Merrimack Valley Metropolitan Planning Organization
Federal Fiscal Years 2021 to 2025
Transportation Improvement Program

Final Report

May 2020

Prepared by the Merrimack Valley Planning Commission

This document was prepared in cooperation with the Massachusetts Department of Transportation and the U.S. Department of Transportation. (under Contract # 108056 with MassDOT) The views and opinions of the Merrimack Valley Planning Commission expressed herein do not necessarily state or reflect those of the Massachusetts Department of Transportation or the U.S. Department of Transportation.

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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 administrated 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

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, 6th 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. 15.

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. 15.

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 15.

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15。

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15。

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 15.

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 15.

Russian

Если Вам необходима данная информация на любом другом языке, пожалуйста, свяжитесь с Координатором Титула VI/Защита от дескриминации в MVMPO по тел: 978-374-0519, добавочный 15.

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 15.

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 15.

Mon-Khmer, Cambodian

ប្រសិនបើលោក-អ្នកត្រូវការបកប្រែព័ត៌មាននេះ
សូមទាក់ទងអ្នកសម្របសម្រួលជំពូកទី6/ក្នានការរើសអើងរបស់ MVMPO តាមរយៈលេខទូរស័ព្ទ 978-374-0519 រួចភ្ជាប់ទៅលេខ 15។

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 وثم اضغط الأرقام 15.

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Endorsement Page for Federal TIP - Signatures

Merrimack Valley Metropolitan Planning Organization Endorsement of the FFYs 2021-2025 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 2021-2025 TIP is financially constrained and that the implementation of the Merrimack Valley Metropolitan Planning Organization 2020 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 2021-2025 Transportation Improvement Program.

Signatory Certification: **Date: May 27, 2020**

_____	_____	_____
Stephanie Pollack Secretary/ CEO MassDOT	Joseph Costanzo Administrator/CEO MVRTA	James Fiorentini Mayor of Haverhill
_____	_____	_____
Jonathan L. Gulliver MassDOT Highway Division Administrator	Paul Materazzo Town of Andover	Daniel Rivera Mayor of Lawrence
_____	_____	_____
John Cashell Town of Georgetown	Neil Harrington Town of Salisbury	Robert Snow Town of Rowley
_____		
Theresa Park MVPC Director		

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Certification of the Merrimack Valley MPO Transportation Planning Process

The Merrimack Valley Region Metropolitan Planning Organization certifies that its conduct of the metropolitan transportation planning process complies with all applicable requirements, which are listed below, and that this process includes activities to support the development and implementation of the Regional Long-Range Transportation Plan and Air Quality Conformity Determination, the Transportation Improvement Program and Air Quality Conformity Determination and the Unified Planning Work Program.

1. 23 U.S.C. 134, 49 U.S.C. 5303, and this subpart.
2. 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 FAST Act (Pub. L. 1194) and 49 CFR Part 26 regarding the involvement of disadvantaged business enterprises in U. S. DOT funded projects.
6. 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, or a Member of Congress, in connection with the awarding of any Federal contract.

Signatory Certification: **Date: May 27, 2020**

_____	_____	_____
Stephanie Pollack Secretary/ CEO MassDOT	Joseph Costanzo Administrator/CEO MVRTA	James Fiorentini Mayor of Haverhill
_____	_____	_____
Jonathan L. Gulliver MassDOT Highway Division Administrator	Paul Materazzo Town of Andover	Daniel Rivera Mayor of Lawrence
_____	_____	_____
John Cashell Town of Georgetown	Neil Harrington Town of Salisbury	Robert Snow Town of Rowley
_____		
Theresa Park 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

This will certify that the FFYs 2021-2025 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, 5(a)(1): Evaluate and report the aggregate transportation GHG emissions and impacts of RTPs and TIPs;
2. 310 CMR 60.05, 5(a)(2): In consultation with MassDOT, develop and utilize procedures to prioritize and select projects in RTPs and TIPs based on factors that include aggregate transportation GHG emissions impacts;
3. 310 CMR 60.05, 5(a)(3): Quantify net transportation GHG emissions impacts resulting from the projects in RTPs and TIPs and certify in a statement included with RTPs and TIPs pursuant to 23 CFR Part 450 that the MPO has made efforts to minimize aggregate transportation GHG emissions impacts;
4. 310 CMR 60.05, 5(a)(4): Determine in consultation with the RPA that the appropriate planning assumptions used for transportation GHG emissions modeling are consistent with local land use policies, or that local authorities have made documented and credible commitments to establishing such consistency;
5. 310 CMR 60.05, 8(a)(2)(a): Develop RTPs and TIPs;
6. 310 CMR 60.05, 8(a)(2)(b): Ensure that RPAs are using appropriate planning assumptions;
7. 310 CMR 60.05, 8(a)(2)(c): Perform regional aggregate transportation GHG emissions of RTPs and TIPs;
8. 310 CMR 60.05, 8(a)(2)(d): Calculate aggregate transportation GHG emissions for RTPs and TIPs
9. 310 CMR 60.05, 8(a)(2)(e): Develop public consultation procedures for aggregate transportation GHG reporting and related GWSA requirements consistent with current and approved regional public participation plans;
10. 310 CMR 60.05, 8(c): Prior to making final endorsements on the RTPs, TIPs, STIPs, and projects included in these plans, MassDOT and the MPOs shall include the aggregate transportation GHG emission impact assessment in RTPs, TIPs and STIPs and provide an opportunity for public review and comment on the RTPs, TIPs and STIPs.
11. 310 CMR 60.05, 8(a)(1)(c): After a final GHG assessment has been made by MassDOT and the MPOs, MassDOT and the MPOs shall submit MPO-endorsed RTPs, TIPs or projects within 30 days of endorsement to the Department for review of the GHG assessment.

Signatory Certification: **Date: May 27, 2020**

_____	_____	_____
Stephanie Pollack Secretary/CEO MassDOT	Joseph Costanzo Administrator/CEO MVRTA Advisory Board	James Fiorentini Mayor of Haverhill
_____	_____	_____
Jonathan L. Gulliver MassDOT Highway Division Administrator	Paul Materazzo Town of Andover	Daniel Rivera Mayor of Lawrence

_____	_____	_____	_____
John Cashell Town of Georgetown	Neil Harrington Town of Salisbury	Robert Snow Town of Rowley	Theresa Park MVPC Director

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Merrimack Valley Metropolitan Planning Organization
FFYs 2021-2025 Transportation Improvement Program
Final Report prepared May 2020

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 21st Century (MAP-21)” established planning factors known as the “MAP-21 eight planning factors”. The FAST Act adds two new planning factors (I and J 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 –Jonathan L. Gulliver
- Merrimack Valley Planning Commission (MVPC) Director –Theresa Park
- Administrator/CEO Merrimack Valley Regional Transit Authority –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) –John Cashell
- Representing Region 4 (Andover, Methuen, North Andover) –Paul Materazzo

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

- Federal Highway Administration –Massachusetts Division –Jeff McEwen
- Federal Transit Administration – Region I – Peter Butler
- Rockingham Planning Commission MPO (NH), Chairman RPC – Barbara Kravitz
- Boston MPO, President MAPC –Erin Wortman
- Northern Middlesex MPO, Chairman NMCOG –Pat Wojtas
- Nashua MPO (NH), Chairman NRPC –Karin Elmer

The TIP has been prepared in accordance with 23 CFR 450.326.

The development of the TIP starts with the Regional Transportation Plan (RTP). The MVMPO's RTP is a twenty-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, meeting performance measure targets, 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. The planning tasks conducted in developing the RTP and the TIP are included in the region's Unified Planning Work Program (UPWP) which is produced for public review annually. The UPWP includes additional transportation planning activities such as intersection and roadway analyses and studies.

Only projects from the RTP first two time bands of years (i.e., 2020 to 2024 and 2025 to 2029) are programmed in the TIP. An inconsistency with spending shown in the RTP is that when the MVMPO's FFY 2020 RTP was developed, it was assumed the construction of North Avenue in Haverhill would occur in the FFYs 2020 to 2024 time-band. The estimated project cost for this project and for the North Andover Route 114 project have increased significantly to the point where programming both of these projects in the 2021 to 2025 TIP is not financially feasible. Neither project would be ready to advertise until 2023 or later. The Route 114 project has a TEC score of 11.32, the Haverhill North Avenue project has a TEC score of 8.25. In addition the North Andover Route 114 project is further along in the design process, therefore the North Andover Route 114 project is programmed to start in FFY 2023 and then consumes all the regional target funding in FFYs 2024 and 2025 and will also need a small amount of FFY 2026 funding before funding may be available for Haverhill North Avenue.

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. MassDOT 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. Projects that help meet Performance Measures targets are programmed in the TIP.

Bicycle and pedestrian paths and accomodations on roadways and bridges are part of the Massachusetts 2019 Statewide Pedestrian Transportation Plan and 2019 Statewide Bicycle Transportation Plan which strive to consider pedestrians and bicyclists at “the same level of importance as drivers in planning, design and maintenance” including incorporating the safety of these users in projects. These Plans also conduct analyses which locate areas with Potential for Everyday Biking, Gaps in the High Comfort Bikeway Network, Potential for Walkable Trips, Transit Route, and High Pedestrian and Bicycle Crash locations used to initiate projects as well as score projects for the Massachusetts Capital Investment Plan (CIP). All TIP projects are part of the (CIP) which has a category of Expansion Projects which include projects that “expand bicycle and pedestrian networks to provide more transportation options and address health and sustainability objectives”. Many bicycle and pedestrian projects are initiated by a municipality because the State provides funding for these projects in the Complete Streets, Shared Use Path, and the Safe Route to Schools Programs.

Part A. 2. Performance Measures

Federal legislation requires states to develop a Transportation Asset Management Plan (TAMP) that includes Performance Measures for NHS roadways and bridges as part of the as-set management process. MassDOT Highway Division submitted an initial TAMP to FHWA on April 30, 2018, the TAMP was finalized in September of 2019.

The *Moving Ahead for Progress in the 21st Century Act (MAP-21)* and the *Fixing America's Surface Transportation Act (FAST)* require State DOTs and MPOs to establish performance measures, and targets for these measures, to be used in assessing the transportation system and programming projects for Federal funding categories provided in the Acts. The Final Rules establishing these measures have been released in three separate rule makings. PM1: "HSIP and Safety Performance Management Measures", PM2: "Pavement and Bridge Condition Performance Measures", and PM3: "System Performance/ Freight/ CMAQ Performance Measures". These Rules define the measures to be used in each of the categories.

The PM1 HSIP and Safety Performance Measures apply to all public roads. The PM2 Pavement and Bridge Performance Measures apply only to NHS (National Highway System) roads and bridges. PM3 Performance Measures apply to various facilities as defined below.

MassDOT has established targets based on these performance measures and the MPOs have worked with MassDOT in either a) choosing the same targets, b) adapting them to the specific region, or c) choosing new targets as goals for the MPO. The MVMPO has adopted all of the targets established by MassDOT. MassDOT and the MPOs will work cooperatively to exchange data and performance targets and measures as required by the legislation.

The following are the performance measures, divided into three categories, as defined by the Final Federal Rules:

HSIP and Safety Performance Management Measures to be applied to all public roads (PM1):

- Number of Fatalities
- Fatality rate per 100 million vehicle-miles traveled
- Number of Serious Injuries
- Serious injury rate per 100 million vehicle-miles traveled
- Number of non-motorized fatalities and non-motorized serious injuries

Pavement and Bridge Condition Performance Measures (PM2):

- Percentage of Pavements of the Interstate System in Good condition
- Percentage of Pavements of the Interstate System in Poor condition
- Percentage of Pavements of the non-Interstate NHS in Good condition
- Percentage of Pavements of the non-Interstate NHS in Poor condition
- Percentage of NHS bridges by deck area classified as in Good condition
- Percentage of NHS bridges by deck area classified as in Poor condition

MassDOT has submitted a draft NHS Transportation Asset Management Plan (TAMP), as required by MAP-21, to address pavement and bridge conditions on the NHS system. The TAMP was finalized in September 2019.

System Performance/ Freight/ CMAQ Performance Measures (PM3):

- Percent of the Person-Miles Traveled on the Interstate that are Reliable
- Percent of the Person-Miles Traveled on the non-Interstate NHS that are Reliable
- Truck Travel Time Reliability (TTTR) Index on the Interstate System
- Annual Hours of Peak Hour Excessive Delay Per Capita
- Percent of Non-SOV Travel on the NHS System

- Total Emission Reduction of all projects funded with CMAQ in areas designated as non-attainment or maintenance for ozone (O_3), carbon monoxide (CO), or particulate matter (PM_{10} and $PM_{2.5}$)

The MVMPO will work cooperatively with MassDOT to determine which performance measures the MPO will collect data for and measure, and which MassDOT will collect data for and measure and will exchange data and program projects for funding with consideration of meeting the targets established for each measure. The performance measures will be incorporated into the Transportation Improvement Program (TIP) Transportation Evaluation Criteria (TEC) in the scoring categories as indicated in the TEC Scoring Criteria Chart in Section A.3. of the TIP.

Targets are set by examining historic trends in the data and considering future plans for potential improvements.

Safety Performance Measures (PM1)

The Merrimack Valley MPO has chosen to adopt the statewide safety performance measure targets set by MassDOT for Calendar Year (CY) 2020. In setting these targets, MassDOT has followed FHWA guidelines by using statewide crash data and Highway Performance Monitoring System (HPMS) data for vehicle miles traveled (VMT) in order to calculate 5 year, rolling average trend lines for all FHWA-defined safety measures.

Total Fatalities: Over the last seven years, the number of fatalities in Massachusetts has been relatively stable, fluctuating less than 1 percent with the exception of 2016, when the 5-year average reached 364. That said, the most recent data shows that the five-year average for fatalities in 2018, 358, is the second lowest it has been since the 2008 – 2012 five-year average. The calendar year (CY) 2020 target of 347 was set to reflect an anticipated decrease in fatalities due to data enhancements, safety projects, and strategies and legislative proposals that were part of the 2018 Strategic Highway Safety Plan (SHSP), such as the primary seat belt and hands-free driving laws. It should be noted that MassDOT's overarching goal is towards zero deaths, which will be pursued through the continued implementation of SHSP strategies.

Similarly, the Merrimack Valley Region number of fatalities is relatively stable with slightly lower numbers of 16 and 17 fatalities averaged over five years for the most recent three rolling 5-year averages ending in years 2016, 2017 and 2018 compared to 19 and 20 fatalities averaged over five years for the 5-year rolling averages ending in years 2012, 2013 and 2014.

Fatality Rate: Partly due to a 0.3% annual increase in VMT and an overarching downward trend in the fatality *rate*, it is anticipated that the fatality rate from 2013–2017 of 0.59 fatalities

per 100 million vehicle miles traveled will drop to 0.56 fatalities per 100 million vehicle miles traveled between 2016–2020. *(Note: Statewide VMTs used to calculate the Projected CY20 Target Fatality Rate were adjusted after state adoption of the 0.56 per 100 million VMT target.)*

The Merrimack Valley Region has also seen a steady downward trend in fatality rate from a high of 0.57 fatalities per 100 million VMT for the 5-year period ending in 2013, down to 0.45 fatalities per 100 million VMT for the 5-year period ending in 2018.

Total Incapacitating Injuries: Although this measure is particularly prone to contextual factors, it is anticipated that there will be an overall decrease in the number of incapacitating injuries due to a continual downward trend line as well as the implementation of countermeasures that are being developed as part of the 2018 Strategic Highway Safety Plan.

The Merrimack Valley number of incapacitating injuries was lowest in the 2012 to 2016 5-year average period at 131, but 2013 to 2017 and 2014 to 2018 at 139 and 141 are significantly lower than the earlier periods that were around 160.

