District ▼	Funding Source ▼	Total Programmed Funds ▼	Federal Funds ▼	Non-Federal Funds ▼	Additional Information ▼
<b>► Statewide Transportation Enhancements</b>										
				No Projects Programmed			\$ -	\$ -	\$ -	
				No Projects Programmed			\$ -	\$ -	\$ -	
Statewide Transportation Enhancements Subtotal ►							\$ -	\$ -	\$ -	◄ 80% Federal + 20% Non-Federal
<b>► Other Statewide Items</b>										
				ABP GANS Repayment			\$ -	\$ -	\$ -	
				Award Adjustments, Change Orders, Project Value Changes, Etc.			\$ -	\$ -	\$ -	
				DBEs, FAPO, Pavement Lab Retrofits, and Misc. Programs			\$ -	\$ -	\$ -	
				Planning			\$ -	\$ -	\$ -	
				Statewide Design and Right of Way			\$ -	\$ -	\$ -	
				Statewide Recreational Trails			\$ -	\$ -	\$ -	
Other Statewide Items Subtotal ►							\$ -	\$ -	\$ -	◄ Funding Split Varies by Funding Source
<b>► Section 2A / Non-Federal Projects</b>										
<b>► Non Federal Aid</b>										
				No Projects Programmed		NFA	\$ -		\$ -	
				No Projects Programmed		NFA	\$ -		\$ -	
Non-Federal Aid Subtotal ►							\$ -		\$ -	◄ 100% Non-Federal
<b>► Section 2B / Non-Federal Bridge Projects</b>										
<b>► Section 2B / Non-Federal Bridge Projects</b>										
				No Projects Programmed		NFA	\$ -		\$ -	
				No Projects Programmed		NFA	\$ -		\$ -	
Section 2B / Non-Federal Bridge Projects Subtotal ►							\$ -		\$ -	◄ 100% Non-Federal

## 2021 Merrimack Valley Region MPO TIP Summary

	TIP Section 1: ▼	TIP Section 2: ▼	Total of All Projects ▼	
Total ►	\$ 9,775,158	\$ -	\$ 9,775,158	◄ Total Spending in Region
Federal Funds ►	\$ 7,864,422		\$ 7,864,422	◄ Total Federal Spending in Region
Non-Federal Funds ►	\$ 1,910,736	\$ -	\$ 1,910,736	◄ Total Non-Federal Spending in Region

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects / 701 CMR 7.00 (the Regulation) was promulgated and became law on October 3, 2008. Under this Regulation, the CMR is applicable to any Public works Project that is performed within the limits of, or that impact traffic on, any Public Road. The Municipal Limitation referenced in this Regulation is applicable only to projects where the Municipality is the Awarding Authority. For all projects contained in the TIP, the Commonwealth is the Awarding Authority. Therefore, all projects must be considered and implemented in accordance with 701 CMR 7.00, and the Road Flagger and Police Detail Guidelines. By placing a project on the TIP, the Municipality acknowledges that 701 CMR 7.00 is applicable to its project and design and construction will be fully compliant with this Regulation. This information, and additional information relative to guidance and implementation of the Regulation can be found at the following link on the MassDOT Highway Division website: <http://www.massdot.state.ma.us/Highway/flaggers/main.aspx>

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## **Part B. Project Listings (Cont.)**

### **Transit Projects**

FTA Program ▼ / Project #	Regional Transit Authority ▼	Project Description ▼	Carryover or Earmark Details ▼	Federal Funds ▼	State Match Sources				RTA Funds ▼	Total Cost ▼
					RTACAP ▼	MAP ▼	TDC ▼	SCA ▼		
5307 ▶ RTD0004542	MVRTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2018 (O)	Carryover Used	\$ 2,443,850	\$ -	\$ -	\$ -	\$ 610,960	\$ -	\$ 3,054,810
5307 ▶ RTD0004541	MVRTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2018 (O)	Carryover Used	\$ 1,097,465	\$ -	\$ -	\$ -	\$ 274,365	\$ -	\$ 1,371,830
5307 ▶ RTD0004550	MVRTA	MVPC Short Range Transit Planning & Technical Support UPWP FY 2018 (20% match from MVPC) (N)	Carryover Used	\$ 80,000	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 100,000
5307 ▶ RTD0004540	MVRTA	Refurbish Engine/Transmission 8 Model Year 2011 Buses (M)	Carryover Used	\$ 224,000	\$ 56,000	\$ -	\$ -	\$ -	\$ -	\$ 280,000
5307 ▶ RTD0004919	MVRTA	Replace Parking Facilities Revenue Collection Equipment (M)	Carryover Used	\$ 240,000	\$ 60,000	\$ -	\$ -	\$ -	\$ -	\$ 300,000
5307 ▶ RTD0004989	MVRTA	Bus/Van Mobile location Project (C)	Carryover Used	\$ 240,000	\$ 60,000	\$ -	\$ -	\$ -	\$ -	\$ 300,000
5307 ▶ RTD0004932	MVRTA	Replace 7 Model Yr 2004 buses with new (M)	Carryover Used	\$ 2,391,200	\$ 597,800	\$ -	\$ -	\$ -	\$ -	\$ 2,989,000
5307 ▶ RTD0004990	MVRTA	Replace 1 Model Yr 2013 Support Vehicle (M)	Carryover Used	\$ 37,080	\$ 9,270	\$ -	\$ -	\$ -	\$ -	\$ 46,350
5307 ▶ RTD0004552	MVRTA	Operating Assistance FY 2018 (O)	Carryover Used	\$ 628,525	\$ -	\$ -	\$ -	\$ 628,525	\$ -	\$ 1,257,050
<b>5307 Subtotal ▶</b>				<b>\$ 7,382,120</b>	<b>\$ 783,070</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,513,850</b>	<b>\$ 20,000</b>	<b>\$ 9,699,040</b>
5309 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5309 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5310 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5310 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5311 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5311 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5316 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5316 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5317 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5317 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
SoGR ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Livability ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Grants Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Other ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Operating Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total ▶</b>				<b>\$ 7,382,120</b>	<b>\$ 783,070</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,513,850</b>	<b>\$ 20,000</b>	<b>\$ 9,699,040</b>

**Other Non Federal Aid**

Other ▶ RTD0005219	MVRTA	Newburyport Intermodal Transit Facility Year 1 of 2	NFA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,500,000
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**Fiscal Constraint Analysis**

Federal Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼	State Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼
FFY 17 /5307	\$ 2,177,810	\$ 5,681,645	\$ 3,503,835 Available	RTACAP	\$ 783,070	\$ 783,070	
Carryover/5307	\$ 5,204,310	\$ 5,204,310	\$ - Available	SCA	\$ 1,513,850	\$ 1,513,850	
<b>Total 5307</b>	<b>\$ 7,382,120</b>	<b>\$ 10,885,955</b>	<b>\$ 3,503,835 Available</b>	Local RTA	\$ 20,000	\$ 20,000	
FFY 17 / 5309	\$ -			Other NFA	\$ 2,500,000	\$ 2,500,000	



2018

Merrimack Valley MPO  
Transportation Improvement Program

6/30/2016  
8/1/2016  
Draft Released  
Endorsed

FTA Program ▼/ Project #	Regional Transit Authority ▼	Project Description ▼	Carryover or Earmark Details ▼	Federal Funds ▼	State Match Sources				RTA Funds ▼	Total Cost ▼
					RTACAP ▼	MAP ▼	TDC ▼	SCA ▼		
5307 ▶ RTD0004544	MVRTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2019 (O)	Carryover Used	\$ 2,522,325	\$ -	\$ -	\$ -	\$ 630,580	\$ -	\$ 3,152,905
5307 ▶ RTD0004543	MVRTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2019 (O)	Carryover Used	\$ 1,120,695	\$ -	\$ -	\$ -	\$ 282,675	\$ -	\$ 1,403,370
5307 ▶ RTD0004555	MVRTA	MVPC Short Range Transit Planning & Technical Support UPWP FY 2019 (20% match from MVPC) (N)	Carryover Used	\$ 80,000	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$ 100,000
5307 ▶ RTD0004545	MVRTA	Refurbish Engine/ Transmissions on 8 Model Year 2011 Transit Buses (M)	Carryover Used	\$ 230,400	\$ 57,600	\$ -	\$ -	\$ -	\$ -	\$ 288,000
5307 ▶ RTD0004954	MVRTA	Replace 6 Model Yr 2004 Buses Delivery 2018 (M)	Carryover Used	\$ 2,180,605	\$ 545,150	\$ -	\$ -	\$ -	\$ -	\$ 2,725,755
5307 ▶ RTD0004991	MVRTA	Replace 1 Model Yr 2013 Support Vehicle (M)	Carryover Used	\$ 38,200	\$ 9,550					\$ 47,750
5307 ▶ RTD0004921	MVRTA	State of Good Repair Gateway Parking (M)	Carryover Used	\$ 16,000	\$ 4,000					\$ 20,000
5307 ▶ RTD0004554	MVRTA	Operating Assistance FY 2019 (O)	Carryover Used	\$ 696,240				\$ 696,240		\$ 1,392,480
<b>5307 Subtotal ▶</b>				<b>\$ 6,884,465</b>	<b>\$ 616,300</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,609,495</b>	<b>\$ 20,000</b>	<b>\$ 9,130,260</b>
5309 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5309 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5310 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5310 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5311 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5311 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5316 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5316 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5317 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5317 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
SoGR ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Livability ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TIGER ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Grants Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Other ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Operating Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total</b>				<b>\$ 6,884,465</b>	<b>\$ 616,300</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,609,495</b>	<b>\$ 20,000</b>	<b>\$ 9,130,260</b>
<b>Other Non Federal Aid</b>										
Other ▶ RTD0005408	MVRTA	Newburyport Intermodal Transit Facility Year 2 of 2	NFA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,500,000

Fiscal Constraint Analysis

Federal Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼	State Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼
FFY 18 / 5307	\$ 3,380,630	\$ 5,818,010	\$ 2,437,380 Available	RTACAP	\$ 616,300	\$ 616,300	
Carryover / 5307	\$ 3,503,835	\$ 3,503,835	\$ - Available	MAP	\$ -	\$ -	
<b>Total 5307</b>	<b>\$ 6,884,465</b>	<b>\$ 9,321,845</b>	<b>\$ 2,437,380 Available</b>	SCA	\$ 1,609,495	\$ 1,609,495	
FFY 18 / 5309	\$ -			Local RTA	\$ 20,000	\$ 20,000	
FFY 18 / 5310	\$ -			Other NFA	\$ 2,500,000	\$ 2,500,000	
FFY 18 / 5311	\$ -			TDC	\$ -	\$ -	

**2019** Merrimack Valley MPO  
Transportation Improvement Program

6/30/2016 Draft Released  
8/1/2016 Endorsed

FTA Program ▼	Regional Transit Authority ▼	Project Description ▼	Carryover or Earmark Details ▼	Federal Funds ▼	State Match Sources				RTA Funds ▼	Total Cost ▼
					RTACAP ▼	MAP ▼	TDC ▼	SCA ▼		
5307 ▶ RTD0004547	MVRTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2020 (O)	Carryover Used	\$ 2,600,075		\$ -	\$ -	\$ 650,020	\$ -	\$ 3,250,095
5307 ▶ RTD0004548	MVRTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2020 (O)	Carryover Used	\$ 1,165,135	\$ -	\$ -	\$ -	\$ 291,285	\$ -	\$ 1,456,420
5307 ▶ RTD0004556	MVRTA	MVPC Short Range Transit Planning & Technical Support UPWP FY 2020 (20% match from MVPC) (N)	Carryover Used	\$ 80,000	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 100,000
5307 ▶ RTD0004955	MVRTA	Purchase 3 new 35' buses delivery 2019 (C)	Carryover Used	\$ 1,098,685	\$ 274,670	\$ -	\$ -	\$ -	\$ -	\$ 1,373,355
5307 ▶ RTD0004992	MVRTA	Replace 1 Model Yr 2013 Support Vehicles (M)	Carryover Used	\$ 39,200	\$ 9,800	\$ -	\$ -	\$ -	\$ -	\$ 49,000
5307 ▶ RTD0004922	MVRTA	State of Good Repair Gateway Parking (M)	Carryover Used	\$ 8,000	\$ 2,000	\$ -	\$ -	\$ -	\$ -	\$ 10,000
5307 ▶ RTD0004558	MVRTA	Operating Assistance FY 2020 (O)	Carryover Used	\$ 765,610		\$ -	\$ -	\$ 765,610	\$ -	\$ 1,531,220
<b>5307 Subtotal ▶</b>				<b>\$ 5,756,705</b>	<b>\$ 286,470</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,706,915</b>	<b>\$ 20,000</b>	<b>\$ 7,770,090</b>
										\$ -
5309 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5309 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5310 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5310 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5311 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5311 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5316 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5316 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5317 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5317 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
SoGR ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Livability ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TIGER ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Grants Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
Other ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Operating Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total ▶</b>				<b>\$ 5,756,705</b>	<b>\$ 286,470</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,706,915</b>	<b>\$ 20,000</b>	<b>\$ 7,770,090</b>

**Fiscal Constraint Analysis**

Federal Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼	State Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼
FFY 19 / 5307	\$ 3,319,325	\$ 5,957,640	\$ 2,638,315 Available	RTACAP	\$ 286,470	\$ 286,470	
Carryover/5307	\$ 2,437,380	\$ 2,437,380	- Available	SCA	\$ 1,706,915	\$ 1,706,915	
<b>Total 5307</b>	<b>\$ 5,756,705</b>	<b>\$ 8,395,020</b>	<b>\$ 2,638,315 Available</b>	MAP	\$ -	\$ -	
FFY 19 / 5309	\$ -			Local RTA	\$ 20,000	\$ 20,000	

**2020** Merrimack Valley MPO  
Transportation Improvement Program

6/30/2016 Draft Released  
8/1/2016 Endorsed

FTA Program ▼	Regional Transit Authority ▼	Project Description ▼	Carryover or Earmark Details ▼	Federal Funds ▼	State Match Sources				RTA Funds ▼	Total Cost ▼
					RTACAP ▼	MAP ▼	TDC ▼	SCA ▼		
5307 ▶ RTD0004559	MVRTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2021 (O)	Carryover Used	\$ 2,678,075	\$ -	\$ -	\$ -	\$ 669,520	\$ -	\$ 3,347,595
5307 ▶ RTD0004560	MVRTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2021 (O)	Carryover Used	\$ 1,200,090	\$ -	\$ -	\$ -	\$ 300,020	\$ -	\$ 1,500,110
5307 ▶ RTD0004561	MVRTA	MVPC Short Range Transit Planning & Technical Support UPWP FY 2021 (20% match from MVPC) (N)	Carryover Used	\$ 80,000	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 100,000
5307 ▶ RTD0004956	MVRTA	Replace 3 Model Yr 2007 buses delivery 2020 (M)	Carryover Used	\$ 1,165,295	\$ 145,663	\$ -	\$ -	\$ -	\$ 145,663	\$ 1,456,621
5307 ▶ RTD0004993	MVRTA	Replace 11 Model Yr 2015 vans (M)	Carryover Used	\$ 605,570	\$ 75,698	\$ -	\$ -	\$ -	\$ 75,698	\$ 756,966
5307 ▶ RTD0004923	MVRTA	State of Good Repair Gateway Parking (M)	Carryover Used	\$ 8,000	\$ 2,000	\$ -	\$ -	\$ -	\$ -	\$ 10,000
5307 ▶ RTD0004563	MVRTA	Operating Assistance FY 2021 (O)	Carryover Used	\$ 842,170		\$ -	\$ -	\$ 842,170	\$ -	\$ 1,684,340
<b>5307 Subtotal ▶</b>				<b>\$ 6,579,200</b>	<b>\$ 223,361</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,811,710</b>	<b>\$ 241,361</b>	<b>\$ 8,855,632</b>
\$ -										
5309 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5309 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5310 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5310 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5311 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5311 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5316 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5316 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5317 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5317 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
SoGR ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Livability ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TIGER ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Grants Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
\$ -										
Other ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Operating Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
\$ -										
<b>Total ▶</b>				<b>\$ 6,579,200</b>	<b>\$ 223,361</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,811,710</b>	<b>\$ 241,361</b>	<b>\$ 8,855,632</b>

**Fiscal Constraint Analysis**

Federal Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼		State Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼	
FFY 20 / 5307	\$ 3,940,885	\$ 6,100,625	\$ 2,159,740	Available	RTACAP	\$ 223,361	\$ 223,361		
Carryover/5307	\$ 2,638,315	\$ 2,638,315	-	Available	SCA	\$ 1,811,710	\$ 1,811,710		
<b>Total 5307</b>	<b>\$ 6,579,200</b>	<b>\$ 8,738,940</b>	<b>\$ 2,159,740</b>	<b>Available</b>	MAP	\$ -	\$ -		
FFY 20 / 5309	\$ -				Local RTA	\$ 241,361	\$ 241,361		

**2021** Merrimack Valley MPO  
Transportation Improvement Program

6/30/2016 Draft Released  
8/1/2016 Endorsed

FTA Program ▼	Regional Transit Authority ▼	Project Description ▼	Carryover or Earmark Details ▼	Federal Funds ▼	State Match Sources				RTA Funds ▼	Total Cost ▼
					RTACAP ▼	MAP ▼	TDC ▼	SCA ▼		
5307 ▶ RTD0004933	MVRTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2022 (O)	Carryover Used	\$ 2,758,415	\$ -	\$ -	\$ -	\$ 689,605	\$ -	\$ 3,448,020
5307 ▶ RTD0004934	MVRTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2022 (O)	Carryover Used	\$ 1,236,090	\$ -	\$ -	\$ -	\$ 309,025	\$ -	\$ 1,545,115
5307 ▶ RTD0004935	MVRTA	MVPC Short Range Transit Planning & Technical Support UPWP FY 2022 (20% match from MVPC) (N)	Carryover Used	\$ 80,000	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 100,000
5307 ▶ RTD0004957	MVRTA	Replace 2 Model Yr 2009 buses delivery 2022 (M)	Carryover Used	\$ 787,855	\$ 98,483	\$ -	\$ -	\$ -	\$ 98,483	\$ 984,821
5307 ▶ RTD0004959	MVRTA	Replace 5 Model Yr 2016 vans with new (M)	Carryover Used	\$ 283,360	\$ 35,420	\$ -	\$ -	\$ -	\$ 35,420	\$ 354,200
5307 ▶ RTD0004958	MVRTA	Operating Assistance FY 2022 (O)	Carryover Used	\$ 926,385		\$ -	\$ -	\$ 926,385	\$ -	\$ 1,852,770
<b>5307 Subtotal ▶</b>				<b>\$ 6,072,105</b>	<b>\$ 133,903</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,925,015</b>	<b>\$ 153,903</b>	<b>\$ 8,284,926</b>
\$ -										
5309 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5309 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5310 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5310 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5311 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5311 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5316 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5316 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
5317 ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>5317 Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
SoGR ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Livability ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TIGER ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Grants Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
\$ -										
Other ▶		No Projects Programmed	N/A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Operating Subtotal ▶</b>				<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
\$ -										
<b>Total ▶</b>				<b>\$ 6,072,105</b>	<b>\$ 133,903</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,925,015</b>	<b>\$ 153,903</b>	<b>\$ 8,284,926</b>

Fiscal Constraint Analysis				State Funding Source			
Federal Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼	Funding Source ▼	Programmed ▼	Available ▼	(+/-) ▼
FFY 21 / 5307	\$ 3,912,365	\$ 6,072,105	\$ 2,159,740 Available	RTACAP	\$ 133,903	\$ 133,903	
Carryover/5307	\$ 2,159,740	\$ 2,159,740	- Available	SCA	\$ 1,925,015	\$ 1,925,015	
<b>Total 5307</b>	<b>\$ 6,072,105</b>	<b>\$ 8,231,845</b>	<b>\$ 2,159,740 Available</b>	MAP	\$ -	\$ -	
FFY 21 / 5309	\$ -			Local RTA	\$ 153,903	\$ 153,903	

## **Summary of Highway Project Listings by Town**

## Summary of Highway Projects by Town (Regional Target Funds)

Year (s) Programmed	City / Town	Project Description	Total Cost (2017 Dollars)
2017	Amesbury	Amesbury - Powwow Riverwalk Construction New Design	\$671,207
2019-2020	Amesbury	Amesbury - Reconstruction of Elm Street	\$8,992,715
2019	Groveland	Groveland- Reconstruction of Route 97 (School Street) from Parker Street to Gardner Street	\$3,600,000
2020	Groveland	Groveland- Groveland Community Trail, from Main Street to King Street	\$2,376,000
2017	Haverhill	Haverhill - Reconstruction on Route 97 (Broadway), from Silver Birch Lane to Research Drive	\$6,526,912
2019	Haverhill	Haverhill –Bradford Rail Trail Extension from Route 125 to Railroad Street	\$1,087,500
2017	MVRTA	Flex to FTA for MVRTA new bus upgrade to cleaner fuel buses	\$645,840
2019	MVRTA	Flex to FTA for MVRTA new bus upgrade to cleaner fuel buses	\$645,840
2018	North Andover	North Andover- Intersection & Signal Improvements at Route 125 & Massachusetts Avenue	\$3,640,038
2021-2023	North Andover	North Andover- Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop Drive-way	\$15,548,000
2018	Salisbury	Salisbury - Multi-use Trail Extension (Borders to Boston Trail)	\$5,918,500- \$500,000 programmed in Statewide section =\$5,418,500

## Summary of Programmed Funds by Town (Regional Target Funds)

Project Description	Total Cost (2017 Dollars)
<b>Amesbury Total</b>	<b>\$9,663,922</b>
<b>Groveland Total</b>	<b>\$5,976,000</b>
<b>Haverhill Total</b>	<b>\$7,614,412</b>
<b>MVRTA Total</b>	<b>\$1,291,680</b>
<b>North Andover Total</b>	<b>\$19,188,038</b>
<b>Salisbury Total</b>	<b>\$5,418,500</b>
<b>Regional Total</b>	<b>\$49,152,552</b>

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## **Part C. Federal Requirements**

## **Part C.1. Highway Program Financial Plan**

Funding levels for Federal Fiscal Years 2017-2021 have been developed cooperatively between the State and the MPOs as part of the TIP development process. The following five tables depict the resulting financial plan for each of the five fiscal years. The expected Title 23 Apportionment is listed first followed by the projected needs of the State. A formula developed by the Regional Planning Agencies (RPAs) and approved by MassDOT is applied to the “Statewide Infrastructure Program Plus State Match” to come up with target budgets for each MPO. In FFY 2017 MassDOT will end funding for the regional major infrastructure program after the I-91 Viaduct in Springfield project has been completed. These funds will be reallocated to the Regional Target program for prioritization by MPOs across the state.

Inflation increases project costs and therefore project costs have been increased 4% per year.

## Title 23 and Regional Target Funding FFYs 2017 to 2021

### Title 23 – Transportation Funding

Federal Fiscal Year 2017

FFY 2017-2021 STIP

### Federal Regional Targets

March 2016 DRAFT

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching State Funds</b>	<b>Total Funding Based On Obl. Auth.</b>
Base Obligation Authority	\$585,525,568		
Redistribution, as estimated by FHWA	\$29,474,432		
<b>Total Estimated Obligation Authority Available</b>	<b>\$615,000,000</b>		
ABP GANS Repayment	\$59,150,000		
<b>Total Non-Earmarked Available Statewide – (Including State Match)</b>	<b>\$555,850,000</b>	<b>\$125,768,056</b>	<b>\$681,618,056</b>
<b>Subtotal Statewide Infrastructure Items:</b>	<b>\$205,286,110</b>	<b>\$39,377,083</b>	<b>\$244,663,194</b>
<b>Subtotal Other Statewide Items:</b>	<b>\$51,986,729</b>	<b>\$12,996,682</b>	<b>\$64,983,411</b>
<b>Regional Major Infrastructure Projects:</b>	<b>\$7,200,000</b>	<b>\$1,800,000</b>	<b>\$9,000,000</b>
<b>Subtotal Federal Aid Bridge Program:</b>	<b>\$124,317,161</b>	<b>\$31,079,290</b>	<b>\$155,396,451</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2017 (Continued)**  
**FFY 2017-2021 STIP**  
**Federal Regional Targets**  
 March 2016 Draft

<b>Total Regional Targets:</b>			
CMAQ – Congestion Management and Air Quality Improvement Program	\$25,000,000	\$6,250,000	\$31,250,000
HSIP – Highway Safety Improvement Program	\$9,000,000	\$1,000,000	\$10,000,000
TAP – Transportation Alternatives Program	\$5,884,000	\$1,471,000	\$7,355,000
Regional Maximum Non-CMAQ / HSIP Component:	\$127,176,000	\$31,794,000	\$158,970,000
<b>Total Regional Target:</b>	<b>\$167,060,000</b>	<b>\$40,515,000</b>	<b>\$207,575,000</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2017 (Continued)**  
**FFY 2017-2021 STIP**  
**Federal Regional Targets**  
 March 2016 Draft

<b>Region</b>	<b>Regional Share (%)</b>	<b>Regional Minimum HSIP Component With State Match</b>	<b>Regional Minimum CMAQ Component With State Match</b>	<b>Regional Minimum TAP Component With State Match</b>	<b>Total Regional Target With State Match</b>	<b>Non CMAQ/ HSIP/ TAP with State Match</b>
Berkshire	3.5596	\$355,964	\$1,112,389	\$0	\$7,388,931	\$5,920,578
Boston Region	42.9671	\$4,296,710	\$13,427,220	\$2,902,060	\$89,188,965	\$68,562,975
Cape Cod	4.5851	\$458,514	\$1,432,857	\$193,036	\$9,517,607	\$7,433,201
Central Mass	8.6901	\$869,013	\$2,715,666	\$984,220	\$18,038,539	\$13,469,640
Franklin Region	2.5397	\$253,975	\$793,671	\$0	\$5,271,878	\$4,224,233
Martha's Vineyard	0.3100	\$30,997	\$96,865	\$0	\$643,418	\$515,556
Merrimack Valley	4.4296	\$442,956	\$1,384,237	\$344,036	\$9,194,653	\$7,023,424
Montachusett	4.4596	\$445,955	\$1,393,611	\$120,756	\$9,256,919	\$7,296,597
Nantucket	0.2200	\$21,998	\$68,743	\$0	\$456,619	\$365,878
Northern Middlesex	3.9096	\$390,961	\$1,221,753	\$276,316	\$8,115,371	\$6,226,341
Old Colony	4.5595	\$455,954	\$1,424,858	\$337,265	\$9,464,473	\$7,246,397
Pioneer Valley	10.8099	\$1,080,992	\$3,378,100	\$1,250,000	\$22,438,689	\$16,729,598
South-eastern Mass	8.9601	\$896,010	\$2,800,033	\$947,311	\$18,598,936	\$13,955,582
<b>Total:</b>	<b>100.00</b>	<b>\$10,000,000</b>	<b>\$31,250,000</b>	<b>\$7,355,000</b>	<b>\$207,575,000</b>	<b>\$158,970,000</b>

**Title 23 – Transportation Funding**

**Federal Fiscal Year 2018**

**FFY 2017-2021**

**Federal Regional Targets**

March 2016 Draft

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching State Funds</b>	<b>Total Funding Based On Obl. Auth.</b>
Base Obligation Authority	\$598,178,885		
Redistribution, as estimated by FHWA	\$26,821,115		
<b>Total Estimated Obligation Authority Available</b>	<b>\$625,000,000</b>		
ABP GANS Repayment	\$68,463,700		
<b>Total Non-Earmarked Available Statewide – (Including State Match)</b>	<b>\$556,536,300</b>	<b>\$123,273,547</b>	<b>\$663,809,847</b>
<b>Subtotal Statewide Infrastructure Items:</b>	<b>\$206,772,409</b>	<b>\$37,082,574</b>	<b>\$227,854,984</b>
<b>Subtotal Other Statewide Items:</b>	<b>\$51,986,729</b>	<b>\$12,996,682</b>	<b>\$64,983,411</b>
<b>Regional Major Infrastructure Projects:</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Subtotal Federal Aid Bridge Program:</b>	<b>\$124,317,161</b>	<b>\$31,079,290</b>	<b>\$155,396,451</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2018 (Continued)**  
**FFY 2017-2021**

**Federal Regional Targets**

March 2016 DRAFT

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
<b>Total Regional Targets:</b>			
CMAQ – Congestion Management and Air Quality Improvement Program	\$20,000,000	\$5,000,000	\$25,000,000
HSIP – Highway Safety Improvement Program	\$9,000,000	\$1,000,000	\$10,000,000
TAP – Transportation Alternatives Program	\$4,555,000	\$1,138,750	\$5,693,750
Regional Maximum Non-CMAQ / HSIP Component:	\$139,905,001	\$34,976,250	\$174,881,251
<b>Total Regional Target:</b>	<b>\$173,460,001</b>	<b>\$42,115,000</b>	<b>\$215,575,001</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2018 (Continued)**  
**FFY 2017-2021**  
**Federal Regional Targets**  
 March 2016 DRAFT