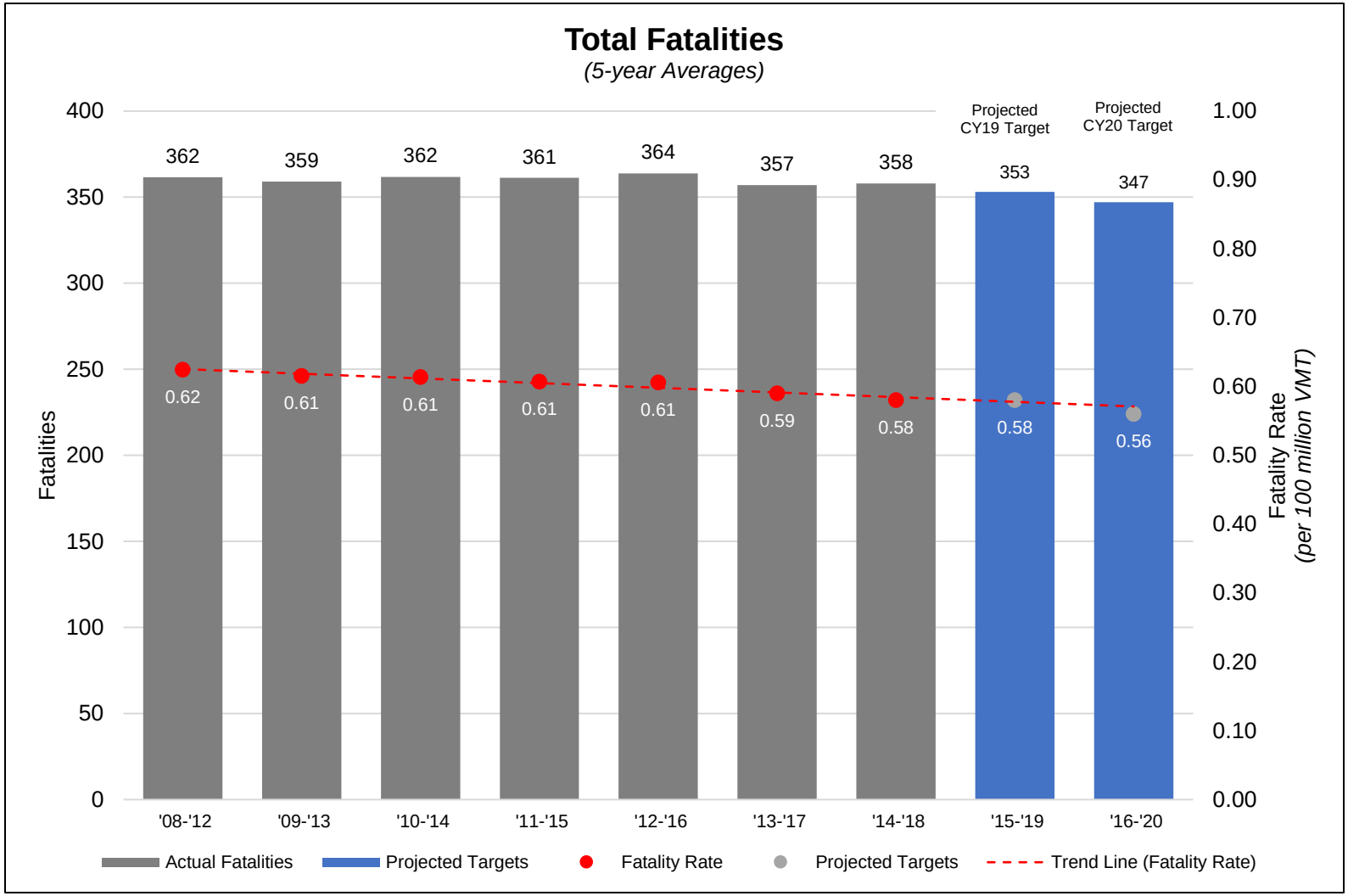
Incapacitating Injuries Rate: Similar to the fatality rate, it is anticipated that the increase in VMT and a downward trend line will result in a drop in the rate of incapacitating injuries from 4.84 per 100 million VMT between 2013–2017 to 4.30 between 2016–2020. *(Note: Statewide VMTs used to calculate the Projected CY20 Target Incapacitating Injury Rate were adjusted after state adoption of the 4.30 per 100 million VMT target.)*

In the Merrimack Valley region the incapacitating injury rate has also decreased from the earlier years with a rate of 3.85 per 100 million VMT the 5-year average from 2014 to 2018 versus 4.6 from 2008 to 2012.

Total Number of Non-Motorized Fatalities and Incapacitating Injuries: The most recent data for non-motorized fatalities and incapacitating injuries indicates that the previously increasing trend decreased in 2017. The CY 2020 target of 505 has been set to reflect continued projected reductions in non-motorized fatalities and injuries due to a number of implementation strategies contained within the Statewide Bike Plan, Statewide Pedestrian Plan, and Strategic Highway Safety Plan.

The total number of non-motorized fatalities and incapacitating injuries has increased slightly in the most recent 5-year periods to 18 from 2012 to 2016 and 19 from 2013 to 2017 and 2014 to 2018. The earlier 5-year periods had an average of 16 from 2009 to 2013 and 17 the remaining 3 time periods.

Figure 1 Statewide Total Fatalities and Fatal Crash Rates – 5-Year Averages



Graph Source: MassDOT

Figure 2 Merrimack Valley Total Fatalities and Fatal Crash Rates – 5-Year Averages

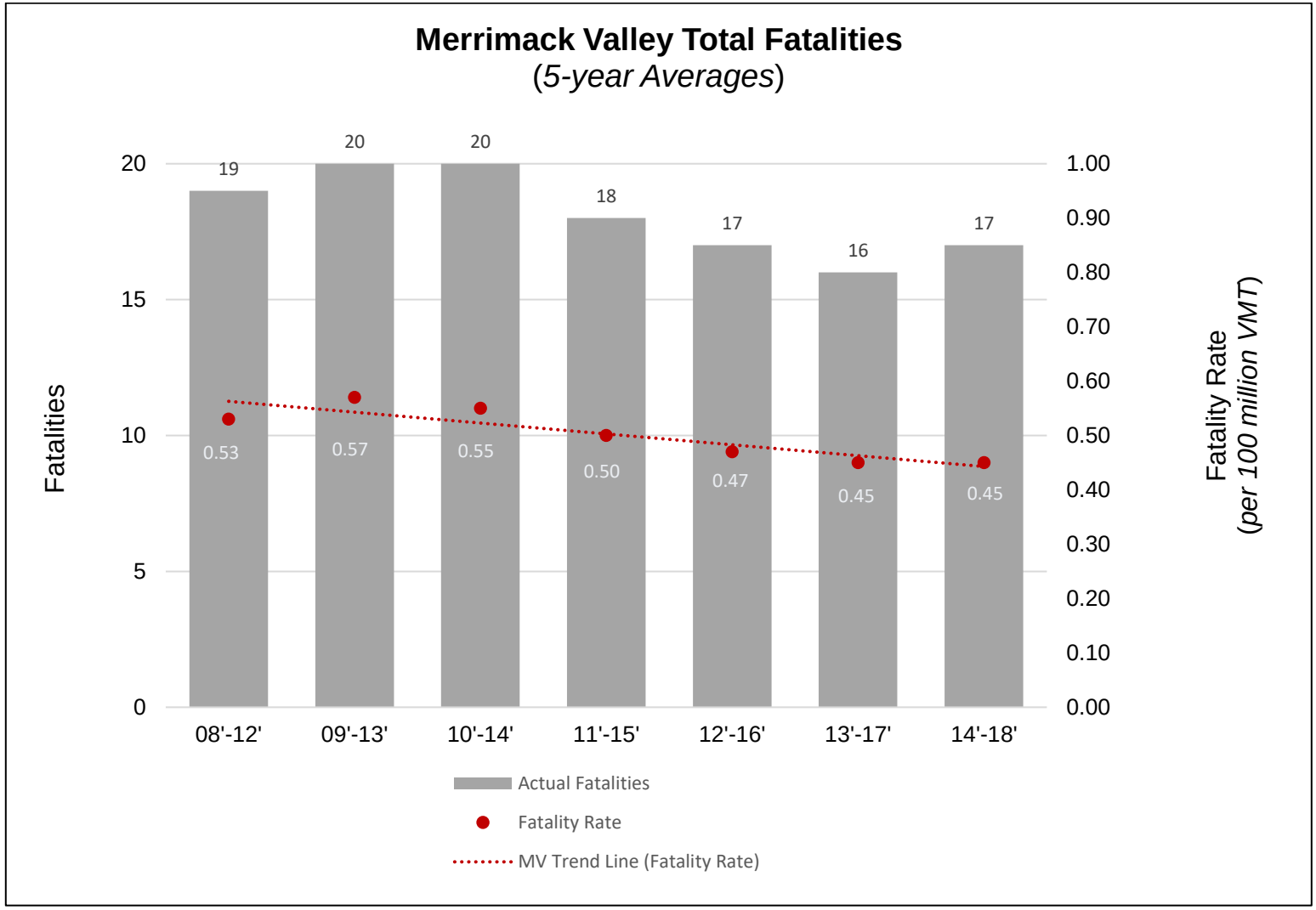
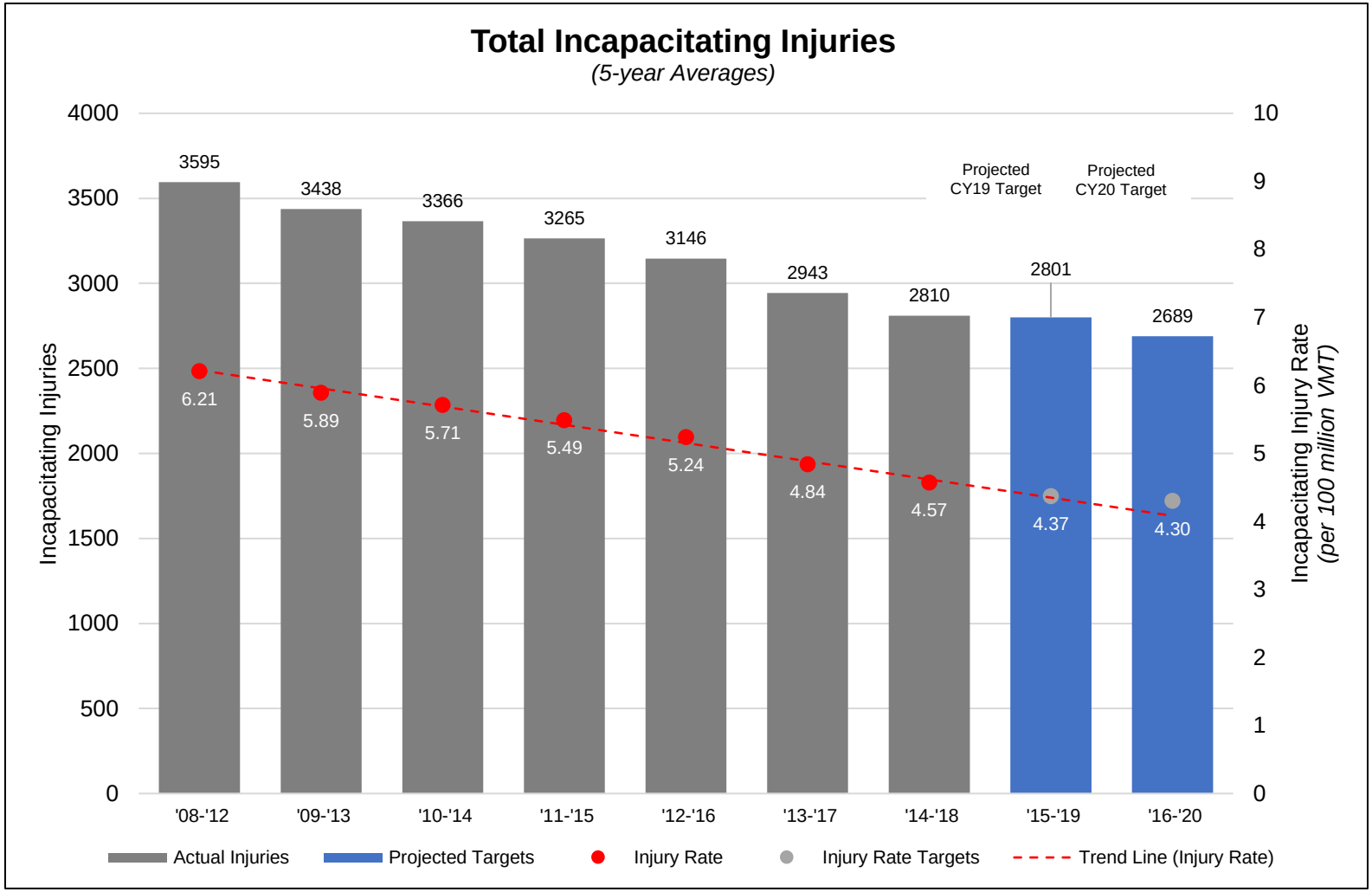


Figure 3 Statewide Total Incapacitating Injuries and Incapacitating Injury Crash Rates

5 Year Averages



Graph Source: MassDOT

Figure 4 Merrimack Valley Total Incapacitating Injuries and Incapacitating Injury Crash Rates 5-Yr Averages

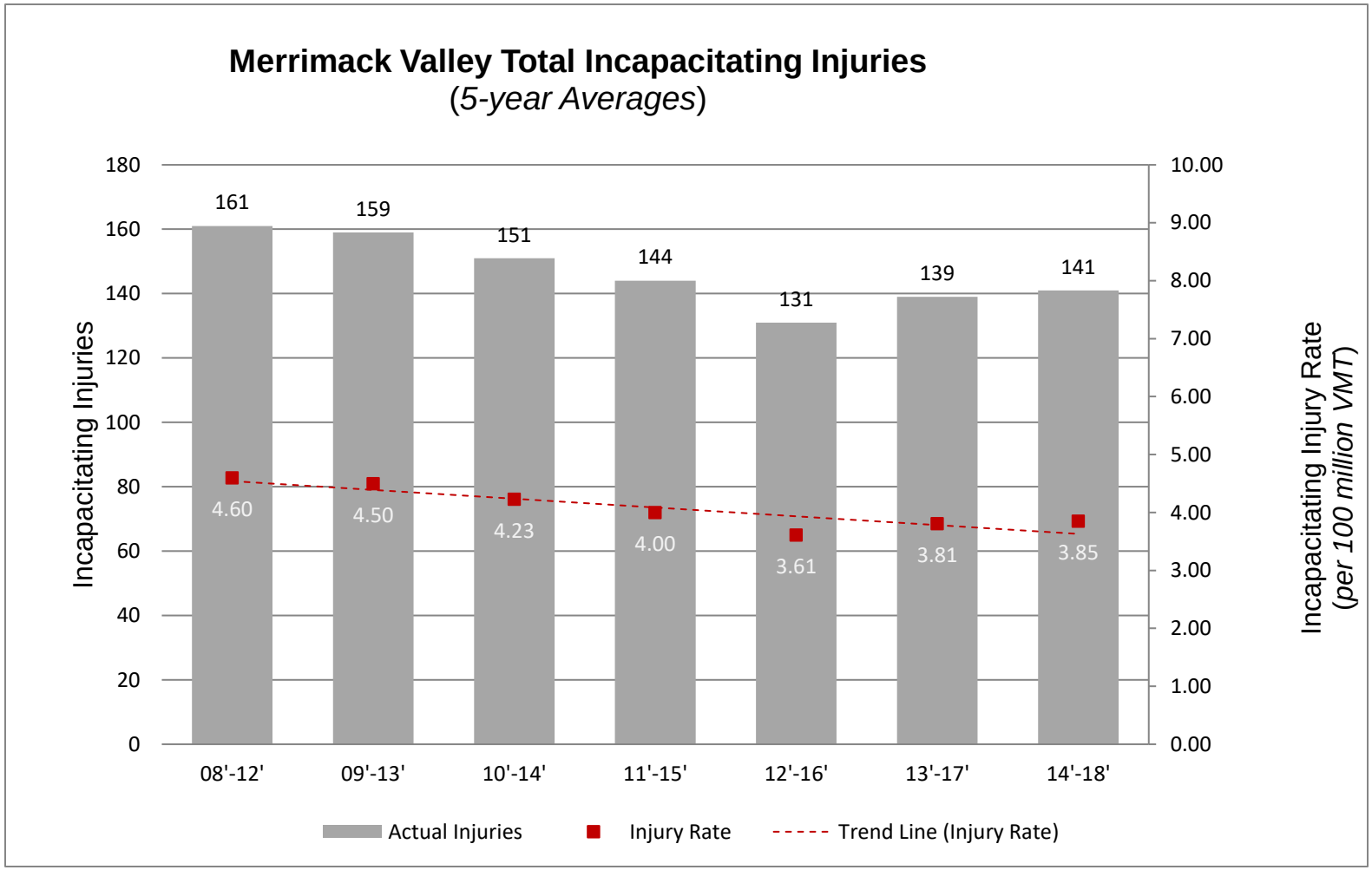
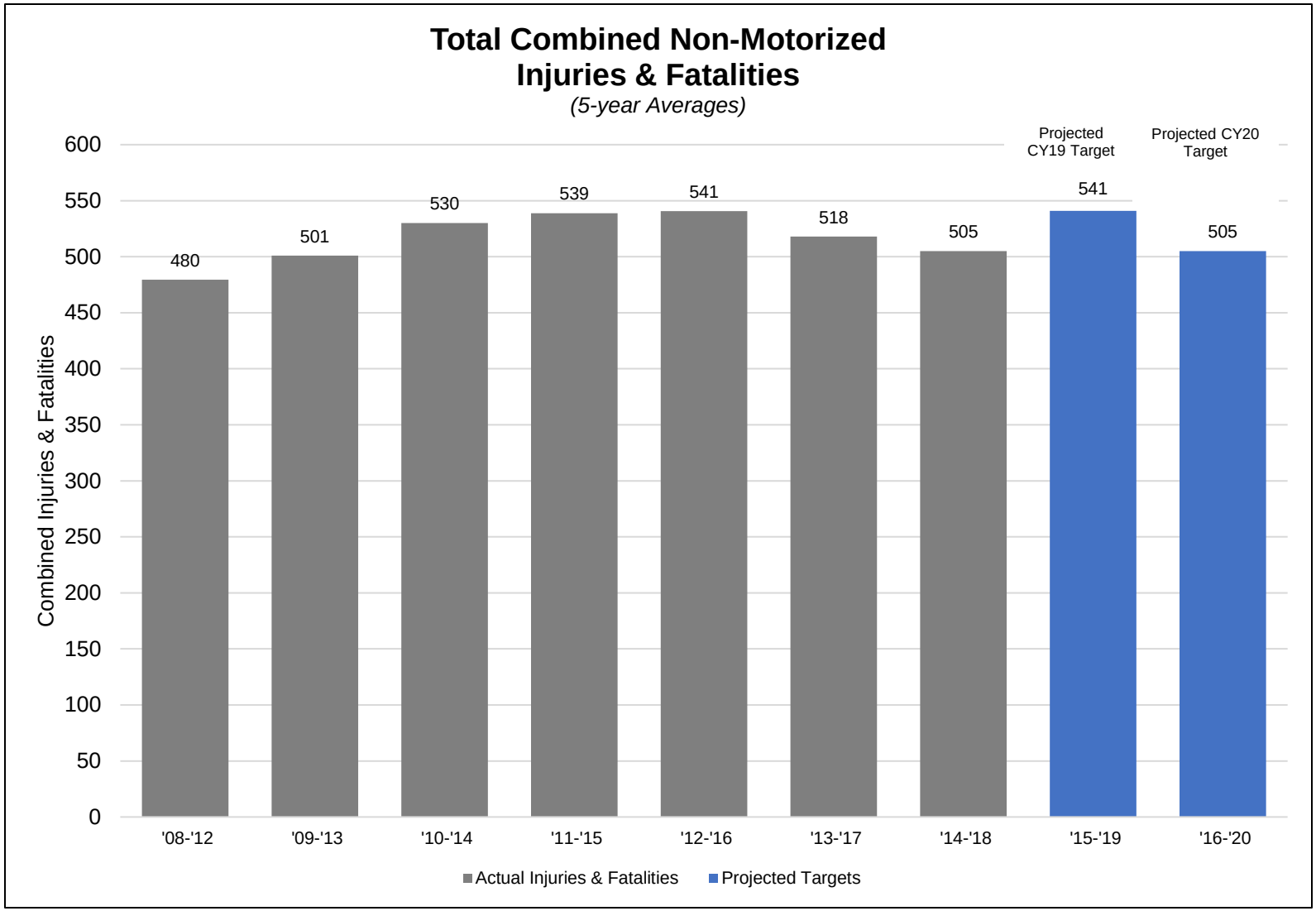
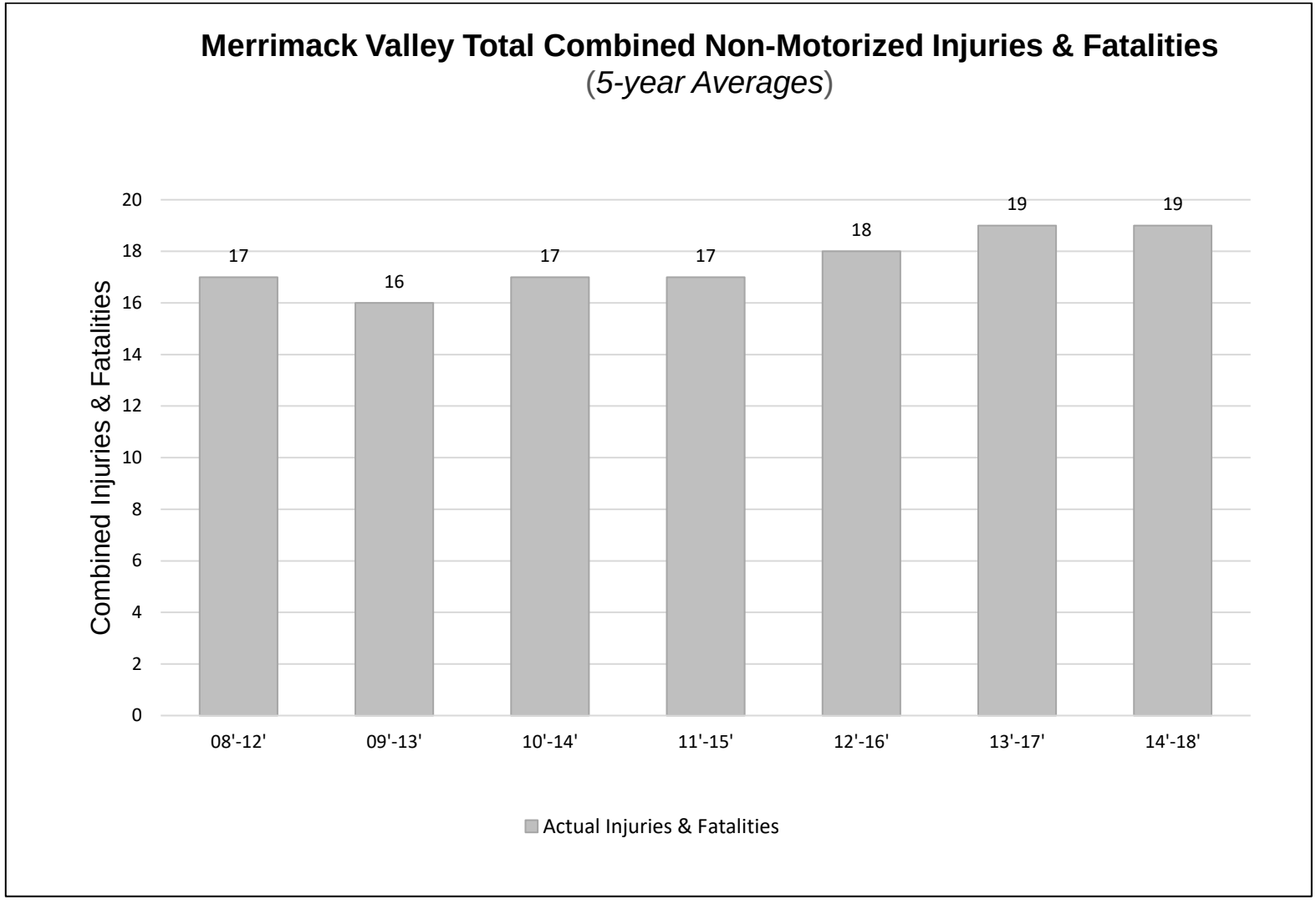


Figure 5 Statewide Total Combined Non-Motorized Injuries & Fatalities



Graph Source: MassDOT

Figure 6 Merrimack Valley Total Combined Non-Motorized Injuries & Fatalities



In recent years, MassDOT and the Merrimack Valley MPO have invested in “complete streets”, bicycle and pedestrian infrastructure, intersection and safety improvements in both the Capital Investment Plan (CIP) and Statewide Transportation Improvement Program (STIP) to address increasing mode share and to incorporate safety mitigation elements into projects. Moving forward, Merrimack Valley MPO, alongside MassDOT, is actively seeking to improve data collection and methodology for bicycle and pedestrian VMT counts and to continue analyzing crash clusters and crash counts that include both motorized and non-motorized modes in order to address safety issues at these locations.

Bridge & Pavement Performance Measures (PM 2)

The Merrimack Valley MPO has chosen to adopt the 2-year (2020) and 4-year (2022) statewide bridge and pavement performance measure targets set by MassDOT. MassDOT was required to adopt a statewide target by May 20th, 2018, with MPOs either adopting the statewide target or establishing their own by November 2018. In setting these targets, MassDOT has followed FHWA guidelines by measuring bridges and pavement condition using the 9-point National Bridge Inventory Standards (NBIS); the International Roughness Index (IRI); the presence of pavement rutting; and the presence of pavement cracking. 2-year and 4-year targets were set for six individual performance measures: percent of bridges in good condition; percent of bridges in poor condition; percent of Interstate pavement in good condition; percent of Interstate pavement in poor condition; percent of non-Interstate pavement in good condition; and percent of non-Interstate pavement in poor condition. All of the above performance measures are tracked in greater detail in MassDOT’s Transportation Asset Management Plan (TAMP), which was finalized in September 2019. It is posted here: https://www.mass.gov/service-details/massdot-asset-management.

Targets for bridge-related performance measures were determined by identifying which bridge projects are programmed and projecting at what rate bridge conditions deteriorate. The bridge-related performance measures measure the percentage of deck area, rather than the total number of bridges.

Performance targets for pavement-related performance measures were based on a single year of data collection, and thus were set to remain steady under the guidance of FHWA. These measures are to be revisited at the 2-year mark (2020), once three years of data are available, for more informed target setting.

MassDOT continues to measure pavement quality and to set statewide short-term and long-term targets in the MassDOT Performance Management Tracker using the Pavement Serviceability Index (PSI), which differs from IRI. These measures and targets are used in conjunction with federal measures to inform program sizing and project selection.

Performance Measure	Current (2017)	2-year target (2020)	4-year target (2022)
Bridges in good condition	15.22%	15%	16%
Bridges in poor condition	12.37%	13%	12%
Interstate Pavement in good condition	74.2%	70%	70%
Interstate Pavement in poor condition	0.1%	4%	4%
Non-Interstate Pavement in good condition	32.9%	30%	30%
Non-Interstate Pavement in poor condition	31.4%	30%	30%

Reliability, Congestion, & Emissions Performance Measures (PM3)

Merrimack Valley MPO has chosen to adopt the 2-year (2020) and 4-year (2022) statewide reliability, congestion, and emissions performance measure targets set by MassDOT. MassDOT was required to adopt a statewide target by May 20th, 2018, with MPOs either adopting the statewide target or establishing their own by November 2018. MassDOT followed FHWA regulation in measuring Level of Travel Time Reliability (LOTTR) on both the Interstate and non-Interstate NHS as well as Truck Travel Time Reliability (TTTR) on the Interstate system using the National Performance Management Research Dataset (NPMRDS) provided by FHWA. These performance measures aim to identify the predictability of travel times on the roadway network by comparing the average travel time along a given segment against longer travel times. For LOTTR, the performance of all segments of the Interstate and of the non-Interstate NHS are defined as either reliable or unreliable based on a comparison between the 50th percentile travel time and the 80th percentile travel time, and the proportion of reliable segments is reported. For TTTR, the ratio between the 50th percentile travel time and the 90th percentile travel time for trucks only along the Interstate system is reported as a statewide measure. As this data set has but one year of consistent data, FHWA guidance has been to set conservative targets and to adjust future targets once more data becomes available. To that end, MassDOT's reliability performance targets are set to remain the same.

The Merrimack Valley MPO an agency whose planning area includes communities in the Boston Urbanized Area (UZA), and as a signatory to the 2018 Boston UZA Memorandum of Understanding (Boston UZA MOU)—has also adopted 2-year (2020) and 4-year (2022) Boston UZA-wide congestion performance measure targets. These performance measures are the percentage of non-single occupancy vehicle (SOV) travel and

the Peak Hour Excessive Delay (PHED). Targets were developed in coordination with state Departments of Transportation and neighboring MPOs with planning responsibility for portions of the Boston UZA.

The percentage of non-SOV travel is approximated using the U.S. Census Bureau's American Community Survey (ACS) Journey-to-Work data. In the Boston UZA, the proportion of non-SOV travel has been steadily increasing and is projected to continue increasing at a rate of 0.32% annually.

PHED is measured by totaling the number of hours spent in excessive delay (defined as travel time at 20 miles per hour or at 60% of the posted speed limit, whichever is greater) in peak hours (between 6:00am and 10:00, and between 3:00pm and 7:00pm) divided by the total UZA population. As of target-setting, there was only one year of data available. As such, the performance targets have been set flat until further data is available.

Emissions reduction targets are measured as the sum total of all emissions reductions anticipated through CMAQ-funded projects in non-attainment or air quality maintenance areas (currently the cities of Lowell, Springfield, Waltham, and Worcester, and the town of Oak Bluffs) identified in the Statewide Transportation Improvement Program (STIP). This anticipated emissions reduction is calculated using the existing CMAQ processes.

Measure	Current (2017)	2-year (2020)	4-year (2022)
Non-Interstate LOTTR	80%	80%	80%
Interstate LOTTR	68%	68%	68%
TTTR	1.85	1.85	1.85
PHED (Boston UZA)	18.31	18.31	18.31
% non-SOV (Boston UZA)	33.6% (2016)	34.82%	35.46%
Emissions Reductions	Baseline (FFY 14–17)	1,622 CO 497.9 Ozone	TBD CO (Springfield) 1.1 Ozone

MassDOT/ Adopted by MVMPO Performance Measures/ Targets Summary Table

Performance Measure Category	Performance Measure	Recent Data	Targets
PM1: HSIP and Safety	Number of Fatalities Statewide (All Public Roads)	358 average number of fatalities/ year for 2014 to 2018	CY 2019 Target = 353 CY 2020 Target = 347 fatalities
PM1: HSIP and Safety	Fatality rate per 100 million vehicle-miles traveled.	0.58 fatalities per 100 million vehicles miles traveled per year average for 2014 to 2018	CY 2019 Target = 0.58 CY 2020 Target = 0.56 fatalities per 100 million vehicle miles traveled
PM1: HSIP and Safety	Number of Incapacitating Injuries Statewide (All Public Roads)	2,810 average number of incapacitating injuries per year average from 2014 to 2018	CY 2019 Target = 2,801 CY 2020 Target = 2,689 serious injuries
PM1: HSIP and Safety	Serious injury rate per 100 million vehicle-miles traveled.	4.57 incapacitating injuries per 100 million vehicle miles traveled per year average for 2014 to 2018	CY 2019 Target = 4.37 CY 2020 Target = 4.30 serious injuries per 100 million vehicle miles traveled
PM1: HSIP and Safety	Number of Non-motorized Fatalities and Non-motorized Serious Injury Statewide (All Public Roads)	505 average number of combined serious injuries and fatalities per year for non-motorized modes for 2014 to 2018	CY 2019 Target = 541 CY 2020 Target = 505 combined fatalities and serious injuries for non-motorized modes

MassDOT/ Adopted by MVMPO Performance Measures/ Targets Summary Table (Cont.)

Performance Measure Category	Performance Measure	Recent Data	Targets
PM2: Pavement and Bridge Condition	Percentage of Pavements of the Interstate System in Good Condition Statewide	74.2% in CY 2017	CY 2020 Target = 70% CY 2022 Target = 70%
PM2: Pavement and Bridge Condition	Percentage of Pavements of the Interstate System in Poor Condition Statewide	0.1% in CY 2017	CY 2020 Target = 4% CY 2022 Target = 4%
PM2: Pavement and Bridge Condition	Percentage of Pavements of the non-Interstate NHS in Good Condition Statewide	32.9 % in CY 2017	CY 2020 Target = 30% CY 2022 Target = 30%
PM2: Pavement and Bridge Condition	Percentage of Pavements of the non-Interstate NHS in Poor Condition Statewide	31.4% in CY 2017	CY 2020 Target = 30% CY 2022 Target = 30%

MassDOT/ Adopted by MVMPO Performance Measures/ Targets Summary Table (Cont.)

Performance Measure Category	Performance Measure	Recent Data	Targets
PM2: Pavement and Bridge Condition	Percentage of NHS bridges by deck area in Good Condition Statewide	15.22% Currently	CY 2020 Target = 15% CY 2022 Target = 16%
PM2: Pavement and Bridge Condition	Percentage of NHS bridges by deck area in Poor Condition Statewide	12.37% Currently	CY 2020 Target = 13% CY 2022 Target = 12%
PM3: System Performance/ Freight/ CMAQ	Percent of Person-Miles Traveled on the Interstate that are Reliable Statewide	68 % in CY 2017	CY 2020 Target = 68% CY 2022 Target = 68%
PM3: System Performance/ Freight/ CMAQ	Percent of Person-Miles Traveled on the Non-Interstate NHS that are Reliable Statewide	80% in CY 2017	CY 2020 Target = 80% CY 2022 Target = 80%

MassDOT/ Adopted by MVMPO Performance Measures/ Targets Summary Table (Cont.)