<b>Region</b>	<b>Regional Share (%)</b>	<b>Regional Minimum HSIP Component With State Match</b>	<b>Regional Minimum CMAQ Component With State Match</b>	<b>Regional Minimum TAP Component With State Match</b>	<b>Total Regional Target With State Match</b>	<b>Non CMAQ/ HSIP/ TAP with State Match</b>
Berkshire	3.5596	\$355,964	\$889,911	\$0	\$7,673,703	\$6,427,827
Boston Region	42.9671	\$4,296,710	\$10,741,776	\$2,927,554	\$92,626,334	\$74,660,294
Cape Cod	4.5851	\$458,514	\$1,146,285	\$210,307	\$9,884,419	\$8,069,312
Central Mass	8.6901	\$869,013	\$2,172,533	\$475,200	\$18,733,750	\$15,217,005
Franklin Region	2.5397	\$253,975	\$634,937	\$0	\$5,475,057	\$4,586,146
Martha's Vineyard	0.3100	\$30,997	\$77,492	\$0	\$668,216	\$559,727
Merrimack Valley	4.4296	\$442,956	\$1,107,389	\$350,938	\$9,549,018	\$7,647,735
Monta-chusett	4.4596	\$445,955	\$1,114,889	\$85,141	\$9,613,684	\$7,967,699
Nantucket	0.2200	\$21,998	\$54,995	\$0	\$474,218	\$397,225
Northern Middlesex	3.9096	\$390,961	\$977,402	\$281,859	\$8,428,140	\$6,777,917
Old Colony	4.5595	\$455,954	\$1,139,886	\$345,114	\$9,829,237	\$7,888,282
Pioneer Valley	10.8099	\$1,080,992	\$2,702,480	\$540,000	\$23,303,483	\$18,980,011
South-eastern Mass	8.9601	\$896,010	\$2,240,026	\$477,637	\$19,315,744	\$15,702,071
<b>Total:</b>	<b>100.00</b>	<b>\$10,000,000</b>	<b>\$25,000,000</b>	<b>\$5,693,750</b>	<b>\$215,575,001</b>	<b>\$174,881,251</b>



**Title 23 – Transportation Funding**

**Federal Fiscal Year 2019**

**FFY 2017-2021**

**Federal Regional Targets**

March 2016

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
Base Obligation Authority	\$611,680,644		
Redistribution, as estimated by FHWA	\$18,319,356		
<b>Total Estimated Obligation Authority Available</b>	<b>\$630,000,000</b>		
ABP GANS Repayment	\$73,525,150		
<b>Total Non-Earmarked Available Statewide – (Including State Match)</b>	<b>\$556,474,850</b>	<b>\$116,053,301</b>	<b>\$656,528,152</b>
<b>Subtotal Statewide Infrastructure Items:</b>	<b>\$206,710,960</b>	<b>\$29,862,329</b>	<b>\$220,573,289</b>
<b>Subtotal Other Statewide Items:</b>	<b>\$51,986,729</b>	<b>\$12,996,682</b>	<b>\$64,983,411</b>
<b>Regional Major Infrastructure Projects:</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Subtotal Federal Aid Bridge Program:</b>	<b>\$124,317,161</b>	<b>\$31,079,290</b>	<b>\$155,396,451</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2019 (Continued)**  
**FFY 2017-2021**

**Federal Regional Targets**

March 2016 DRAFT

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
<b>Total Regional Targets:</b>			
CMAQ – Congestion Management and Air Quality Improvement Program	\$20,000,000	\$5,000,000	\$25,000,000
HSIP – Highway Safety Improvement Program	\$9,000,000	\$1,000,000	\$10,000,000
TAP – Transportation Alternatives Program	\$4,540,000	\$1,135,000	\$5,675,000
Regional Maximum Non-CMAQ / HSIP Component:	\$139,920,000	\$34,980,000	\$174,900,000
<b>Total Regional Target:</b>	<b>\$173,460,000</b>	<b>\$42,115,000</b>	<b>\$215,575,000</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2019 (Continued)**  
**FFY 2017-2021**  
**Federal Regional Targets**  
 March 2016 DRAFT

<b>Region</b>	<b>Regional Share (%)</b>	<b>Regional Minimum HSIP Component With State Match</b>	<b>Regional Minimum CMAQ Component With State Match</b>	<b>Regional Minimum TAP Component With State Match</b>	<b>Total Regional Target With State Match</b>	<b>Non CMAQ/ HSIP/ TAP with State Match</b>
Berkshire	3.5596	\$355,964	\$889,911	\$0	\$7,673,703	\$6,427,827
Boston Region	42.9671	\$4,296,710	\$10,741,776	\$2,882,340	\$92,626,333	\$74,705,507
Cape Cod	4.5851	\$458,514	\$1,146,285	\$193,036	\$9,884,419	\$8,086,583
Central Mass	8.6901	\$869,013	\$2,172,533	\$488,961	\$18,733,750	\$15,203,244
Franklin Region	2.5397	\$253,975	\$634,937	\$0	\$5,475,057	\$4,586,146
Martha's Vineyard	0.3100	\$30,997	\$77,492	\$0	\$668,216	\$559,727
Merrimack Valley	4.4296	\$442,956	\$1,107,389	\$345,082	\$9,549,018	\$7,653,590
Montachusett	4.4596	\$445,955	\$1,114,889	\$85,118	\$9,613,684	\$7,967,722
Nantucket	0.2200	\$21,998	\$54,995	\$0	\$474,218	\$397,225
Northern Middlesex	3.9096	\$390,961	\$977,402	\$277,156	\$8,428,140	\$6,782,620
Old Colony	4.5595	\$455,954	\$1,139,886	\$338,242	\$9,829,237	\$7,895,154
Pioneer Valley	10.8099	\$1,080,992	\$2,702,480	\$537,500	\$23,303,483	\$18,982,511
Southeastern Mass	8.9601	\$896,010	\$2,240,026	\$527,565	\$19,315,744	\$15,652,143
<b>Total:</b>	<b>100.00</b>	<b>\$10,000,000</b>	<b>\$25,000,000</b>	<b>\$5,675,000</b>	<b>\$215,575,000</b>	<b>\$174,900,000</b>

**Title 23 – Transportation Funding**

**Federal Fiscal Year 2020**

**Federal Regional Targets**

March 2016 Draft

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
Base Obligation Authority	\$626,330,019		
Redistribution, as estimated by FHWA	\$8,669,981		
<b>Total Estimated Obligation Authority Available</b>	<b>\$635,000,000</b>		
ABP GANS Repayment	\$77,951,600		
<b>Total Non-Earmarked Available Statewide – (Including State Match)</b>	<b>\$557,048,400</b>	<b>\$124,845,391</b>	<b>\$665,893,791</b>
<b>Subtotal Statewide Infrastructure Items:</b>	<b>\$203,200,308</b>	<b>\$37,633,368</b>	<b>\$224,833,676</b>
<b>Subtotal Other Statewide Items:</b>	<b>\$51,986,729</b>	<b>\$12,996,682</b>	<b>\$64,983,411</b>
<b>Regional Major Infrastructure Projects:</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Subtotal Federal Aid Bridge Program:</b>	<b>\$124,317,161</b>	<b>\$31,079,290</b>	<b>\$155,396,451</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2020 (Continued)**  
**FFY 2017-2021**

**Federal Regional Targets**

March 2016 DRAFT

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
<b>Total Regional Targets:</b>			
CMAQ – Congestion Management and Air Quality Improvement Program	\$20,000,000	\$5,000,000	\$25,000,000
HSIP – Highway Safety Improvement Program	\$9,000,000	\$1,000,000	\$10,000,000
TAP – Transportation Alternatives Program	\$5,373,446	\$1,343,362	\$6,716,808
Regional Maximum Non-CMAQ / HSIP Component:	\$143,170,756	\$35,792,689	\$178,963,445
<b>Total Regional Target:</b>	<b>\$177,544,202</b>	<b>\$43,136,051</b>	<b>\$220,680,253</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2020 (Continued)**  
**FFY 2017-2021**  
**Federal Regional Targets**  
 March 2016 DRAFT

<b>Region</b>	<b>Regional Share (%)</b>	<b>Regional Minimum HSIP Component With State Match</b>	<b>Regional Minimum CMAQ Component With State Match</b>	<b>Regional Minimum TAP Component With State Match</b>	<b>Total Regional Target With State Match</b>	<b>Non CMAQ/ HSIP/ TAP with State Match</b>
Berkshire	3.5596	\$355,964	\$889,911	\$30,410	\$7,855,431	\$6,579,146
Boston Region	42.9671	\$4,296,710	\$10,741,776	\$3,259,106	\$94,819,913	\$76,522,320
Cape Cod	4.5851	\$458,514	\$1,146,285	\$242,367	\$10,118,502	\$8,271,336
Central Mass	8.6901	\$869,013	\$2,172,533	\$560,767	\$19,177,403	\$15,575,090
Franklin Region	2.5397	\$253,975	\$634,937	\$21,697	\$5,604,718	\$4,694,110
Martha's Vineyard	0.3100	\$30,997	\$77,492	\$2,648	\$684,040	\$572,903
Merrimack Valley	4.4296	\$442,956	\$1,107,389	\$382,924	\$9,775,158	\$7,841,889
Montachusett	4.4596	\$445,955	\$1,114,889	\$122,343	\$9,841,355	\$8,158,168
Nantucket	0.2200	\$21,998	\$54,995	\$1,879	\$485,448	\$406,576
Northern Middlesex	3.9096	\$390,961	\$977,402	\$310,556	\$8,627,735	\$6,948,816
Old Colony	4.5595	\$455,954	\$1,139,886	\$378,017	\$10,062,013	\$8,088,156
Pioneer Valley	10.8099	\$1,080,992	\$2,702,480	\$629,850	\$23,855,357	\$19,442,035
Southeastern Mass	8.9601	\$896,010	\$2,240,026	\$774,242	\$19,773,180	\$15,862,901
<b>Total:</b>	<b>100.00</b>	<b>\$10,000,000</b>	<b>\$25,000,000</b>	<b>\$6,716,808</b>	<b>\$220,680,253</b>	<b>\$178,963,445</b>

**Title 23 – Transportation Funding**

**Federal Fiscal Year 2021**

**FFY 2017-2021**

**Federal Regional Targets**

March 2016 DRAFT

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
Base Obligation Authority	\$626,330,019		
Redistribution, as estimated by FHWA	\$13,669,981		
<b>Total Estimated Obligation Authority Available</b>	<b>\$640,000,000</b>		
ABP GANS Repayment	\$82,588,050		
<b>Total Non-Earmarked Available Statewide – (Including State Match)</b>	<b>\$557,411,950</b>	<b>\$124,885,785</b>	<b>\$666,297,735</b>
<b>Subtotal Statewide Infrastructure Items:</b>	<b>\$203,563,858</b>	<b>\$37,673,762</b>	<b>\$225,237,620</b>
<b>Subtotal Other Statewide Items:</b>	<b>\$51,986,729</b>	<b>\$12,996,682</b>	<b>\$64,983,411</b>
<b>Regional Major Infrastructure Projects:</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Subtotal Federal Aid Bridge Program:</b>	<b>\$124,317,161</b>	<b>\$31,079,290</b>	<b>\$155,396,451</b>

**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2021 (Continued)**  
**FFY 2017-2021**

**Federal Regional Targets**

March 2016 DRAFT

	<b>Obligation Authority</b>	<b>Obl. Auth. Matching</b>	<b>Total Funding Based On Obl. Auth.</b>
<b>Total Regional Targets:</b>			
CMAQ – Congestion Management and Air Quality Improvement Program	\$20,000,000	\$5,000,000	\$25,000,000
HSIP – Highway Safety Improvement Program	\$9,000,000	\$1,000,000	\$10,000,000
TAP – Transportation Alternatives Program	\$5,578,446	\$1,394,612	\$6,973,058
Regional Maximum Non-CMAQ / HSIP Component:	\$142,965,756	\$35,741,439	\$178,707,195
<b>Total Regional Target:</b>	<b>\$177,544,202</b>	<b>\$43,136,051</b>	<b>\$220,680,253</b>



**Title 23 – Transportation Funding**  
**Federal Fiscal Year 2021 (Continued)**  
**FFY 2017-2021**  
**Federal Regional Targets**  
 March 2016 DRAFT

<b>Region</b>	<b>Regional Share (%)</b>	<b>Regional Minimum HSIP Component With State Match</b>	<b>Regional Minimum CMAQ Component With State Match</b>	<b>Regional Minimum TAP Component With State Match</b>	<b>Total Regional Target With State Match</b>	<b>Non CMAQ/ HSIP/ TAP with State Match</b>
Berkshire	3.5596	\$355,964	\$889,911	\$248,216	\$7,855,431	\$6,361,340
Boston Region	42.9671	\$4,296,710	\$10,741,776	\$2,996,121	\$94,819,913	\$76,785,305
Cape Cod	4.5851	\$458,514	\$1,146,285	\$319,725	\$10,118,502	\$8,193,978
Central Mass	8.6901	\$869,013	\$2,172,533	\$605,968	\$19,177,403	\$15,529,889
Franklin Region	2.5397	\$253,975	\$634,937	\$177,098	\$5,604,718	\$4,538,709
Martha's Vineyard	0.3100	\$30,997	\$77,492	\$21,614	\$684,040	\$553,937
Merrimack Valley	4.4296	\$442,956	\$1,107,389	\$308,876	\$9,775,158	\$7,915,937
Montachusett	4.4596	\$445,955	\$1,114,889	\$310,967	\$9,841,355	\$7,969,544
Nantucket	0.2200	\$21,998	\$54,995	\$15,339	\$485,448	\$393,117
Northern Middlesex	3.9096	\$390,961	\$977,402	\$272,619	\$8,627,735	\$6,986,753
Old Colony	4.5595	\$455,954	\$1,139,886	\$317,940	\$10,062,013	\$8,148,233
Pioneer Valley	10.8099	\$1,080,992	\$2,702,480	\$753,782	\$23,855,357	\$19,318,103
Southeastern Mass	8.9601	\$896,010	\$2,240,026	\$624,793	\$19,773,180	\$16,012,351
<b>Total:</b>	<b>100.00</b>	<b>\$10,000,000</b>	<b>\$25,000,000</b>	<b>\$6,973,058</b>	<b>\$220,680,253</b>	<b>\$178,707,195</b>

The following table shows the total federal programmed amounts in this TIP for each of the five years covered in this document. The funding summaries below show the total Operating and Maintenance costs versus Capital and Other costs, for each year of the TIP. A fiscal constraint finding for the State Transportation Improvement Program will include the cost of operating and maintaining the existing MVMPO transportation system.

## Highway Program Financial Plan Table

### Merrimack Valley Metropolitan Planning Organization

### FY 2017-2021 Transportation Improvement Program

### (FHWA - related funding categories only)

### Total Costs including Federal and State Match\*

### Figures include Federal Aid “target” program & statewide funding

Fiscal Year	Federal Programmed Operating/Maintenance Costs*(inc. Match)	Federal Programmed Capital and Other Costs*(inc. Match)	Total Federal + Match Programmed*	Total Federal + Match Estimated Available Funds*
2017	\$22.36	\$9.86	\$32.22	\$33.57
2018	\$23.00	\$12.62	\$35.62	\$35.73
2019	\$20.58	\$10.98	\$31.56	\$32
2020	\$0	\$13.4	\$13.40	\$14.11
2021	\$9.78	\$0	\$9.78	\$9.78

\* Millions of dollars

The financial plan contained herein is financially constrained and indicates that the Merrimack Valley Metropolitan Planning Organization's FFYs 2017-2021 TIP reflects an emphasis on the maintenance and operation of the current roadway and bridge system with the ability to provide additional capital improvements. Only projects for which funds can be expected have been included.

Appendix B of this document includes a list of Non-federal-aid transportation projects in the region. The projects listed in Appendix B are an integral part of the planning, programming, and priority setting process of the MVMPO.

## Summary of Highway Funding Categories

The following tables contain a breakdown of the project cost totals and federal aid cost portions by federal aid funding categories for each fiscal year and the expected available resources to cover the cost.

### Cost Estimates and Available Resources

#### Summary By Funding Category

#### Highway Projects Federal Fiscal Year 2017

Draft Prepared June 2016

<b>Highway FFY 2017</b>	<b>Estimated Needs MVMPO (in 1000s) Federal Portion of Cost</b>	<b>Estimated Needs MVMPO (in 1000s) Total Project Cost</b>	<b>Available Resources MVMPO Projects (in 1000s) From Region Target</b>
Congestion Mitigation/AQ	\$1,107.39	\$1,384.24	\$1,384.24
Highway Safety (HSIP)	\$0	\$0	\$442.96
Surface Transportation Program (STP)	\$4,892.55	\$6,115.69	\$7,023.42
Transportation Alternatives (TAP)	\$275.23	\$344.04	344.04
Statewide Bridges On System (NHPP)	\$9,600.00	\$12,000.00	\$12,000.00
Statewide Interstate Maintenance (NHPP)	\$8,660.03	\$9,622.26	\$9,622.26
Statewide SRTS (TAP)	\$1,612.92	\$2,016.15	\$2,016.15
Statewide Stormwater Program (STP-TE)	\$588.27	\$735.34	\$735.34
Statewide (TAP)			
<b>Total FFY 2017</b>	<b>\$26,736.39</b>	<b>\$32,217.72</b>	<b>\$33,568.41</b>

**Cost Estimates and Available Resources**  
**Summary By Funding Category**  
**Highway Projects Federal Fiscal Year 2018**  
**Draft Prepared June 2016**

<b>Highway FFY 2018</b>	<b>Estimated Needs MVMPO (in 1000s) Federal Portion of Cost</b>	<b>Estimated Needs MVMPO (in 1000s) Total Project Cost</b>	<b>Available Resources MVMPO Projects (in 1000s) From Region Target</b>
Congestion Mitigation/AQ	\$4,243.44	\$5,304.30	\$5,304.30
Highway Safety (HSIP)	\$398.66	\$442.96	\$442.96
Surface Transportation Program (STP)	\$2,674.15	\$3,342.68	\$3,450.82
Transportation Alternatives (TAP)	\$280.75	\$350.94	\$350.94
Statewide On System Bridges (NHPP)	\$18,400.00	\$23,000.00	\$23,000.00
Statewide CMAQ	\$2,542.24	\$3,177.80	\$3,177.80
Statewide TE			
<b>Total FFY 2018</b>	<b>\$28,539.24</b>	<b>\$35,618.68</b>	<b>\$35,726.82</b>

**Cost Estimates and Available Resources**  
**Summary By Funding Category**  
**Highway Projects Federal Fiscal Year 2019**  
**Draft Prepared June 2016**

<b>Highway FFY 2019</b>	<b>Estimated Needs MVMPO (in 1000s) Federal Portion of Cost</b>	<b>Estimated Needs MVMPO (in 1000s) Total Project Cost</b>	<b>Available Resources MVMPO Projects (in 1000s) From Region Target</b>
Congestion Mitigation/AQ	\$885.91	\$1,107.39	\$1,107.39
Highway Safety (HSIP)	\$0	\$0	\$442.96
Surface Transportation Program (STP)	\$6,122.87	\$7,653.59	\$7,653.59
Transportation Alternatives (TAP)	\$276.07	\$345.08	\$345.08
Statewide On System Bridges (NHPP)	\$12,617.74	\$15,772.18	\$15,772.18
Statewide CMAQ	\$1,499.22	\$1,874.03	\$1,874.03
Statewide Highway Safety Improvement Program (HSIP)	\$4,326.70	\$4,807.45	\$4,807.45
<b>Total FFY 2019</b>	<b>\$25,728.51</b>	<b>\$31,559.72</b>	<b>\$32,002.68</b>

**Cost Estimates and Available Resources  
 Summary By Funding Category  
 Highway Projects Federal Fiscal Year 2020  
 Draft Prepared June 2016**

<b>Highway FFY 2020</b>	<b>Estimated Needs MVMPO (in 1000s) Federal Portion of Cost</b>	<b>Estimated Needs MVMPO (in 1000s) Total Project Cost</b>	<b>Available Resources MVMPO Projects (in 1000s) From Region Target</b>
Congestion Mitigation/AQ	\$885.91	\$1,107.39	\$1,107.39
Highway Safety (HSIP)	\$0	\$0	\$442.96
Surface Transportation Program (STP)	\$6,057.09	\$7,571.36	\$7,841.89
Transportation Alternatives (TAP)	\$306.34	\$382.92	\$382.92
Statewide CMAQ	\$3,472.90	\$4,341.12	\$4,341.12
<b>Total FFY 2020</b>	<b>\$10,722.24</b>	<b>\$13,402.79</b>	<b>\$14,116.28</b>

**Cost Estimates and Available Resources  
 Summary By Funding Category  
 Highway Projects Federal Fiscal Year 2021  
 Draft Prepared June 2016**

<b>Highway FFY 2021</b>	<b>Estimated Needs MVMPO (in 1000s) Federal Portion of Cost</b>	<b>Estimated Needs MVMPO (in 1000s) Total Project Cost</b>	<b>Available Resources MVMPO Projects (in 1000s) From Region Target</b>
Congestion Mitigation/AQ	\$885.91	\$1,107.39	\$1,107.39
Highway Safety (HSIP)	\$398.66	\$442.96	\$442.96
Surface Transportation Program (STP)	\$6,332.75	\$7,915.94	\$7,915.94
Transportation Alternatives (TAP)	\$247.10	\$308.87	\$308.87
<b>Total FFY 2021</b>	<b>\$7,864.42</b>	<b>\$9,775.16</b>	<b>\$9,775.16</b>

## MassDOT Estimated Highway Operating and Maintenance Expenditures FFY 2017 to 2021

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 1: Non-Federal Aid**

as of May 20, 2016

### Section I – Non-Federal Aid Maintenance Projects – State Bond funds

Program Group/Sub Group	Estimated SFY 2017 Expenditures	Estimated SFY 2018 Expenditures	Estimated SFY 2019 Expenditures	Estimated SFY 2020 Expenditures	Estimated SFY 2021 Expenditures
<b>01- Bridge Repair &amp; Replacement</b>					
New Bridge (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Replacement (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Reconstruction/Rehab	\$1,021,741	\$414,766	\$526,351	\$654,286	\$531,801
Drawbridge Maintenance	\$0	\$0	\$0	\$0	\$0
Structure Maintenance	\$37,538	\$50,050	\$43,781	\$43,790	\$45,874
<b>02 – Bridge Painting</b>					
Painting - Structural	\$0	\$0	\$0	\$0	\$0
<b>03 – Roadway Reconstruction</b>					
Hwy Relocation (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Recon. –Added Capacity (Excluded)	n/a	n/a	n/a	n/a	n/a



Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region** – Part 1: Non-Federal Aid

as of May 20, 2016

**Section I – Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>03 – Roadway Reconstruction (Cont.)</b>					
New Construction (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Reconstr – Restr and Rehab	\$0	\$0	\$0	\$0	\$0
Hwy Reconstr – No Added Capacity	\$336,585	\$115,447	\$150,677	\$200,903	\$155,676
Hwy Reconstr – Minor Widening	\$0	\$0	\$0	\$0	\$0
Hwy Reconstr – Major Widening	\$0	\$0	\$0	\$0	\$0
<b>04 – Roadway Resurfacing</b>					
Resurfacing	\$5,471	\$7,294	\$4,255	\$5,673	\$5,741

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 1: Non-Federal Aid**

as of May 20, 2016

**Section I – Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>05 – Intersection &amp; Safety</b>					
Impact Attenuators	\$0	\$0	\$0	\$0	\$0
Safety Improvements	\$0	\$0	\$0	\$0	\$0
Traffic Signals	\$0	\$0	\$0	\$0	\$0
<b>06 – Signs &amp; Lighting</b>					
Electrical	\$0	\$0	\$0	\$0	\$0
Sign Installation / Upgrading	\$0	\$0	\$0	\$0	\$0
Structural Signing	\$0	\$0	\$0	\$0	\$0
<b>07 – Guardrail</b>					
Guard Rail and Fencing	\$0	\$0	\$0	\$0	\$0

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 1: Non-Federal Aid**

as of May 20, 2016

**Section I – Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>08 – Maintenance</b>					
Catch Basin Cleaning	\$0	\$0	\$0	\$0	\$0
Crack Sealing	\$0	\$0	\$0	\$0	\$0
Landscaping	\$0	\$0	\$0	\$0	\$0
Mowing and Spraying	\$0	\$0	\$0	\$0	\$0
Pavement Marking	\$0	\$0	\$0	\$0	\$0
Sewer and Water	\$0	\$0	\$0	\$0	\$0
Process/Recycle/Transport Soils	\$0	\$0	\$0	\$0	\$0
Contract Highway Maintenance	\$0	\$0	\$0	\$0	\$0
<b>09 – Facilities</b>					
Chemical Storage Sheds	\$0	\$0	\$0	\$0	\$0
Vertical Construction	\$1,597,409	\$696,796	\$782,307	\$1,025,504	\$834,869

Massachusetts Highway Department  
 Summary of Operating and Maintenance Expenditures  
**Merrimack Valley Region** – Part 1: Non-Federal Aid  
 as of May 20, 2016

**Section I – Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>10 – Bikeways (Excluded)</b>	n/a	n/a	n/a	n/a	n/a
<b>11 – Other</b>					
Demolition	\$0	\$0	\$0	\$0	\$0
Drilling and Boring	\$0	\$0	\$0	\$0	\$0
Highway Sweeping	\$0	\$0	\$0	\$0	\$0
Intelligent Transportation Sys	\$0	\$0	\$0	\$0	\$0
Marine Construction	\$0	\$0	\$0	\$0	\$0
Miscellaneous / No Prequal	\$0	\$0	\$0	\$0	\$0
Reclamation	\$0	\$0	\$0	\$0	\$0
Underground Tank Removal Replace	\$0	\$0	\$0	\$0	\$0
Unknown	\$0	\$0	\$0	\$0	\$0
<b>Grand Total NFA:</b>	<b>\$2,998,744</b>	<b>\$1,284,354</b>	<b>\$1,507,372</b>	<b>\$1,930,156</b>	<b>\$1,573,961</b>

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 2: Federal Aid**

as of May 20, 2016

**Federal Aid Maintenance Projects**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>01- Bridge Repair &amp; Replacement</b>					
New Bridge (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Replacement (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Reconstruction/Rehab	\$5,871	\$3,819	\$3,230	\$4,306	\$3,785
Drawbridge Maintenance	\$0	\$0	\$0	\$0	\$0
Structure Maintenance	\$1,092,751	\$1,456,849	\$1,298,718	\$1,282,773	\$1,346,113
<b>02 – Bridge Painting</b>					
Painting - Structural	\$1,862,396	\$1,223,296	\$1,505,484	\$1,530,392	\$1,419,724
<b>03 – Roadway Reconstruction</b>					
Hwy Relocation (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Recon. –Added Capacity (Excluded)	n/a	n/a	n/a	n/a	n/a

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 2: Federal Aid**

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>03 – Roadway Reconstruction (Cont.)</b>					
New Construction (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Reconstr – Restr and Rehab	\$4,611	\$1,537	\$2,049	\$2,733	\$2,106
Hwy Reconstr – No Added Capacity	\$15,387,837	\$20,250,735	\$19,821,320	\$18,486,631	\$19,519,562
Hwy Reconstr – Minor Widening	\$19,819	\$6,606	\$8,808	\$11,744	\$9,053
Hwy Reconstr – Major Widening	\$0	\$0	\$0	\$0	\$0
<b>04 – Roadway Resurfacing</b>					
Resurfacing	\$6,126,646	\$4,507,292	\$4,885,925	\$5,173,288	\$4,855,502

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 2: Federal Aid**

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>05 – Intersection &amp; Safety</b>					
Impact Attenuators	\$0	\$0	\$0	\$0	\$0
Safety Improvements	\$0	\$0	\$0	\$0	\$0
Traffic Signals	\$319,780	\$126,312	\$152,865	\$199,652	\$159,610
<b>06 – Signs &amp; Lighting</b>					
Electrical	\$0	\$0	\$0	\$0	\$0
Sign Installation / Upgrading	\$0	\$0	\$0	\$0	\$0
Structural Signing	\$1,692	\$564	\$752	\$1,002	\$773
<b>07 – Guardrail</b>					
Guard Rail and Fencing	\$0	\$0	\$0	\$0	\$0