Performance Measure Category	Performance Measure	Recent Data	Targets
PM3: System Performance/ Freight/ CMAQ	Truck Travel Time Reliability (TTTR) Index on the Interstate System Statewide	TTTR index in CY 2017 = 1.85	CY 2020 Target = 1.85 CY 2022 Target = 1.85
PM3: System Performance/ Freight/ CMAQ	Annual Hours of Peak Hour Excessive Delay (PHED) per Capita in the UZA	PHED per capita in CY 2017 = 18.31 hours per person in the UZA	2018-2019 Two-year Target = 18.3 2018-2021 Four-year Target = 18.3
PM3: System Performance/ Freight/ CMAQ	Percent of Non-SOV Travel on the NHS System in the UZA	CY 2016 Non-SOV Travel on the NHS in the UZA = 33.6%	CY 2020 Target = 34.5% CY 2022 Target = 35.1%

Performance Target(s) Project Will Help Meet
(2021 to 2025 Statewide and Regional Target Funds)

Year (s) Program-med	City / Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2024-2025	Andover	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) (# 606522)	$36,054,012	1) Percentage of NHS bridges classified as in Good condition. 2) Percentage of Pavements of the Interstate System in Good Condition and in Poor Condition 3) Percent of the Person-Miles Traveled on the Interstate that are Reliable. 4) Truck Travel Time Reliability (TTTR) Index on the Interstate System.
2022	George-town / Box-ford	Georgetown - Boxford Border to Boston Trail, from Georgetown Road to West Main Street (Route 97) (# 607541)	$2,520,436	1) Number of non-motorized fatalities and non-motorized serious injury. 2) Percent change in Tailpipe CO_2 Emissions on the NHS Compared to Calendar Year 2017 Level.
2024	George-town / Newbury	Georgetown - Newbury Border to Boston Trail, (Northern Georgetown to Byfield Section) (# 607542)	$5,685,060	Number of non-motorized fatalities and non-motorized serious injury.

Performance Target(s) Project Will Help Meet
(2021 to 2025 Statewide and Regional Target Funds)

Year (s) Program-med	City / Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2021	Groveland	Groveland – Groveland Community Trail, from Main Street to King Street (# 608298)	$1,984,861	1) Number of non-motorized fatalities and non-motorized serious injury. 2) Percent change in Tailpipe CO_2 Emissions on the NHS Compared to Calendar Year 2017 Level.
2021-2023	Haverhill	Haverhill – Bridge Replacement, H-12-039, I-495 (NB & SB) over Merrimack River (# 605306) (AC Yrs 4 to 6 of 6)	$46,503,796	1) Percentage of NHS bridges classified as in Good condition. 2) Percentage of Pavements of the Interstate System in Good Condition and in Poor Condition 3) Percent of the Person-Miles Traveled on the Interstate that are Reliable. 4) Truck Travel Time Reliability (TTTR) Index on the Interstate System.
2023-2025	Haverhill	Haverhill – Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River (#609466) (AC Yrs 1,2 & 3 of 4)	$94,747,200	1) Percentage of NHS bridges classified as in Good condition. 2) Percentage of Pavements of the Interstate System in Good Condition and in Poor Condition 3) Percent of the Person-Miles Traveled on the Interstate that are Reliable. 4) Truck Travel Time Reliability (TTTR) Index on the Interstate System.

Performance Target(s) Project Will Help Meet
(2021 to 2025 Statewide and Regional Target Funds) (Cont.)

Year (s) Program-med	City / Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2024-2025	Haverhill	Haverhill – Bridge Replacement, H-12-007 &H-12-025, Bridge Street (SR 125) over the Merrimack River (# 605304) (AC Yrs 1 & 2 of 5)	$45,861,496	1) Percentage of NHS bridges classified as in Good condition. 2) Percentage of Pavements of the Non-Interstate NHS in Good Condition and in Poor Condition 3) Percent of the Person-Miles Traveled on the Non- Interstate NHS that are Reli-able.
2021	Haverhill	Haverhill – Intersection Improvements at Rt 110 / Rt 108 (#608761)	$1,980,067	1) Number and Rate of Fatalities 2) Number and Rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury. 4) Percent change in Tailpipe CO_2 Emis-sions on the NHS Compared to Calendar Year 2017 Level. 5) Percent of the Person-Miles Traveled on the non-Interstate NHS that are Relia-ble.

Performance Target(s) Project Will Help Meet
(2021 to 2025 Statewide and Regional Target Funds) (Cont.)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2022	Lawrence	Lawrence – Intersection Improvements at Merrimack Street and South Broadway (Route 28) (# 609509)	$1,610,960	1) Number and Rate of Fatalities 2) Number and Rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury. 4) Percent change in Tailpipe CO_2 Emissions on the NHS Compared to Calendar Year 2017 Level. 5) Percent of the Person-Miles Traveled on the non-Interstate NHS that are Reliable.
2021	Lawrence	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon Street (# 609251)	$1,013,739	1) Number and Rate of Fatalities 2) Number and Rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury. 4) Percent change in Tailpipe CO_2 Emissions on the NHS Compared to Calendar Year 2017 Level. 5) Percent of the Person-Miles Traveled on the non-Interstate NHS that are Reliable.

Performance Target(s) Project Will Help Meet
(2021 to 2025 Statewide and Regional Target Funds) (Cont.)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2023	Lawrence	Lawrence – Lawrence Manchester Rail Corridor (LMRC) Rail Trail (# 608930)	$16,087,005	Number of non-motorized fatalities and non-motorized serious injury
2022	Methuen	Methuen – Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	$967,200	Number of non-motorized fatalities and non-motorized serious injury
2022	Newbury - Newburyport - Salisbury	Newbury - Newburyport - Salisbury - Resurfacing and related work on Route 1 (# 608494)	$9,807,200	Percentage of Pavements of the non-Interstate NHS in Good condition.
2021	Newburyport	Newburyport – Riverfront Clipper City Rail Trail Construction (# 610663)	$1,900,802	Number of non-motorized fatalities and non-motorized serious injury.
2023-2025	North Andover	North Andover - Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop Driveway (# 608095)	$26,906,532	1) Number of non-motorized fatalities and non-motorized serious injury. 2) Percentage of Pavements of the non-Interstate NHS in Good condition. 3) Percent of the Person-Miles Traveled on the non-Interstate NHS that are Reliable. 4) Number and Rate of Serious Injuries

Performance Target(s) Project Will Help Meet
(2021 to 2025 Statewide and Regional Target Funds) (Cont.)

Year (s) Program-med	City / Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2025	Rowley	Rowley – Safety Improvements at Route 1, Central and Glen Streets (# 609392)	$2,368,068	1) Number and rate of fatalities. 2) Number and rate of Serious Injuries
2023	Salisbury	Salisbury – Reconstruction of Route 1 (Lafayette Road) (# 602202)	$6,837,285	Number of non-motorized fatalities and non-motorized serious injury.
2021	MVRTA	MVRTA – Flex to FTA to Replace Yr 2009 Buses with new Buses Delivery 2022 (7 of 9) (# S10777)	$3,467,361	Percent of Person-Miles Traveled on the Non-Interstate NHS that are Reliable Statewide

Transit Asset Management (TAM) Plan Performance Management Targets

The MVRTA completed its TAM Plan March 6, 2020. The Performance Management Targets were adopted by the MVRTA Advisory Board on May 7, 2020. The Merrimack Valley MPO adopted these targets at its May 27, 2020 MPO meeting.

The following information is from the MVRTA Transit Asset Management Plan prepared 3/6/2020.

Annual Performance Targets and Measures

As a recipient of Federal Transit Administration funds, the MVRTA is required to develop and maintain a Transit Asset Management Plan per FTA's Final Rule at 49 CFR Part 625. As defined by the Rule, Transit Asset Management (TAM) is the strategic and systematic practice of processing, operating, inspecting, maintaining, rehabilitating and replacing transit capital assets to manage their performance, risks and cost over their life cycles to provide safe, cost effective and reliable public transportation.

The preparation of the TAM is based on identifying the transit assets which the MVRTA owns and has direct Capital responsibility for and the performance measures included in the Final Rule that relate to these identified assets.

	Performance Measure
Equipment Non-revenue support-service and maintenance vehicles	Percentage of vehicles met or exceeded Useful Life Benchmark
Rolling Stock Revenue vehicles by mode, bus/ van	Percent of vehicles met or exceeded Useful Life Benchmark
Facilities Maintenance and administrative facilities: and passenger stations (buildings) and parking facilities	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.

Using these Performance Measures leads to the setting of targets against the defined Useful Life Benchmark (ULB). Which FTA defines as:

> The expected lifecycle of a capital asset for a particular Transit Provider's operating environment, or the acceptable period of use in service for a particular Transit Provider's operating environment.

The MVRTA has defined the ULB as presented in FTA circular C 5010.1E for buses and vans:

Minimum Service-life for Buses and Vans

Category	Length	Minimum Life (Whichever comes first)	
		Years	Miles
Heavy-Duty Large Bus	35 to 45 ft.	12	500,000
Heavy-Duty Small Bus	30 ft.	10	350,000
Medium-Duty Transit Bus	30 ft.	7	200,000
Light-Duty Mid-Sized Bus	25 to 35 ft.	5	150,000
Light Duty Small Bus, Cutaways and Modified Van	16 to 28 ft.	4	100,000

For TAM Plan dated 3/6/2020, the MVRTA has prepared the following targets:

Transit TAM Targets

Percent of revenue vehicles that have met or exceeded their useful life benchmark:

	FFY 2020	FFY 2021	FFY 2022	FFY 2023
Bus	0%	18%	8%	8%
Van	0%	70%	0%	26%

Non-revenue vehicles - percent of service vehicles that have met or exceeded their useful life benchmark:

	FFY 2020	FFY 2021	FFY 2022	FFY 2023
Maintenance Trucks	0%	0%	0%	0%
SUV (Supervisory Vehicles)	12%	12%	25%	12%

Facility - percent of facilities rated below 3 on the FTA condition scale:

Passenger/ Parking facilities 0% (McGovern Center, Gateway Surface Parking, Haverhill Intermodal Parking, Costello Center)

Administrative/ maintenance facilities 0% (85 Railroad Ave. HQ)

Updates to these targets will be done in conjunction with the preparation of the next TAM Plan and the FY 2022-2026 Capital Plan.

In May of 2020 the Merrimack Valley MPO voted to adopt the transit TAM performance measure targets set by MVRTA for FFY 2020 through FFY 2023.

Public Transportation Agency Safety Plan (PTASP) Final Rule.

The MVRTA as a recipient of FTA Urban Area Funding Grants needs to develop a plan to implement a Safety Management System (SMS) that includes safety performance targets. Originally with a deadline of July 2020, Regional Transit Authorities (RTA's) now have until December 2020 to develop the plan. More information can be found at: https://www.transit.dot.gov/about/news/us-department-transportation-provides-greater-flexibility-transit-agencies-meet-safety .

Part A. 3. Prioritization

The FFYs 2021-2025 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 2021 begins on October 1, 2020 and ends on September 30, 2021. 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 STBG 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 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 scores within each category are averaged and then the category averages are added together to reach the total score. The following chart illustrates the data and scoring criteria for each TEC element as well as the planning factors considered in each element, and which TEC elements will be affected by performance measures.

Consideration of whether a project contributes to Climate Resiliency has been added to the TEC process for the MVMPO 2021 to 2025 TIP in the Environmental Effects section of the evaluation form, under the Air Quality/Climate Effects scoring component. The project receives one point under this criteria if the project involves widening a culvert and the project receives one point if it raises a facility (for example a bridge, roadway or trail) in a flood prone area.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Condition				
A. Magnitude of pavement condition improvements	Use Pavement Condition Index (PCI) (if available) to rate current condition as excellent, good, fair, or poor. If not available, use pavement condition description from other sources.	Poor = 3 to 2 Fair = 2 to 1 Good = 1 to 2 Excellent = 0 to 1	Pavement conditions often vary across the project limits, and therefore scores have a range. Excellent current condition may score a 1 if project is not expected to be programmed for several years.	Preservation; Safety; Resiliency & reliability; Economic Vitality. Contributes to meeting Pavement Performance Measure Targets of 70% Interstate or 30% Non-Interstate NHS Pavements in Good Condition and/or 4% max. Interstate or 30% max. Non-Interstate Pavements in Poor Condition Statewide
B. Magnitude of improvement of other infrastructure	Types and number of upgrades	Major Upgrade such as widening a bridge = 3 Multiple upgrades from list of drainage improvements, new sidewalks, new signals, signal upgrades, adding turn lanes, etc. = 3 to 2 One or two of above upgrades = 2 to 1 No Upgrades = 0		Preservation; Safety; Resiliency & reliability; Accessibility & mobility; Environmental and economic sustainability; Enhance travel & tourism; Note that all roadway projects consider drainage improvements.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Mobility				
A. Effect on magnitude and duration of congestion	Magnitude of current congestion, measured by Level of Service, traffic delays, or queue lengths, if available. If there is not currently congestion, then score is zero unless project causes congestion.	Significant reduction in congestion = 3 Moderate reduction in congestion = 2 Small reduction in congestion = 1 No change in congestion = 0 Small increase in congestion = -1 Moderate increase in congestion = -2 Significant increase in congestion = -3	If there is not currently congestion, then score is zero unless project causes new congestion.	Economic Vitality; Accessibility and Mobility; Resiliency and reliability; Enhance travel and tourism. Contributes to meeting System Performance Measure Targets of 68% Interstate or 80% Non-Interstate NHS person-miles travelled that are reliable Statewide and/or 1.85 Truck Travel Time Reliability Index Statewide
B. Effect on travel time and connectivity / access	Types and numbers of upgrades, such as, improves travel time by widening shoulders, or signal improvements; provides new access, connects existing trails, etc.	Major Upgrade such as providing new roadway access = 3 Multiple upgrades from signal improvements, new sidewalks, adding turn lanes, new trail = 3 to 2 One or two of above upgrades, or new = 2 to 1 No Upgrades = 0	Additional point (not above 3) if providing connectivity between schools, businesses, and other activity centers.	Economic Vitality; Accessibility and Mobility; Resiliency and reliability; Connectivity; Enhance travel and tourism.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Mobility (Cont.)				
C. Effect on other modes using the facility	Types and numbers of upgrades to Other modes (means of travel)	Major Upgrade for Other mode of transportation = 3 Multiple upgrades from adding bike lanes, new sidewalks, wheelchair ramps, proximity to transit facilities = 3 to 2 One or two of above upgrades = 2 to 1 No Upgrades to Other modes = 0		Economic Vitality; Safety; Security; Accessibility and Mobility; Environmental and economic sustainability; Connectivity; Resiliency and reliability; Enhance travel and tourism. Contributes to meeting System Performance Measure Target of 34.5% Non-SOV travel on the NHS in the UZA
D. Effect on regional and local traffic	Whether affects traffic outside of the project limits locally, and beyond that, regionally	Is on the NHS, a State numbered route, connector, or highly traveled local road; and: Substantially improves traffic regionally = 3 Moderately improves traffic regionally = 2 to 1 Substantially or moderately improves traffic locally = 2 to 1 Neutral = 0 Negative scores if adversely affects traffic to the degrees and geography above.		Economic Vitality; Accessibility and Mobility; Efficient System Management; Enhance travel and tourism.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Safety and Security				
A. Effect on crash rate compared to State average	Whether location is designated a State defined Crash Cluster location (HSIP eligible) and the EPDO score assigned by that performance measure, or crash rate compared to State average, other safety concerns	High EPDO score, crash cluster, Top 100 crash locations = 3 Higher than average crash rate/ EPDO score = 2 Lower than average crash rate, but safety concerns are being addressed = 1 No effect on crash rate = 0		Safety; Efficient System Management; Resiliency and Reliability. Contributes to meeting HSIP and Safety Performance Measure Targets for number of fatalities and serious injuries, rates of fatality and serious injury Statewide on all public roads.
B. Effect on bicycle and pedestrian safety	Includes improvements that effect bicycle and pedestrian safety or is detrimental to pedestrian bicycle safety.	Major Upgrade, separate bike lane, or shared use path = 3 Multiple upgrades from list of: widening shoulders for bikes; new or improved sidewalks; new pedestrian signals; wheelchair ramps; etc. = 3 to 2 One or two of above upgrades = 2 to 1 No Upgrades = 0 Could use negative scores if detrimental to bike / pedestrian safety	Additional point (not above 3) if improvements are near schools or other areas frequented by bicyclists and/ or pedestrians, or there is a history of crashes involving bikes and/or pedestrians.	Safety; Resiliency and Reliability; Enhance Travel and Tourism. Contributes to meeting HSIP and Safety Performance Measure Targets for Number of non-motorized fatalities and serious injuries Statewide on all public roads.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Safety and Security (Cont.)				
C. Effect on transportation security and evacuation	Is on the NHS. Is a community designated evacuation route. Is within 10 miles of a nuclear power plant.	Will significantly improve travel along an evacuation route = 3 Is an evacuation route within 10 miles of a nuclear power plant, or is on the NHS and improves travel = 2 Is an evacuation route or Is within 10 miles of a nuclear power plant, or in on the NHS = 1 Is not any of the 3 listed in the data column = 0		Security; Safety.
Community Effects and Support				
A. Residential effects: ROW, noise, aesthetic, cut through traffic, and other.	Degree of effect on residential aspects.	Improves these aspects: Significantly = 3 Moderately = 2 Slightly = 1 No effect on these aspects = 0 Creates negative effects from these aspects: Slightly = -1 Moderately = -2 Significantly = -3		Environmental Sustainability;

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Community Effects and Support (Cont.)				
B. Public, local government, legislative, and regional support	Degree of support.	Improves these aspects: Greatly Supported = 3 Moderately Supported = 2 Somewhat Supported = 1 Not Supported, or unknown = 0 Some Opposition = -1		
C. Effect on service to minority or low-income neighborhoods. (Title VI and EJ)	Increased or decreased service to Title VI and EJ neighborhoods	Improves service to Title VI or EJ neighborhoods: Significantly = 3 Moderately = 2 Slightly = 1 No effect on Title VI or EJ neighborhood = 0 Slightly decreased service = - 1 Moderately decreased service = - 2 Significantly decreased service = - 3		Quality of Life; Accessibility and Mobility; Resiliency and Reliability; Enhance Travel and Tourism.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Community Effects and Support (Cont.)				
D. Other impacts / benefits to minority or low-income neighborhoods. (Title VI and EJ)	Number / degree of positive or negative impacts to Title VI and EJ neighborhoods	Positive Impacts to Title VI or EJ neighborhoods: Significant = 3 Moderate = 2 Slight = 1 No effect on Title VI or EJ neighborhood = 0 Negative Impacts to Title VI or EJ neighborhoods: Slight = - 1 Moderate = - 2 Significant = - 3		Quality of Life.
E. Effect on development and redevelopment of housing stock	Number / degree of positive or negative effects on development and redevelopment of housing stock	Positive Impacts to development / redevelopment of housing stock: Significant = 3 Moderate = 2 Slight = 1 No effect on development or redevelopment of housing stock = 0 Negative Impacts to development / redevelopment of housing stock: Slight = - 1 Moderate = - 2 Significant = - 3		Economic Vitality; Quality of Life.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Land Use and Economic Development				
A. Business effects: ROW, noise, traffic, parking, freight access and other.	Degree of effect on business aspects.	Improves these aspects: Significantly = 3 Moderately = 2 Slightly = 1 No effect on these aspects = 0 Creates negative effects from these aspects: Slightly = -1 Moderately = -2 Significantly = -3		Economic Vitality; Accessibility and Mobility.
B. Sustainable development effects. Consistent with Merrimack Valley Priority Growth Strategy (MVPGS).	Number / degree of positive or negative effects on sustainable development and proximity to State and/or Regional Priority Development Areas (PDA)	Positive Impacts to sustainable development: Significant = 3 Moderate = 2 Slight = 1 No effect on development or redevelopment of housing stock = 0 Negative Impacts to development / redevelopment of housing stock: Slight = - 1 Moderate = - 2 Significant = - 3	Additional points, (not above 3) if located in or near a State or Regional Priority Development Area	Economic Vitality; Consistency with State and local planned growth.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Land Use and Economic Development (Cont.)				
C. Consistent with regional land-use and economic development plans and Merrimack Valley Priority Growth Strategy (MVPGS).	Degree of consistency with regional plans	Consistent with regional plans: Significantly = 3 Moderately = 2 Slightly = 1 Neutral = 0 Not Consistent with regional Plans: Slightly = - 1 Moderately = - 2 Significantly = - 3	Additional points (not above 3) if located in or near a Regional Priority Development Area	Economic Vitality; Consistency with State and local planned growth and economic development plans.
D. Effect on job creation.	Estimated job creation	Effect on job creation: Significant = 3 Moderate = 2 Slight = 1 Neutral = 0 Elimination of jobs: Slight = - 1 Moderate = - 2 Significant = - 3		Economic Vitality.

TEC Element	Data	Scoring	Addi-tional Notes	Planning Factors Considered
Environmental Effects				
A. Air Quality / Climate effects	Green House Gas Analysis Results	Effect on Air Quality: Quantified decrease in emissions = 2 or 1 Qualitative decrease in emissions = 1 No effect on emissions = 0 Qualitative increase in emissions = -1 Quantified increase in emissions = - 2 or -1 Climate Effects Resiliency: A culvert is being widened = 1 A facility (ex. bridge, road or trail) in a flood prone area is being raised = 1		Protect and Enhance the Environment. Preservation; Resiliency & reliability; Reduce or mitigate stormwater impacts; Contributes to meeting CMAQ Performance Measure Target of 18.3 Annual Hours of Peak Hour Excessive Delay (PHED) per Capita in the UZA
B. Water Quality / supply effects; wetlands effects.	Number / degree of positive or negative effects on water quality / supply effects; wetlands effects.	Effect on Water Quality / supply and wetlands: Positive effect: Significant = 3 Moderate = 2 Slight = 1 Neutral = 0 Negative Effect: Slight = - 1 Moderate = - 2 Significant = - 3		Protect and Enhance the Environment; Reduce or mitigate stormwater impacts.

TEC Element	Data	Scoring	Additional Notes	Planning Factors Considered
Environmental Effects (Cont.)				
C. Historic and cultural resource effects	Proximity / degree of positive or negative effects on historic and cultural resources	Positive effect on historic and cultural resources: Significant = 3 Moderate = 2 Slight = 1 Neutral = 0 Negative Effect: Slight = - 1 Moderate = - 2 Significant = - 3	Often considers improved access to nearby resources.	Economic Vitality; Accessibility and Mobility; Quality of Life; Enhance Travel and Tourism.
D. Effect on wildlife habitat and endangered species.	Location of project in State Estimated Habitat of Rare Wildlife or State Priority Habitat of Rare Species	Positive effect on wildlife or endangered species in a State designated area: Significant = 3 Moderate = 2 Slight = 1 Not in a wildlife or endangered species area = 0 Negative effect on wildlife or endanger species in a State designated area.: Slight = - 1 Moderate = - 2 Significant = - 3		Protect and Enhance the Environment.

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. 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. 4. 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 2021-2025 Transportation Improvement Program was developed in accordance with the Public Participation Process established for the Merrimack Valley Metropolitan Planning Organization (MVMPO). The MVMPO amended its current Public Involvement Process in March of 2017, it is contained in the MVMPO Public Participation Plan as Amended through March 2017 on the MVPC website under Transportation Reports. 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 Public Participation Plan as amended through March 2017, reflects the consultation requirements identified in the FAST Act of 2015 and prior federal transportation authorizations, and the existing transportation planning regulations developed by the U.S. Department of Transportation for the development of Regional Transportation Plans and Transportation Improvement Programs. This document identifies a number of stakeholders to be consulted in developing these documents. In developing the Draft FFYs 2021-2025 Transportation Improvement Program, all MVMPO stakeholders were given notice that the process of developing the FFYs 2021-

2025 TIP was beginning. Stakeholders were also notified of the availability of the draft 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 the FAST Act of 2015 and prior federal transportation authorizations, 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.

Individuals, including:

- Interested individuals, business persons
- Merrimack Valley Transportation Committee (MVTC) members
- Libraries
- 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

- 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

Representatives of users of public transportation, including:

- American Training, Inc.
- Cambridge College
- Community Action Incorporated (CAI)
- Emmaus, Inc.
- Elder Services of the Merrimack Valley
- Local Senior Centers/Councils on Aging
- Northeast Independent Living Program
- Merrimack College
- Merrimack Valley Hospice
- Merrimack Valley Workforce Investment Board, Inc.
- Northern Essex Community College
- Office of Employment Services

Representatives of bicyclist and pedestrian advocacy organizations, including:

- Andover Trails Committee
- Bay Circuit Alliance
- Coastal Trails Coalition
- Essex National Heritage Commission
- Essex County Trail Association
- Groveland Open Space and Recreation Committee

- MassBike
- Merrimack Valley Off-Road Trails Committee

Representatives for the community of individuals with disabilities, including:

- Executive Office of Health and Human Services
- Northeast Independent Living Program
- Department of Mental Health
- Massachusetts Commission for the Blind
- Area Nursing Homes
- United Cerebral Palsy
- CLASS Inc.
- Fidelity House
- Association of Retarded Persons (ARC)

Organizations and facilities that serve low-income and minority households who traditionally have been underserved by existing transportation systems and may face challenges accessing employment and other services, including:

- MVRTA Transit Centers in Amesbury, Haverhill and Lawrence (post notices)
- Social Security Offices
- Employment Offices (post notices)
- Ethnic, Civic/Social, Faith-Based and Veterans Organizations
- Merrimack Valley Goodwill
- Area Hospitals
- Salvation Army
- Groundwork Lawrence
- Lawrence Community Works
- United Way of the Merrimack Valley
- Methuen Arlington Neighborhood, Inc.
- YMCA/YWCA

Agencies and officials responsible for other planning activities within the MPA that are affected by transportation, including:

a. State and local planned growth:

1. Area Planning Boards
2. Mass Development
3. Merrimack Valley Transportation Management Association
4. The Junction Transportation Management Organization

b. Economic development:

1. Chambers of Commerce
2. Economic Development Administration
3. Local Community Development Directors
4. Merrimack Valley Economic Development Council

c. Environmental agencies and federal lands:

1. Andover Village Improvement Society (AVIS)
2. Essex County Greenbelt Association
3. Local Conservation Commissions
4. MassRiverways
5. Merrimack River Watershed Council
6. National Park Service
7. Powwow River Watershed Association
8. Parker River Clean Water Association
9. Shawsheen River Watershed Association
10. Trustees of Reservations
11. U.S. Environmental Protection Agency (EPA)
12. U.S. Fish and Wildlife Service

d. Airport operations:

1. Lawrence Airport Commission

e. Other Interested Parties

1. Conservation Law Foundation

The notices were sent directly to almost 500 email addressees representing these groups. Notices were put in newspapers and on cable community television directing the public to the MVPC website which contained the notice and the materials for review.

In addition to these direct mailings, and in accordance with this process, public notice of the Draft FFYs 2021-2025 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 on the MVPC website from May 1, 2020 through May 21, 2020. It said that comments would be received through May 21, 2020 and that two separate Virtual public hearings on the document would take place on May 13, 2020 from 1:00 p.m. to 2:00 p.m. and from 6:00 p.m. to 7:00 p.m. The meetings were held Virtually due to COVID-19 Virus restrictions. The MVMPO will summarize comments that are received during the 21-day review and comment period and will include this summary in the Final FFYs 2021-2025 TIP.

Public input in developing the TIP was sought at the following meetings in 2019 and 2020:

- October 23, 2019, January 22, 2020, February 26, 2020, March 25, 2020 (held Virtually due to COVID-19 Virus restrictions), April 22,2020 (held Virtually due to COVID-19 Virus restrictions) and May 27,2020 (held Virtually due to COVID-19 Virus restrictions) MVMPO Meetings;
- February 6, 2020, March 5, 2020 and May 7, 2020 (held Virtually due to COVID-19 restrictions) MVRTA Advisory Board meetings held at the MVRTA Office;
- February 20, 2020, April 16, 2020 (held Virtually due to COVID-19 Virus restrictions) and May 21, 2020 (held Virtually due to COVID-19 Virus restrictions) Merrimack Valley Planning Commission (MVPC) meetings;
- February 12, 2020 DPW Directors/Stormwater Collaborative Meeting
- May 1, 2020 Community Planners Meeting (held Virtually due to COVID-19 Virus restrictions)

The above meetings were held at the Merrimack Valley Planning Commission unless otherwise stated.

Part A. 5. Amendment/ Adjustment Procedures

Changes being made starting with the FFYs 2021 to 2025 TIP

A few changes have been made to the TIP Amendment/ Adjustment procedures beginning with the FFYs 2021 to 2025 TIP to align with MassDOT's Amendment procedures for the State Transportation Improvement Program (STIP). The changes are:

- Cost change thresholds constituting a Major change requiring an Amendment will apply to decreases in cost, as well as increases, approved by MassDOT Office of Transportation Planning (OTP), and will apply to projects in any Fiscal Year, not just Fiscal Year 1;
- Moving a project between any years, not just advancement of other than a Fiscal Year 2 project, requires an Amendment.
- Major change in project/ project phase initiation dates or design has been changed to major change in project scope large enough to necessitate an additional review by MassDOT's Project Review Committee (PRC) typically accompanied by major project cost change.
- Adding Exceptions to these procedures and Exception to 21-day review period. (See final paragraph of the Procedures below.)

Resulting Procedures

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

Adjustments

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:

- 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 if project cost is more than $5 million dollars;
- Changing funding amounts that are an increase of less than $500,000 if project cost is $5 million dollars or less;
- Changing funding sources.

Amendments

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

- Moving a currently programmed project earlier or later than an originally programmed year;
- MassDOT Office of Transportation Planning (OTP) approved ten percent or more increases, or decreases, in the construction cost estimate for a project costing more than $5 million dollars;
- MassDOT OTP approved project cost increase, or decrease, of $500,000 or more, in the construction cost estimate for a project costing $5 million dollars or less;
- Adding a new project.
- Deleting a project
- Major change in project scope large enough to necessitate an additional review by MassDOT's Project Review Committee (PRC) – typically accompanied by major project cost change.
- Exceptions

  Although the MVMPO typically holds a 21-day public comment period for amendments, in the event of extenuating circumstances beyond the agency's control, the comment period may be shortened or waived in consultation with FHWA Division Office and/or the FTA Regional Office. Additionally, MassDOT may make exceptions to the procedures outlined above and treat amendments as adjustments and/or adjustments as administrative modifications, but these exceptions will also require coordination with and concurrence by MassDOT's federal partners and the affected MPO.

Part A. 6. 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:

Highway High Priority Projects	**Status**
Amesbury/Newburyport – Rehabilitation of I-95 Whittier Bridge	Project Complete
Andover – Design, Engineering and Construction at I-93 The Junction Interchange, (Andover, Tewksbury, and Wilmington)	Project Deactivated
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.	Project Complete
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

Transit Projects for Bus and Bus-Related Facilities and Clean Fuels Grant Program	**Status**
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 Complete

Part A. 7. 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 2021-2025 TIP using this Advance Construction (AC) method:

Haverhill –	Bridge Replacement, H-12-039, I-495 (NB & SB) over Merrimack River
North Andover-	Corridor Improvements on Route 114, between Rt 125 (Andover St) & Stop & Shop Driveway
Haverhill -	Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River
Haverhill -	Bridge Replacement, H-12-007 & H-12-025, Bridge Street (SR 125) over Merrimack River and the Abandoned B&M RR (Proposed Bikeway)
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)

Part A. 8. 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 2021 -2025 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)

Surface Transportation Block Grant Program (STBG) (STP) – (also known as the Surface Transportation Program (STP) from previous legislation) - funding for any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.

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 2021-2025 TIP.

Section 5307 (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 (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 (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%

Section 5339 (continued in FAST Act) - provides capital funds, through the State, for bus and bus related equipment and facilities.

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. MassDOT is aligning the FFYs 2021 to 2025 Statewide Transportation Improvement Program (STIP) with the MassDOT Capital Investment Plan (CIP). The CIP identifies three capital planning priorities: reliability, modernization and expansion investments. The STIP will now align program names with CIP investment priorities as follows:

Reliability

- Bridge program (including investments in inspections, systematic maintenance, on-system NHS bridges, on-system non-NHS bridges, and off-system bridges)
- Interstate pavement program
- Non-Interstate DOT pavement program
- Roadway improvements program
- Safety improvements program

Modernization

- ADA retrofits program
- Intersection improvements program
- Intelligent Transportation Systems program
- Roadway reconstruction program

Expansion

- Bicycles and Pedestrians program
- Capacity program

For the FFYs 2021 to 2025 TIP, the Regional Target funding amounts, distributed via statewide formula to the regions across the state, are initially programmed by the regions as STBG (also known as STP) funding category projects and MassDOT will inform regions if projects are to be partitioned by the HSIP, CMAQ and TAP categories.