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 2: Federal Aid**

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>08 – Maintenance</b>					
Catch Basin Cleaning	\$0	\$0	\$0	\$0	\$0
Crack Sealing	\$0	\$0	\$0	\$0	\$0
Landscaping	\$124,191	\$165,588	\$220,784	\$170,188	\$185,520
Mowing and Spraying	\$0	\$0	\$0	\$0	\$0
Pavement Marking	\$0	\$0	\$0	\$0	\$0
Sewer and Water	\$0	\$0	\$0	\$0	\$0
Process/Recycle/Transport Soils	\$0	\$0	\$0	\$0	\$0
Contract Highway Maintenance	\$0	\$0	\$0	\$0	\$0
<b>09 – Facilities</b>					
Chemical Storage Sheds	\$0	\$0	\$0	\$0	\$0
Vertical Construction	\$0	\$0	\$0	\$0	\$0



Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Merrimack Valley Region – Part 2: Federal Aid**

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>10 – Bikeways (Excluded)</b>	n/a	n/a	n/a	n/a	n/a
<b>11 – Other</b>					
Demolition	\$0	\$0	\$0	\$0	\$0
Drilling and Boring	\$0	\$0	\$0	\$0	\$0
Highway Sweeping	\$0	\$0	\$0	\$0	\$0
Intelligent Transportation Sys	\$1,058	\$353	\$470	\$627	\$483
Marine Construction	\$0	\$0	\$0	\$0	\$0
Miscellaneous / No Prequal	\$173,957	\$110,529	\$96,857	\$127,114	\$111,500
Reclamation	\$0	\$0	\$0	\$0	\$0
Underground Tank Removal Replace	\$0	\$0	\$0	\$0	\$0
Unknown	\$0	\$0	\$0	\$0	\$0
<b>Grand Total NFA:</b>	<b>\$25,120,609</b>	<b>\$27,853,480</b>	<b>\$27,997,263</b>	<b>\$26,990,451</b>	<b>\$27,613,731</b>

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>01- Bridge Repair &amp; Replacement</b>					
New Bridge (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Replacement (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Reconstruction/Rehab	\$33,519,818	\$33,737,676	\$32,549,024	\$33,268,839	\$33,185,180
Drawbridge Maintenance	\$6,558,629	\$6,541,360	\$6,469,051	\$6,523,013	\$6,511,142
Structure Maintenance	\$55,082,841	\$54,278,812	\$53,806,086	\$54,389,247	\$54,158,048
<b>02 – Bridge Painting</b>					
Painting - Structural	\$2,026,835	\$2,101,739	\$2,032,633	\$2,053,736	\$2,062,703
<b>03 – Roadway Reconstruction</b>					
Hwy Relocation (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Recon. –Added Capacity (Excluded)	n/a	n/a	n/a	n/a	n/a

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total – Part 1: Non-Federal Aid**

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>03 – Roadway Reconstruction (Cont.)</b>					
New Construction (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Reconstr – Restr and Rehab	\$407,539	\$186,651	\$212,713	\$268,968	\$222,777
Hwy Reconstr – No Added Capacity	\$361,593	\$125,966	\$164,064	\$217,208	\$169,079
Hwy Reconstr – Minor Widening	\$1,123,095	\$1,478,852	\$1,791,900	\$1,464,616	\$1,578,456
Hwy Reconstr – Major Widening	\$2,562,144	\$2,647,016	\$2,531,887	\$2,580,349	\$2,586,418
<b>04 – Roadway Resurfacing</b>					
Resurfacing	\$41,786,147	\$46,173,175	\$40,419,973	\$42,793,098	\$43,128,749

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total – Part 1: Non-Federal Aid**

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>05 – Intersection &amp; Safety</b>					
Impact Attenuators	\$402,876	\$454,129	\$435,388	\$430,798	\$440,105
Safety Improvements	\$0	\$0	\$0	\$0	\$0
Traffic Signals	\$2,792,697	\$2,594,426	\$2,440,993	\$2,609,372	\$2,548,264
<b>06 – Signs &amp; Lighting</b>					
Electrical	\$1,811,724	\$1,847,913	\$1,834,655	\$1,831,431	\$1,838,000
Sign Installation / Upgrading	\$573,731	\$491,387	\$439,997	\$501,705	\$477,696
Structural Signing	\$466,454	\$417,544	\$436,398	\$440,132	\$431,358
<b>07 – Guardrail</b>					
Guard Rail and Fencing	\$4,837,759	\$5,374,294	\$5,614,681	\$5,275,578	\$5,421,518

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total – Part 1: Non-Federal Aid**

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>08 – Maintenance</b>					
Catch Basin Cleaning	\$5,397,124	\$5,446,604	\$5,136,815	\$5,326,848	\$5,303,422
Contract Highway Maintenance	\$1,004,657	\$551,139	\$524,958	\$693,584	\$589,894
Crack Sealing	\$7,142,254	\$6,643,654	\$6,165,195	\$6,650,368	\$6,486,406
Landscaping	\$4,461,845	\$4,271,234	\$4,147,973	\$4,293,684	\$4,237,630
Mowing and Spraying	\$984,894	\$1,174,528	\$1,487,618	\$1,215,680	\$1,292,608
Pavement Marking	\$3,940,701	\$3,813,562	\$3,625,737	\$3,793,333	\$3,744,211
Process/Recycle/Transport Soils	\$131,322	\$46,806	\$60,709	\$79,613	\$62,376
Sewer and Water	\$596,872	\$734,687	\$803,068	\$711,542	\$749,766
<b>09 – Facilities</b>					
Chemical Storage Sheds	\$903,196	\$921,251	\$900,711	\$908,386	\$910,116
Vertical Construction	\$12,766,702	\$11,623,042	\$12,456,670	\$12,282,138	\$12,120,616

Massachusetts Highway Department  
 Summary of Operating and Maintenance Expenditures

**State Total – Part 1: Non-Federal Aid**

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>10 – Bikeways (Excluded)</b>	n/a	n/a	n/a	n/a	n/a
<b>11 – Other</b>					
Demolition	\$102,207	\$51,501	\$53,347	\$69,018	\$57,955
Drilling and Boring	\$6,328	\$8,437	\$6,642	\$7,136	\$7,405
Highway Sweeping	\$650,015	\$633,814	\$550,093	\$611,307	\$598,404
Intelligent Transportation Sys	\$83,347	\$80,756	\$64,322	\$76,142	\$73,740
Marine Construction	\$0	\$0	\$0	\$0	\$0
Miscellaneous / No Prequal	\$2,346,038	\$2,366,321	\$2,429,539	\$2,380,633	\$2,392,164
Reclamation	\$289,906	\$386,541	\$413,689	\$363,379	\$387,870
Underground Tank Removal Replace	\$0	\$0	\$0	\$0	\$0
Hazardous Waste Remediation	\$17,805	\$5,935	\$7,913	\$10,551	\$8,133
Unknown	\$1,356,608	\$1,636,167	\$1,551,127	\$1,514,634	\$1,567,309
<b>Section I Total:</b>	<b>\$196,495,704</b>	<b>\$198,846,919</b>	<b>\$191,565,570</b>	<b>\$195,636,064</b>	<b>\$195,349,518</b>

Massachusetts Highway Department  
 Summary of Operating and Maintenance Expenditures

**State Total – Part 1: Non-Federal Aid**

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

**Section II – Non-Federal Aid Highway Operations - State Operating Budget Funding**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>12 – Snow and Ice Operations &amp; Materials</b>	\$110,899,956	\$115,607,787	\$114,526,326	\$105,356,633	\$111,597,675
<b>13 – District Maintenance Payroll</b> (Mowing, Litter Management, Sight Distance Clearing, Etc.)	\$38,438,161	\$38,409,044	\$37,745,292	\$36,858,690	\$37,862,797
<b>Section II Total:</b>	<b>\$149,338,117</b>	<b>\$154,016,831</b>	<b>\$152,271,618</b>	<b>\$142,215,323</b>	<b>\$149,460,472</b>
<b>Grand Total NFA:</b>	<b>\$345,833,822</b>	<b>\$352,863,750</b>	<b>\$343,837,188</b>	<b>\$337,851,388</b>	<b>\$344,809,990</b>

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>01- Bridge Repair &amp; Replacement</b>					
New Bridge (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Replacement (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Reconstruction/Rehab	\$192,537,060	\$184,253,340	\$174,736,422	\$183,842,274	\$180,944,012
Drawbridge Maintenance	\$0	\$0	\$0	\$0	\$0
Structure Maintenance	\$19,410,398	\$22,030,361	\$21,003,679	\$20,814,812	\$21,282,950
<b>02 – Bridge Painting</b>					
Painting - Structural	\$1,862,396	\$1,223,296	\$1,505,484	\$1,530,392	\$1,419,724
<b>03 – Roadway Reconstruction</b>					
Hwy Relocation (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Recon. –Added Capacity (Excluded)	n/a	n/a	n/a	n/a	n/a



Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>03 – Roadway Reconstruction (Cont.)</b>					
New Construction (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Reconstr – Restr and Rehab	\$34,273,785	\$37,386,882	\$36,021,263	\$35,893,977	\$36,434,041
Hwy Reconstr – No Added Capacity	\$41,683,394	\$45,828,931	\$43,559,156	\$43,690,494	\$44,359,527
Hwy Reconstr – Minor Widening	\$20,023,911	\$22,058,273	\$21,765,090	\$21,282,424	\$21,701,929
Hwy Reconstr – Major Widening	\$2,172,779	\$2,555,886	\$2,305,088	\$2,344,584	\$2,401,853
<b>04 – Roadway Resurfacing</b>					
Resurfacing	\$106,561,879	\$103,852,675	\$101,009,470	\$103,808,008	\$102,890,051

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>05 – Intersection &amp; Safety</b>					
Impact Attenuators	\$0	\$0	\$0	\$0	\$0
Safety Improvements	\$1,800	\$600	\$800	\$1,066	\$822
Traffic Signals	\$9,950,226	\$11,306,096	\$10,407,814	\$10,554,712	\$10,756,207
<b>06 – Signs &amp; Lighting</b>					
Electrical	\$986,518	\$583,287	\$585,349	\$718,384	\$629,007
Sign Installation / Upgrading	\$2,339,176	\$2,169,688	\$1,661,002	\$2,056,622	\$1,962,437
Structural Signing	\$6,133,609	\$6,039,073	\$6,375,971	\$6,182,885	\$6,199,310
<b>07 – Guardrail</b>					
Guard Rail and Fencing	\$1,045,699	\$765,621	\$621,832	\$811,051	\$732,835

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>08 – Maintenance</b>					
Catch Basin Cleaning	\$9,639	\$12,852	\$7,497	\$9,996	\$10,115
Contract Highway Maintenance	\$133,246	\$175,210	\$106,311	\$138,256	\$139,925
Crack Sealing	\$0	\$0	\$0	\$0	\$0
Landscaping	\$460,767	\$594,890	\$701,958	\$585,872	\$627,573
Mowing and Spraying	\$0	\$0	\$0	\$0	\$0
Pavement Marking	\$398,904	\$487,460	\$519,534	\$468,633	\$491,876
Process/Recycle/Transport Soils	\$526,704	\$702,272	\$936,363	\$721,780	\$786,805
Sewer and Water	\$82,673	\$110,230	\$146,974	\$113,292	\$123,499
<b>09 – Facilities</b>					
Chemical Storage Sheds	\$0	\$0	\$0	\$0	\$0
Vertical Construction	\$4,778,711	\$6,367,594	\$8,490,125	\$6,545,476	\$7,134,398

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**State Total** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>10 – Bikeways (Excluded)</b>	n/a	n/a	n/a	n/a	n/a
<b>11 – Other</b>					
Demolition	\$0	\$0	\$0	\$0	\$0
Drilling and Boring	\$305	\$102	\$136	\$181	\$139
Highway Sweeping	\$0	\$0	\$0	\$0	\$0
Intelligent Transportation Sys	\$8,809,822	\$39,747,224	\$11,144,514	\$9,900,520	\$10,264,086
Marine Construction	\$885,249	\$295,083	\$393,444	\$524,592	\$404,373
Miscellaneous / No Prequal	\$622,756	\$684,518	\$615,078	\$640,784	\$646,793
Reclamation	\$589,444	\$780,688	\$470,451	\$613,527	\$621,555
Underground Tank Removal Replace	\$0	\$0	\$0	\$0	\$0
Unknown	\$443	\$591	\$345	\$460	\$465
<b>Grand Total Federal Aid:</b>	<b>\$456,281,291</b>	<b>\$460,012,722</b>	<b>\$445,091,146</b>	<b>\$453,795,053</b>	<b>\$452,966,307</b>

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>01- Bridge Repair &amp; Replacement</b>					
New Bridge (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Replacement (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Reconstruction/Rehab	\$818,992	\$976,172	\$658,509	\$817,891	\$817,524
Drawbridge Maintenance	\$6,222,343	\$6,273,905	\$6,267,804	\$6,254,684	\$6,265,464
Structure Maintenance	\$29,570,731	\$27,473,077	\$27,267,652	\$28,103,820	\$27,614,850
<b>02 – Bridge Painting</b>					
Painting - Structural	\$908,739	\$882,812	\$782,346	\$857,966	\$841,041
<b>03 – Roadway Reconstruction</b>					
Hwy Relocation (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Recon. –Added Capacity (Excluded)	n/a	n/a	n/a	n/a	n/a

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>03 – Roadway Reconstruction (Cont.)</b>					
New Construction (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Reconstr – Restr and Rehab	\$373,528	\$159,748	\$190,114	\$241,130	\$196,998
Hwy Reconstr – No Added Capacity	\$0	\$0	\$0	\$0	\$0
Hwy Reconstr – Minor Widening	\$0	\$0	\$0	\$0	\$0
Hwy Reconstr – Major Widening	\$0	\$0	\$0	\$0	\$0
<b>04 – Roadway Resurfacing</b>					
Resurfacing	\$26,795,308	\$26,327,308	\$24,585,035	\$25,902,551	\$25,604,965

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>05 – Intersection &amp; Safety</b>					
Impact Attenuators	\$402,876	\$454,129	\$435,388	\$430,798	\$440,105
Safety Improvements	\$0	\$0	\$0	\$0	\$0
Traffic Signals	\$2,784,931	\$2,584,072	\$2,434,953	\$2,601,319	\$2,540,115
<b>06 – Signs &amp; Lighting</b>					
Electrical	\$1,809,483	\$1,847,166	\$1,833,659	\$1,830,102	\$1,836,976
Sign Installation / Upgrading	\$573,731	\$491,387	\$439,997	\$501,705	\$477,696
Structural Signing	\$466,454	\$417,544	\$436,398	\$440,132	\$431,358
<b>07 – Guardrail</b>					
Guard Rail and Fencing	\$4,836,843	\$5,373,073	\$5,613,969	\$5,274,628	\$5,420,557

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>08 – Maintenance</b>					
Catch Basin Cleaning	\$5,397,124	\$5,446,604	\$5,136,815	\$5,326,848	\$5,303,422
Crack Sealing	\$1,004,657	\$551,139	\$524,958	\$693,584	\$589,894
Landscaping	\$7,142,254	\$6,643,654	\$6,165,195	\$6,650,368	\$6,486,406
Mowing and Spraying	\$4,459,801	\$4,268,509	\$4,146,384	\$4,291,565	\$4,235,486
Pavement Marking	\$984,894	\$1,174,528	\$1,487,618	\$1,215,680	\$1,292,608
Sewer and Water	\$3,939,428	\$3,813,137	\$3,625,171	\$3,792,579	\$3,743,629
Process/Recycle/Transport Soils	\$0	\$0	\$0	\$0	\$0
Contract Highway Maintenance	\$594,912	\$732,074	\$801,544	\$709,510	\$747,709
<b>09 – Facilities</b>					
Chemical Storage Sheds	\$903,196	\$921,251	\$900,711	\$908,386	\$910,116
Vertical Construction	\$6,031,111	\$6,611,411	\$7,018,249	\$6,553,590	\$6,727,750



Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>10 – Bikeways (Excluded)</b>	n/a	n/a	n/a	n/a	n/a
<b>11 – Other</b>					
Demolition	\$0	\$0	\$0	\$0	\$0
Drilling and Boring	\$6,328	\$8,437	\$6,642	\$7,136	\$7,405
Highway Sweeping	\$650,015	\$633,814	\$550,093	\$611,307	\$598,404
Intelligent Transportation Sys	\$73,955	\$69,932	\$49,890	\$64,592	\$61,471
Marine Construction	\$0	\$0	\$0	\$0	\$0
Miscellaneous / No Prequal	\$2,129,491	\$2,196,357	\$2,204,095	\$2,176,648	\$2,192,367
Reclamation	\$0	\$0	\$0	\$0	\$0
Underground Tank Removal Replace	\$0	\$0	\$0	\$0	\$0
Hazardous Waste Remediation	\$17,805	\$5,935	\$7,913	\$10,551	\$8,133
Unknown	\$1,356,608	\$1,636,167	\$1,551,127	\$1,514,634	\$1,567,309
<b>Section I Total:</b>	<b>\$196,495,704</b>	<b>\$198,846,919</b>	<b>\$191,565,570</b>	<b>\$195,636,064</b>	<b>\$195,349,518</b>

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 1: Non-Federal Aid

as of May 20, 2016

**Non-Federal Aid Maintenance Projects – State Bond funds (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>Section II Total:</b>	<b>\$149,338,117</b>	<b>\$154,016,831</b>	<b>\$152,271,618</b>	<b>\$142,215,323</b>	<b>\$149,460,472</b>
<b>Grand Total NFA:</b>	<b>\$259,593,656</b>	<b>\$261,990,171</b>	<b>\$257,393,846</b>	<b>\$249,999,026</b>	<b>\$256,420,229</b>

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>01- Bridge Repair &amp; Replacement</b>					
New Bridge (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Replacement (Excluded)	n/a	n/a	n/a	n/a	n/a
Bridge Reconstruction/Rehab	\$0	\$0	\$0	\$0	\$0
Drawbridge Maintenance	\$0	\$0	\$0	\$0	\$0
Structure Maintenance	\$19,410,398	\$22,030,361	\$21,003,679	\$20,814,812	\$21,282,950
<b>02 – Bridge Painting</b>					
Painting - Structural	\$0	\$0	\$0	\$0	\$0
<b>03 – Roadway Reconstruction</b>					
Hwy Relocation (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Recon. –Added Capacity (Excluded)	n/a	n/a	n/a	n/a	n/a

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>03 – Roadway Reconstruction (Cont.)</b>					
New Construction (Excluded)	n/a	n/a	n/a	n/a	n/a
Hwy Reconstr – Restr and Rehab	\$1,327,895	\$1,371,005	\$1,228,748	\$1,309,216	\$1,302,990
Hwy Reconstr – No Added Capacity	\$743,411	\$941,877	\$917,368	\$867,552	\$908,933
Hwy Reconstr – Minor Widening	\$0	\$0	\$0	\$0	\$0
Hwy Reconstr – Major Widening	\$0	\$0	\$0	\$0	\$0
<b>04 – Roadway Resurfacing</b>					
Resurfacing	\$1,063,258	\$1,417,677	\$1,872,846	\$1,451,260	\$1,580,595

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>05 – Intersection &amp; Safety</b>					
Impact Attenuators	\$0	\$0	\$0	\$0	\$0
Safety Improvements	\$0	\$0	\$0	\$0	\$0
Traffic Signals	\$578,370	\$771,160	\$786,837	\$712,123	\$756,707
<b>06 – Signs &amp; Lighting</b>					
Electrical	\$711,277	\$332,457	\$366,109	\$469,948	\$389,505
Sign Installation / Upgrading	\$2,732	\$2,014	\$2,686	\$2,477	\$2,392
Structural Signing	\$0	\$0	\$0	\$0	\$0
<b>07 – Guardrail</b>					
Guard Rail and Fencing	\$0	\$0	\$0	\$0	\$0

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>08 – Maintenance</b>					
Catch Basin Cleaning	\$9,639	\$12,852	\$7,497	\$9,996	\$10,115
Contract Highway Maintenance	\$133,246	\$175,210	\$106,311	\$138,256	\$139,925
Crack Sealing	\$0	\$0	\$0	\$0	\$0
Landscaping	\$9,823	\$13,098	\$17,464	\$13,462	\$14,674
Mowing and Spraying	\$0	\$0	\$0	\$0	\$0
Pavement Marking	\$398,904	\$487,460	\$519,534	\$468,633	\$491,876
Process/Recycle/Transport Soils	\$0	\$0	\$0	\$0	\$0
Sewer and Water	\$0	\$0	\$0	\$0	\$0
<b>09 – Facilities</b>					
Chemical Storage Sheds	\$0	\$0	\$0	\$0	\$0
Vertical Construction	\$11,714	\$15,329	\$20,439	\$15,827	\$17,198

Massachusetts Department of Transportation – Highway Division

Summary of Operating and Maintenance Expenditures

**Statewide Contracts** – Part 2: Federal Aid

as of May 20, 2016

**Federal Aid Maintenance Projects (Cont.)**

<b>Program Group/Sub Group</b>	<b>Estimated SFY 2017 Expenditures</b>	<b>Estimated SFY 2018 Expenditures</b>	<b>Estimated SFY 2019 Expenditures</b>	<b>Estimated SFY 2020 Expenditures</b>	<b>Estimated SFY 2021 Expenditures</b>
<b>10 – Bikeways (Excluded)</b>	n/a	n/a	n/a	n/a	n/a
<b>11 – Other</b>					
Demolition	\$0	\$0	\$0	\$0	\$0
Drilling and Boring	\$305	\$102	\$136	\$181	\$139
Highway Sweeping	\$0	\$0	\$0	\$0	\$0
Intelligent Transportation Sys	\$6,251,591	\$7,097,285	\$8,114,072	\$7,154,316	\$7,455,224
Marine Construction	\$0	\$0	\$0	\$0	\$0
Miscellaneous / No Prequal	\$3,235	\$1,078	\$1,438	\$1,917	\$1,478
Reclamation	\$0	\$0	\$0	\$0	\$0
Underground Tank Removal Replace	\$0	\$0	\$0	\$0	\$0
Unknown	\$443	\$591	\$345	\$460	\$465
<b>Grand Total Federal Aid:</b>	<b>\$15,929,752</b>	<b>\$18,096,483</b>	<b>\$19,268,609</b>	<b>\$17,764,948</b>	<b>\$18,376,680</b>

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## **Part C. 2. Transit Program Financial Plan**

### **Planning Justification for Transit Projects**

The Merrimack Valley region's FFYs 2017-2021 TIP federal aid transit projects are to be carried out using Section 5307 received by the MVRTA from the FTA. The Authority will design and oversee construction of the Newburyport Intermodal Center with Non-Federal Aid funding. With the exception of the provision of operating assistance, the planning justification for the Section 5307 projects are contained in the Merrimack Valley Regional Transit Authority's Five Year Capital Program for 2017-2021.

### **MVRTA Financial Status**

The FAST Act requires that projects appearing in the TIP must have an identified source of funding that will allow them to be completed within the time period contemplated. Transit projects appearing in the FY 2017-2021 TIP meet this criterion.

However, while the program of transit projects shown in this TIP is a fiscally constrained plan for the MPO, it does not meet all of the MVRTA's capital funding needs as identified in the Authority's 2017-2021 Capital Program. A copy of this report can be found in Appendix E. Should additional state funding for transit capital spending become available, projects that appear in the MVRTA's FFY 2017 to FFY 2021 Capital Program can be added to the 2017-2021 MVMPO TIP program by amending the document.

## Transit Program Financial Plan Table

Merrimack Valley Metropolitan Planning Organization  
 FY 2017-2021 Transportation Improvement Program  
 (FTA related funding categories only)  
 Total Costs including Federal, State and Local\*

<b>Fiscal Year</b>	<b>Federal Programmed Operating/ Maintenance Costs* (inc. Match)</b>	<b>Federal Programmed Capital and Other Costs* (inc. Match)</b>	<b>Total Federal + Match Programmed*</b>	<b>Total Federal + Match Estimated Available Funds*</b>
<b>2017</b>	\$9.30	\$0.40	\$9.70	\$9.70
<b>2018</b>	\$9.03	\$0.10	\$9.13	\$9.13
<b>2019</b>	\$6.30	\$1.47	\$7.77	\$7.77
<b>2020</b>	\$8.76	\$0.10	\$8.86	\$8.86
<b>2021</b>	\$8.18	\$0.10	\$8.28	\$8.28

\* Millions of dollars

## Summary of Transit Funding Categories

### Cost Estimates and Available Resources

#### Summary by Funding Category

#### 2017 Transit Projects

#### FTA Funding Program Summaries (Federal dollars only)

<b>Merrimack Valley Regional Transit Authority FTA Funding Programs</b>	<b>Estimated Authorization FFY 2017</b>	<b>Regional TIP FFY 2017</b>	<b>Balance FFY 2017</b>
Section 5307 Capital and Planning Formula	\$5,681,645	\$2,177,810	\$3,503,835
Section 5307 Transit Enhancements			
<b>Subtotal</b>	<b>\$5,681,645</b>	<b>\$2,117,810</b>	<b>\$3,503,835</b>
Section 5307 Capital and Planning Formula Carryover	\$5,204,310	\$5,204,310	\$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
<b>Subtotal</b>	<b>\$5,204,310</b>	<b>\$5,204,310</b>	<b>\$0</b>
<b>Section 5307 Total</b>	<b>\$10,885,955</b>	<b>\$7,382,120</b>	<b>\$3,503,835</b>
Section 5309 Bus			
Section 5309 Fixed Guideway			
<b>Section 5309 Total</b>			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
<b>Federal Aid Total</b>	<b>\$10,885,955</b>	<b>\$7,382,120</b>	<b>\$3,503,835</b>
Other Transit Funding (Non-Federal Aid)	\$2,500,000	\$2,500,000	\$0

**Cost Estimates and Available Resources  
Summary by Funding Category  
2018 Transit Projects**

**FTA Funding Program Summaries (Federal dollars only)**

<b>Merrimack Valley Regional Transit Authority FTA Funding Programs</b>	<b>Estimated Authorization FFY 2018</b>	<b>Regional TIP FFY 2018</b>	<b>Balance FFY 2018</b>
Section 5307 Capital and Planning Formula	\$5,818,010	\$3,380,630	\$2,437,380
Section 5307 Transit Enhancements			
<b>Subtotal</b>	<b>\$5,818,010</b>	<b>\$3,380,630</b>	<b>\$2,437,380</b>
Section 5307 Capital and Planning Formula Carrover	\$3,503,835	\$3,503,835	\$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
<b>Subtotal</b>	<b>\$3,503,835</b>	<b>\$3,503,835</b>	<b>\$0</b>
<b>Section 5307 Total</b>	<b>\$9,321,845</b>	<b>\$6,884,465</b>	<b>\$2,437,380</b>
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
<b>Federal Aid Total</b>	<b>\$9,321,845</b>	<b>\$6,884,465</b>	<b>\$2,437,380</b>
Other Transit Funding (Non-Federal Aid)	\$2,500,000	\$2,500,000	\$0

**Cost Estimates and Available Resources  
Summary by Funding Category  
2019 Transit Projects**

**FTA Funding Program Summaries (Federal dollars only)**

<b>Merrimack Valley Regional Transit Authority FTA Funding Programs</b>	<b>Estimated Authorization FFY 2019</b>	<b>Regional TIP FFY 2019</b>	<b>Balance FFY 2019</b>
Section 5307 Capital and Planning Formula	\$5,957,640	\$3,319,325	\$2,638,315
Section 5307 Transit Enhancements			
<b>Subtotal</b>	<b>\$5,957,640</b>	<b>\$3,319,325</b>	<b>\$2,638,315</b>
Section 5307 Capital and Planning Formula Carryover	\$2,437,380	\$2,437,380	\$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
<b>Subtotal</b>	<b>\$2,437,380</b>	<b>\$2,437,380</b>	<b>\$0</b>
<b>Section 5307 Total</b>	<b>\$8,395,020</b>	<b>\$5,756,705</b>	<b>\$2,638,315</b>
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
Federal Aid Total	<b>\$8,395,020</b>	<b>\$5,756,705</b>	<b>\$2,638,315</b>
Other Transit Funding			

**Cost Estimates and Available Resources  
Summary by Funding Category  
2020 Transit Projects**

**FTA Funding Program Summaries (Federal dollars only)**

<b>Merrimack Valley Regional Transit Authority FTA Funding Programs</b>	<b>Estimated Authorization FFY 2020</b>	<b>Regional TIP FFY 2020</b>	<b>Balance FFY 2020</b>
Section 5307 Capital and Planning Formula	\$6,100,625	\$3,940,885	\$2,159,740
Section 5307 Transit Enhancements			
<b>Subtotal</b>	<b>\$6,100,625</b>	<b>\$3,940,885</b>	<b>\$2,159,740</b>
Section 5307 Capital and Planning Formula Carryover	\$2,638,315	\$2,638,315	\$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
<b>Subtotal</b>	<b>\$2,638,315</b>	<b>\$2,638,315</b>	<b>\$0</b>
<b>Section 5307 Total</b>	<b>\$8,738,940</b>	<b>\$6,579,200</b>	<b>\$2,159,740</b>
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
<b>Federal Aid Total</b>	<b>\$8,738,940</b>	<b>\$6,579,200</b>	<b>\$2,159,740</b>
Other Transit Funding			

**Cost Estimates and Available Resources  
Summary by Funding Category  
2021 Transit Projects**

**FTA Funding Program Summaries (Federal dollars only)**

<b>Merrimack Valley Regional Transit Authority FTA Funding Programs</b>	<b>Estimated Authorization FFY 2021</b>	<b>Regional TIP FFY 2021</b>	<b>Balance FFY 2021</b>
Section 5307 Capital and Planning Formula	\$6,072,105	\$3,912,365	\$2,159,740
Section 5307 Transit Enhancements			
<b>Subtotal</b>	<b>\$6,072,105</b>	<b>\$3,912,365</b>	<b>\$2,159,740</b>
Section 5307 Capital and Planning Formula Carryover	\$2,159,740	\$2,159,740	\$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
<b>Subtotal</b>	<b>\$2,159,740</b>	<b>\$2,159,740</b>	<b>\$0</b>
Section 5307 Total	\$8,231,845	\$6,072,105	\$2,159,740
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
<b>Federal Aid Total</b>	<b>\$8,231,845</b>	<b>\$6,072,105</b>	<b>\$2,159,740</b>
Other Transit Funding			

## MVRTA Transit Operations and Maintenance Summary Table

### State Fiscal Year 2015 (Actual), 2016 (Adopted Budget), and 2017 to 2021 (Projected)

The numbers below represent actual numbers for the previous year, the current year budget/forecast approved by the MVRTA Advisory Board, and Projections for the out-years. These numbers indicate that there are sufficient revenues projected to meet the operating needs of the MVRTA.