<u>Section 1A / Regionally Prioritized Projects</u>

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

Section 1B / Earmark or Discretionary Grant Funded Projects (Provided by MassDOT)

- Federal-Aid Earmark or Discretionary Grant Funded Projects

Section 2A / State Prioritized Reliability Projects (Provided by MassDOT)

- Bridge Program / Inspections
- Bridge Program / Off-System
- Bridge Program / On-System (NHS)
- Bridge Program / On-System (Non-NHS)
- Bridge Program / Systematic Maintenance
- Interstate Pavement
- Non-Interstate Pavement
- Roadway Improvements
- Safety Improvements

Section 2B / State Prioritized Modernization Projects (Provided by MassDOT)

- ADA Retrofits
- Intersection Improvements
- Intelligent Transportation Systems
- Roadway Reconstruction

Section 2C / State Prioritized Expansion Projects (Provided by MassDOT)

- Bicycles and Pedestrians
- Capacity

Section 3 / Planning / Adjustments / Pass-throughs (Provided by MassDOT)

- Planning / Adjustments / Pass-throughs

Section 4 / Non-Federally Aided Projects (Provided by MassDOT)

- Non-Federal Aid

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.

STIP Program – STIP program names as defined in the Organization of Highway Project Listings section above.

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 at the beginning of Part A.8.);

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;

Additional Information - a) Planning / Design / Construction; b) total project cost and funding sources used; c) advance construction status; d) MPO project score; e) name of entity receiving a transfer; f) name of entity paying the non-State Non-Federal match; g) earmark details; h) TAP project proponent; i) other information.

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

Organization of Project Listings – Transit Projects

Each transit project in the TIP contains the following information:

Project Number – Transit Project number from MassDOT

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

Line Item – The FTA Line Item number

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

Carry Over – indicates whether Carry over funding is being used;

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

RTACAP – Regional Transit Authority State Capital Assistance - portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds in order to receive Federal Funds, coming from State source;

SCA – State Contract Assistance - portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds in order to receive Federal Funds, coming from State source;

TDC –Transportation Development Credits, and

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

Total - estimated total cost of project.

Part B. Project Listings
Highway Projects

Merrimack Valley Region Program

Program	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	District	Funding Source	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information ▼ ***Present information as follows, if applicable:*** **a)** Planning / Design / or Construction; **b)** total project cost and funding sources used; **c)** advance construction status; **d)** MPO project score; **e)** name of entity receiving a transfer; **f)** name of entity paying the non-state non-federal match; **g)** earmark details; **h)** TAP project proponent; **i)** other information
STIP: 2021 - 2025 (D)										
Federal Fiscal Year	2021									
Section 1A / Regionally Prioritized Projects							$10,346,830	$8,277,464	$2,069,366	
Bicycle and Pedestrian	608298	Merrimack Valley	Groveland	GROVELAND- GROVELAND COMMUNITY TRAIL, FROM MAIN STREET TO KING STREET	4	STBG	$1,984,861	$1,587,889	$396,972	a) Construction; b) $1,984,861 STBG; d) TEC = 4.87 out of 18.
Roadway Reconstruction	608761	Merrimack Valley	Haverhill	HAVERHILL- INTERSECTION RECONSTRUCTION ON ROUTE 108 (NEWTON ROAD) AT ROUTE 110 (KENOZA AVENUE AND AMESBURY ROAD)	4	STBG	$1,980,067	$1,584,054	$396,013	a) Construction; b) $1,980,067 STBG; d) TEC = 8.87 out of 18.
Roadway Reconstruction	609251	Merrimack Valley	Lawrence	LAWRENCE- INTERSECTION IMPROVEMENTS AT SOUTH BROADWAY (ROUTE 28) AND MOUNT VERNON STREET	4	STBG	$1,013,739	$810,991	$202,748	a) Construction; b) $1,013,739 STBG; d) TEC = 7.02 out of 18.
Bicycle and Pedestrian	610663	Merrimack Valley	Newburyport	NEWBURYPORT- RIVERFRONT CLIPPER CITY RAIL TRAIL CONSTRUCTION	4	STBG	$1,900,802	$1,520,642	$380,160	a) Construction; b) $1,900,802 STBG; d) TEC = 7.00 out of 18.
Flex to FTA	S10777	Merrimack Valley		MVRTA FLEX TO FTA TO REPLACE YR 2009 BUSES WITH NEW BUSES DELIVERY 2022 (7 of 9)		STBG	$3,467,361	$2,773,889	$693,472	b) $3,467,361 STBG; e) FTA.
						STBG Programmed	$10,346,830	$8,277,464	$2,069,366	
						Total Programmed for Merrimack Valley Region Projects*	$10,346,830	$8,277,464	$2,069,366	
						Program Target for Merrimack Valley Region Projects	$10,778,653	$8,622,922	$2,155,731	
						Target Funds Available for Merrimack Valley Region Projects	$431,823	$345,458	$86,365	
Section 2A / State Prioritized Reliability Projects							$15,305,880	$12,244,704	$3,061,176	
Bridge On-system NHS	605306	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	$15,305,880	$12,244,704	$3,061,176	Project ACd over 2018-2023.

* Only includes funds counting against obligation authority

Merrimack Valley Region Program

Program	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	District	Funding Source	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information ▼ *Present information as follows, if applicable:* **a)** Planning / Design / or Construction; **b)** total project cost and funding sources used; **c)** advance construction status; **d)** MPO project score; **e)** name of entity receiving a transfer; **f)** name of entity paying the non-state non-federal match; **g)** earmark details; **h)** TAP project proponent; **i)** other information
STIP: 2021 - 2025 (D)										
Federal Fiscal Year	2022									
Section 1A / Regionally Prioritized Projects							$2,578,160	$2,062,528	$515,632	
Intersection Improvements	609509	Merrimack Valley	Lawrence	LAWRENCE- INTERSECTION IMPROVEMENTS AT MERRIMACK STREET AND SOUTH BROADWAY (ROUTE 28)	4	STBG	$1,610,960	$1,288,768	$322,192	a) Construction; b) $1,610,960 STBG (inflated 4% from 2021 cost); d) TEC = 10.7 out of 18.
Intersection Improvements	610658	Merrimack Valley	Methuen	METHUEN- INTERSECTION IMPROVEMENTS AT RIVERSIDE DRIVE AND BURNHAM ROAD	4	STBG	$967,200	$773,760	$193,440	a) Construction; b) $967,200 STBG (inflated 4% from 2021 cost); d) TEC = 6.52 out of 18.
						STBG Programmed	$2,578,160	$2,062,528	$515,632	
						Total Programmed for Merrimack Valley Region Projects*	$2,578,160	$2,062,528	$515,632	
						Program Target for Merrimack Valley Region Projects	$10,998,131	$8,798,505	$2,199,626	
						Target Funds Available for Merrimack Valley Region Projects	$8,419,971	$6,735,977	$1,683,994	
Section 2A / State Prioritized Reliability Projects							$28,010,883	$22,408,706	$5,602,177	
Non-Interstate Pavement	608494	Merrimack Valley	Multiple	NEWBURY- NEWBURYPORT- SALISBURY- RESURFACING AND RELATED WORK ON ROUTE 1	4	NHPP	$9,807,200	$7,845,760	$1,961,440	a) Construction; b) 9,807,200 NHPP (inflated 4% from 2021 cost).
Bridge On-system NHS	605306	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	$18,203,683	$14,562,946	$3,640,737	Project ACd over 2018-2023.
Section 2C / State Prioritized Expansion Projects							$2,520,436	$2,016,349	$504,087	
Bicycle and Pedestrian	607541	Merrimack Valley	Multiple	GEORGETOWN- BOXFORD- BORDER TO BOSTON TRAIL, FROM GEORGETOWN ROAD TO WEST MAIN STREET (ROUTE 97)	4	CMAQ	$2,520,436	$2,016,349	$504,087	a) Construction; b) $2,423,496 CMAQ (inflated 4% from 2021 cost); d) TEC = 5.22.

* Only includes funds counting against obligation authority

Merrimack Valley Region Program

STIP: 2021 - 2025 (D)

Program	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	District	Funding Source	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information ▼ *Present information as follows, if applicable:* **a)** Planning / Design / or Construction; **b)** total project cost and funding sources used; **c)** advance construction status; **d)** MPO project score; **e)** name of entity receiving a transfer; **f)** name of entity paying the non-state non-federal match; **g)** earmark details; **h)** TAP project proponent; **i)** other information
Federal Fiscal Year	2023									
Section 1A / Regionally Prioritized Projects							$11,238,340	$8,990,672	$2,247,668	
Roadway Reconstruction	602202	Merrimack Valley	Salisbury	SALISBURY- RECONSTRUCTION OF ROUTE 1 (LAFAYETTE ROAD)	4	STBG	$6,837,284	$5,469,827	$1,367,457	a) Construction; b) $6,837,285 (Inflated 8% from 2021 cost); d) TEC = 8.93 out of 18.
Roadway Reconstruction	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	STBG	$4,401,056	$3,520,845	$880,211	a) Construction; b) $27,061,794 (Inflated 8% from 2021 cost) = FFY 2023 ($4,401,056) + FFY 2024 ($11,385,638) + FFY 2025 ($11,119,839)+ beyond 2025 ($155,261); c) A/C Years 1-4 FFY 2023- 2026; d)TEC = 11.32 out of 18.
						STBG Programmed	$11,238,340	$8,990,672	$2,247,668	
						Total Programmed for Merrimack Valley Region Projects*	$11,238,340	$8,990,672	$2,247,668	
						Program Target for Merrimack Valley Region Projects	$11,238,340	$8,990,672	$2,247,668	
						Target Funds Available for Merrimack Valley Region Projects	$0	$0	$0	
Section 2A / State Prioritized Reliability Projects							$30,859,874	$24,687,899	$6,171,975	
Bridge On-system NHS	605306	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	$12,994,233	$10,395,386	$2,598,847	Project ACd over 2018-2023.
Bridge On-system NHS	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	$17,865,641	$14,292,513	$3,573,128	Project ACd over 2023-2026.
Section 2C / State Prioritized Expansion Projects							$16,087,005	$12,869,604	$3,217,401	
Bicycle and Pedestrian	608930	Merrimack Valley	Lawrence	LAWRENCE- LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	4	CMAQ	$16,087,005	$12,869,604	$3,217,401	a) Construction; b) $16,087,005 CMAQ (inflated 8% from 2021 cost); d) TEC = 11.25 out of 18.

* Only includes funds counting against obligation authority

Merrimack Valley Region Program

STIP: 2021 - 2025 (D)

Program	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	District	Funding Source	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information ▼ *Present information as follows, if applicable:* **a)** Planning / Design / or Construction; **b)** total project cost and funding sources used; **c)** advance construction status; **d)** MPO project score; **e)** name of entity receiving a transfer; **f)** name of entity paying the non-state non-federal match; **g)** earmark details; **h)** TAP project proponent; **i)** other information
Federal Fiscal Year	2024									
Section 1A / Regionally Prioritized Projects							$11,385,638	$9,108,510	$2,277,128	
Roadway Reconstruction	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	STBG	$11,385,638	$9,108,510	$2,277,128	a) Construction; b) $27,061,794 (Inflated 8% from 2021 cost) = FFY 2023 ($4,401,056) + FFY 2024 ($11,385,638) + FFY 2025 ($11,119,839)+ beyond 2025 ($155,261); c) A/C Years 1-4 FFY 2023- 2026; d)TEC = 11.32 out of 18.
						STBG Programmed	$11,385,638	$9,108,510	$2,277,128	
						Total Programmed for Merrimack Valley Region Projects*	$11,385,638	$9,108,510	$2,277,128	
						Program Target for Merrimack Valley Region Projects	$11,385,638	$9,108,510	$2,277,128	
						Target Funds Available for Merrimack Valley Region Projects	$0	$0	$0	
Section 2A / State Prioritized Reliability Projects							$76,149,623	$60,919,698	$15,229,925	
Bridge On-system NHS	606522	Merrimack Valley	Andover	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	NHPP	$15,056,661	$12,045,329	$3,011,332	Project ACd over FFY 2024-2028.
Bridge On-system NHS	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	$43,180,558	$34,544,446	$8,636,112	Project ACd over 2023-2026.
Bridge On-system NHS	605304	Merrimack Valley	Haverhill	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	NHPP	$17,912,404	$14,329,923	$3,582,481	Project ACd over 2024-2028.
Section 2C / State Prioritized Expansion Projects							$5,685,060	$4,548,048	$1,137,012	
Bicycle and Pedestrian	607542	Merrimack Valley	Multiple	GEORGETOWN- NEWBURY- BORDER TO BOSTON TRAIL (NORTHERN GEORGETOWN TO BYFIELD SECTION)	4	CMAQ	$5,685,060	$4,548,048	$1,137,012	a) Construction; b) $5,685,060 CMAQ (inflated 12% from 2021 cost); d) TEC = 5.22 out of 18.

* Only includes funds counting against obligation authority

Merrimack Valley Region Program

STIP: 2021 - 2025 (D)

Program	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	District	Funding Source	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information ▼ *Present information as follows, if applicable:* **a)** Planning / Design / or Construction; **b)** total project cost and funding sources used; **c)** advance construction status; **d)** MPO project score; **e)** name of entity receiving a transfer; **f)** name of entity paying the non-state non-federal match; **g)** earmark details; **h)** TAP project proponent; **i)** other information
Federal Fiscal Year	2025									
Section 1A / Regionally Prioritized Projects							$11,119,839	$8,895,871	$2,223,968	
Roadway Reconstruction	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	4	STBG	$11,119,839	$8,895,871	$2,223,968	a) Construction; b) $27,061,794 (Inflated 8% from 2021 cost) = FFY 2023 ($4,401,056) + FFY 2024 ($11,385,638) + FFY 2025 ($11,119,839)+ beyond 2025 ($155,261); c) A/C Years 1-4 FFY 2023- 2026; d)TEC = 11.32 out of 18.
						STBG Programmed	$11,119,839	$8,895,871	$2,223,968	
						Total Programmed for Merrimack Valley Region Projects*	$11,119,839	$8,895,871	$2,223,968	
						Program Target for Merrimack Valley Region Projects	$11,119,839	$8,895,871	$2,223,968	
						Target Funds Available for Merrimack Valley Region Projects	$0	$0	$0	
Section 2A / State Prioritized Reliability Projects							$82,647,444	$66,117,955	$16,529,489	
Bridge On-system NHS	606522	Merrimack Valley	Andover	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	NHPP	$20,997,351	$16,797,881	$4,199,470	Project ACd over FFY 2024-2028.
Bridge On-system NHS	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	4	NHPP	$33,701,001	$26,960,801	$6,740,200	Project ACd over 2023-2026.
Bridge On-system NHS	605304	Merrimack Valley	Haverhill	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	NHPP	$27,949,092	$22,359,274	$5,589,818	Project ACd over 2024-2028.
Section 2B / State Prioritized Modernization Projects							$2,368,068	$2,131,261	$236,807	
Intersection Improvements	609392	Merrimack Valley	Rowley	ROWLEY- SAFETY IMPROVEMENTS AT ROUTE 1, CENTRAL AND GLEN STREETS	4	HSIP	$2,368,068	$2,131,261	$236,807	a) Construction; b) $2,368,068 HSIP (inflated 16% from 2021 cost; d) TEC = 4.08 out of 18.
						Merrimack Valley Region Total Program Summary	$306,303,080	$245,279,271	$61,023,809	

* Only includes funds counting against obligation authority

Part B. Project Listings (Cont.)

Transit Projects

TIP FFYs 2021 – 2025 Transit Projects
2021

FTA Section 5307										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008602	MVRTA	114211	SGR Replace 1 model yr 2016 supervisory vehicle		$38,320	$9,580	$0	$0	$0	$47,900
	MVRTA		Replace Model Yr 2009 buses delivery 2022 (2 of 9)		$495,337	$495,337				$990,674
RTD0009132	MVRTA	114409	SGR Replace Security Camera system at McGovern Center	2020 - $104,800	$104,800	$26,200				$131,000
RTD0008595	MVRTA	300901	OPERATING ASSISTANCE		$558,120	$0	$558,120	$0	$0	$1,116,240

TIP FFYs 2021 – 2025 Transit Projects
2021 (Cont.)

FTA Section 5307 (Cont.)										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008592	MVRTA	117A00	PREVENTIVE MAINTENANCE		$2,796,775	$0	$699,195	$0	$0	$3,495,970
RTD0008594	MVRTA	442400	SHORT RANGE TRANSIT PLANNING		$80,000	$0	$0	$0	$20,000	$100,000
RTD0009131	MVRTA	114305	Riverbank stabi-lization Con-struction	2020 - $1,400,265	$1,400,265	$350,065	$0	$0	$0	$1,750,330
RTD0008596	MVRTA	111215	Replace 16 Model Yr 2015 vans with new Delivery 2021		$590,240	$590,240	$0	$0	$0	$1,180,480

TIP FFYs 2021 – 2025 Transit Projects
2021 (Cont.)

FTA Section 5307 (Cont.)										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008593	MVRTA	117C00	NON-FIXED ROUTE ADA PARA SERVICE		$1,392,850	$0	$348,215	$0	$0	$1,741,065
				FTA Section 5307 Total	**$7,456,707**	**$1,471,422**	**$1,605,530**	**$0**	**$20,000**	**$10,553,659**
Non-Federal Aid										
Project Number	**Agency**	**Line Item**	**Project Description**		**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
	MVRTA		MVRTA FLEX TO FTA TO REPLACE YR 2009 BUSES WITH NEW BUSES DELIVERY 2022 (7 OF 9) (STBG MATCH ON HWY TIP PROJECT #S10777) (NON-FEDERAL AID)			$693,472				$693,472
				Non-Federal Aid Total		**$693,472**				**$693,472**

TIP FFYs 2021 – 2025 Transit Projects
2022

FTA Section 5307										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008609	MVRTA	114211	SGR Replace 2 model year 2016 supervi-sory vehicles		$78,190	$19,550	$0	$0	$0	$97,740
RTD0008597	MVRTA	117A00	PREVENTIVE MAINTENANCE		$2,889,070	$0	$722,265	$0	$0	$3,611,335
RTD0008599	MVRTA	442400	SHORT RANGE TRANSIT PLANNING		$80,000	$0	$0	$0	$20,000	$100,000
RTD0008600	MVRTA	300901	OPERATING ASSISTANCE		$644,945	$0	$644,945	$0	$0	$1,289,890
RTD0008598	MVRTA	117C00	NON-FIXED ROUTE ADA PARA SERVICE		$1,441,305	$0	$360,325	$0	$0	$1,801,630
Federal Aid Total					**$5,133,510**	**$19,550**	**$1,727,535**		**$20,000**	**$6,900,595**

TIP FFYs 2021 – 2025 Transit Projects
2023

FTA Section 5307										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008604	MVRTA	300901	OPERATING ASSISTANCE		$739,365	$0	$739,365	$0	$0	$1,478,730
RTD0008606	MVRTA	111202	Replace 4 Model Yr 2011 buses delivery 2023		$1,004,800	$1,004,800		$0	$0	$2,009,600
RTD0008960	MVRTA	114211	SGR Replace 1 model year 2017 supervisory vehicle		$40,265	$10,070	$0	$0	$0	$50,335
RTD0008608	MVRTA	442400	SHORT RANGE TRANSIT PLANNING		$80,000	$0		$0	$20,000	$100,000
RTD0008603	MVRTA	117A00	PREVENTIVE MAINTENANCE		$2,984,410	$0	$746,100	$0	$0	$3,730,510

TIP FFYs 2021 – 2025 Transit Projects
2023 (Cont.)

FTA Section 5307 (Cont.)										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008607	MVRTA	111215	Replace 6 model yr 2017 vans delivery 2023		$234,810	$234,810		$0	$0	$469,620
RTD0008605	MVRTA	117C00	NON-FIXED ROUTE ADA PARA SERVICE		$1,488,870	$0	$372,220	$0	$0	$1,861,090
				FTA Section 5307 Total	**$6,572,520**	**$1,249,680**	**$1,857,685**	**$0**	**$20,000**	**$9,699,885**

TIP FFYs 2021 – 2025 Transit Projects
2024

FTA Section 5307										
Project Number	**Agency**	**Line Item**	**Project De-scription**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008961	MVRTA	114211	SGR Replace 1 model year 2018 supervi-sory vehicle		$41,475	$10,370	$0	$0	$0	$51,845
RTD0008614	MVRTA	442400	SHORT RANGE TRANSIT PLANNING		$80,000	$0	$0	$0	$20,000	$100,000
RTD0008611	MVRTA	117000	PREVENTIVE MAINTENANCE		$2,894,615	$0	$723,650	$0	$0	$3,618,265
RTD0008613	MVRTA	117C00	Non-fixed Route ADA paratransit service		$1,444,205	$0	$361,050	$0	$0	$1,805,255
RTD0008610	MVRTA	111202	SGR Replace model yr 2011 Buses Delivery 2024 (4 of 8)		$1,049,485	$1,049,485				$2,098,970

TIP FFYs 2021 – 2025 Transit Projects
2024 (Cont.)

FTA Section 5307 (Cont.)										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008612	MVRTA	300901	OPERATING ASSISTANCE		$714,840	$0	$714,840	$0	$0	$1,429,680
				FTA Section 5307 Total	**$6,224,620**	**$1,059,855**	**$1,799,540**	**$0**	**$20,000**	**$9,104,015**

TIP FFYs 2021 – 2025 Transit Projects
2025

FTA Section 5307										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008963	MVRTA		PREVENTIVE MAINTENANCE		$2,952,505	$0	$738,125	$0	$0	$3,690,630
RTD0008965	MVRTA		NON-FIXED ROUTE ADA PARA SERVICE		$1,473,090	$0	$368,275	$0	$0	$1,841,365
RTD0008962	MVRTA		SHORT RANGE TRANSIT PLANNING		$80,000	$0	$0	$0	$20,000	$100,000
RTD0008964	MVRTA		OPERATING ASSISTANCE		$729,135	$0	$729,135	$0	$0	$1,458,270
RTD0008615	MVRTA		SGR Replace Model Yr 2012 Buses 4 of 8 Delivery 2025		$1,096,920	$1,096,920				$2,193,840

TIP FFYs 2021 – 2025 Transit Projects
2025 (Cont.)

FTA Section 5307 (Cont.)										
Project Number	**Agency**	**Line Item**	**Project Description**	**Carry Over**	**Federal Funds**	**RTACAP**	**SCA**	**TDC**	**Local Funds**	**Total**
RTD0008966	MVRTA		SGR Replace 1 model year 2019 supervisory vehicle		$42,305	$10,575	$0	$0	$0	$52,880
FTA Section 5307 Total					**$6,373,955**	**$1,107,495**	**$1,835,535**	**$0**	**$20,000**	**$9,336,985**

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Summary of Highway Project Listings by Town

Summary of Highway Projects by Town
(2021 to 2025 Regional Target Funds)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2021	Groveland	Groveland - Groveland Community Trail, from Main Street to King Street (# 608298)	$1,984,861
2021	Haverhill	Haverhill – Intersection Improvements at Rt 110 / Rt 108 (# 608761)	$1,980,067
2022	Lawrence	Lawrence – Intersection Improvements at Merrimack Street and South Broadway (Route 28) (# 609509)	$1,610,960
2021	Lawrence	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon Street (# 609251)	$1,013,739
2022	Methuen	Methuen – Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	$967,200
2021	Newburyport	Newburyport – Riverfront Clipper City Rail Trail Construction (# 610663)	$1,900,802
2023-2025	North Andover	North Andover - Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop Driveway (# 608095) *	$26,906,532*
2023	Salisbury	Salisbury – Reconstruction of Route 1 (Lafayette Road)	$6,837,284

* North Andover Route 114 is AC'd FFY 2023 to 2026, FFY 2026 = $ 155,262, Total Project Cost =$27,061,794

Summary of Highway Projects by Town
(2021 to 2025 Regional Target Funds)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2021	MVRTA	MVRTA – Flex to FTA to Replace Yr 2009 Buses with new Buses Delivery 2022 (7 of 9) (# S10777)	$3,467,361

Summary of Programmed Highway Funds by Town (2021 to 2025 Regional Target Funds)

Project Description	Total Cost Programmed
Groveland Total	**$1,984,861**
Haverhill Total	**$1,980,067**
Lawrence Total	**$2,624,699**
Methuen Total	**$967,200**
Newburyport Total	**$1,900,802**
North Andover Total	**$26,906,532**
Salisbury Total	**$6,837,284**
MVRTA Total	**$3,467,361**
Regional Total	**$46,668,806**

Summary of Highway Projects by Town
(2021 to 2025 Statewide and Regional Target Funds)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2024-2025	Andover	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) (# 606522)	$36,054,012*
2022	Georgetown / Boxford	Georgetown - Boxford Border to Boston Trail, from Georgetown Road to West Main Street (Route 97) (# 607541)	$2,520,436
2024	Georgetown / Newbury	Georgetown - Newbury Border to Boston Trail, (Northern Georgetown to Byfield Section) (# 607542)	$5,685,060
2021	Groveland	Groveland - Groveland Community Trail, from Main Street to King Street (# 608298)	$1,984,861
2024-2025	Haverhill	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) (# 605304)	$45,861,496
2021-2023	Haverhill	Haverhill - Bridge Replacement, H-12-039, I-495 (NB & SB) over Merrimack River (# 605306)	$46,503,796*
2023-2025	Haverhill	Haverhill - Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River (# 609466)	$94,747,200

* Andover (# 606522) is AC'd FFY 2024 to 2028, Total Project Cost =$131,458,071
Haverhill (# 605304) is AC'd FFY 2024 to 2028, Total Project Cost = $116,320,512
Haverhill (# 605306) is AC'd FFY 2018 to 2023, Total Project Cost = $108,833,832
Haverhill (# 609466) is AC'd FFY 2023 to 2026, Total Project Cost = $99,783,090

Summary of Highway Projects by Town
(2021 to 2025 Statewide and Target Funds) (Cont.)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2021	Haverhill	Haverhill – Intersection Reconstruction on Route 108 (Newton Road) at Route 110 (Kenoza Avenue and Amesbury Road) (# 608761)	$1,980,067
2021	Lawrence	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon Street (# 609251)	$1,013,739
2022	Lawrence	Lawrence – Intersection Improvements at Merrimack Street and South Broadway (Route 28) (# 609509)	$1,610,960
2023	Lawrence	Lawrence – Lawrence Manchester Rail Corridor (LMRC) Rail Trail (# 608930)	$16,087,005
2022	Methuen	Methuen – Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	$967,200
2022	Newbury - Newburyport - Salisbury	Newbury - Newburyport - Salisbury - Resurfacing and related work on Route 1 (# 608494)	$9,807,200
2021	Newburyport	Newburyport – Riverfront Clipper City Rail Trail Construction	$1,900,802

Summary of Highway Projects by Town
(2021 to 2025 Statewide and Target Funds) (Cont.)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2023-2025	North Andover	North Andover - Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop Driveway (# 608095)	$26,906,533*
2025	Rowley	Rowley – Safety Improvements at Route 1, Central and Glen Streets (# 609392)	$2,368,068
2023	Salisbury	Salisbury – Reconstruction of Route 1 (Lafayette Road) (# 602202)	$6,837,284
2021	MVRTA	MVRTA – Flex to FTA to Replace Yr 2009 Buses with new Buses Delivery 2022 (7 of 9) (#S10777)	$3,467,361

*North Andover (# 608095) is AC'd FFY 2023 to 2026, Total Project Cost =$27,061,794

Summary of Programmed Highway Funds by Town (2021 to 2025 Statewide and Regional Target Funds)

Project Description	Total Cost Programmed
Andover Total	**$36,054,012**
Boxford Total	**$1,260,218**
Georgetown Total	**$4,102,748**
Groveland Total	**$1,984,861**
Haverhill Total	**$189,092,559**
Lawrence Total	**$18,711,704**
Methuen Total	**$967,200**
Newbury Total	**$6,111,597**
Newburyport Total	**$5,169,869**
North Andover Total	**$26,906,533**
Rowley Total	**$2,368,068**
Salisbury Total	**$10,106,350**
MVRTA Total	**$3,467,361**
Regional Total	**$306,303,080**

Part C. Federal Requirements

Part C.1. Highway Program Financial Plan

The TIP must be financially constrained, meaning projects included in the TIP must have an identified funding source. Funding levels for Federal Fiscal Years 2021-2025 have been developed cooperatively between the State and the MPOs as part of the TIP development process. The following tables depict the resulting financial plan for each of the five fiscal years. FHWA provides the state with the expected Federal Funding available for each year of the TIP this estimated Title 23 Base Obligation Authority is listed first to which is added a “Planned redistribution request” estimated to be $50,000,000 each year of the TIP. (Toward the end of the FFY any state that has not spent their Federal Obligation Authority returns that authority, and the Federal government redistributes those funds to the other states.) The Total estimated Federal Funds available to Massachusetts is estimated to be between approximately 671 million dollars and 711 million dollars for each of FFYs 2021 to 2025. The State then subtracts annual debt service payments for the Accelerated Bridge Program (ABP) Grant Application Notes (GANs) which range from 82 million dollars to almost 94 million dollars for each year over the five years of the TIP. The State generally provides the 20% match required for the Federal funds resulting in estimated funds ranging from approximately 728 million dollars to approximately 763 million dollars available Statewide for highway program funding for each of the five years of the TIP.

MassDOT Highway Division, Office of Transportation Planning (OTP), and the Federal Aid Programming and Reimbursement Office (FAPRO) then decide the amount of funding needed for Statewide items such as Interstate Maintenance, district-wide contracts, planning and transportation demand management. Those funds are subtracted from the total and the remaining is available for regional priorities, which ranges from $243,332,161 in FFY 2021 to $257,035,098 in FFY 2025.

This funding is then allocated to MPOs based upon the existing Massachusetts Association of Regional Planning Agencies (MARPA) TIP target distribution formula. This “MARPA” formula is based mainly on each MPO’s road mileage and population. The MVMPO’s share is 4.4296%, resulting in the funding available for regional priorities to be; $10,778,653 in FFY 2021; $10,998,131 in FFY 2022; $11,238,340 in FFY 2023; $11,385,638 in FFY 2024 and $11,119,839 in FFY 2025.

In FFY 2017 MassDOT ended funding for the regional major infrastructure program after the I-91 Viaduct in Springfield project had 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.

FFY 2021–2025 STIP

2021–2025 BUDGET (Federal Aid + Match)

	2021 Current Obligation authority	2021 Proposed Obligation authority (91%)*	2022 Current Obligation authority	2022 Proposed Obligation authority (91%)*
Base obligation authority	$ 641,988,270.00	$ 621,541,829.00	$ 658,744,163.00	$ 634,503,827.00
Planned redistribution request	$ 50,000,000.00	$ 50,000,000.00	$ 50,000,000.00	$ 50,000,000.00
Total estimated funding available	**$ 691,988,270.00**	**$ 671,541,829.00**	**$ 708,744,163.00**	**$ 684,503,827.00**
ABP GANS Repayment	$ (85,190,000.00)	$ (82,375,000.00)	$ (89,590,000.00)	$ (86,470,000.00)
Total non-earmarked funding available (federal aid)	$ 606,798,270.00	$ 589,166,829.00	$ 619,154,163.00	$ 598,033,827.00
Total non-earmarked funding available (federal aid + match)	$ 750,612,944.18	$ 728,325,042.88	$ 766,455,220.10	$ 739,775,237.22
Planning and Pass-throughs (excluding EWO)	$ 47,887,887.47	$ 48,138,639.97	$ 47,887,887.47	$ 48,186,662.47
Funding for Regional Priorities**	$ 243,332,160.75	$ 243,332,160.75	$ 248,287,195.75	$ 248,287,195.75
Highway Division Programs***	$ 459,392,895.96	$ 436,854,242.16	$ 470,280,136.87	$ 443,301,379.00

FFY 2021–2025 STIP

2021–2025 BUDGET (Federal Aid + Match) (Cont.)

	2023 Current Obligation Authority	2023 Proposed Obligation authority (91%)*	2024 Current Obligation authority	2024 Proposed Obligation authority (91%)*
Base obligation authority	$ 676,662,004.60	$ 647,736,142.00	$ 689,684,332.90	$ 661,244,412.00
Planned redistribution request	$ 50,000,000.00	$ 50,000,000.00	$ 50,000,000.00	$ 50,000,000.00
Total estimated funding available	**$ 726,662,004.60**	**$ 697,736,142.00**	**$ 739,684,332.90**	**$ 711,244,412.00**
ABP GANS Repayment	$ (93,985,000.00)	$ (89,510,000.00)	$ (98,715,000.00)	$ (93,985,000.00)
Total non-earmarked funding available (federal aid)	$ 632,677,004.60	$ 608,226,142.00	$ 640,969,332.90	$ 617,259,412.00
Total non-earmarked funding available (federal aid + match)	$ 782,700,504.29	$ 752,059,445.48	$ 792,949,657.91	$ 763,212,630.54
Planning and Pass-throughs (excluding EWO)	$ 45,080,547.47	$ 45,428,785.47	$ 45,080,547.47	$ 45,479,733.47
Funding for Regional Priorities**	$ 253,709,791.53	$ 253,709,791.53	$ 257,035,097.92	$ 257,035,097.92
Highway Division Programs***	$ 483,910,165.28	$ 452,920,868.48	$ 490,834,012.52	$ 460,697,799.14

**Base Obligation Authority based on 2.1% growth rate from actual FFY 2020 apportionment and average of Fast Act Obligation Authority (91%) through FFY 2020*

***MPO TIP targets will be held harmless from the change in proposed Obligation Authority*

****MassDOT Highway Division programs (including EWO/Awards/Adjustments) need revised based on new ABP GANS schedule and proposed Obligation Authority*

FFY 2021–2025 STIP

2021–2025 BUDGET (Federal Aid + Match) (Cont.)