	<b>Audit</b>	<b>Adopted Budget</b>	<b>Adopted Budget</b>	<b>Projected</b>	<b>Projected</b>	<b>Projected</b>	<b>Projected</b>
<b>Operating Revenue</b>	<b>Actual</b>	<b>Current</b>	<b>Yr One</b>	<b>Yr Two</b>	<b>Yr Three</b>	<b>Yr Four</b>	<b>Yr Five</b>
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Farebox	\$1,792,786	\$ 1,940,040	\$2,021,190	\$2,081,145	\$2,142,860	\$2,208,420	\$2,271,870
Section 5307	\$3,548,873	\$3,526,185	\$3,787,950	\$3,806,450	\$3,974,325	\$4,155,335	\$4,340,640
Section 5311	-	-					
CMAQ/TDM	-	-					
Fully Funded*	-	-					
Job Access/ Reverse Commute	-	-					
New Freedom	-	-					
Advertising	\$70,793	\$9,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Interest Income	\$2,212	\$0	\$0	\$0	\$0	\$0	\$0



**MVRTA Transit Operations and Maintenance Summary Table**

**State Fiscal Year 2015 (Actual), 2016 (Adopted Budget), and 2017 to 2021 (Projected) (Continued)**

	<b>Audit</b>	<b>Adopted Budget</b>	<b>Adopted Budget</b>	<b>Projected</b>	<b>Projected</b>	<b>Projected</b>	<b>Projected</b>
<b>Operating Revenue</b>	<b>Actual</b>	<b>Current</b>	<b>Yr One</b>	<b>Yr Two</b>	<b>Yr Three</b>	<b>Yr Four</b>	<b>Yr Five</b>
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Rental Income	-						
State Contract Assistance **	\$6,669,432	\$6,836,165	\$6,836,165	\$7,182,245	\$7,361,800	\$7,545,850	\$7,734,445
Local Assessment	\$3,037,334	\$3,306,515	\$3,429,440	\$3,516,215	\$3,605,785	\$3,696,420	\$3,789,970
Other: (Define)	\$981,685	\$933,800	\$942,580	\$970,610	\$990,020	\$1,009,825	\$1,030,020
<b>Total Revenue</b>	\$16,103,115	\$16,551,705	\$17,042,425	\$17,581,665	\$18,099,790	\$18,640,850	\$19,099,945

**MVRTA Transit Operations and Maintenance Summary**

**State Fiscal Year 2015 (Actual), 2016 (Adopted Budget), and 2017 to 2021 (Projected) (Continued)**

<b>Operating Expenses ***</b>	<b>Actual</b>	<b>Current</b>	<b>Yr One</b>	<b>Yr Two</b>	<b>Yr Three</b>	<b>Yr Four</b>	<b>Yr Five</b>
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Total (See Below)</b>	\$16,103,115	\$16,551,705	\$17,042,425	\$17,581,665	\$18,099,790	\$18,640,850	\$19,099,945

**Footnotes:**

\* Fully funded refers to contract work often to Human Service Agencies

\*\* Operating assistance provided by the State

\*\*\* Description of Operating Expenses: Salaries and Wages; Fringe Benefits: Legal, Accounting and Professional Services; Promotion/Marketing; Insurance; Equipment Leases and Rentals; Real Property Leases and Rentals; Non-capitalized Maintenance/Repair; Fuel costs; Tire costs; Office Supplies and Equipment; Interest expense; Utilities; Management Fees; Travel and Training; and Other miscellaneous expense items.

**Part C. 3. Status on Implementation of FFY 2016 TIP Projects**  
**FFY 2016 Highway Project List**

<b>Project ID</b>	<b>Location</b>	<b>Project Description</b>	<b>MassD OT District</b>	<b>Funding Category</b>	<b>Total Programmed Funds</b>	<b>Project Status as of August 6, 2016</b>
606669	Amesbury	Amesbury – Powwow Riverwalk Construction New Design	4	STP and TAP	\$786,875	Moved to 2017
606574	Andover - Lawrence	Andover - Lawrence Interstate Maintenance and related work I - 495	4	NHPP	\$14,396,000	Advertised 1/30/2016
605114	Groveland	Groveland – Rehabilitation of Route 97 (School Street & Salem Street)	4	STP	\$2,040,502	Advertised 8/15/2015
606161	Haverhill	Haverhill – Improvements on Main Street (Route 125)	4	STP and CMAQ	\$3,635,519	100% package received as of 7/15/16
608002	Lawrence	Lawrence – Safe Routes to School (Bruce Elementary)	4	TAP	\$812,500	25% package comments returned to DE 5/26/16. Moved to 2017 with cost increase to \$2,016,148
608407	Lawrence	Lawrence - Traffic Signal and ADA Improvements on Common Street & Lowell Street	4	HSIP, STP TAP and SW STP	\$2,880,512	Design Public Hearing 7/13/16

**Part C. 3. Status on Implementation of FFY 2016 TIP Projects  
 FFY 2016 Highway Project List (Cont.)**

<b>Project ID</b>	<b>Location</b>	<b>Project Description</b>	<b>MassD OT District</b>	<b>Funding Category</b>	<b>Total Programmed Funds</b>	<b>Project Status as of August 6, 2016</b>
607476	Methuen	Methuen – Resurfacing and related work on Route 213	4	NHPP and STP-TE	\$\$11,987,868	Cost increased to \$11,987,868. Advertised 8/6/2016.

**Part C. 3. Status on Implementation of FFY 2016 TIP Projects**

**FFY 2016 Transit Project List**

State Match Sources (RTACAP, MAP, TDC and SCA)

FTA Program	RTA	Project Description	State Match Sources					Local Funds	Total Cost	Project Status as of Aug. 4, 2016
			Federal Funds	RTA-CAP	MAP	TDC	SCA			
5307	MVRTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2017 (O)	\$2,505,065				\$626,265		\$3,131,330	FTA Grant MA-2016-009 Executed 7/14/2016
5307	MVRTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2017 (O)	\$1,048,955				\$262,240		\$1,311,195	FTA Grant MA-2016-009 Executed 7/14/2016

**Part C. 3. Status on Implementation of FFY 2016 TIP Projects**

**FFY 2016 Transit Project List (Continued)**

FTA Program	RTA	Project Description	Federal Funds	State Match Sources				Local Funds	Total Cost	Project Status as of Aug. 4, 2016
				RTA-CAP	MAP	TDC	SCA			
5307	MVRTA	Continue Short Range Transit Planning MVPC UPWP FY 2017 (20% match from MVPC) (N)	\$40,000					\$10,000	\$50,000	FTA Grant MA-2016-017 Executed 8/2/2016
5307	MVRTA	MVPC Technical Support to MVRTA FY 2017 (20% match from MVPC)	\$40,000					\$10,000	\$50,000	FTA Grant MA-2016-017 Executed 8/2/2016
5307	MVRTA	Replace 7 Model Year 2004 Transit Buses with new (delivery FY 2017) 7 of 17 (M)	\$2,391,200	\$597,800					\$2,989,000	Delivery April 2017
5307	MVRTA	Newburyport Intermodal Transit Parking Facility – Construction (C)	\$2,000,000					\$500,000	\$2,500,000	In 30% Design Phase

**Part C. 3. Status on Implementation of FFY 2016 TIP Projects**

**FFY 2016 Transit Project List (Continued)**

FTA Program	RTA	Project Description	Federal Funds	State Match Sources				Local Funds	Total Cost	Project Status as of Aug. 4, 2016
				RTACAP	MAP	TDC	SCA			
5307	MVRTA	Replace 5 Model Year 2011 Para-transit vehicles (delivery FY 2016) (M)	\$256,000	\$64,000				\$320,000	Complete	
5307	MVRTA	Acquire – Support Vehicles (M)	\$72,000	\$18,000				\$90,000	Complete	
5307	MVRTA	FY 2017 Operating Assistance (O)	\$342,175				\$342,175	\$684,350	FTA Grant MA-2016-009 Executed 7/14/2016	
5307	MVRTA	State of Good Repair – MVRTA Facility (M)	\$58,800			\$14,200		\$58,800	Complete	
5307	MVRTA	State of Good Repair – McGovern Center (M)	\$32,000			\$8,000		\$32,000	Complete	

**Part C. 3. Status on Implementation of FFY 2016 TIP Projects**

**FFY 2016 Transit Project List (Continued)**

FTA Program	RTA	Project Description	Federal Funds	State Match Sources				Local Funds	Total Cost	Project Status as of Aug. 4, 2016
				RTACAP	MAP	TDC	SCA			
5307	MVRTA	State of Good Repair – Buckley Center (M)	\$12,000			\$3,000		\$12,000	Complete	
5307	MVRTA	Newburyport Inter-modal Transit Parking Facility – Final Design/ Construction Phase Services (N)	\$120,000				\$30,000	\$150,000	Deleted	
5307	MVRTA	Replace 10 Model 2004 Buses (M)	\$3,360,000	\$840,000				\$4,200,000	Complete	
5307	MVRTA	Replace Parking Facilities Revenue Collection Equipment	\$240,000	\$60,000				\$300,000	FTA Grant MA-2016-010 Executed 7/14/2016	
5307	MVRTA	Purchase Bus/Van Mobile Location Sys.	\$240,000	\$60,000				\$300,000	FTA Grant MA-2016-017 Executed 8/2/2016	



**Part C. 3. Status on Implementation of FFY 2016 TIP Projects**

**FFY 2016 Transit Project List (Continued)**

FTA Program	RTA	Project Description	Federal Funds	State Match Sources				Local Funds	Total Cost	Project Status as of Aug. 4, 2016
				RTACAP	MAP	TDC	SCA			
5307	MVRTA	Acquire 1 support vehicle (M)	\$37,080	\$9,270				\$46,350	FTA Grant MA-2016-017 Executed 8/2/2016	
5307	MVRTA	Refurbish Engines on 8 Model Year 2011 Transit Buses	\$224,000	\$56,000				\$280,000	FTA Grant MA-2016-017 Executed 8/2/2016	

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## **Part C. 4. Air Quality Conformity**

### **Meeting Air Quality Goals in Transportation Massachusetts Department of Transportation (MassDOT) and the Metropolitan Planning Organizations (MPOs)**

**August 2016**

#### **Introduction**

This report documents recent progress made by MassDOT and the MPOs in meeting air quality goals established through state and (currently former) federal regulations applicable to Massachusetts. It consists of two parts: 1) A “progress report” that documents future carbon dioxide (CO<sub>2</sub>) emission estimates from the transportation sector as part of meeting greenhouse gas (GHG) reduction goals established through the Commonwealth’s Global Warming Solutions Act (GWSA), and 2) An informational analysis of future vehicle emissions of ozone precursor pollutants – formerly a federal “air quality conformity” requirement for areas of Massachusetts.

#### **Section 1**

#### **GWSA Transportation Status: Future Carbon Dioxide Emissions Reductions**

The Global Warming Solutions Act of 2008 requires statewide reductions in greenhouse gas (CO<sub>2</sub>) emissions of 25 percent below 1990 levels by the year 2020, and 80 percent below 1990 levels by 2050. As part of the GWSA, the Executive Office of Energy and Environmental Affairs developed the Massachusetts Clean Energy and Climate Plan (CECP), which outlines programs to attain the 25 percent reduction by 2020 – including a 7.6 percent reduction that would be attributed to the transportation sector.

The Commonwealth’s thirteen metropolitan planning organizations (MPOs) are integrally 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 – *Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation (310*

CMR 60.05). The purpose of this regulation is to assist the Commonwealth in achieving their adopted GHG emission reduction goals by:

- Requiring MassDOT to demonstrate that its GHG reduction commitments and targets are being achieved.
- Requiring each MPO to evaluate and track the GHG emissions and impacts of both its Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP).
- Requiring each MPO, in consultation with MassDOT, to develop and utilize procedures to prioritize and select projects in its RTP and TIP based on factors that include GHG emissions and impacts.

Meeting the requirements of this regulation is being achieved through the transportation goals and policies contained in the 2016 Regional Transportation Plans (RTPs), the major projects planned in the RTPs, and the mix of new transportation projects that are programmed and implemented through the Transportation Improvement Program (TIPs). The GHG tracking and evaluation 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)

*Regional GHG Tracking and Evaluation in RTPs*

MassDOT coordinated with MPOs and regional planning agency (RPA) staffs on the implementation of GHG tracking and evaluation in development of each MPO's 2012 RTPs, which were adopted in September 2011. This collaboration has continued for the MPO's 2016 RTPs and 2016-19 TIPs. Working together, MassDOT and the MPOs have attained the following milestones:

- Modeling and long-range statewide projections for GHG emissions resulting from the transportation sector, as a supplement to the 2016 RTPs. Using the Boston MPO's regional travel demand model and the newly updated statewide travel demand model for the remainder of the state, GHG emissions have been projected for 2020 no-build (base) and build (action) conditions, and for 2040 no-build (base) and build (action) conditions. The results of this modeling are presented at the end of this section.
  
- All of the MPOs have addressed GHG emission reduction projections in their RTPs (including these supplemental statewide estimates), along with a discussion of climate change and a statement of MPO support for reducing GHG emissions as a regional goal.

MassDOT’s statewide estimates of CO<sub>2</sub> emissions resulting from the collective list of all recommended projects in all the Massachusetts RTPs combined are presented below. Emissions have been estimated using the new (2014) MOVES model, and also incorporate the latest planning assumptions including updated socio-economic projections for the Commonwealth:

**Massachusetts Statewide CO<sub>2</sub> Emissions Estimates**  
**(all emissions in tons per summer day)**

<b>Year</b>	<b>CO<sub>2</sub> Action Emissions</b>	<b>CO<sub>2</sub> Base Emissions</b>	<b>Difference (Action – Base)</b>
2012	185,324.3	185,324.3	n/a
2020	138,611.3	138,638.1	-26.7
2030	89,631.6	89,645.3	-13.7
2040	70,010.7	70,035.5	-24.8

This analysis measures only projects that are included in the travel demand models. Many other types of projects that cannot be accounted for in the model (such as bicycle and pedestrian facilities, shuttle services, intersection improvements, etc.), are covered in the regional TIPs with either “qualitative” assessments of likely CO<sub>2</sub> change, or actual quantitative estimates listed for each project.

As shown above, collectively, all the projects in the RTPs in the 2020 Action scenario provide a statewide reduction of over 26 tons of CO<sub>2</sub> per day compared to the base case. The 2040 Action scenario estimates a reduction of nearly 25 tons of CO<sub>2</sub> emissions compared to the base case.

These results demonstrate that the transportation sector is expected to make positive progress in meeting the GHG reduction targets and complying 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.

## **Section 2**

### **Statewide Ozone Precursor Analysis (for informational purposes only)**

#### *Legislative Background on Ozone*

The 1970 Clean Air Act defined a one-hour national ambient air-quality standard (NAAQS) for ground-level ozone. The 1990 Clean Air Act Amendments further classified degrees of nonattainment of the one-hour standard based on the severity of monitored levels of the pollutant. The entire Commonwealth of Massachusetts was classified as being in serious nonattainment for the one-hour ozone standard, with a required attainment date of 1999; this was later extended first to 2003, then to 2007.

In 1997, the U.S. Environmental Protection Agency (EPA) proposed a new, eight-hour ozone NAAQS to replace the one-hour standard, effective June 15, 2005. The new standard was challenged in court, and after a lengthy legal battle, the courts upheld the standard, which was finalized in June 2004. The eight-hour standard was 0.08 parts per million (ppm), averaged over eight hours and not to be exceeded more than once per year. Nonattainment areas were again further classified based on the severity of eight-hour values. Massachusetts as a whole was classified as being in moderate nonattainment for the eight-hour standard, but it was separated into two nonattainment areas—Eastern Massachusetts and Western Massachusetts. Both nonattainment areas were required to reduce its emissions of VOCs and NO<sub>x</sub> to achieve attainment of the eight-hour ozone NAAQS by 2009.

In March 2008, EPA published revisions to the eight-hour ozone NAAQS that established a level of 0.075 ppm (March 27, 2008; 73 FR 16483). After reviewing data from Massachusetts monitoring stations, the EPA sent a letter on December 16, 2011, proposing that only Dukes County would be designated as being in nonattainment for the new, proposed 0.075 ozone standard. Massachusetts concurred with these findings.

On May 21, 2012, the final rule (77 FR 30088) was published in the Federal Register, defining the 2008 NAAQS at 0.075 ppm, the standard that was promulgated in March 2008. A second rule (77 FR 30160), published on May 21, 2012, revoked the 1997 ozone NAAQS; the rule was to become effective one year after the 2008 NAAQS became effective (July 20, 2012). Also on May 21, 2012, the air-quality designation areas for the 2008 NAAQS were published in the Federal Register. In this Federal Register, the only

area in Massachusetts that was designated as being in nonattainment for ozone was Dukes County. All other counties were classified as unclassifiable/ attainment. Therefore, the 13 MPOs are not required to perform a conformity determination for ozone for their LRTP.

All the Massachusetts MPOs and MassDOT continue to meet the requirements of air quality conformity according to the Code of Federal Regulations, and as evaluated through inter-agency consultation. Specifically, on March 6, 2015, (80 FR 12264, effective April 6, 2015) EPA published the Final Rulemaking, "Implementation of the 2008 National Ambient Air Quality Standards (NAAQS) for Ozone: State Implementation Plan Requirements; Final Rule." This rulemaking removed transportation conformity to the 1997 Ozone NAAQS (the standard referenced by the Conservation Law Foundation and the subject of a December 23, 2014 DC Circuit Court decision). Link to Final EPA Rulemaking: <http://www.gpo.gov/fdsys/pkg/FR-2015-03-06/pdf/2015-04012.pdf>

Since the LRTPs have been developed, reviewed, and approved after April 6, 2015, air quality conformity determinations to the 1997 Ozone NAAQS are no longer required, as those standards and all associated area designations have been permanently replaced by the 2008 NAAQS, which (with actually a stricter level of allowable ozone concentration than the 1997 standards) no longer designate Massachusetts as a non- attainment area(s) for ozone except for Dukes County as discussed above.

### *Legislative Background on Carbon Monoxide*

Although this document reports on statewide ozone precursor emissions, reporting on another criteria pollutant, carbon monoxide (CO) is still federally required for some MPOs in Massachusetts. The cities of Boston, Cambridge, Chelsea, Everett, Malden, Medford, Quincy, Revere, and Somerville within the Boston Region MPO were classified as being in attainment for CO emissions. As part of the Boston MPO LRTP, an air-quality conformity analysis is still completed for these communities, as they have a carbon monoxide maintenance plan approved as part of the SIP. This information can be found in Chapter 8 of [Charting Progress to 2040](#), the Boston MPO's current LRTP.

The Lowell, Waltham, Worcester and Springfield carbon monoxide areas are classified attainment with a limited maintenance plan in place. No regional air quality analysis is required in limited maintenance plan areas as emissions may be treated as essentially



not constraining for the length of the maintenance period because it is unreasonable to expect that such areas will experience so much growth in that period that a violation of the carbon monoxide NAAQS would result. Therefore, in areas with approved limited maintenance plans, Federal actions requiring conformity determinations under the transportation conformity rule are considered to satisfy the “budget test.” All other transportation conformity requirements under 40 CFR 93.109(b) continue to apply in limited maintenance areas, including project level conformity determinations based on carbon monoxide hot spot analyses under 40 CFR 93.116.

### *Ozone Analysis Criteria*

The ozone analysis was prepared using the following criteria:

- The horizon years for the travel demand model analysis are established as 2012 (base year), 2020, 2030, and 2040.
- Projections for future population, employment, and households were developed jointly by MassDOT, the Metropolitan Area Planning Council, and the Donahue Institute of the University of Massachusetts. This was a cooperative and iterative process conducted throughout 2014 and into 2015, with input and comments from each MPO in the Commonwealth.
- Projections were incorporated into the statewide and Boston region travel demand models, along with updated travel characteristics, obtained through the 2010-2011 Massachusetts Travel Survey.
- The transit service assumptions for the MBTA were included in this analysis and were based on MBTA service in the spring of 2012. Travel demand model calibration was performed using the Ridership and Service Statistics, MBTA Blue Book, 2012 and the MBTA Systemwide Passenger Survey, 2008–09.
- Factors used for calculating emissions changes were determined using the EPA’s latest emissions model, Motor Vehicle Emissions Simulator (MOVES) 2014. Inputs used for 2012 through 2040 were received from the DEP and include information about programs that were submitted to the EPA as the strategy for the Commonwealth to attain ambient air-quality standards.

- The Federal Highway Administration’s Highway Performance Monitoring System (HPMS) is used to track daily vehicle-miles of travel (VMT). For each MPO region, adjustment factors that compare the 2012 HPMS VMT to the 2012 base year VMT estimated by the travel demand models transportation model VMT were developed. The adjustment factors were then applied to all modeled VOC and NOx emissions for the years 2020 through 2040 to ensure consistency with EPA-accepted procedures.

### *Inclusion of Regionally Significant Transportation Projects*

Only “regionally significant” projects are included in the travel-demand modeling. Regionally significant projects are defined as follows:

A transportation project (other than an exempt project) that is on a facility that serves regional transportation needs (such as access to and from the area outside of the MPO region; major activity centers in the region; major planned developments, such as new retail malls and sport complexes; and transportation terminals (as well as most terminals themselves) and would be included in the modeling of a metropolitan area’s transportation network, including at a minimum all principal arterial highways and all fixed-guideway transit facilities that offer an alternative to regional highway travel.

The following table lists the regionally significant projects proposed in the LRTPs in the Commonwealth:

## Regionally Significant Projects Included in the Travel Demand Models

<b>Analysis</b>	<b>Community</b>	<b>Project Description</b>
2020	Bedford and Billerica	Middlesex Turnpike Improvements, From Crosby Drive North to Manning Road, Phase III
2020	Newton and Needham	Reconstruction of Highland Avenue, Needham Street and Charles River Bridge, from Webster Street to Route 9
2020	Weymouth and Abington	Reconstruction and Widening on Route 18 (Main Street) From Highland Place to Route 139
2020	Woburn	Reconstruction of Montvale Avenue, from I-93 Interchange to Central Street
2020	Woburn	Bridge Replacement, New Boston Street over MBTA
2030	Boston	Reconstruction of Rutherford Avenue, from City Square to Sullivan Square
2030	Framingham	Intersection Improvements at Route 126 and Route 135/MBTA and CSX Railroad
2030	Lexington	Route 4/225 (Bedford Street) and Hartwell Avenue
2030	Natick	Bridge Replacement, Route 27 (North Main St.) over Route 9 (Worcester St.) and Interchange Improvements
2030	Somerville and Medford	Green Line Extension Project (Phase 2), College Avenue to Mystic Valley Parkway/Route 16
2030	Somerville	McGrath Boulevard Project
2040	Barnstable	Hyannis Access Improvements
2030	Westborough	Route 9 Improvements
2030	Oxford	Route 20 capacity improvement
2030	Millbury	Turnpike/Route 146 int. improve.
2030	Worcester	I-290 Bridge Expansion

## Regionally Significant Projects Included in the Travel Demand Models (Cont.)

2030	North Andover	Route 114 Reconstruction
2030	Athol	Route 2 Interchange @ S. Athol Rd
2040	Westford	Route 110 wid-
2040	Tewksbury, Andover	Lowell Junction Interchange
2020	Abington, Weymouth	Route 18 Widening (funded in Boston Region)
2020	Wilbraham	Boston Road Reconstruction
2020	Hadley	Route 9 Phase 1
2030	Hadley	Route 9 Phase 2
2030	Hadley	Route 9 Phase 3
2030	Middleborough	Routes 44/28/18 Rotary
2040	Taunton	Routes 24 & 140 Improvements
2040	Fall River	Route 79 Blvd

### *Emissions Inventory Assumptions*

Although Massachusetts is currently in conformity for ozone, this informational analysis was done in relation to the State Implementation Plan mobile-source ozone emission projections that were approved in March 2008 for the revoked 1997 eight-hour NAAQS for VOC and NO<sub>x</sub>. The VOC mobile-source emission budget for 2009 for the Eastern Massachusetts Ozone Nonattainment Area was set at 63.50 tons per summer day, and at 10.73 tons per summer day for the Western Massachusetts Ozone Nonattainment Area. The NO<sub>x</sub> mobile-source emission budget for 2009 for the Eastern Massachusetts Ozone Nonattainment Area was set at 174.96 tons per summer day, and at 27.73 tons per summer day for the Western Massachusetts Ozone Nonattainment Area.

The Massachusetts Department of Transportation, Office of Transportation Planning (MassDOT Planning) estimated the results for the Eastern and Western Massachusetts Ozone Nonattainment Areas using the Statewide and Boston Region MPO regional trav-

el demand model sets, based on the latest planning assumptions (as outlined in this document).

*Ozone Analysis Results*

MassDOT OTP conducted an air-quality analysis for the Commonwealth’s 13 MPO’s LRTP. The test used in this analysis was to show that the LRTPs are consistent with the emission budgets set for the revoked 1997 eight-hour ozone NAAQS as described above. The results are shown in the tables below. They include emissions from regionally significant projects as derived from the travel demand models and off-model emissions from commuter rail, commuter boat, and buses:

**VOC Emissions Estimates  
Eastern Massachusetts Ozone Nonattainment Area  
(all emissions in tons per summer day: tpsd)**

<b>Year</b>	<b>VOC Action Emissions</b>	<b>VOC Budget</b>	<b>Difference (Action – Budget)</b>
2012	30.56	n/a	n/a
2020	11.25	63.50	-52.25
2030	7.06	63.50	-56.44
2040	5.79	63.50	-57.71

**NOx Emissions Estimates**  
**Eastern Massachusetts Ozone Nonattainment Area (tpsd)**

<b>Year</b>	<b>NOx Action Emissions</b>	<b>NOx Budget</b>	<b>Difference (Action – Budget)</b>
2012	116.97	n/a	n/a
2020	36.37	174.96	-138.59
2030	17.81	174.96	-157.15
2040	13.36	174.96	-161.60

**VOC Emissions Estimates**  
**Western Massachusetts Ozone Nonattainment Area (tpsd)**

<b>Year</b>	<b>VOC Action Emissions</b>	<b>VOC Budget</b>	<b>Difference (Action – Budget)</b>
2012	3.61	n/a	n/a
2020	1.58	10.73	-9.15
2030	0.89	10.73	-9.84
2040	0.76	10.73	-9.97

**NOx Emissions Estimates**  
**Western Massachusetts Ozone Nonattainment Area (tpsd)**

<b>Year</b>	<b>NOx Action Emissions</b>	<b>NOx Budget</b>	<b>Difference (Action – Budget)</b>
2012	13.10	n/a	n/a
2020	4.36	27.73	-23.37
2030	1.86	27.73	-25.87
2040	1.42	27.73	-26.31

Based on the preceding estimates, MassDOT Planning has found that the combined emission levels from transportation projects contained in the 2016 Regional Transportation Plans and 2016-2019 Transportation Improvement Programs – for both former ozone nonattainment areas in Massachusetts – would demonstrate conformity with the SIP, the Clean Air Act, and the EPA conformity regulations (40 CFR part 51).

Through the interagency air quality consultation process (involving U.S. Department of Transportation, EPA, DEP, MassDOT, and the MPOs) the latest EPA rulemakings, and the referenced legislative background and legal issues, currently applicable ozone standards, area designations, and requirements were all reviewed.

The ozone analysis outlined in this section demonstrates that the implementation of the 2016 RTPs and TIPs meets the “budget test,” and would therefore satisfy the air quality ozone conformity criteria, and is consistent with the air quality goals in the Massachusetts SIP.

## Part C. 5. Special Efforts - ADA

### Projects Required for Implementation of ADA

Another requirement of 23 CFR 450.324 is that projects required for the implementation of the Americans with Disabilities Act (ADA) should be so marked. There are no projects in this TIP listing that are required for the implementation of the Americans with Disabilities Act and therefore no projects are marked as such. There are projects to replace existing accessible transit vehicles with new accessible transit vehicles, but these are replacements not implementations.

## Part C. 6. Title VI Notice to Beneficiaries

The Merrimack Valley Planning Commission (MVPC) 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 MVPC's Title VI Program consistent with federal interpretation and administration. Additionally, MVPC provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with U.S. Department of Transportation policy and guidance on federal Executive Order 13166.

MVPC also complies with the Massachusetts Public Accommodation Law, M.G.L. Chapter 272, Sections 92a, 98, and 98a prohibiting making any distinction, discrimination, or restriction in admission to or treatment in a place of public accommodation based upon **race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry**. Likewise, MVPC complies with the Governor's Executive Order 526, Section 4 requiring that all of its programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for shall be conducted without unlawful discrimination based upon **race, color, age, gender, ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, national origin, disability, veteran's status** (including Vietnam-era veterans), or **background**.



### Additional Information

To request additional information regarding Title VI and related federal and state nondiscrimination obligations, please contact:

Title VI Program Coordinator  
Merrimack Valley Metropolitan Planning Organization  
c/o Merrimack Valley Planning Commission  
160 Main Street  
Haverhill, MA 01830-5061  
(978) 374-0519, extension 15  
[akomornick@mvpc.org](mailto:akomornick@mvpc.org)

### Complaint Filing

To file a complaint alleging a violation of Title VI or related federal nondiscrimination law, contact the Title VI Program Coordinator (above) within one hundred and eighty (180) days of the alleged discriminatory conduct.

To file a complaint alleging a violation of the Commonwealth's Public Accommodation Law, contact the Massachusetts Commission Against Discrimination within three hundred (300) days of the alleged discriminatory conduct at:

Massachusetts Commission Against Discrimination (MCAD)  
One Ashburton Place, 6<sup>th</sup> Floor  
Boston, MA 02109  
(617) 994-6000  
TTY: (617) 994-6196

### Translation

#### **English**

If this information is needed in another language, please contact the MVMPO Title VI/Nondiscrimination Coordinator at 978-374-0519 ext. 29.

#### **Spanish**

Si necesita esta información en otro idioma, por favor contacte al coordinador de MVMPO del Título VI/Contra la Discriminación al 978-374-0519 ext. 29.

#### **Portuguese**

Caso estas informações sejam necessárias em outro idioma, por favor, contate o Coordenador de Título VI e de Não Discriminação da MVMPO pelo telefone 978-374-0519, Ramal 29.

### Chinese Simple

如果需要使用其它语言了解信息, 请联系Merrimack Valley大都会规划组织 (MVMPO) 《民权法案》第六章协调员, 电话978-374-0519, 转29。

### Chinese Traditional

如果需要使用其他語言瞭解資訊, 請聯繫Merrimack Valley大都會規劃組織 (MVMPO) 《民權法案》第六章協調員, 電話978-374-0519, 轉29。

### Vietnamese

Nếu quý vị cần thông tin này bằng tiếng khác, vui lòng liên hệ Điều phối viên Luật VI/Chống phân biệt đối xử của MVMPO theo số điện thoại 978-374-0519, số máy nhánh 29.

### French Creole

Si yon moun vle genyen enfòmasyon sa yo nan yon lòt lang, tanpri kontakte Kowòdinatè kont Diskriminasyon/MVMPO Title VI la nan nimewo 978-374-0519, ekstansyon 29.

### Russian

Если Вам необходима данная информация на любом другом языке, пожалуйста, свяжитесь с Координатором Титула VI/Защита от дискриминации в MVMPO по тел: 978-374-0519, добавочный 29.

### French

Si vous avez besoin d'obtenir une copie de la présente dans une autre langue, veuillez contacter le coordinateur du Titre VI/anti-discrimination de MVMPO en composant le 978-374-0519, poste 29.

### Italian

Se ha bisogno di ricevere queste informazioni in un'altra lingua si prega di contattare il coordinatore del MVMPO del Titolo VI e dell'ufficio contro la discriminazione al 978-374-0519 interno 29.

### Mon-Khmer, Cambodian

ប្រសិនបើលោកអ្នកចង់ទទួលបានព័ត៌មាននេះក្នុងភាសាដទៃទៀត សូមទាក់ទងមេគ្រប់គ្រងច្បាប់លក្ខណៈទី ៦/ការការពារប្រឆាំងនឹងការរើសអើងរបស់ MVMPO លេខទូរស័ព្ទ ៩៧៨-៣៧៤-០៥១៩ ខ្សែទូរស័ព្ទ ២៩

### Arabic

إذا كنت بحاجة إلى هذه المعلومات بلغة أخرى، يُرجى الاتصال بمنسق الفقرة السادسة لمنع التمييز التابع لمنظمة التخطيط الحضري في ميريماك فالي على الهاتف: 978-374-0519 و ثم اضغط الأرقام 29.

## Part C. 7. Environmental Justice

Environmental Justice from a transportation perspective is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of transportation laws, regulations, and policies.

***"Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."***

### **MVMPO Merrimack Valley Transportation Committee Nondiscrimination Working Group**

The MVMPO MVTC's purpose is to advise the MVMPO and participate in the MVMPO region's federally certified transportation planning process. Its membership provides for the involvement of local government officials, transportation professionals, transportation providers, and individuals experienced in economic development, freight, commuter rail, smart growth, environmental issues, regional planning, and other interest groups, ensuring broad representation and a geographical balance of its participants.

### **MVTC Nondiscrimination Working Group**

The MVMPO is responsible for promoting, securing and evaluating public involvement in its transportation planning process. In particular, it is responsible for identifying and seeking meaningful participation of the region's minority and low-income (Environmental Justice) populations – and in working to reduce participation barriers for such populations.

The MVMPO's established EJ process includes identification of Census-based statistical areas within its region where:

- a) the percentage of minority populations exceeds the average percentage of minority population for the region as a whole;
- b) household incomes are 80% or less of area median income (AMI), and
- c) there are concentrations of households with limited English proficiency (LEP).

The MVMPO MVTC Nondiscrimination Working Group's purpose is to provide the MVMPO members, its MVTC and the public with the perspectives of individuals and organizations representing low-income, minority populations. It is also an opportunity for MVMPO staff and EJ stakeholders to exchange information, evaluate policies, plans and projects, and generate ideas for future projects.

Membership is comprised of at least five (5), and no more than ten (10), members with individual and/or collective knowledge and expertise in working with EJ populations on

- a) Disabilities
- b) Education
- c) English proficiency
- d) Elder Affairs
- e) Faith-based community service
- f) Minority advocacy
- g) Neighborhood organization
- h) Non-profit community development
- i) Public Health
- j) Veterans Affairs
- k) Workforce training and development

Working Group members would serve two-year terms.

The MVMPO staff administers the Nondiscrimination Working Group's membership, activities and reporting tasks according to the same process as the full MVTC. The MVMPO must approve any Nondiscrimination Working Group activities. The MVMPO staff will be responsible for preparing all Nondiscrimination Working Group notices, agendas, minutes and other materials. Any written and verbal communication from the Nondiscrimination Working Group is addressed to the MVMPO Chair.

## **Part C. 8. Equity Analysis**

The following tables illustrate a geographic equity analysis of regional target funding in the Merrimack Valley MPO region. The first table contains data for FFYs 2017 to 2021 including the number of projects and the target funding by community, and whether the community is a Title VI (high percentage of minorities) and/or an EJ (high percentage of low income households) community. The second table contains the same information for projects programmed in FFYs 2012 to 2016.

The results show that for FFYs 2017 to 2021, 36% of the total number projects are in Title VI communities and 18% are in EJ communities. Considering the data for percent of funding, 34% of the funding is in Title VI communities and 21% is in EJ communities.

The results show that for FFYs 2012 to 2016, 56% of the total number projects are in Title VI communities and 56% are in EJ communities. Considering the data for percent of funding, 48% of the funding is in Title VI communities and 48% is in EJ communities.

Equity Analysis MVMPO Regional Target Funding FFYs 2017 to 2021

Community	Number of Projects	Percent of Projects	Target Funding	Percent of Funding	Title VI Community	EJ Community
Amesbury	2	18%	\$10,397,728	29%	No	No
Andover	0	0%	\$0	0%	No	No
Boxford	0	0%	\$0	0%	No	No
Georgetown	0	0%	\$0	0%	No	No
Groveland	2	18%	\$6,566,437	18%	No	No
Haverhill	2	18%	\$7,703,152	21%	Yes	Yes
Lawrence	0	0%	\$0	0%	Yes	Yes
Merrimac	0	0%	\$0	0%	No	No
Methuen	0	0%	\$0	0%	Yes	Yes
Newbury	0	0%	\$0	0%	No	No
Newburyport	0	0%	\$0	0%	No	No
North Andover	2	18%	\$4,489,391	12%	Yes	No
Rowley	0	0%	0	0%	No	No
Salisbury	1	9%	\$5,655,240	16%	No	No
West Newbury	0	0%	0	0%	No	No
MVRTA	2	18%	\$1,344,381	4%	Yes	Yes
<b>Total</b>	<b>11</b>		<b>\$36,156,329</b>			
Percent of Projects in Title VI community =		36%	Percent of Funding in Title VI community =		34%	
Percent of Projects in EJ community =		18%	Percent of Funding in EJ community =		21%	

Equity Analysis MVMPO Regional Target Funding FFYs 2012 to 2016

Community	Number of Projects	Percent of Projects	Target Funding	Percent of Funding	Title VI Community	EJ Community
Amesbury	1	11%	\$4,643,054	14%	No	No
Andover	0	0%	\$0	0%	No	No
Boxford	0	0%	\$0	0%	No	No
Georgetown	0	0%	\$0	0%	No	No
Groveland	1	11%	\$6,341,761	19%	No	No
Haverhill	2	22%	\$8,903,646	26%	Yes	Yes
Lawrence	2	22%	\$3,322,439	10%	Yes	Yes
Merrimac	1	11%	\$6,075,055	18%	No	No
Methuen	1	11%	\$3,895,600	12%	Yes	Yes
Newbury	0	0%	\$0	0%	No	No
Newburyport	1	11%	\$450,000	1%	No	No
North Andover	0	0%	0	0%	Yes	No
Rowley	0	0%	0	0%	No	No
Salisbury	0	0%	0	0%	No	No
West Newbury	0	0%	0	0%	No	No
<b>Totals</b>	<b>9</b>		<b>\$33,631,555</b>			
Percent of Projects in Title VI communities =		56%	Percent of Funding in Title VI communities =		48%	
Percent of Projects in EJ communities =		56%	Percent of Funding in EJ communities =		48%	

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## **Appendices**

### **Appendix A and B: Other Regional Priorities**

## Appendix A Other Regional Priority Bridge Projects

Merrimack Valley Metropolitan Planning Organization  
 FY 2017-2021 Transportation Improvement Program  
 Implementing Agency: MassDOT

**Bridges That Do Not Fit into Fiscally Constrained Targets  
 and therefore have No Funding Available in Any Year:**

<u>ID</u>	<u>Location</u>	<u>Project Description</u>	<u>Highway District</u>	<u>Estimated Total Project Cost</u>
602322	Ames.	Amesbury - Bridge Replacement, A-07-008, Oak Street Over The B&M Railroad (Abandoned Line)	4	\$1,000,000
	And.	Andover - Rehab. Bridge (A-09-001) Route 28 (North Main Street) Over the Shawsheen River	4	
605418	And.	Andover - Bridge Preservation, A-09-028, Chandler Road over I-93	4	\$3,450,000
606522	And.	Andover - Bridge Rehabilitation, A-09-036, I-495 over ST 28 (SB), A-09-037, I-495 over B&M and MBTA, A-09-041, I-495 over ST 28 (NB)	4	\$22,706,948
605304	Hav.	Haverhill- Bridge Replacement, H-12-007 & H-12-025, Bridge Street (SR 125) over the Merrimack River and the Abandoned B&M RR (Proposed Bikeway)	4	\$63,437,220
604839	Law.	Lawrence – Bridge Replacement, L-04-027, Lowell Street over B&M Railroad	4	\$4,473,000
	Law.	Lawrence - Bridge Rehabilitation, L-04-042, South Union Connector over South Street	4	

## Appendix A Other Regional Priority Bridge Projects (Continued)

Merrimack Valley Metropolitan Planning Organization  
 FY 2017-2021 Transportation Improvement Program  
 Implementing Agency: MassDOT

**Bridges That Do Not Fit into Fiscally Constrained Targets  
 and therefore have No Funding Available in Any Year:**

<u>ID</u>	<u>Location</u>	<u>Project Description</u>	<u>Highway District</u>	<u>Estimated Total Project Cost</u>
605421	Medford, Methuen, Stoneham, Woburn	Medford, Methuen, Stoneham, Woburn – Bridge Painting on I-93 Corridor: M-12-037, M-12-044, M-17-007, S-27-008, W-43-035	4	\$1,200,000
	Nbypt.	Newburyport - Bridge (N-11-002) State Route 113 (High Street) Over Railroad	4	
	Nbypt.	Newburyport - Bridge (N-11-014) State Route 1A (High Street) over US 1	4	
607115	Nbypt.	Newburyport - Bridge Repairs, N-11-015, Washington St. over US 1	4	\$1,400,000

## Appendix B Other Regional Priority Roadway Projects

### Merrimack Valley Metropolitan Planning Organization FY 2017-2021 Transportation Improvement Program By Town

#### Roadway Projects That Do Not Fit into Fiscally Constrained Targets and therefore have No Funding Available in Any Year:

<u>ID</u>	<u>Location</u>	<u>Project Description</u>	<u>District</u>	<u>Estimated Total Project Cost</u>
608336	Andover	Andover – Reconstruction on Route 133 (Lowell Street), from Lovejoy Road to Route 28 (North Main Street) TEC = 10.75	4	\$7,245,000
607708	Andover/ Lawrence	Andover - Lawrence - Resurfacing and related work on Route 28 TEC = 5.22	4	\$1,062,600
606721	Boxford	Boxford - Reconstruction of Route 133 (Washington Street) from North Andover town line to Main Street TEC = 5.60	4	\$5,172,164
	Boxford	Boxford Reconstruction of Route 97 from Georgetown to Topsfield (2 miles)	4	\$3,785,000
607540	Boxford	Boxford - Border to Boston Trail TEC = 3.32	4	\$4,174,500
602843	George.	Georgetown - Reconstruction on Route 97 (W. Main Street) from Moulton Street to Groveland townline TEC = 4.77	4	\$2,400,000
604950	George.	Georgetown – Park & Ride lot construction at I-95 and Route 133 Interchange TEC = 3.78	4	\$3,276,594
	Haverhill	Haverhill -Intersection Improvements Route 110 and Elliot Way	4	

## Appendix B Other Regional Priority Roadway Projects (Continued)

Roadway Projects That Do Not Fit into Fiscally Constrained Targets  
and therefore have No Funding Available in Any Year:

<u>ID</u>	<u>Location</u>	<u>Project Description</u>	<u>District</u>	<u>Estimated Total Project Cost</u>
	Haverhill	Haverhill – Widen Route 97 (Broadway) from Computer Drive to Forrest Street	4	
607711	Haverhill	Haverhill - Resurfacing and related work on Route 125 (from N. And. TL to Boston Rd) TEC = 4.97	4	\$1,062,600
	Haverhill	Haverhill – Reconstruction of Route 110 (Amesbury Road) / Route 108 (Newton Road) intersection	4	\$700,000
	Haverhill	Haverhill – Reconstruction of North Avenue	4	
	Haverhill	Haverhill – Buttonwoods Trail	4	\$2,000,000
602339	Haverhill	Haverhill-Historic Waterfront Walkway Phase II (Construction)	4	\$3,110,184
	Lawrence/ North Andover	Lawrence - North Andover - Reconstruction of Route 114 from South Union St. in Lawrence to Rt. 125 (Andover St.) in North Andover TEC = 12.8	4	\$16,300,000
607712	Lawrence/ North Andover	Lawrence - North Andover – Resurfacing and related work on Route 114 from I-495 to Waverly Road TEC = 3.97	4	\$885,500
608261	Lawrence	Lawrence – Intersection Improvements at Marston Street & Ferry Street/ Commonwealth Drive TEC = 7.75	4	\$750,000

## Appendix B Other Regional Priority Roadway Projects (Continued)

Roadway Projects That Do Not Fit into Fiscally Constrained Targets  
and therefore have No Funding Available in Any Year:

<u>ID</u>	<u>Location</u>	<u>Project Description</u>	<u>District</u>	<u>Estimated Total Pro- ject Cost</u>
	Law- rence	Lawrence - Reconstruct Merrimack Street from Parker Street to South Union Street TEC = 9.05	4	
	Methuen	Methuen – Reconstruction of Route 110 from Burnham Road to Woodland Street	4	
	Newbury- port	Newburyport -Route 1 Rotary Reconfiguration	4	
608029	Newbury- port	Newburyport - Intersection Improvements Route 1 at Merrimac Street TEC = 6.88	4	\$2,400,000
	North Andover	North Andover - Machine Shop Village improvements	4	
	North Andover	North Andover – Reconstruction of Mass. Ave. and Sidewalks (from Osgood St. to I-495)	4	
605694	North Andover	North Andover - Resurfacing and related work Route 125 TEC = 7.45	4	\$7,910,592
	North Andover	North Andover - Signals and turn lanes at Mass Ave. and I-495 NB and SB Ramps	4	
602202	Salisbury	Salisbury - Reconstruction of Route 1 (Lafayette Road) TEC = 7.3	4	\$6,330,819
607710	Salisbury	Salisbury - Resurfacing and related work Route 1A TEC = 6.05	4	\$2,300,000

## **Appendix C Transportation Evaluation Criteria Summary**

## Appendix C Transportation Evaluation Criteria Summary

	ID#	Project Description	Project Cost in 1000s	AADT	Linear Lane Miles	Condition	Mobility	Safety & Security	Community Effects & Support	Land Use & Economic Development	Environmental Effects	Total TEC Score (2017-2021)
OPP		Lawrence –North Andover - Reconstruction of Rt. 114 from I-495 to Rt. 125 (Andover St.)		30,000	5.2	3.00	3.00	3.00	1.80	1.50	0.50	<b>12.80</b>
TIP	608095	North Andover – Recon-struction of Rt. 114 from Rt. 125 (Andover St.) to Stop & Shop	\$15,548	30,000	4.8	2.50	2.75	2.67	1.00	1.50	0.75	<b>11.17</b>
OPP	608336	Andover – Rt. 133 reconst. Lovejoy Road to Shawsheen Square (inc.Shawsheen Square)	\$7,245	12,773	4.4	2.00	2.75	2.00	1.00	1.75	1.25	<b>10.75</b>
TIP	608407	Lawrence – Traffic Signal and ADA Common & Lowell St	\$2,057	NA	NA	1.50	2.00	2.33	2.00	1.50	0.75	<b>10.08</b>



### Appendix C Transportation Evaluation Criteria Summary (Cont.)

	<b>ID#</b>	<b>Project Description</b>	<b>Project Cost in 1000s</b>	<b>AADT</b>	<b>Linear Lane Miles</b>	<b>Condition</b>	<b>Mobility</b>	<b>Safety &amp; Security</b>	<b>Community Effects &amp; Support</b>	<b>Land Use &amp; Economic Development</b>	<b>Environmental Effects</b>	<b>Total TEC Score (2017-2021)</b>
TIP	606161	Haverhill – Route 125, three intersections	\$3,636	NA	NA	2.50	2.00	1.67	1.40	1.00	0.75	<b>9.32</b>
OPP		Lawrence – Merrimack St. (Broadway to South Union St.)		9,654	0.6	2.50	1.25	1.00	1.80	1.75	0.75	<b>9.05</b>
OPP	608261	Lawrence – Intersection Improvements at Marston St/ Ferry St/ Commonwealth Dr.	\$750	NA	NA	1.5	1.25	2.00	2.00	0.75	0.25	<b>7.75</b>
TIP	606159	North Andover – Intersection Improvements Route 125 at Mass. Ave.	\$3,640	30,284	NA	1.50	1.75	2.00	1.20	0.75	0.50	<b>7.70</b>

### Appendix C Transportation Evaluation Criteria Summary (Cont.)

	<b>ID#</b>	<b>Project Description</b>	<b>Project Cost in 1000s</b>	<b>AADT</b>	<b>Linear Lane Miles</b>	<b>Condition</b>	<b>Mobility</b>	<b>Safety &amp; Security</b>	<b>Community Effects &amp; Support</b>	<b>Land Use &amp; Economic Development</b>	<b>Environmental Effects</b>	<b>Total TEC Score (2017-2021)</b>
OPP	605694	North Andover – Route 125 Resurfacing and related work	\$7,911	20,400	9.4	2.50	1.00	1.00	1.20	1.25	0.50	<b>7.45</b>
OPP	602202	Salisbury – Reconstruction of Route 1 (Lafayette Road)	\$6,331	12,147	4.8	1.50	2.00	2.00	0.80	0.75	0.25	<b>7.30</b>
TIP	607573	Haverhill – Reconstruction of Route 97 (Broadway) from Silver Birch Lane to Research Drive)	\$6,527	14,352	1.8	2.00	1.25	1.00	1.00	1.25	0.75	<b>7.25</b>
OPP	608029	Newburyport – Intersection Improvements Rt. 1 at Merrimac St.	\$2,400	24,850	NA	2.00	0.50	2.33	0.80	1.00	0.25	<b>6.88</b>

### Appendix C Transportation Evaluation Criteria Summary (Cont.)

	<b>ID#</b>	<b>Project Description</b>	<b>Project Cost in 1000s</b>	<b>AADT</b>	<b>Linear Lane Miles</b>	<b>Condition</b>	<b>Mobility</b>	<b>Safety &amp; Security</b>	<b>Community Effects &amp; Support</b>	<b>Land Use &amp; Economic Development</b>	<b>Environmental Effects</b>	<b>Total TEC Score (2017-2021)</b>
TIP	608027	Haverhill – Bradford Rail Trail extension	\$1,088	NA	NA	0.50	1.50	1.00	2.40	1.25	0.00	<b>6.65</b>
TIP	605020	Salisbury – section of Border to Boston Trail	\$5,919	NA	NA	1.00	1.25	1.33	1.00	0.75	0.75	<b>6.08</b>
OPP	607710	Salisbury – Resurfacing and related work Route 1A	\$2,300	11,411	8.0	2.00	0.75	1.00	0.80	0.75	0.75	<b>6.05</b>
TIP	602418	Amesbury – Reconstruction of Elm Street	\$8,993	12,436	3.4	1.50	0.50	1.33	0.40	1.50	0.75	<b>5.98</b>
TIP	607476	Methuen – Resurfacing and related work Route 213	\$11,988	53,000	16	3.00	0.25	0.33	0.80	1.00	0.25	<b>5.63</b>
OPP	606721	Boxford - Route 133 (North Andover TL to Main St.)	\$5,172	6,149	2.9	1.50	1.00	1.00	0.60	0.50	1.00	<b>5.60</b>

### Appendix C Transportation Evaluation Criteria Summary (Cont.)

	ID#	Project Description	Project Cost in 1000s	AADT	Linear Lane Miles	Condition	Mobility	Safety & Security	Community Effects & Support	Land Use & Economic Development	Environmental Effects	Total TEC Score (2017-2021)
OPP	607708	Andover / Lawrence – Route 28 resurfacing and related work	\$1,063	19,728	4.0	2.50	0.25	0.67	0.80	0.50	0.50	<b>5.22</b>
TIP	607542	Georgetown – Square to Byfield (Northern) section of Border to Boston Trail	\$3,876	NA	NA	0.50	1.25	0.67	0.80	1.50	0.50	<b>5.22</b>
TIP	605753	Groveland – Route 97 (Parker Rd. to Gardner St.)	\$3,600	13,500	1.8	1.50	0.50	1.00	0.60	1.00	0.50	<b>5.10</b>
TIP	607541	Georgetown- Boxford– south of Square to Georgetown Road (Southern) section of Border to Boston Trail	\$1,702	NA	NA	0.50	1.00	0.67	0.80	1.25	0.75	<b>4.97</b>
OPP	607711	Haverhill – Resurfacing and related work Rt. 125	\$1,063	19,224	4.1	2.00	0.50	0.67	0.80	0.75	0.25	<b>4.97</b>

### Appendix C Transportation Evaluation Criteria Summary (Cont.)

	<b>ID#</b>	<b>Project Description</b>	<b>Project Cost in 1000s</b>	<b>AADT</b>	<b>Linear Lane Miles</b>	<b>Condition</b>	<b>Mobility</b>	<b>Safety &amp; Security</b>	<b>Community Effects &amp; Support</b>	<b>Land Use &amp; Economic Development</b>	<b>Environmental Effects</b>	<b>Total TEC Score (2017-2021)</b>
TIP	608298	Groveland Community Trail	\$2,376	NA	NA	0.50	1.25	0.67	1.20	1.00	0.25	<b>4.87</b>
OPP	602843	Georgetown – Route 97 from Moulton St. to Groveland TL	\$2,400	15,486	2.2	1.50	0.50	0.67	0.60	1.00	0.50	<b>4.77</b>
OPP	607712	Lawrence – North Andover resurfacing of Route 114	\$885	32,900	2.8	1.50	0.25	0.67	0.80	0.50	0.25	<b>3.97</b>
OPP	604950	Georgetown – Park & Ride Construction at I-95 and Route 133 Interchange	\$3,277	NA	NA	0.00	1.75	0.33	0.20	0.75	0.75	<b>3.78</b>
TIP	606669	Amesbury – Powwow River-walk Construct. New Design	\$671	NA	NA	0.50	0.25	0.00	0.40	1.50	0.75	<b>3.40</b>
OPP	607540	Boxford – section of Border to Boston Trail	\$4,175	NA	NA	0.50	1.00	0.67	0.40	0.50	0.25	<b>3.32</b>

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## **Appendix D Sample Project Evaluation Worksheet**

## Sample Project Evaluation Worksheet

### Merrimack Valley Planning Commission and MassDOT Evaluation Criteria

**Project: Amesbury - Intersection Improvements Rt 110 @ Rt 150**

**Project Number: 608028**

**Project Cost: \$1,800,000    AADT: 21,000    Distance: NA    Linear Lane Miles: NA**

<b>Condition</b>	<b>Score</b>	<b>Additional Comments</b>
A. Magnitude of pavement condition improvement.	1	Existing pavement is in Fair condition.
B. Magnitude of improvement of other infrastructure.	2	Signal upgrade. New turning lane. Some sidewalk segments on 110 and 150 are discontinuous.
<b>Condition Average</b>	<b>1.5</b>	

<b>Mobility</b>	<b>Score</b>	<b>Additional Comments</b>
A. Effect on magnitude and duration of congestion.	2	
B. Effect on travel time and connectivity / access.	2	
C. Effect on other modes using the facility.	2	
D. Effect on regional and local traffic.	2	
<b>Mobility Average</b>	<b>2</b>	



**Sample Project Evaluation Worksheet (Cont.)**

**Project: Amesbury - Intersection Improvements Rt 110 @ Rt 150**

**Project Number: 608028**

<b>Safety and Security</b>	<b>Score</b>	<b>Additional Comments</b>
A. Effect on crash rate compared to State average.	3	Crash Cluster EPDO = 72. (15 <sup>th</sup> worst in region.)
B. Effect on bicycle and pedestrian safety.	3	Middle school nearby.
C. Effect on transportation security and evacuation.	2	Is an evacuation route in 10 mile radius of nuclear power plant. Not NHS.
<b>Safety and Security Average</b>	<b>2.67</b>	

<b>Community Effects and Support</b>	<b>Score</b>	<b>Additional Comments</b>
A. Residential effects: ROW, noise, aesthetics, cut through traffic, and other.	2	
B. Public, local government, legislative, and regional support.	2	
C. Effect on service to minority or low-income neighborhoods. (Title VI and EJ)	0	Not Title VI or EJ area.
D. Other impacts / benefits to minority or low-income neighborhoods. (Title VI and EJ).	0	Not Title VI or EJ area.
E. Effect on development and redevelopment of housing stock.	0	
<b>Community Effects and Support Average</b>	<b>0.8</b>	

**Sample Project Evaluation Worksheet (Cont.)**

**Project: Amesbury - Intersection Improvements Rt 110 @ Rt 150**

**Project Number: 608028**

<b>Land Use and Economic Development</b>	<b>Score</b>	<b>Additional Comments</b>
A. Business effects; ROW, noise, traffic, parking, freight access, other.	1	
B. Sustainable development effects. Consistent with MVPGS.	2	Adjacent to Rt. 150 Gateway Village Regional PDA.
C. Consistent with regional land-use and economic development plans and PGS.	2	Adjacent to Rt. 150 Gateway Village Regional PDA.
D. Effect on job creation.	0	
<b>Land Use and Economic Development Average</b>	<b>1.25</b>	

**Sample Project Evaluation Worksheet (Cont.)**

**Project: Amesbury - Intersection Improvements Rt 110 @ Rt 150**

**Project Number: 608028**

<b>Environmental Effects</b>	<b>Score</b>	<b>Additional Comments</b>
A. Air quality / Climate effects. GHG Impact Description – Assumed Nominal Decrease in Emissions from Other Improvements	1	
B. Sustainable development effects. Consistent with MVPGS.	0	Adjacent to Rt. 150 Gateway Village Regional PDA.
C. Consistent with regional land-use and economic development plans and PGS.	0	Adjacent to Rt. 150 Gateway Village Regional PDA.
D. Effect on job creation.	0	
<b>Environmental Effects Average</b>	<b>0.25</b>	
<b>Overall Project TEC score</b>	<b>6.97</b>	

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## **Appendix E Greenhouse Gas (GHG) Monitoring and Evaluation**

## **2017-2021**

# **Transportation Improvement Program Greenhouse Gas Monitoring and Evaluation**

## **Introduction**

This section summarizes the greenhouse gas (GHG) impacts that are anticipated to result from the projects that are included in this FFY 2017 – 2021 Transportation Improvement Program (TIP). It includes a summary of the state laws and policies that call for reducing greenhouse gas in order to mitigate global climate change, actions that are being taken to respond to these state laws and policies, the role of regional planning and TIP development in reducing GHG emission and tracking these reductions, and the projected GHG emission impacts from the projects programmed in the TIP.

## **State Policy Context**

The Global Warming Solutions Act (GWSA), which was signed into law in August 2008, makes Massachusetts a leader in setting aggressive and enforceable GHG reduction targets, and implementing policies and initiatives to achieve these targets. In keeping with the law, on December 29, 2010 the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), in consultation with other state agencies and the public, released the Massachusetts *Clean Energy and Climate Plan for 2020*. In December 2014 the Department of Environmental Protection issued new regulations that require Metropolitan Planning Organizations to quantify impacts from project investments, track progress towards reductions, and consider impacts in the prioritization of GHG impacts from project investments. The targets for overall statewide GHG emissions are:

- By 2020: 25 percent reduction below statewide 1990 GHG emission levels, and
- By 2050: 80 percent reduction below statewide 1990 GHG emission levels

## **GreenDOT Policy**

The transportation sector is the single largest emitter of greenhouse gases, accounting for over a third of GHG emissions, and therefore the transportation sector is a key focus of the *Clean Energy and Climate Plan*. MassDOT's approach to supporting the implementation of the plan is set forth in its GreenDOT Policy Directive, a comprehensive sustainability initiative that sets three principal objectives:

- **Reduce greenhouse gas (GHG) emissions.** MassDOT will achieve this by taking GHG emissions into account in all of its responsibilities, from strategic planning to project design and construction and system operations;
- **Promote the healthy transportation modes of walking, bicycling, and public transit.** MassDOT will achieve this by pursuing multi-modal, “complete streets” design standards; providing choice in transportation services; and by working with MPOs and other partners to prioritize and program a balance of projects that serve drivers, pedestrians, bicyclists, and public transit riders, and
- **To support smart growth development.** MassDOT will achieve this by working with MPOs and other partners to make transportation investments that enable denser, smart growth development patterns that support reduced GHG emissions.

### **GreenDOT Policy and Metropolitan Planning Organizations**

The Commonwealth’s thirteen metropolitan planning organizations (MPOs) are integrally involved in helping to achieve the GreenDOT goals and supporting the GHG reductions mandated under the GWSA. The MPOs are most directly involved in helping to achieve the GHG emissions reductions under the second goal – to promote healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments – and assist in the third goal by supporting smart growth development patterns through the creation of a balanced multi-modal transportation system. This will be realized through the transportation goals and policies espoused in the Regional Transportation Plans (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 tracking and evaluation processes enable the MPOs 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.

### **Regional GHG Tracking and Evaluation in RTPs**

MassDOT coordinated with MPOs and regional planning agency (RPA) staffs on the implementation of GHG tracking and evaluation in development of each MPO’s 2035 RTPs, which were adopted in September 2011. This collaboration has continued for the MPO’s 2040 RTPs and FFYs 2017-2021 TIPs.

Working together, MassDOT and the MPOs have attained the following milestones:

- Modeling and long-range statewide projections for GHG emissions resulting from the transportation sector. Using the Boston MPO’s regional model and the statewide travel demand model for the remainder of the state, GHG emissions

were projected for 2021 no-build and build conditions, and for 2035 no-build and build conditions.

- All of the MPOs included these GHG emission projections in their RTPs, along with a discussion of climate change and a statement of MPO support for reducing GHG emissions as a regional goal.

## **Project-Level GHG Tracking and Evaluation in the Transportation Improvement Program**

It is also important to monitor and evaluate the GHG impacts of the transportation projects that are programmed in the MPO Transportation Improvement Programs (TIP). The TIP includes both the larger, regionally-significant projects from the RTPs, which have already had their aggregate GHG impacts calculated and reported in the RTP, as well as smaller projects that are not included in the RTP but that may nevertheless have impacts on GHG emissions. The principal objective of this tracking is to enable the MPOs to evaluate expected GHG impacts of different projects and to use this information as a criterion for prioritizing and programming projects in future TIPs.

In order to monitor and evaluate the GHG impacts of TIP projects, MassDOT and the MPOs have developed the following approach for identifying anticipated GHG impacts and quantifying GHG impacts of projects, when appropriate, through the TIP. Different types of projects will have different anticipated GHG emissions impacts. The different project categories are outlined on the next two pages with this region's project tracking sheets on the third page.

### **Calculation of GHG Impacts for TIP Projects**

The Office of Transportation Planning at MassDOT provided the spreadsheets that are used for determining Congestion Management and Air Quality (CMAQ) eligibility. These spreadsheets require the same inputs as the CMAQ calculations, and have been adapted to provide CO<sub>2</sub> impacts. The data and analysis required for these calculations is available from functional design reports that should be submitted for projects that would produce a measurable GHG impact.

- **Projects with Quantified Impacts**
  - **RTP Projects** - Major capacity expansion projects would be expected to have a significant impact on GHG emissions. However, these projects are included in the RTPs and analyzed using the statewide model or Boston regional model, which would reflect their GHG impacts. Therefore, no independent TIP calculations are required.



- **Quantified Decrease in Emissions** - Projects that would be expected to produce a measurable decrease in emissions. The approach for calculating these impacts is described below. These projects should be categorized in the following manner:
  - **Quantified Decrease in Emissions from Traffic Operational Improvement** - An intersection reconstruction or signalization project that is projected to reduce delay and congestion.
  - **Quantified Decrease in Emissions from Pedestrian and Bicycle Infrastructure** - A shared-use path that would enable increased walking and biking and decreased vehicle-miles traveled (VMT).
  - **Quantified Decrease in Emissions from New/Additional Transit Service** - A bus or shuttle service that would enable increased transit ridership and decreased VMT.
  - **Quantified Decrease in Emissions from a Park and Ride Lot** - A park-and-ride lot that would enable increased transit ridership/ increased ridesharing and decreased VMT.
  - **Quantified Decrease in Emissions from Bus Replacement** - A bus replacement that would directly reduce GHG emissions generated by that bus service.
  - **Quantified Decrease in Emissions from Complete Streets Improvements** - Improvements to roadway networks that include the addition of bicycle and pedestrian accommodations where none were present before.
  - **Quantified Decrease in Emissions from Other Improvement**
- **Quantified Increase in Emissions** – Projects that would be expected to produce a measurable increase in emissions.
- **Projects with Assumed Impacts**
  - **No Assumed Impact/Negligible Impact on Emission** - Projects that do not change the capacity or use of a facility (e.g. a resurfacing project that restores a roadway to its previous condition, or a bridge rehabilitation/replacement that restores the bridge to its previous condition) would be assumed to have no GHG impact.
  - **Assumed Nominal Decrease in Emissions** - Projects that would be expected to produce a minor decrease in emissions that cannot be

calculated with any precision. Examples of such projects include roadway repaving or reconstruction projects that add a new sidewalk or new bike lanes. Such a project would enable increased travel by walking or bicycling, but there may be no data or analysis to support any projections of GHG impacts. These projects should be categorized in the following manner:

- **Assumed Nominal Decrease in Emissions from Sidewalk Infrastructure**
  - **Assumed Nominal Decrease in Emissions from Bicycle Infrastructure**
  - **Assumed Nominal Decrease in Emissions from Sidewalk and Bicycle Infrastructure**
  - **Assumed Nominal Decrease in Emissions from Intelligent Transportation Systems (ITS) and/or Traffic Operational Improvements**
  - **Assumed Nominal Decrease in Emissions from Other Improvements**
- **Assumed Nominal Increase in Emissions** - Projects that would be expected to produce a minor increase in emissions that cannot be calculated with any precision.

### **Regional Greenhouse Gas Impact Summary Tables for FFYs 2017 – 2021 TIP**

The following tables summarize the calculated quantitative and assumed qualitative impacts of the projects included in the regional FFYs 2017 – 2021 TIP by year.

## FFYs 2017 to 2021 Projects GHG Tracking Summary

2017 Merrimack Valley Region MPO Transportation Improvement Program							
Highway Projects GHG Tracking Summary							
MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
606669	AMESBURY - POWWOW RIVERWALK CONSTRUCTION	\$ 671,207	Qualitative		Qualitative Decrease in Emissions	\$ 671,207	Not yet enough information to generate an estimate.
607561	ANDOVER- METHUEN- INTERSTATE MAINTENANCE & RELATED WORK ON I-93	\$ 10,357,600	Qualitative		No assumed impact/negligible impact on emissions	\$ 10,357,600	
604585	FLEX TO FTA FOR MVRTA NEW BUS UPGRADE TO CLEANER FUEL BUSES	\$ 645,840	Qualitative		Qualitative Decrease in Emissions	\$ 645,840	Not yet enough information to generate an estimate.
607573	HAVERHILL - RECONSTRUCTION ON ROUTE 97 (BROADWAY), FROM SILVER BIRCH LANE TO RESEARCH DRIVE	\$ 6,526,912	Qualitative		Qualitative Decrease in Emissions	\$ 6,526,912	Not yet enough information to generate an estimate.

## 2017 (Cont.) Merrimack Valley Region MPO Transportation Improvement Program Highway Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
605306	HAVERHILL- SUPERSTRUCTURE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	\$ 12,000,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 50,772,179	AC yr 1 of 3. Sum Year 1 Cost = \$12,000,000. Total Project Cost = \$50,772,179
608002	LAWRENCE- SAFE ROUTES TO SCHOOL (BRUCE ELEMENTARY)	\$ 2,016,148	Qualitative		Qualitative Decrease in Emissions	\$ 2,016,148	
<b>2017 Total GHG emissions</b>				0			

## 2018 Merrimack Valley Region MPO Transportation Improvement Program Highway Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
606159	NORTH ANDOVER-INTERSECTION & SIGNAL IMPROVEMENTS AT ROUTE 125 & MASSACHUSETTS AVENUE	\$ 3,785,640	Qualitative		Qualitative Decrease in Emissions	\$ 3,785,640	Not yet enough information to generate an estimate.
605020	SALISBURY - MULTI-USE TRAIL EXTENSION (BORDERS TO BOSTON TRAIL)	\$ 6,155,240	Quantified	6,837	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	\$ 6,155,240	
605306	HAVERHILL-SUPERSTRUCTURE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	\$ 23,000,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 50,772,179	AC yr 2 of 3. Sum Year 2 Cost = \$23,000,000. Total Project Cost = \$50,772,179
607737	AMESBURY- SALISBURY-TRAIL CONNECTOR @ I-95	\$ 2,677,798	Qualitative		Qualitative Decrease in Emissions	\$ 2,677,798	Not yet enough information to generate an estimate.
		<b>2018 Total GHG emissions</b>		6,837			

## 2019 Merrimack Valley Region MPO Transportation Improvement Program Highway Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
MV0001	FLEX TO FTA FOR MVRTA NEW BUS UPGRADE TO CLEANER FUEL BUSES	\$ 698,541	Qualitative		Qualitative Decrease in Emissions	\$ 698,541	Not yet enough information to generate an estimate.
608027	HAVERHILL - BRADFORD RAIL TRAIL EXTENSION, FROM ROUTE 125 TO RAILROAD STREET	\$ 1,176,240	Quantified	2,935	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	\$ 1,176,240	
602418	AMESBURY- RECONSTRUCTION OF ELM STREET	\$ 3,337,520	Qualitative		No assumed impact/negligible impact on emissions	\$ 9,726,521	AC yr 1 of 2. Sum Year 1 Cost = \$3,337,520. Total Project Cost = \$9,726,521
605753	GROVELAND- RECONSTRUCTION OF ROUTE 97 (SCHOOL STREET) FROM PARKER STREET TO GARDNER STREET	\$ 3,893,760	Qualitative		No assumed impact/negligible impact on emissions	\$ 3,893,760	
605306	HAVERHILL- SUPERSTRUCTURE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	\$ 15,772,179	Qualitative		No assumed impact/negligible impact on emissions	\$ 50,772,179	AC yr 3 of 3. Sum Year 3 Cost = \$15,772,179. Total Project Cost = \$50,772,179

## 2019 (Cont.) Merrimack Valley Region MPO Transportation Improvement Program Highway Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
607541	GEORGETOWN- BOXFORD- BORDER TO BOSTON TRAIL, FROM GEORGETOWN ROAD TO WEST MAIN STREET (ROUTE 97)	\$ 1,874,028	Quantified	1,520	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	\$ 1,874,028	
608187	HAVERHILL- MERRIMAC- AMESBURY- TRAFFIC & GUIDE SIGN REPLACEMENT ON A SECTION OF I-495	\$ 4,807,449	Qualitative		No assumed impact/negligible impact on emissions	\$ 4,807,449	
		<b>2019 Total GHG Emissions</b>		4,455			

## 2020 Merrimack Valley Region MPO Transportation Improvement Program Highway Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
608298	GROVELAND-GROVELAND COMMUNITY TRAIL, FROM MAIN STREET TO KING STREET	\$ 2,672,677	Quantified	2,552	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	\$ 2,672,677	
602418	AMESBURY-RECONSTRUCTION OF ELM STREET	\$ 6,389,001	Qualitative		No assumed impact/negligible impact on emissions	\$ 9,726,521	AC yr 1 of 2. Sum Year 1 Cost = \$3,337,520. Total Project Cost = \$9,726,521
607542	GEORGETOWN-NEWBURY- BORDER TO BOSTON TRAIL (NORTHERN GEORGETOWN SECTION)	\$ 4,341,120	Quantified	17,460	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	\$ 4,341,120	
<b>2020 Total GHG emissions</b>				20,012			



## 2021 Merrimack Valley Region MPO Transportation Improvement Program Highway Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼
608095	NORTH ANDOVER-CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	\$ 9,775,158	Qualitative		Qualitative Decrease in Emissions	\$ 18,188,961	Not yet enough information generate an estimate. AC Year 1 of 3. \$9,775,158 = Sum of Year 1. Total Project Cost = \$ 18,188,961
<b>2021 Total GHG emissions</b>				0			

## 2017 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
5307 ▶ RTD0004542	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2018 (O)	\$ 3,054,810	Qualitative		No assumed impact/negligible impact on emissions	\$ 3,054,810		
5307 ▶ RTD0004541	Capital funding used for operating ADA service and considered as an operating expense for FY 2018 (O)	\$ 1,371,830	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,371,830		
5307 ▶ RTD0004550	MVPC Short Range Transit Planning & Technical Support UPWP FY 2018 (20% match from MVPC) (N)	\$ 100,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 100,000		
5307 ▶ RTD0004540	Refurbish Engine/Transmission 8 Model Year 2011 Buses (M)	\$ 280,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 280,000		
5307 ▶ RTD0004919	Replace Parking Facilities Revenue Collection Equipment (M)	\$ 300,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 300,000		
5307 ▶ RTD0004989	Bus/Van Mobile location Project (C)	\$ 300,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 300,000		
5307 ▶ RTD0004932	Replace 7 Model Yr 2004 Buses with new (M)	\$ 2,989,000	Quantified	18,271	Quantified Decrease in Emissions from Bus Replacement	\$ 2,989,000		

## 2017 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
5307 ► RTD0004990	Replace 1 Model Yr 2013 Support Vehicle (M)	\$ 46,350	Qualitative		No assumed impact/negligible impact on emissions	\$ 46,350		
5307 ► RTD0004552	Operating Assistance FY 2018 (O)	\$ 1,257,050	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,257,050		
<b>Other ►</b> <b>RTD0005219</b>	Newburyport Intermodal Transit Facility Year 1 of 2	\$ 2,500,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 5,000,000		

## 2018 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
5307 ▶ RTD0004544	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2019 (O)	\$ 3,152,905	Qualitative		No assumed impact/negligible impact on emissions	\$ 3,152,905		
5307 ▶ RTD0004543	Capital funding used for operating ADA service and considered as an operating expense for FY 2019 (O)	\$ 1,403,370	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,403,370		
5307 ▶ RTD0004555	MVPC Short Range Transit Planning & Technical Support UPWP FY 2019 (20% match from MVPC) (N)	\$ 100,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 100,000		
5307 ▶ RTD0004545	Refurbish Engine/ Transmissions on 8 Model Year 2011 Transit Buses (M)	\$ 288,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 288,000		
5307 ▶ RTD0004954	Replace 6 Model Yr 2004 Buses Delivery 2018 (M)	\$ 2,725,755	Quantified	15,661	Quantified Decrease in Emissions from Bus Replacement	\$ 2,725,755		

## 2018 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
<b>5307 ▶</b> RTD0004991	Replace 1 Model Yr 2013 Support Vehicle (M)	\$ 47,750	Qualitative		No assumed impact/negligible impact on emissions	\$ 47,750		
<b>5307 ▶</b> RTD0004921	State of Good Repair Gateway Parking (M)	\$ 20,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 20,000		
<b>5307 ▶</b> RTD0004554	Operating Assistance FY 2019 (O)	\$ 1,392,480	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,392,480		
<b>Other ▶</b> RTD0005408	Newburyport Intermodal Transit Facility Year 2 of 2	\$ 2,500,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 5,000,000		

## 2019 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
5307 ▶ RTD0004547	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2020 (O)	\$ 3,250,095	Qualitative		No assumed impact/negligible impact on emissions	\$ 3,250,095		
5307 ▶ RTD0004548	Capital funding used for operating ADA service and considered as an operating expense for FY 2020 (O)	\$ 1,456,420	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,456,420		
5307 ▶ RTD0004556	MVPC Short Range Transit Planning & Technical Support UPWP FY 2020 (20% match from MVPC) (N)	\$ 100,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 100,000		
5307 ▶ RTD0004955	Purchase 3 new 35' buses delivery 2019 (C)	\$ 1,373,355	Qualitative		Qualitative Decrease in Emissions	\$ 1,373,355	Not yet enough information to generate an estimate.	
5307 ▶ RTD0004992	Replace 1 Model Yr 2013 Support Vehicles (M)	\$ 49,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 49,000		
5307 ▶ RTD0004922	State of Good Repair Gateway Parking (M)	\$ 10,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 10,000		
5307 ▶ RTD0004558	Operating Assistance FY 2020 (O)	\$ 1,531,220	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,531,220		

## 2020 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
5307 ▶ RTD0004559	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2021 (O)	\$ 3,347,595	Qualitative		No assumed impact/negligible impact on emissions	\$ 3,347,595		
5307 ▶ RTD0004560	Capital funding used for operating ADA service and considered as an operating expense for FY 2021 (O)	\$ 1,500,110	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,500,110		
5307 ▶ RTD0004561	MVPC Short Range Transit Planning & Technical Support UPWP FY 2021 (20% match from MVPC) (N)	\$ 100,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 100,000		
5307 ▶ RTD0004956	Replace 3 Model Yr 2007 buses delivery 2020 (M)	\$ 1,456,621	Quantified	7,830	Quantified Decrease in Emissions from Bus Replacement	\$ 1,456,621		
5307 ▶ RTD0004993	Replace 11 Model Yr 2015 vans (M)	\$ 756,966	Quantified	23,042	Quantified Decrease in Emissions from Bus Replacement	\$ 756,966		
5307 ▶ RTD0004923	State of Good Repair Gateway Parking (M)	\$ 10,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 10,000		
5307 ▶ RTD0004563	Operating Assistance FY 2021 (O)	\$ 1,684,340	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,684,340		



## 2021 Merrimack Valley Region MPO Transportation Improvement Program Transit Projects GHG Tracking Summary

MassDOT/FTA Project ID ▼	MassDOT/FTA Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Total Cost ▼	Additional Information ▼	Fiscal Year of Contract Award (2015 and forward) ▼
5307 ▶ RTD0004933	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2022 (O)	\$ 3,448,020	Qualitative		No assumed impact/negligible impact on emissions	\$ 3,448,020		
5307 ▶ RTD0004934	Capital funding used for operating ADA service and considered as an operating expense for FY 2022 (O)	\$ 1,545,115	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,545,115		
5307 ▶ RTD0004935	MVPC Short Range Transit Planning & Technical Support UPWP FY 2022 (20% match from MVPC) (N)	\$ 100,000	Qualitative		No assumed impact/negligible impact on emissions	\$ 100,000		
5307 ▶ RTD0004957	Replace 2 Model Yr 2009 buses delivery 2022 (M)	\$ 984,821	Quantified	5,412	Quantified Decrease in Emissions from Bus Replacement	\$ 984,821		
5307 ▶ RTD0004959	Replace 5 Model Yr 2016 vans with new (M)	\$ 354,200	Quantified	6,355	Quantified Decrease in Emissions from Bus Replacement	\$ 354,200		
5307 ▶ RTD0004958	Operating Assistance FY 2022 (O)	\$ 1,852,770	Qualitative		No assumed impact/negligible impact on emissions	\$ 1,852,770		



# GHG Calculations Worksheets

FILL IN SHADED BOXES ONLY

TIP YEAR: 2019

MPO: Merrimack Valley

Municipality: Haverhill

Project: Haverhill - Bradford Rail Trail Extension, from Route 125 to Railroad Street # 608027

Step 1: Calculate New Walk and Bike Miles Traveled:

If VMT reduction per year is known then go to Step 2B, if not proceed with Step 1 :

		User Input (blank for defau Default)
A. Facility Length (L):	0.2 Miles	
B Types of Improvements Implemented:	Both (select Pedestrian, Bicycle, or Both from list)	
B. Service Area Radius for Bicycling (RB):	0.5 Miles	0.5
C. Service Area Radius for Walking (RW):	0.25 Miles	0.25
D. Service Area of Community(ies) for Bicycling (SAB): $L * 2RB = SAB$	0.20833333 Sq. Miles	
E. Service Area of Community(ies) for Walking (SAW): $L * 2RW = SAW$	0.10416667 Sq. Miles	
F. Land Area of Neighborhoods Served (AN):	1.4 Sq. Miles	
G. Population of Neighborhoods Served (PN):	8,702 Persons	
H. Population Density of Neighborhoods Served (PD):	6,216 Persons/Sq. Mile	
I. Population Served by Facility for Bicycling (PB): $PD * SAB = PB$	1,295 Persons	
J. Population Served by Facility for Walking (PW): $PD * SAW = PW$	647 Persons	
K. Trips per Person per Day in Service Area (T):	4.7 Trips	4.7
L. Baseline Bicycle Mode Share in Service Area (MSB):	0.6% Percent	
M. Baseline Walk Mode Share in Service Area (MSW):	7.2% Percent	

CMAQ Air Quality Analysis Worksheet for Complete Streets Project (cont.)

TIP YEAR: 2019

MPO: Merrimack Valley

Municipality: Haverhill

Project: Haverhill - Bradford Rail Trail Extension, from Route 125 to Railroad Street # 608027

N. Relative Increase in Service Area Bicycle Mode Share from Improvements (BI)	30.0% Percent	<input type="text"/>	30.0%
O. Relative Increase in Service Area Walk Mode Share from Improvements (WI):	7.5% Percent	<input type="text"/>	7.5%
P. New Bike Trips (BT): $PB * T * MSB * BI = BT$	11 1-Way Trips/Day		
Q. New Walk Trips (WT): $PW * T * MSW * WI = WT$	16 1-Way Trips/Day		
R. Average Bike Trip Length (LB):	2.3 Miles	<input type="text"/>	2.3
S. Average Walk Trip Length (LW):	0.7 Miles	<input type="text"/>	0.7
T. New Bike and Walk Miles of Travel (BWM):	37 Miles per Day		

Step 2: Calculate the VMT Reduction:

U. Prior Drive Mode Share of New Bike and Walk Trips (MSD):	59.0% Percent	<input type="text" value="59%"/>
V. VMT Reduced per Day (VMTR): $BWM * MSD = VMTR$	22 Miles per Day	
W. $VMTR * Operating Days Per Year$	$22 * 365 =$	7,974 VMTR Per Year

If the Vehicles Miles Traveled Reduction is known enter  VMTR Per Year in the box to the right.

Note: A manual entry of the VMTR will override the calculated cell.

CMAQ Air Quality Analysis Worksheet for Complete Streets Project (cont.)

TIP YEAR: 2019

MPO: Merrimack Valley

Municipality: Haverhill

Project: Haverhill - Bradford Rail Trail Extension, from Route 125 to Railroad Street #6 08027

Step 3: Emission Factors for Average Commuter Travel Speed:

Note: Use 35 MPH as a default if average speed is not known. Speed Used: 35 MPH

2016 Auto Summer VOC Factor grams/mile	2016 Auto Summer NOx Factor grams/mile	2016 Auto Summer CO Factor grams/mile	2016 Auto Summer CO2 Factor grams/mile
0.232	0.178	3.540	368.100

Step 4: Calculate emissions reductions in kilograms per year (Seasonally Adjusted):

Summer VOC	Summer NOx	Summer CO	Summer CO2
1.9	1.4	28.8	2,935.3

Step 5: Calculate cost effectiveness (first year cost per kg of emissions reduced)

Emission	Project Cost		Emission Reduction in kg per year	First year cost per kilogram
Summer VOC	\$1,176,240	/	1.9 =	\$624,076
Summer NOx	\$1,176,240	/	1.4 =	\$813,402
Summer CO	\$1,176,240	/	28.8 =	\$40,900
Summer CO2	\$1,176,240	/	2,935.3 =	\$401

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project						
Fill in shaded boxes only						
TIP YEAR:	2018					
MPO:	Merrimack Valley Planning Commission			Municipality:	Salisbury	
Project:	Salisbury Rail Trail Mudnock Road to NHSL along Abandoned RR					
<b>Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):</b>						
If VMT reduction per year is known then go to Step 2B, if not proceed with Step 1 :						
A.	Facility Length (L):				2.3	Miles
B.	Service Area Radius (R):				1.0	Miles (Default = 1 Mile)
C.	Service Area of Community(ies) (SA):	$L * 2R = SA$			4.5	Sq. Miles
D.	Total Land Area of Community(ies) (T):				15.4	Sq. Miles
E.	Service Area % of Community(ies) Land Area (LA):	$SA / T = LA$			29.2%	
F.	Total Population of Community(ies) (TP):				8,283	Persons
G.	Population Served by Facility (P):	$LA * TP = P$			2,420	Persons
H.	Total Number of Households in Community(ies) (HH):				3,441	HH
I.	Number of Households Served by Facility (HS):	$LA * HH = HS$			1,005	HH
J.	Total Number of Workers Residing in Community(ies) (W):				3,950	Persons
K.	Workers Per household (WPHH):	$W / HH = WPHH$			1.15	Persons
L.	Workers in Service Area (WSA):	$HS * WPHH = WSA$			1,154	Persons
M.	Population Density of the Service area (PD):	$P / SA = PD$			538	Persons Per Sq. Mile
N.	If the bicycle and pedestrian commuter mode share is known, enter the percentage at the right.				(BMS)	1.3%
If not, use the 2000 US Census Journey to Work data to determine the mode share and enter the percentage to the right.						

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project				
Project:		Salisbury Rail Trail Mudnock Road to NHSL along Abandoned RR (Continued)		
O.	Bike and Ped. Work Utilitarian Trips (BWT):	WSA * BMS = BWT	15	One-Way Trips
P.	Bike and Ped. Non-Work Utilitarian Trips (BNWT):	BWT * 1.7 = BNWT	26	One-Way Trips
(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)				
<b>Step 2: Calculate the VMT Reduction Per Day:</b>				
A.	((2 * BWT) + (2 * BNWT)) * (0.5* L) = VMTR		91.2	VMTR Per Day
B.	VMTR * Operating Days Per Year	91.2 * 200 =	18,231	VMTR Per Year
		If the Vehicle Miles Traveled Reduction is known enter in the box to the right.		VMTR Per Year
<b>Note:</b> A manual entry of the VMTR will override the calculated cell.				
<b>Step 3: MOBILE 6 Emission Factors for Average Commuter Travel Speed:</b>				
Note: Use 35 MPH as a default if average speed is not known		Speed Used:	35 MPH	
2016 Auto	2016 Auto	2016 Auto	2016 Auto	
Summer VOC Factor	Summer NOx Factor	Summer CO Factor	Summer CO2 Factor	
grams/mile	grams/mile	grams/mile	grams/mile	
0.232	0.178	3.540	368.100	
<b>Step 4: Calculate emissions reductions in kilograms per year (Seasonally Adjusted):</b>				
Summer VOC	Summer NOx	Summer CO	Summer CO2	
4.3	3.3	65.8	6,837.0	
<b>Step 5: Calculate cost effectiveness (first year cost per kg of emissions reduced)</b>				
	Project		Emission Reduction	First year cost
Emission	Cost		in kg per year	per kilogram
Summer VOC	\$3,687,500	/	4.3 =	\$855,749
Summer NOx	\$3,687,500	/	3.3 =	\$1,115,359
Summer CO	\$3,687,500	/	65.8 =	\$56,083
Summer CO2	\$3,687,500	/	6,837.0 =	\$539

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project						
Fill in shaded boxes only						
TIP YEAR:	2019					
MPO:	Merrimack Valley			Municipality:	Georgetown	
Project:	Georgetown - Southern Section of B to B Trail from Georgetown Square to Boxford TL					
<b>Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):</b>						
If VMT reduction per year is known then go to Step 2B, if not proceed with Step 1 :						
A. Facility Length (L):				1.6	Miles	
B. Service Area Radius (R):				1.0	Miles	(Default = 1 Mile)
C. Service Area of Community(ies) (SA):	L * 2R = SA			3.2	Sq. Miles	
D. Total Land Area of Community(ies) (T):				12.9	Sq. Miles	
E. Service Area % of Community(ies) Land Area (LA):	SA / T = LA			24.8%		
F. Total Population of Community(ies) (TP):				8,183	Persons	
G. Population Served by Facility (P):	LA * TP = P			2,030	Persons	
H. Total Number of Households in Community(ies) (HH):				2,937	HH	
I. Number of Households Served by Facility (HS):	LA * HH = HS			729	HH	
J. Total Number of Workers Residing in Community(ies) (W):				3,783	Persons	
K. Workers Per household (WPHH):	W / HH = WPHH			1.29	Persons	
L. Workers in Service Area (WSA):	HS * WPHH = WSA			938	Persons	
M. Population Density of the Service area (PD):	P / SA = PD			634	Persons Per Sq. Mile	
N. If the bicycle and pedestrian commuter mode share is known, enter the percentage				(BMS)	0.5%	
If not, use the 2000 US Census Journey to Work data to determine the mode share and enter the percentage to the right.						

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project				
Project:		Georgetown - Southern Section of B to B Trail (Continued)		
O.	Bike and Ped. Work Utilitarian Trips (BWT):	WSA * BMS = BWT	5	One-Way Trips
P.	Bike and Ped. Non-Work Utilitarian Trips (BNWT):	BWT * 1.7 = BNWT	8	One-Way Trips
(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)				
<b>Step 2: Calculate the VMT Reduction Per Day:</b>				
A.	((2 * BWT) + (2 * BNWT)) * (0.5 * L) = VMTR		20.3	VMTR Per Day
B.	VMTR * Operating Days Per Year	20.3 * 200 =	4,054	VMTR Per Year
If the Vehicle Miles Traveled Reduction is known enter in the box to the right. <input type="text"/>				
<b>Note:</b> A manual entry of the VMTR will override the calculated cell.				
<b>Step 3: MOBILE 6 Emission Factors for Average Commuter Travel Speed:</b>				
Note: Use 35 MPH as a default if average speed is not known. Speed Used: <input type="text" value="35 MPH"/>				
	2016 Auto	2016 Auto	2016 Auto	2016 Auto
Summer VOC Factor	Summer NOx Factor	Summer CO Factor	Summer CO2 Factor	
grams/mile	grams/mile	grams/mile	grams/mile	
<input type="text" value="0.232"/>	<input type="text" value="0.178"/>	<input type="text" value="3.540"/>	<input type="text" value="368.100"/>	
<b>Step 4: Calculate emissions reductions in kilograms per year (Seasonally Adjusted):</b>				
Summer VOC	Summer NOx	Summer CO	Summer CO2	
<input type="text" value="1.0"/>	<input type="text" value="0.7"/>	<input type="text" value="14.6"/>	<input type="text" value="1,520.3"/>	
<b>Step 5: Calculate cost effectiveness (first year cost per kg of emissions reduced)</b>				
	Project		Emission Reduction	First year cost
Emission	Cost		in kg per year	per kilogram
Summer VOC	\$1,480,000	/	1.0 =	\$1,544,559
Summer NOx	\$1,480,000	/	0.7 =	\$2,013,133
Summer CO	\$1,480,000	/	14.6 =	\$101,225
Summer CO2	\$1,480,000	/	1,520.3 =	\$973

<b>CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project</b>						
<b>Fill in shaded boxes only</b>						
<b>TIP YEAR:</b>	2020					
<b>MPO:</b>	Merrimack Valley		<b>Municipality:</b>		Georgetown/ Newbury	
<b>Project:</b>	Georgetown - North Section of B to B Trail from Georgetown Square to Byfield Center					
<b>Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):</b>						
If VMT reduction per year is known then go to Step 2B, if not proceed with Step 1 :						
<b>A. Facility Length (L):</b>				3.6	Miles	
<b>B. Service Area Radius (R):</b>				1.0	Miles	(Default = 1 Mile)
<b>C. Service Area of Community(ies) (SA):</b>	$L * 2R = SA$			7.2	Sq. Miles	
<b>D. Total Land Area of Community(ies) (T):</b>				37.1	Sq. Miles	
<b>E. Service Area % of Community(ies) Land Area (LA):</b>	$SA / T = LA$			19.4%		
<b>F. Total Population of Community(ies) (TP):</b>				14,849	Persons	
<b>G. Population Served by Facility (P):</b>	$LA * TP = P$			2,882	Persons	
<b>H. Total Number of Households in Community(ies) (HH):</b>				5,531	HH	
<b>I. Number of Households Served by Facility (HS):</b>	$LA * HH = HS$			1,073	HH	
<b>J. Total Number of Workers Residing in Community(ies) (W):</b>				7,259	Persons	
<b>K. Workers Per household (WPHH):</b>	$W / HH = WPHH$			1.31	Persons	
<b>L. Workers in Service Area (WSA):</b>	$HS * WPHH = WSA$			1,409	Persons	
<b>M. Population Density of the Service area (PD):</b>	$P / SA = PD$			400	Persons Per Sq. Mile	
<b>N. If the bicycle and pedestrian commuter mode share is known, enter the percentage</b>					<b>(BMS)</b>	1.7%
If not, use the 2000 US Census Journey to Work data to determine the mode share and enter the percentage to the right.						



CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project				
Project: Georgetown - North Section of B to B from Georgetown Square to Byfield Center (Continued)				
O.	Bike and Ped. Work Utilitarian Trips (BWT): WSA * BMS = BWT		24	One-Way Trips
P.	Bike and Ped. Non-Work Utilitarian Trips (BNWT): BWT * 1.7 = BNWT		41	One-Way Trips
(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)				
<b>Step 2: Calculate the VMT Reduction Per Day:</b>				
A.	$((2 * BWT) + (2 * BNWT)) * (0.5 * L) = VMTR$		232.8	VMTR Per Day
B.	VMTR * Operating Days Per Year	232.8 * 200 =	46,557	VMTR Per Year
	If the Vehicle Miles Traveled Reduction is known enter in the box to the right.			VMTR Per Year
<b>Note:</b> A manual entry of the VMTR will override the calculated cell.				
<b>Step 3: MOBILE 6 Emission Factors for Average Commuter Travel Speed:</b>				
Note: Use 35 MPH as a default if average speed is not known Speed Used: 35 MPH				
	2016 Auto	2016 Auto	2016 Auto	2016 Auto
	Summer VOC Factor	Summer NOx Factor	Summer CO Factor	Summer CO2 Factor
	grams/mile	grams/mile	grams/mile	grams/mile
	0.232	0.178	3.540	368.100
<b>Step 4: Calculate emissions reductions in kilograms per year (Seasonally Adjusted):</b>				
	Summer VOC	Summer NOx	Summer CO	Summer CO2
	11.0	8.4	167.9	17,459.6
<b>Step 5: Calculate cost effectiveness (first year cost per kg of emissions reduced)</b>				
	Project		Emission Reduction	First year cost
Emission	Cost		in kg per year	per kilogram
Summer VOC	\$3,600,000	/	11.0 =	\$327,149
Summer NOx	\$3,600,000	/	8.4 =	\$426,396
Summer CO	\$3,600,000	/	167.9 =	\$21,440
Summer CO2	\$3,600,000	/	17,459.6 =	\$206

FILL IN SHADED BOXES ONLY

TIP YEAR: 2020

MPO: Merrimack Valley

Municipality: Groveland

Project: Groveland Community Trail, from Main Street to King Street

Step 1: Calculate New Walk and Bike Miles Traveled:

If VMT reduction per year is known then go to Step 2B, if not proceed with Step 1 :

		User Input	
		(blank for default)	Default
A. Facility Length (L):	2.2 Miles		
B. Types of Improvements Implemented:	Both (select Pedestrian, Bicycle, or		
B. Service Area Radius for Bicycling (RB):	0.5 Miles		0.5
C. Service Area Radius for Walking (RW):	0.25 Miles		0.25
D. Service Area of Community(ies) for Bicycling (SAB): $L * 2RB = SAB$	2.18 Sq. Miles		
E. Service Area of Community(ies) for Walking (SAW): $L * 2RW = SAW$	1.09 Sq. Miles		
F. Land Area of Neighborhoods Served (AN):	10.3 Sq. Miles		
G. Population of Neighborhoods Served (PN):	5,929 Persons		
H. Population Density of Neighborhoods Served (PD):	573 Persons/Sq. Mile		
I. Population Served by Facility for Bicycling (PB): $PD * SAB = PB$	1,250 Persons		
J. Population Served by Facility for Walking (PW): $PD * SAW = PW$	625 Persons		
K. Trips per Person per Day in Service Area (T):	4.7 Trips		4.7
L. Baseline Bicycle Mode Share in Service Area (MSB):	0.6% Percent		
M. Baseline Walk Mode Share in Service Area (MSW):	4.7% Percent		
N. Relative Increase in Service Area Bicycle Mode Share from Improvements (BI)	30.0% Percent		30.0%

CMAQ Air Quality Analysis Worksheet for Complete Streets Project (cont.)

TIP YEAR: 2020

MPO: Merrimack Valley

Municipality: Groveland

Project: Groveland Community Trail, from Main Street to King Street

O. Relative Increase in Service Area Walk Mode Share from Improvements (WI):	7.5% Percent	<input type="text"/>	7.5%
P. New Bike Trips (BT): $PB * T * MSB * BI = BT$	11	1-Way Trips/Day	
Q. New Walk Trips (WT): $PW * T * MSW * WI = WT$	10	1-Way Trips/Day	
R. Average Bike Trip Length (LB):	2.3 Miles	<input type="text"/>	2.3
S. Average Walk Trip Length (LW):	0.7 Miles	<input type="text"/>	0.7
T. New Bike and Walk Miles of Travel (BWM):	32	Miles per Day	

Step 2: Calculate the VMT Reduction:

U. Prior Drive Mode Share of New Bike and Walk Trips (MSD):	59.0% Percent	<input type="text" value="59%"/>
V. VMT Reduced per Day (VMTR): $BWM * MSD = VMTR$	19	Miles per Day
W. VMTR * Operating Days Per Year	19 * 365 =	6,843 VMTR Per Year
If the Vehicles Miles Traveled Reduction is known enter in the box to the right.	<input type="text"/>	VMTR Per Year

Note: A manual entry of the VMTR will override the calculated cell.

CMAQ Air Quality Analysis Worksheet for Complete Streets Project (cont.)

TIP YEAR: 2020

MPO: Merrimack Valley

Municipality: Groveland

Project: Groveland Community Trail, from Main Street to King Street

Step 3: Emission Factors for Average Commuter Travel Speed:

Note: Use 35 MPH as a default if average speed is not known. Speed Used: 35 MPH

2016 Auto Summer VOC Factor grams/mile	2016 Auto Summer NOx Factor grams/mile	2016 Auto Summer CO Factor grams/mile	2016 Auto Summer CO2 Factor grams/mile
0.232	0.178	3.540	368.100

Step 4: Calculate emissions reductions in kilograms per year (Seasonally Adjusted):

Summer VOC	Summer NOx	Summer CO	Summer CO2
1.6	1.2	24.7	2,519.1

Step 5: Calculate cost effectiveness (first year cost per kg of emissions reduced)

Emission	Project Cost	Emission Reduction in kg per year	First year cost per kilogram
Summer VOC	\$2,672,677	1.6 =	\$1,652,313
Summer NOx	\$2,672,677	1.2 =	\$2,153,577
Summer CO	\$2,672,677	24.7 =	\$108,287
Summer CO2	\$2,672,677	2,519.1 =	\$1,061

CMAQ Bus Replacement Air Quality Analysis Worksheet

**FILL IN SHADED BOXES ONLY**

TIP YEAR: **2017** Bus Replacements  
 MPO: **Merrimack Valley**  
 RTA: **MVRTA**

**Project #RTD0004932 - Replace 7 (2004 model year) Buses with 7 (2017 model year) Buses**

Emission Rates in grams/mile at assumed operating speed of : **18 MPH**

Scenario Comparison	Model Year	Summer VOC (grams/mile)	Summer NOx (grams/mile)	Winter CO (grams/mile)	Summer CO2 (grams/mile)
Existing Model* =	2004	1.734	7.542	3.180	1,200.600
New Bus Purchase* =	2017	0.048	0.764	0.275	1,133.230

**HDDV 7** Enter vehicle type used for New Bus emission factors (For example, HDGV 6 or HDDV 2b)

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18 MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us

Change (Buy-Base)	-1.686	-6.778	-2.905	-67.370
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**Replace 7 (2004 model year) Buses with 7 (2017 model year) Buses (Cont.)**  
**Calculate fleet vehicle miles per day:**

Revenue miles per year	X	Deadhead factor	= fleet miles per year	/ operating days per year	= fleet miles per day
235,827		1.15	271,201	304	892

**Calculate emissions change in kilograms per summer day**

Change	rate change grams/mile	/ 1000 g/kg	X fleet miles per day	X seasonal adj factor	= change/day in kg
Change in Summer VOC	-1.686	1,000	892	1.0188	-1.532
Change in Summer NOx	-6.778	1,000	892	1.0188	-6.160
Change in Winter CO	-2.905	1,000	892	0.9812	-2.543
Change in Summer CO2	-67.370	1,000	892	1.0000	-60.101

**Calculate emissions change in kilograms per year**

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-1.532	304	-465.841
Summer NOx	-6.160	304	-1872.759
Winter CO	-2.543	304	-773.028
Summer CO2	-60.101	304	-18270.815

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Calculate cost effectiveness (cost per kg of emissions reduced)

Pollutant	Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC	\$2,989,000	12	465.841	\$535
Summer NOx	\$2,989,000	12	1872.759	\$133
Winter CO	\$2,989,000	12	773.028	\$322
Summer CO2	\$2,989,000	12	18270.815	\$14

CMAQ Bus Replacement Air Quality Analysis Worksheet

FILL IN SHADED BOXES ONLY

Page 1 of 3

TIP YEAR: 2018 Bus Replacements

MPO: Merrimack Valley

RTA: MVRTA

Project # RTD0004954 - Replace 6 (2004 model year) Buses with 6 (2018 model year) Buses

Emission Rates in grams/mile at assumed operating speed of : 18 MPH

Scenario Comparison

		Summer VOC (grams/mile)	Summer NOx (grams/mile)	Winter CO (grams/mile)	Summer CO2 (grams/mile)	
		Model Year				
Existing Model*	=	2004	1.734	7.542	3.180	1,200.600
New Bus Purchase*	=	2018	0.048	0.764	0.275	1,133.230

HDDV 7 Enter vehicle type used for New Bus emission factors (For example, HDGV 6 or HDDV 2b)

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18 MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us

Change (Buy-Base)	-1.686	-6.778	-2.905	-67.370
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**Project # RTD0004954 - Replace 6 (2004 model year) Buses with 6 (2018 model year) Buses**  
**Calculate fleet vehicle miles per day:**

Revenue miles per year	X	Deadhead factor	= fleet miles per year	/ operating days per year	= fleet miles per day
202,138		1.15	232,459	304	765

**Calculate emissions change in kilograms per summer day**

Change	rate change grams/mile	/ 1000 g/kg	X fleet miles per day	X seasonal adj factor	= change/day in kg
Change in Summer VOC	-1.686	1,000	765	1.0188	-1.313
Change in Summer NOx	-6.778	1,000	765	1.0188	-5.280
Change in Winter CO	-2.905	1,000	765	0.9812	-2.180
Change in Summer CO2	-67.370	1,000	765	1.0000	-51.516

**Calculate emissions change in kilograms per year**

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-1.313	304	-399.294
Summer NOx	-5.280	304	-1605.226
Winter CO	-2.180	304	-662.597
Summer CO2	-51.516	304	-15660.743

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Project # RTD0004954 - Replace 6 (2004 model year) Buses with 6 (2018 model year) Buses

Calculate cost effectiveness (cost per kg of emissions reduced)

Pollutant	Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC	\$2,725,755	12	399.294	\$569
Summer NOx	\$2,725,755	12	1605.226	\$142
Winter CO	\$2,725,755	12	662.597	\$343
Summer CO2	\$2,725,755	12	15660.743	\$15

Template prepared by the Office of Transportation Planning

CMAQ Bus Replacement Air Quality Analysis Worksheet

FILL IN SHADED BOXES ONLY

TIP YEAR: 2020 Bus Replacements

MPO: Merrimack Valley

RTA: MVRTA

Project #RTD0004956 - Replace 3 (2007 model year) Buses with 3 (2020 model year) Buses

Emission Rates in grams/mile at assumed operating speed of : 18 MPH

Scenario Comparison	Model Year	Summer VOC (grams/mile)	Summer NOx (grams/mile)	Winter CO (grams/mile)	Summer CO2 (grams/mile)
Existing Model* =	2007	0.115	3.750	0.659	1,200.600
New Bus Purchase* =	2020	0.048	0.764	0.275	1,133.230
HDDV 7	Enter vehicle type used for New Bus emission factors (For example, HDGV 6 or HDDV 2b)				
*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18 MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us					
Change (Buy-Base)		-0.067	-2.986	-0.384	-67.370

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**Project #RTD0004956 - Replace 3 (2007 model year) Buses with 3 (2020 model year) Buses**  
**Calculate fleet vehicle miles per day:**

Revenue miles per year	X	Deadhead factor	= fleet miles per year	/ operating days per year	= fleet miles per day
101,069		1.15	116,229	304	382

**Calculate emissions change in kilograms per summer day**

Change	rate change grams/mile	/ 1000 g/kg	X fleet miles per day	X seasonal adj factor	= change/day in kg
Change in Summer VOC	-0.067	1,000	382	1.0188	-0.026
Change in Summer NOx	-2.986	1,000	382	1.0188	-1.163
Change in Winter CO	-0.384	1,000	382	0.9812	-0.144
Change in Summer CO2	-67.370	1,000	382	1.0000	-25.758

**Calculate emissions change in kilograms per year**

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.026	304	-7.934
Summer NOx	-1.163	304	-353.586
Winter CO	-0.144	304	-43.793
Summer CO2	-25.758	304	-7830.371

Project #RTD0004956 - Replace 3 (2007 model year) Buses with 3 (2020 model year) Buses

Calculate cost effectiveness (cost per kg of emissions reduced)

Pollutant	Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC	\$1,456,621	12	7.934	\$15,300
Summer NOx	\$1,456,621	12	353.586	\$343
Winter CO	\$1,456,621	12	43.793	\$2,772
Summer CO2	\$1,456,621	12	7830.371	\$16

Template prepared by the Office of Transportation Planning

CMAQ Bus Replacement Air Quality Analysis Worksheet

**FILL IN SHADED BOXES ONLY**

TIP YEAR: **2020** Bus Replacements (Paratransit Vehicles)  
 MPO: **Merrimack Valley**  
 RTA: **MVRTA**

**Project # RTD0004993 - Replace 11 (2015 model year) Vans with new (2020 model year)**

Emission Rates in grams/mile at assumed operating speed of : **18 MPH**

Scenario Comparison		Summer VOC (grams/mile)	Summer NOx (grams/mile)	Winter CO (grams/mile)	Summer CO2 (grams/mile)
Existing Model* =		0.008	0.058	2.014	501.185
New Bus Purchase* =		0.003	0.025	0.593	435.854

**HDGV 3** Enter vehicle type used for New Bus emission factors (For example, HDGV 6 or HDDV 2b)

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18 MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us

Change (Buy-Base)	-0.005	-0.033	-1.422	-65.331
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**Project # RTD0004993 - Replace 11 (2015 model year) Vans with new (2020 model year)**

Calculate fleet vehicle miles per day:

Revenue miles per year	X	Deadhead factor	= fleet miles per year	/ operating days per year	= fleet miles per day
309,386		1.14	352,700	304	1,160

Calculate emissions change in kilograms per summer day

Change	rate change grams/mile	/ 1000 g/kg	X fleet miles per day	X seasonal adj factor	= change/day in kg
Change in Summer VOC	-0.005	1,000	1,160	1.0188	-0.006
Change in Summer NOx	-0.033	1,000	1,160	1.0188	-0.039
Change in Winter CO	-1.422	1,000	1,160	0.9812	-1.618
Change in Summer CO2	-65.331	1,000	1,160	1.0000	-75.797

Calculate emissions change in kilograms per year

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.006	304	-1.946
Summer NOx	-0.039	304	-11.707
Winter CO	-1.618	304	-492.019
Summer CO2	-75.797	304	-23042.246

**Project # RTD0004993 - Replace 11 (2015 model year) Vans with new (2020 model year)**

**Calculate cost effectiveness (cost per kg of emissions reduced)**

Pollutant	Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC	\$756,966	4	1.946	\$97,255
Summer NOx	\$756,966	4	11.707	\$16,164
Winter CO	\$756,966	4	492.019	\$385
Summer CO2	\$756,966	4	23042.246	\$8

Template prepared by the Office of Transportation Planning



CMAQ Bus Replacement Air Quality Analysis Worksheet

FILL IN SHADED BOXES ONLY

TIP YEAR: 2021 Bus Replacements

MPO: Merrimack Valley

RTA: MVRTA

Project #RTD0004957 - Replace 2 (2009 model year) Buses with 2 (2022 model year) Buses

Emission Rates in grams/mile at assumed operating speed of : 18 MPH

Scenario Comparison		Summer VOC (grams/mile)	Summer NOx (grams/mile)	Winter CO (grams/mile)	Summer CO2 (grams/mile)
	Model Year				
Existing Model*	= 2009	0.115	3.750	0.659	1,203.080
New Bus Purchase*	= 2022	0.048	0.764	0.275	1,133.230

HDDV 7 Enter vehicle type used for New Bus emission factors (For example, HDGV 6 or HDDV 2b)

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18 MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at Ethan.Britland@state.ma.us

Change (Buy-Base)	-0.067	-2.986	-0.384	-69.850
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**Project #RTD0004957 - Replace 2 (2009 model year) Buses with 2 (2022 model year) Buses**  
**Calculate fleet vehicle miles per day:**

Revenue miles per year	X	Deadhead factor	= fleet miles per year	/ operating days per year	= fleet miles per day
67,379		1.15	77,486	304	255

**Calculate emissions change in kilograms per summer day**

Change	rate change grams/mile	/ 1000 g/kg	X fleet miles per day	X seasonal adj factor	= change/day in kg
Change in Summer VOC	-0.067	1,000	255	1.0188	-0.017
Change in Summer NOx	-2.986	1,000	255	1.0188	-0.775
Change in Winter CO	-0.384	1,000	255	0.9812	-0.096
Change in Summer CO2	-69.850	1,000	255	1.0000	-17.804

**Calculate emissions change in kilograms per year**

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.017	304	-5.289
Summer NOx	-0.775	304	-235.723
Winter CO	-0.096	304	-29.195
Summer CO2	-17.804	304	-5412.387

Template prepared by the Office of Transportation Planning

**Project #RTD0004957 - Replace 2 (2009 model year) Buses with 2 (2022 model year) Buses**

**Calculate cost effectiveness (cost per kg of emissions reduced)**

Pollutant	Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC	\$984,821	12	5.289	\$15,516
Summer NOx	\$984,821	12	235.723	\$348
Winter CO	\$984,821	12	29.195	\$2,811
Summer CO2	\$984,821	12	5412.387	\$15

Template prepared by the Office of Transportation Planning

CMAQ Bus Replacement Air Quality Analysis Worksheet

**FILL IN SHADED BOXES ONLY**

TIP YEAR: **2021** Bus Replacements (Paratransit Vehicles)

MPO: **Merrimack Valley**

RTA: **MVRTA**

**Project # RTD0004959 - Replace 5 (2016 model year) Vans with new (2021 model year)**

Emission Rates in grams/mile at assumed operating speed of : **18 MPH**

Scenario Comparison	Model Year	Summer VOC (grams/mile)	Summer NOx (grams/mile)	Winter CO (grams/mile)	Summer CO2 (grams/mile)
Existing Model* =	2016	0.008	0.058	2.014	475.496
New Bus Purchase* =	2021	0.003	0.025	0.593	435.854

**HDGV 3** Enter vehicle type used for New Bus emission factors (For example, HDGV 6 or HDDV 2b)

\*Please refer to the 'Emission Factors' tab to determine the most appropriate 'New Bus' factors based on fuel type and gross vehicle weight. If you require factors for an operating speed other than 18 MPH, or for the 'Existing Model' being replaced, please contact Ethan Britland at 857-368-8840 or at [Ethan.Britland@state.ma.us](mailto:Ethan.Britland@state.ma.us)

Change (Buy-Base)	-0.005	-0.033	-1.421	-39.642
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**Project # RTD0004959 - Replace 5 (2016 model year) Vans with new (2021 model year)**

Calculate fleet vehicle miles per day:

Revenue miles per year	X	Deadhead factor	= fleet miles per year	/ operating days per year	= fleet miles per day
140,630		1.14	160,318	304	527

Calculate emissions change in kilograms per summer day

Change	rate change / 1000 grams/mile g/kg	X fleet miles per day	X seasonal adj factor	= change/day in kg	
Change in Summer VOC	-0.005	1,000	527	1.0188	-0.003
Change in Summer NOx	-0.033	1,000	527	1.0188	-0.017
Change in Winter CO	-1.421	1,000	527	0.9812	-0.735
Change in Summer CO2	-39.642	1,000	527	1.0000	-20.906

Calculate emissions change in kilograms per year

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.003	304	-0.884
Summer NOx	-0.017	304	-5.315
Winter CO	-0.735	304	-223.527
Summer CO2	-20.906	304	-6355.334

**Project # RTD0004959 - Replace 5 (2016 model year) Vans with new (2021 model year)**

**Calculate cost effectiveness (cost per kg of emissions reduced)**

Pollutant	Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC	\$354,200	4	0.884	\$100,159
Summer NOx	\$354,200	4	5.315	\$16,660
Winter CO	\$354,200	4	223.527	\$396
Summer CO2	\$354,200	4	6355.334	\$14

Template prepared by the Office of Transportation Planning

**Appendix F List of Completed Highway and Transit Projects  
(FFYs 2015 – 2016) with Green House Gas Emissions Analysis**

## Completed Projects from FFYs 2015 and 2016 GHG Tracking Summary

### Merrimack Valley Region MPO Completed Highway Projects GHG

MassDOT Project ID ▼	MassDOT Project Description ▼	Total Programmed Funds ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Additional Description ▼	Fiscal Year of Contract Award (2015 and forward) ▼
605720	HAVERHILL - RIVERWALK CONSTRUCTION (BRADFORD SECTION), FROM ROUTE 125 TO COUNTY ROAD	\$ 2,410,718	Quantified	3,520	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	Advertised 9/20/2014 Notice to Proceed 7/27/2015	
606503	NEWBURYPORT CLIPPER CITY RAIL TRAIL ALONG THE CITY BRANCH (PHASE II)	\$ 4,061,158	Quantified	34,996	Quantified Decrease in Emissions from Bicycle and Pedestrian Infrastructure	Advertised 9/19/2015 Notice to Proceed 4/1/2016	



## Merrimack Valley Region MPO Completed Transit Projects GHG

FTA Activity Line Item ▼	Transit Agency ▼	Project Description ▼	Total Cost ▼	GHG Analysis Type ▼	GHG CO <sub>2</sub> Impact (kg/yr) ▼	GHG Impact Description ▼	Additional Description ▼	Fiscal Year Programmed (2015 and forward) ▼
	MVRTA	Purchase -Replacement: Vans 11 Model Year 2009 Delivery 2015	\$ 627,000	Quantified	41,814	Quantified Decrease in Emissions from Bus Replacement		2015
111202	MVRTA	Replace 10 of 17 Model Year 2004 Transit Buses with new buses (Delivery 2016)	\$ 4,200,000	Qualitative		Qualitative Decrease in Emissions		2015
111215	MVRTA	Replace 5 Model Year 2011 Paratransit Vehicles (Delivery 2016)	\$ 320,000	Quantified	15,992	Quantified Decrease in Emissions from Bus Replacement		2016

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**Appendix G Projects from MVRTA Capital Program FFYs 2017 - 2021**

**Adopted May 5, 2016**

**Transit Projects**

**2017 Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016**

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2018 (O)	Carry-over Used	\$2,442,850	\$0	\$0	\$0	\$610,960	\$0	\$3,053,810
	MV-RTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2018 (O)	Carry-over Used	\$1,097,465	\$0	\$0	\$0	\$274,365	\$0	\$1,371,830
	MV-RTA	Continue Short Range Transit Planning MVPC UPWP FY 2018 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000

2017 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	MVPC Technical Support to MVRTA FY 2018 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000
	MV-RTA	Refurbish Engines on 8 Model year 2011 Transit Buses (M)	Carry-over Used	\$224,000	\$56,000	\$0	\$0	\$0	\$0	\$280,000
	MV-RTA	Replace 6 Model Year 2004 35' Transit Buses with New Delivery 2018 (M)	Carry-over Used	\$2,180,605	\$545,150	\$0	\$0	\$0	\$0	\$2,725,755
	MV-RTA	Replace 1 Model Year 2013 Supervisory Vehicle (M)		\$37,080	\$9,270	\$0	\$0	\$0	\$0	\$46,350
	MV-RTA	Operating Assistance FY 2018 (O)	Carry-over Used	\$493,680	\$0	\$0	\$0	\$493,680	\$0	\$987,360

2017 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Replace Parking Revenue Collection Equipment (M)	Carry-over Used	\$240,000	\$60,000	\$0	\$0	\$0	\$0	\$300,000
	MV-RTA	Purchase Bus/Van Mobile Location System (C)	Carry-over Used	\$240,000	\$60,000	\$0	\$0	\$0	\$0	\$300,000
	MV-RTA	Bus Area Buckley Center Lawrence (M)	Carry-over Used	\$250,000		\$0	\$0	\$0	\$0	\$250,000
		<b>5307 Subtotal ▶</b>		<b>\$7,285,680</b>	<b>\$730,420</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,379,005</b>	<b>\$20,000</b>	<b>\$9,415,105</b>

2017 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5309 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5309 Subtotal ▶</b>								
5310 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5310 Subtotal ▶</b>								
5311 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5311 Subtotal ▶</b>								
5316 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5316 Subtotal ▶</b>								
5317 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5317 Subtotal ▶</b>								

2017 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
SoGR ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Livability▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TIGER▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Grants Subtotal▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Operating Subtotal▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Total▶</b>		<b>\$7,285,680</b>	<b>\$730,420</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,379,005</b>	<b>\$20,000</b>	<b>\$9,415,105</b>



2017 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

<b>Fiscal Constraint Analysis</b>				
<b>Federal Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
FFY 17 / 5307	<b>\$4,472,572</b>	\$5,681,648	\$1,209,076	Available
Carryover / 5307	\$2,813,110	\$	-	Available
<b>Total 5307</b>	<b>\$7,285,680</b>	<b>\$5,681,648</b>	<b>\$1,209,076</b>	<b>Available</b>
<b>State Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
RTACAP	<b>\$730,420</b>	<b>\$730,420</b>		
SCA	<b>\$1,379,005</b>	<b>\$1,379,005</b>		

2018 Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2019 (O)	Carry-over Used	\$2,522,325	\$0	\$0	\$0	\$630,580	\$0	\$3,152,905
	MV-RTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2019 (O)	Carry-over Used	\$1,130,695	\$0	\$0	\$0	\$282,675	\$0	\$1,413,370
	MV-RTA	Continue Short Range Transit Planning MVPC UPWP FY 2019 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000

2018 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/16

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	MVPC Technical Support to MVRTA FY 2019 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000
	MV-RTA	Refurbish Engine/ Transmissions on 8 model year 2012 transit buses (M)	Carry-over Used	\$230,000	\$57,600	\$0	\$0	\$0	\$0	\$288,000
	MV-RTA	Replace 1 Model Year 2013 Supervisory Vehicle (M)	Carry-over Used	\$38,200	\$9,550	\$0	\$0	\$0	\$0	\$47,750
	MV-RTA	State of Good Repair – Lawrence Gateway Parking, Phase I (M)	Carry-over Used	\$16,000	\$4,000	\$0	\$0	\$0	\$0	\$20,000
	MV-RTA	Operating Assistance FY 2019 (O)	Carry-over Used	\$696,240	\$0	\$0	\$0	\$696,240	\$0	\$1,392,480

2018 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Purchase Three New 35' Transit Buses (Delivery 2019) (C)	Carry-over Used	\$1,098,685	\$274,670	\$0	\$0	\$0	\$0	\$1,373,355
		<b>5307 Subtotal ▶</b>		<b>\$5,812,145</b>	<b>\$345,820</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,609,495</b>	<b>\$20,000</b>	<b>\$7,787,460</b>

2018 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5309 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5309 Subtotal ▶</b>								
5310 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5310 Subtotal ▶</b>								
5311 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5311 Subtotal ▶</b>								
5316 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5316 Subtotal ▶</b>								
5317 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5317 Subtotal ▶</b>								

2018 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
SoGR ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Livability▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TIGER▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Grants Subtotal▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Operating Subtotal▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Total▶</b>		<b>\$5,812,145</b>	<b>\$345,820</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,609,495</b>	<b>\$20,000</b>	<b>\$7,787,460</b>

2018 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

<b>Fiscal Constraint Analysis</b>				
<b>Federal Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
FFY 18 / 5307	\$4,603,070	\$5,818,010	\$1,214,940	Available
Carryover / 5307	\$1,209,075		-	Available
<b>Total 5307</b>	<b>\$5,812,145</b>	<b>\$5,818,010</b>	<b>\$1,214,940</b>	<b>Available</b>
<b>State Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
RTACAP	\$345,820			
SCA	\$1,609,495	\$		

2019 Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2020 (O)	Carry-over Used	\$2,600,075	\$0	\$0	\$0	\$650,020	\$0	\$3,250,095
	MV-RTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2020 (O)	Carry-over Used	\$1,165,135	\$0	\$0	\$0	\$291,285	\$0	\$1,456,420
	MV-RTA	Continue Short Range Transit Planning MVPC UPWP FY 2020 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000



2019 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	MVPC Technical Support to MVRTA FY 2020 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000
	MV-RTA	Replace 3 of 3 Model Year 2007 Transit Buses with new (delivery in 2020) (M)	Carry-over Used	\$1,165,295	\$291,325	\$0	\$0	\$0	\$0	\$1,456,620
	MV-RTA	Replace 1 Model Year 2013 Supervisory Vehicle (M)	Carry-over Used	\$39,200	\$9,800	\$0	\$0	\$0	\$0	\$49,000
	MV-RTA	Operating Assistance FY 2020 (O)	Carry-over Used	\$765,610	\$0	\$0	\$0	\$765,610	\$0	\$1,531,220

2019 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	State of Good Repair – Lawrence Gateway Parking, Phase II (M)	Carry-over Used	\$8,000	\$2,000	\$0	\$0	\$0	\$0	\$10,000
		<b>5307 Subtotal ▶</b>		<b>\$5,823,315</b>	<b>\$303,125</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,706,915</b>	<b>\$20,000</b>	<b>\$7,853,355</b>

2019 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5309 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5309 Subtotal ▶</b>								
5310 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5310 Subtotal ▶</b>								
5311 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5311 Subtotal ▶</b>								
5316 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5316 Subtotal ▶</b>								
5317 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5317 Subtotal ▶</b>								

2019 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
SoGR ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Livability ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TIGER ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Grants Subtotal ▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Operating Subtotal ▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Total ▶</b>		<b>\$5,823,315</b>	<b>\$303,125</b>	<b>\$</b>	<b>\$</b>	<b>\$1,706,915</b>	<b>\$20,000</b>	<b>\$7,853,355</b>

2019 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

<b>Fiscal Constraint Analysis</b>				
<b>Federal Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
FFY 19 / 5307	\$4,608,375	\$5,957,640	\$1,349,265	Available
Carryover / 5307	\$1,214,940	\$	-	
<b>Total 5307</b>	<b>\$5,823,315</b>	<b>\$5,957,640</b>	<b>\$1,349,265</b>	<b>Available</b>
<b>State Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
RTACAP	\$303,125	\$	-	
SCA	\$1,706,915	\$	-	

2020 Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2021 (O)	Carry-over, FY 2018 Funds Used	\$2,678,075	\$0	\$0	\$0	\$669,520	\$0	\$3,347,595
	MV-RTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2021 (O)	Carry-over Used	\$1,200,090	\$0	\$0	\$0	\$300,020	\$0	\$1,500,110
	MV-RTA	Continue Short Range Transit Planning MVPC UPWP FY 2021 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000

2020 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	MVPC Technical Support to MVRTA FY 2021 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000
	MV-RTA	Replace 11 Model Year 2015 Paratransit Vehicles (M)	Carry-over Used	\$605,970	\$151,395	\$0	\$0	\$0	\$0	\$757,365
	MV-RTA	Operating Assistance FY 2021 (O)	Carry-over Used	\$842,170	\$0	\$0	\$0	\$842,170	\$0	\$1,684,340
	MV-RTA	State of Good Repair – Lawrence Gateway Parking, Phase II (M)	Carry-over Used	\$8,000	\$2,000	\$0	\$0	\$0	\$0	\$10,000

2020 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
		5307 Subtotal ►		\$5,414,305	\$153,395	\$0	\$0	\$1,811,710	\$20,000	\$7,399,410



2020 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5309 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5309 Subtotal ▶</b>								
5310 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5310 Subtotal ▶</b>								
5311 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5311 Subtotal ▶</b>								
5316 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5316 Subtotal ▶</b>								
5317 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5317 Subtotal ▶</b>								

2020 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
SoGR ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Livability ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TIGER ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Grants Subtotal ▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Operating Subtotal ▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Total ▶</b>		<b>\$5,414,305</b>	<b>\$153,395</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,811,710</b>	<b>\$20,000</b>	<b>\$7,399,410</b>

2020 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

<b>Fiscal Constraint Analysis</b>				
<b>Federal Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
FFY 20 / 5307	\$4,065,040	\$6,100,623	\$2,035,582	Available
Carryover / 5307	\$1,349,265	\$	-	
<b>Total 5307</b>	<b>\$5,414,305</b>	<b>\$6,100,623</b>	<b>\$2,035,582</b>	<b>Available</b>
<b>State Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
RTACAP	\$153,395		-	
SCA	\$1,811,710		-	

2021 Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5307 ▶	MV-RTA	Capital funding used for Preventive Maintenance and considered as an operating expense for FY 2022 (O)	Carry-over, FY 2018 Funds Used	\$2,758,415	\$0	\$0	\$0	\$689,605	\$0	\$3,448,020
	MV-RTA	Capital funding used for operating ADA service and considered as an operating expense for FY 2022 (O)	Carry-over Used	\$1,236,090	\$0	\$0	\$0	\$309,025	\$0	\$1,545,115
	MV-RTA	Continue Short Range Transit Planning MVPC UPWP FY 2022 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000

2021 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Details ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
	MV-RTA	MVPC Technical Support to MVRTA FY 2022 (20% match from MVPC) (N)	Carry-over Used	\$40,000	\$0	\$0	\$0	\$0	\$10,000	\$50,000
	MV-RTA	Replace 2 of 9 Model Year 2009 Transit Buses with new (delivery FY 2022) (M)	Carry-over Used	\$787,855	\$196,965	\$0	\$0	\$0	\$0	\$984,820
	MV-RTA	Replace 5 Model Year 2016 Paratransit Vehicles (Delivery 2021) (M)	Carry-over Used	\$283,360	\$70,840	\$0	\$0	\$0	\$0	\$354,200
	MV-RTA	Operating Assistance 2022 (O)	Carry-over Used	\$926,385	\$0	\$0	\$0	\$926,385	\$0	\$1,852,770
		<b>5307 Subtotal ►</b>		<b>\$6,072,105</b>	<b>\$267,805</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,925,015</b>	<b>\$20,000</b>	<b>\$8,284,925</b>

2021 (Cont.) Merrimack Valley MPO 2017 – 2021TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
5309 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5309 Subtotal ▶</b>								
5310 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5310 Subtotal ▶</b>								
5311 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5311 Subtotal ▶</b>								
5316 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5316 Subtotal ▶</b>								
5317 ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>5317 Subtotal ▶</b>								

2021 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

FTA Program ▼	RTA ▼	Project Description ▼	Carry-over or Earmark Detail ▼	Federal Funds ▼	State Match Source RTA-CAP ▼	State Match Source MAP ▼	State Match Source TDC ▼	State Match Source SCA ▼	Local Funds ▼	Total Cost ▼
SoGR ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Livability ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TIGER ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Grants Subtotal ▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ▶		No Projects Programmed	N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Operating Subtotal ▶</b>		\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<b>Total ▶</b>		<b>\$6,072,105</b>	<b>\$267,805</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,925,015</b>	<b>\$20,000</b>	<b>\$8,284,925</b>

2021 (Cont.) Merrimack Valley MPO 2017 – 2021 TIP from MVRTA Capital Program Adopted 5/5/2016

<b>Fiscal Constraint Analysis</b>				
<b>Federal Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
FFY 21 / 5307	\$4,036,520	\$6,072,105	\$2,035,582	Available
Carryover / 5307	\$2,035,585	\$	-	
<b>Total 5307</b>	<b>\$6,072,105</b>	<b>\$6,072,105</b>	<b>\$2,035,582</b>	<b>Available</b>
<b>State Funding Source ▼</b>	<b>Programmed ▼</b>	<b>Available ▼</b>	<b>(+/-) ▼</b>	
RTACAP	\$267,805	\$	-	
SCA	\$1,925,015	\$	-	



**Appendix H Key to Maps Showing Locations of Transportation Projects**

## Appendix H Key to Maps Showing Locations of Transportation Projects

Map Number	Project Number	City/Town	Project Description
<a href="#"><u>1</u></a>	606669	Amesbury	Amesbury - Powwow Riverwalk Construction – New Design
<a href="#"><u>1</u></a>	602418	Amesbury	Amesbury – Reconstruction of Elm Street
<a href="#"><u>1</u></a>	607737	Amesbury/ Salisbury	Amesbury – Salisbury Trail Connector at I-95
<a href="#"><u>2</u></a>	607561	Andover/ Methuen	Andover/ Methuen Interstate Maintenance and related work on I – 93
<a href="#"><u>3</u></a>	RTD-5219	MVRTA	Newburyport – Intermodal Transit Parking Facility Construction
<a href="#"><u>4</u></a>	608298	Groveland	Groveland- Groveland Community Trail, from Main Street to King Street
<a href="#"><u>4</u></a>	605753	Groveland	Groveland- Reconstruction of Route 97 (School Street) from Parker Street to Gardner Street
<a href="#"><u>5</u></a>	607573	Haverhill	Haverhill – Reconstruction of Route 97 (Broadway) from Silver Birch Lane to Research Drive)
<a href="#"><u>5</u></a>	605306	Haverhill	Haverhill – Substructure replacement, H-12- 039, I-495 (NB & SB) over Merrimack River
<a href="#"><u>5</u></a>	608027	Haverhill	Haverhill- Bradford Rail Trail Extension, from Route 125 to Railroad Street
<a href="#"><u>6</u></a>	608095	North Andover	North Andover- Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop driveway

**Appendix H Key to Maps Showing Locations of Transportation Projects  
(Continued)**

<b>Map Number</b>	<b>Project Number</b>	<b>City/Town</b>	<b>Project Description</b>
<a href="#"><u>7</u></a>	606159	North Andover	North Andover – Intersection & Signal Improvements at Route 125 & Massachusetts Avenue
<a href="#"><u>8</u></a>	605020	Salisbury	Salisbury - Multi-use Trail Extension (Borders to Boston Trail)
<a href="#"><u>9</u></a>	608187	Haverhill – Merrimac - Salisbury	Haverhill – Merrimac– Amesbury Traffic & Guide Sign Replacement on I-495
<a href="#"><u>10</u></a>	608002	Lawrence	Lawrence – Safe Routes to School (Bruce Elementary)
<a href="#"><u>11</u></a>	607541	Georgetown-Boxford	Georgetown – Boxford Border to Boston Trail From Georgetown Road to West Main Street (Route 97)
<a href="#"><u>11</u></a>	607542	Georgetown-Newbury	Georgetown– Newbury Border to Boston Trail (Northern Georgetown to Byfield Section)

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## **Appendix I List of Acronyms**

<b>MVMPO List of Commonly Used Acronyms</b>		
A	AADT	Average Annual Daily Traffic
	AASHTO	American Association of State Highway Transportation Officials
	ABP	MassDOT Accelerated Bridge Program
	AC	Advance Construction
	ADA	Americans with Disabilities Act (1990)
	ADT	Average Daily Traffic
	ARRA	American Recovery and Reinvestment Act (of 2009)
	AQ	Air Quality
B	BR, BR-On, BR-Off	Bridge Rehabilitation or Replacement (On- or Off-National Highway System)
C	(C)	Type of Project = Capital Improvement
	3C	Continuing, Comprehensive and Coordinated (Transportation Planning)
	CAAA	Clean Air Act Amendments of 1990
	CFR	Code of Federal Regulations
	CIP	Capital Improvements Plan (or Program)
	CLF	Conservation Law Foundation
	CMAQ	Congestion Mitigation and Air Quality Improvement Program
	CMP	Congestion Management Process
	CMR	Code of Massachusetts Regulations
	CNG	Compressed Natural Gas
	CO	Carbon Monoxide
D	DEP	Department of Environmental Protection
	DOT	Department of Transportation

	DPW	Department of Public Works
E	EB	Eastbound
	EIR	Environmental Impact Report
	EIS	Environmental Impact Statement
	EJ	Environmental Justice
	ENF	Environmental Notification Form
	E.O.	Executive Order (of the Governor of the Commonwealth)
	EPA	U.S. Environmental Protection Agency
F	FA	Federal-Aid
	FAST Act	Fixing America's Surface Transportation Act legislation signed into law December 4, 2015
	FHWA	Federal Highway Administration
	FTA	Federal Transit Administration
	FY	(State) Fiscal Year
	FFY	Federal Fiscal Year
G	GANs	Grant Anticipation Notes
	GHG	Greenhouse Gases
H	HPP	USDOT High Priority Project
	HSIP	Highway Safety Improvement Program
I	IM	Interstate Maintenance
	ITS	Intelligent Transportation System
	ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
L	LEP	Limited English Proficiency

	LOS	Level of Service
	LTA	Local Technical Assistance
M	(M)	Type of project = Maintenance
	MAP-21	Moving Ahead for Progress in the 21 <sup>st</sup> Century legislation signed into law July 6, 2012
	MassDOT	Massachusetts Department of Transportation
	MCAD	Massachusetts Commission Against Discrimination
	MEPA	Massachusetts Environmental Policy Act
	M.G.L.	Massachusetts General Laws
	MOA	Memorandum of Agreement
	MOD	Massachusetts Office on Disabilities
	MOU	Memorandum of Understanding
	MPO	Metropolitan Planning Organization
	MVMPO	Merrimack Valley Metropolitan Planning Organization
	MVPC	Merrimack Valley Planning Commission
	MVRTA	Merrimack Valley Regional Transit Authority
N	(N)	Type of project = other, not capital expense, or operating expense, but other such as planning or design
	NAAQS	National Ambient Air Quality Standards
	NARC	National Association of Regional Councils
	NB	Northbound
	NEPA	National Environmental Policy Act
	NFA	Non-Federal Aid
	NHS	National Highway System
	NMCOG	Northern Middlesex Council of Governments
	NOx	Nitrogen Oxide
	NPRM	Notice of Proposed Rulemaking (Federal Register)



O	(O)	Type of Project = Operating Expense
	O&M	Operations and Maintenance
P	PCI	Pavement Condition Index
	PDA	Priority Development Area
	PL	(Metropolitan) Planning Funds
	PMS	Pavement Management System
	PPP	Public Participation Plan
	PRC	(MassDOT) Project Review Committee
	PSAC	Project Selection Advisory Council
R	RGGI	Regional Greenhouse Gas Initiative
	ROW	Right-of-Way
	RPA	Regional Planning Agency
	RPMS	Regional Pavement Management System
	RTA	Regional Transit Authority
	RTP	Regional Transit Plan
S	SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
	SB	Southbound
	SD	Structurally Deficient
	SGR	State of Good Repair
	SIP	State (Air Quality) Implementation Plan
	SOV	Single Occupancy Vehicle
	SPR	Statewide Planning and Research Funds
	STBG	Surface Transportation Block Grant Program
	STIP	Statewide Transportation Improvement Program
	STP	Surface Transportation Program

T	TA	Transportation Alternatives
	TAP	Transportation Alternatives Program
	TCSP	Transportation and Community System Preservation Grant Program
	TDM	Transportation Demand Management
	TEA-21	Transportation Equity Act for the 21 <sup>st</sup> Century
	TEC	Transportation Project Evaluation Criteria
	TIP	Transportation Improvement Program
	TMA	Transportation Management Area
	TMC	Turning Movement Count
	TOD	Transit-Oriented Development
	TRB	Transportation Research Board
U	UPWP	Unified Planning Work Program
	USDOT	U.S. Department of Transportation
V	V/C	Volume/Capacity Ratio
	VMT	Vehicle Miles Traveled
	VOC	Volatile Organic Compound
W	WB	Westbound

<b>Massachusetts Executive Orders</b>		
EO	526	Nondiscrimination, Diversity, Equal Employment Opportunity and Affirmative Action
EO	12898	Environmental Justice in Minority and Low Income Populations, February 1994
EO	13166	Improving Access to Programs (and Services) for persons with limited English Proficiency

**Appendix J    Comments received on Draft FFY 2017-2021 TIP**

## **Comments Received on Draft MVMPO 2017-2021 TIP**

**MVRTA Comment:** In Black Cat FY 2017 the following project is listed: Replace 7 Model Year 2004 buses Federal \$2,391,200 RTACAP \$597,800. This is consistent with the replacement of these buses ordered in October 2015 and expected to be delivered in April 2017 - This project is missing from the FY 2017 Draft TIP Transit element and should be consistent with BC and to line up with the CMAQ funds for the Hybrid drive available in FY 2017.

**Response:** Changes Made.

**Haverhill Chamber of Commerce Comment:** The Haverhill Chamber of Commerce supports "Complete Streets" projects.

### **MassDOT Comments on the Narrative:**

- Page 1 - Please use consistent font and size for Table of Contents.
- Page 11 - Please provide a web link to Merrimack Valley MPO's Public Participation Plan.
- The TIP document does not include an equity analysis. Please provide a regional equity analysis of FFY 2017-2021 programmed TIP projects, as well as a regional equity analysis for FFY 2012-2016.

**Response:** Changes Made.

**MassDOT Comments on Part B. Project Listings: Highway Projects:**

- Please make sure TIP template is legible.

**Response:** Change made.

- FFY2017
  - o 606669 - Revise project description to AMESBURY – POWWOW RIVERWALK CONSTRUCTION, MAIN STREET TO WATER STREET, INCLUDES PED BRIDGE OVER THE BACK RIVER & PED BRIDGE OVER THE POWWOW RIVER. Revise programmed cost estimate to TFPCC of \$1,870,218.

**Response:** The above description and cost (from the MassDOT project listing) is incorrect. The scope of the project has been reduced and no longer includes bridges. The project is being re-designed and the project cost is well less than half of \$1,870,218, it is currently programmed for in FY 2017 for a total project cost of \$671,207.

- o 607681-Revise project number to read 607561.

**Response:** Change made.

**MassDOT comments on Part B. Project Listings (Cont.): Transit Projects:**

- 2017 – Please add the following project: Replace 7 Model Yr 2004 buses with new, \$2,989,000 (Section 5307: \$2,391,200; RTACAP: \$597,800).

**Response:** Changes Made.

**MassDOT comments on Part C. Air Quality Conformity:**

- Please update date from August 2015 to August 2016.

**Response:** Change Made.

**MassDOT comments on Part C. Title VI Notice of Public Protection:**

- Please revise this section title to "Title VI Notice to Beneficiaries."

**Response:** Change Made.

**MassDOT comments on Appendix E: Greenhouse Gas (GHG) Monitoring and Evaluation:**

- Please correct spelling of "greenhouse" in appendix title.

**Response:** Change Made.

- Please update greenhouse gas emission results on statewide funded projects with the information that will be provided by the Office of Transportation Planning before endorsement.

**Response:** Will make changes when results are available.

- For the purpose of ensuring compliance with *310 CMR 60.05: Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation*, we have provided the following comments to be addressed in the GHG sections of your TIP (for more information on reporting, please see the guidance document issued by MassDOT in December 2015:

<https://www.massdot.state.ma.us/GreenDOT/GreenhouseGasReduction.aspx>

**MassDOT comments on Appendix E: Greenhouse Gas (GHG) Monitoring and Evaluation (Cont.):**

- 2017 Highway

- 607573 - For projects labeled qualitative decrease in emissions, please include project characteristics that cause the decrease in the additional description field. (This allows MassDOT to determine common project types that may require a new spreadsheet tool).

**Response:** This project should be able to be quantified in the future with the Complete Streets and the Intersections spreadsheet tools. Currently there is not yet enough information to generate an estimate.

- 604585 - Please quantify with the bus replacement tool.

**Response:** There is not enough information to generate an estimate, would need emission factors for the cleaner fuel buses, which are not available.

- 606669 - Please quantify with the bicycle/ pedestrian tool.

**Response:** There is not enough information to generate an estimate, the project is being re-designed.

- 2018 Highway

- 606159 - Please quantify with the traffic operations tool.

**Response:** There is not yet enough information to generate an estimate.

**MassDOT comments on Appendix E: Greenhouse Gas (GHG) Monitoring and Evaluation (Cont.):**

- 2019 Highway
  - MV0001-Please quantify with the bus replacement tool.

**Response:** There is not enough information to generate an estimate, would need emission factors for the cleaner fuel buses, which are not available.

- 608027-Please quantify with the bicycle/pedestrian tool.

**Response:** Change made, quantified.

- 2020 Highway
  - 608298-Please quantify with the bicycle/pedestrian tool.

**Response:** Change made, quantified.

- 2021 Highway
  - 608095 - For projects labeled qualitative decrease in emissions, please include project characteristics that cause the decrease in the additional description field. (This allows MassDOT to determine common project types that may require a new spreadsheet tool).

**Response:** This project should be able to be quantified in the future with the Complete Streets and the Intersections spreadsheet tools. Currently there is not yet enough information to generate an estimate.

- Completed Highway
  - It is not necessary to include qualitative projects.

**Response:** Change Made.



**MassDOT comments on Appendix E: Greenhouse Gas (GHG) Monitoring and Evaluation (Cont.):**

- Completed Transit
  - It is not necessary to include qualitative projects.

**Response:** Change Made.

- Please quantify all new service and bus replacement projects.

**Response:** Many projects have been quantified, awaiting more data for input to spreadsheet tool to complete more.

- Transit Tabs
  - All new service and bus replacement projects should be quantified

**Response:** Many projects have been quantified, awaiting more data for input to spreadsheet tool to complete more.