			2025 Proposed Obligation authority (91%)*
		Base obligation authority	$ 675,034,391
		Planned redistribution request	$ 50,000,000
		Total estimated funding available	$ 725,034,391
		ABP GANS Repayment	$ (122,185,000)
Total non-earmarked funding available			$ 602,849,391.00
Total non-earmarked funding available (federal aid + match)			$ 745,410,138.60
Planning and Pass-throughs (excluding EWO)			$ 45,479,733.47
	3.5596%	Berkshire	$ 8,935,836
	42.9671%	Boston	$ 107,862,383
	4.5851%	Cape Cod	$ 11,510,198
	8.6901%	Central Mass	$ 21,815,177
	2.5397%	Franklin	$ 6,375,531
	0.3100%	Martha's Vineyard	$ 778,208
	4.4296%	Merrimack Valley	$ 11,119,839
	4.4596%	Montachusett	$ 11,195,149
	0.2200%	Nantucket	$ 552,277
	3.9096%	Northern Middlesex	$ 9,814,457
	4.5595%	Old Colony	$ 11,445,933
	10.8099%	Pioneer Valley	$ 27,136,613
	8.9601%	Southeastern Mass	$ 22,492,971
		Funding for Regional Priorities	$251,034,571.91
		Highway Division Programs	$448,895,833.23

**Base Obligation Authority based on 2.1% growth rate from actual FFY 2020 apportionment and average of Fast Act Obligation Authority (91%) through FFY 2020*

***MPO TIP targets will be held harmless from the change in proposed Obligation Authority*

****MassDOT Highway Division programs (including EWO/Awards/Adjustments) need revised based on new ABP GANS schedule and proposed Obligation Authority*

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
FFY 2021-2025 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*
2021	$21.77	$3.88	$25.65	$26.08
2022	$30.59	$2.52	$33.11	$41.53
2023	$42.10	$16.09	$58.19	$58.19
2024	$87.53	$5.69	$93.22	$93.22
2025	$96.14	$0	$96.14	$96.14

* Millions of dollars

The financial plan contained herein is financially constrained and indicates that the Merrimack Valley Metropolitan Planning Organization's FFYs 2021-2025 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 but have no available funding source.

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 2021

Highway FFY 2021	**Estimated Needs MVMPO (in 1000s) Federal Portion of Cost**	**Estimated Needs MVMPO (in 1000s) Total Project Cost**	**Available Resources MVMPO Projects (in 1000s) (From Region Target if not Statewide Category)**
Regional Target Congestion Mitigation/AQ Program (CMAQ)	$0	$0	$0
Regional Target Highway Safety Program (HSIP)	$0	$0	$0
Regional Target Surface Transportation Block Grant Program (STBG)	$8,277.46	$10,346.83	$10,778.65
Regional Target Transportation Alternatives Program (TAP)	$0	$0	$0
Regional Target Subtotals	**$8,277.46**	**$10,346.83**	**$10,778.65**
Statewide On-System Bridges (NHPP-On)	$12,244.70	$15,305.88	$15,305.88
Total FFY 2021	**$20,522.16**	**$25,652.71**	**$26,084.53**

Cost Estimates and Available Resources
Summary by Funding Category
Highway Projects Federal Fiscal Year 2022

Highway FFY 2022	**Estimated Needs MVMPO (in 1000s) Federal Portion of Cost**	**Estimated Needs MVMPO (in 1000s) Total Project Cost**	**Available Resources MVMPO Projects (in 1000s) (From Region Target if not Statewide Category)**
Regional Target Congestion Mitigation/AQ Program (CMAQ)	$0	$0	$0
Regional Target Highway Safety Program (HSIP)	$0	$0	$0
Regional Target Surface Transportation Block Grant Program (STBG)	$2,062.53	$2,578.16	$10,998.13
Regional Target Transportation Alternatives Program (TAP)	$0	$0	$0
Regional Target Subtotals	**$2,062.53**	**$2,578.16**	**$10,998.13**
Statewide Bicycle and Pedestrians (CMAQ)	$2,016.35	$2,520.44	$2,520,44
Statewide On-System Bridges (NHPP)	$14,562.95	$18,203.68	$18,203.68
Statewide Non-Interstate Pavement (NHPP)	$7,845.76	$9,807.20	$9,807.20
Total FFY 2022	**$26,487.59**	**$33,109.48**	**$41,529.45**

Cost Estimates and Available Resources
Summary by Funding Category
Highway Projects Federal Fiscal Year 2023

Highway FFY 2023	**Estimated Needs MVMPO (in 1000s) Federal Portion of Cost**	**Estimated Needs MVMPO (in 1000s) Total Project Cost**	**Available Resources MVMPO Projects (in 1000s) (From Region Target if not Statewide Category)**
Regional Target Congestion Mitigation/AQ Program (CMAQ)			
Regional Target Highway Safety Program (HSIP)			
Regional Target Surface Transportation Block Grant Program (STBG)	$8,990.67	$11,238.34	$11,238.34
Regional Target Transportation Alternatives Program (TAP)			
Regional Target Subtotals	**$8,990.67**	**$11,238.34**	**$11,238.34**
Statewide On-System Bridges (NHPP-On)	$24.687.90	$30,859.87	$30,859.87
Statewide Bicycle and Pedestrians (CMAQ)	$12,869.60	$16,087.01	$16,087.01
Total FFY 2023	**$46,548.17**	**$58,185.22**	**$58,185.22**

Cost Estimates and Available Resources

Summary by Funding Category

Highway Projects Federal Fiscal Year 2024

Highway FFY 2024	**Estimated Needs MVMPO (in 1000s) Federal Portion of Cost**	**Estimated Needs MVMPO (in 1000s) Total Project Cost**	**Available Resources MVMPO Projects (in 1000s) (From Region Target if not Statewide Category)**
Regional Target Surface Transportation Block Grant Program (STBG)	$9,108.51	$11,385.64	$11,385.64
Regional Target Subtotals	**$9,108.51**	**$11,385.64**	**$11,385.64**
Statewide Bicycle and Pedestrians (CMAQ)	$4,548.05	$5,685.06	$5,685.06
Statewide (SW) Bridges On-System (NHPP-On)	$60,919.70	$76,149.62	$76,149.62
Total FFY 2024	**$74,576.26**	**$93,220.32**	**$93,220.32**

Cost Estimates and Available Resources

Summary by Funding Category

Highway Projects Federal Fiscal Year 2025

Highway FFY 2025	**Estimated Needs MVMPO (in 1000s) Federal Portion of Cost**	**Estimated Needs MVMPO (in 1000s) Total Project Cost**	**Available Resources MVMPO Projects (in 1000s) (From Region Target if not Statewide Category)**
Regional Target Surface Transportation Block Grant Program (STBG)	$8,895.87	$11,119.84	$11,119.84
Regional Target Subtotals	**$8,895.87**	**$11,119.84**	**$11,119.84**
Statewide (SW) Bridges On-System (NHPP-On)	$66,117.96	$82,647.44	$82,647.44
Statewide Intersection Improvements (HSIP)	$2,131.26	$2,368.07	$2,368.07
Total FFY 2025	**$77,145.09**	**$96,135.35**	**$96,135.35**

Part C. 2. Transit Program Financial Plan

Planning Justification for Transit Projects

The Merrimack Valley region's FFYs 2021-2025 TIP federal aid transit projects are to be carried out using Sections 5307 received by the MVRTA from the FTA 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 2021-2025.

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 2021-2025 TIP meet this criterion.

Transit Program Financial Plan Table

Merrimack Valley Metropolitan Planning Organization
FFYs 2021-2025 Transportation Improvement Program
(FTA related funding categories only)
Total Costs including Federal, State and Local*

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*
2021	$10.45	$0.10	$10.55	$10.55
2022	$6.80	$0.10	$6.90	$6.90
2023	$9.60	$0.10	$9.70	$9.70
2024	$9.00	$0.10	$9.10	$9.10
2025	$9.24	$0.10	$9.34	$9.34

* Millions of dollars

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

FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority FTA Funding Programs	**Estimated Authorization FFY 2021**	**Regional TIP FFY 2021**	**Balance FFY 2021**
Section 5307 Capital and Planning Formula	$6,170,880	$4,540,742	$1,630,138
Section 5307 Transit Enhancements			
Subtotal	**$6,170,880**	**$4,540,742**	**$1,630,138**
Section 5307 Capital and Planning Formula Carryover	$2,915,965	$2,915,965	$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$2,915,965**	**$2,915,965**	**$0**
Section 5307 Total	**$9,086,845**	**$7,456,707**	**$1,630,138**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
Federal Aid Total	**$9,086,845**	**$7,456,707**	**$1,630,138**
Other Transit Funding			

Summary of Transit Funding Categories

Cost Estimates and Available Resources
Summary by Funding Category
2022 Transit Projects

FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority FTA Funding Programs	**Estimated Authorization FFY 2022**	**Regional TIP FFY 2022**	**Balance FFY 2022**
Section 5307 Capital and Planning Formula	$6,299,235	$3,503,372	$2,795,863
Section 5307 Transit Enhancements			
Subtotal	**$6,299,235**	**$3,503,372**	**$2,795,863**
Section 5307 Capital and Planning Formula Carryover	$1,630,138	$1,630,138	$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$1,630,138**	**$1,630,138**	**$0**
Section 5307 Total	**$7,929,373**	**$5,133,510**	**$2,795,863**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
Federal Aid Total	**$7,929,373**	**$5,133,510**	**$2,795,863**
Other Transit Funding (Non-Federal Aid)			

Cost Estimates and Available Resources
Summary by Funding Category
2023 Transit Projects

FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority FTA Funding Programs	**Estimated Authorization FFY 2023**	**Regional TIP FFY 2023**	**Balance FFY 2023**
Section 5307 Capital and Planning Formula	$6,430,260	$3,776,657	$2,653,603
Section 5307 Transit Enhancements			
Subtotal	**$6,430,260**	**$3,776,657**	**$2,653,603**
Section 5307 Capital and Planning Formula Carryover	$2,795,863	$2,795,863	$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$2,795,863**	**$2,795,863**	**$0**
Section 5307 Total	**$9,226,123**	**$6,572,520**	**$2,653,603**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
Section 5339 Bus and Bus Related Equipment and Facilities			
Federal Aid Total	**$9,226,123**	**$6,572,520**	**$2,653,603**
Other Transit Funding (Non-Federal Aid)	$0	$0	$0

Cost Estimates and Available Resources
Summary by Funding Category
2024 Transit Projects

FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority **FTA Funding Programs**	**Estimated Authorization FFY 2024**	**Regional TIP FFY 2024**	**Balance FFY 2024**
Section 5307 Capital and Planning Formula	$6,564,010	$3,571,017	$2,992,993
Section 5307 Transit Enhancements			
Subtotal	**$6,564,010**	**$3,571,017**	**$2,992,993**
Section 5307 Capital and Planning Formula Carryover	$2,653,603	$2,653,603	$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$2,653,603**	**$2,653,603**	**$0**
Section 5307 Total	**$9,217,613**	**$6,224,620**	**$2,992,993**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
Section 5339 Bus and Bus Related Equipment and Facilities			
Federal Aid Total	**$9,217,613**	**$6,224,620**	**$2,992,993**
Other Transit Funding (Non-Federal Aid)	$0	$0	$0

Cost Estimates and Available Resources
Summary by Funding Category
2025 Transit Projects

FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority **FTA Funding Programs**	**Estimated Authorization FFY 2025**	**Regional TIP FFY 2025**	**Balance FFY 2025**
Section 5307 Capital and Planning Formula	$6,700,540	$3,380,962	$3,319,578
Section 5307 Transit Enhancements			
Subtotal	**$6,700,540**	**$3,380,962**	**$3,319,578**
Section 5307 Capital and Planning Formula Carryover	$2,992,993	$2,992,993	$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$2,992,993**	**$2,992,993**	**$0**
Section 5307 Total	**$9,693,533**	**$6,373,955**	**$3,319,578**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5310 Elderly and Disabled Carryover			
Section 5339 Bus and Bus Related Equipment and Facilities			
Federal Aid Total	**$9,693,533**	**$6,373,955**	**$3,319,578**
Other Transit Funding (Non-Federal Aid)	$0	$0	$0

MVRTA Transit Operations and Maintenance Summary Table

State Fiscal Year 2019 (Actual), 2020 (Adopted Budget), and 2021 to 2025 (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.

	Audit	**Adopted Budget**	**DRAFT Budget**	**Projected**	**Projected**	**Projected**	**Projected**
Operating Revenue	**Actual**	**Current**	**Yr One**	**Yr Two**	**Yr Three**	**Yr Four**	**Yr Five**
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Farebox	$1,907,935	$1,851,640	$1,957,500	$1,888,855	$1,907,735	$1,926,185	$1,944,815
Section 5307	$4,195,800	$4,313,850	$4,637,100	$4,749,280	$4,657,960	$4,887,350	$5,128,040
Section 5311							
CMAQ/TDM							
Fully Funded*							
Job Access/ Reverse Commute							
New Freedom							

MVRTA Transit Operations and Maintenance Summary Table
State Fiscal Year 2019 (Actual), 2020 (Adopted Budget), and 2021 to 2025 (Projected) (Continued)

	Audit	Adopted Budget	Draft Budget	Projected	Projected	Projected	Projected
Operating Revenue	**Actual**	**Current**	**Yr One**	**Yr Two**	**Yr Three**	**Yr Four**	**Yr Five**
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Advertising	$25,000	$25,000	$30,000	$25,000	$25,000	$25,000	$25,000
Interest Income	$2,000	$10,000	$12,000	$10,000	$10,000	$10,000	$10,000
Rental Income							
State Contract Assistance**	$6,836,165	$7,253,005	$7,509,670	$7,694,700	$7,887,070	$8,084,245	$8,286,350
Local Assessment	$3,725,510	$3,810,715	$4,607,705	$4,007,285	$4,109,345	$4,214,010	$4,321,340
Other: (Define)	$962,855	$1,041,510	$1,109,365	$1,083,585	$1,105,260	$1,127,360	$1,149,900
Total Revenue	$17,646,465	$18,305,720	$19,863,340	$19,458,705	$19,702,370	$20,274,150	$20,865,445

MVRTA Transit Operations and Maintenance Summary

State Fiscal Year 2019 (Actual), 2020 (Adopted Budget), and 2021 to 2025 (Projected) (Continued)

Operating Expenses * **	**Actual**	**Current**	**Yr One**	**Yr Two**	**Yr Three**	**Yr Four**	**Yr Five**
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Total (See Below)	$17,646,465	$18,305,720	$19,863,340	$19,458,705	$19,702,370	$20,274,150	$20,865,445

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 2020 TIP Projects
FFY 2020 Highway Project List

Regional Target Projects

Project ID	Location	Project Description	Mass DOT District	Funding Category	Total Programmed Funds	Project Status
602418	Amesbury	Amesbury – Reconstruction of Elm Street	4	STBG	$7,223,053	Advertised 7/13/2019.
608027	Haverhill	Haverhill – Bradford Rail Trail Extension from Route 125 to Railroad Street	4	STBG/ TAP	$1,766,108	100% Design March 2020. Amend # 6 Increased Project Cost from $848,345 to $1,766,108.
605306	Haverhill	Haverhill – Bridge Replacement, H-12-039, I-495 (NB & SB) over Merrimack River	4	NHPP-ON	$15,305,880	Contract Awarded 5/14/2018. Under Construction. AC Year 3 of 6. Total project cost to $118,786,388.

Part C. 3. Status on Implementation of FFY 2020 TIP Projects

FFY 2020 Transit Project List

5307								
Project Number	**Project Description**	**Carry Over**	**Federal Funds**	**State Funds**	**TDC**	**Local Funds**	**Total**	**Project Status**
RTD0007680	Preventive Maintenance Ex-pense		$2,658,530	$664,630	$0	$0	$3,323,160	Ongoing
RTD0007681	Non-Fixed Route ADA para serv		$1,322,605	$330,650	$0	$0	$1,653,255	Ongoing
RTD0007682	SHORT RANGE TRANSIT PLANNING		$80,000	$0	$0	$20,000	$100,000	Ongoing
RTD0007683	OPERATING ASSISTANCE		$430,775	$430,775	$0	$0	$861,550	Ongoing
RTD0007687	Replace 3 Model Yr 2007 buses delivery 2020		$1,101,720	$275,430	$0	$0	$1,377,150	Complete
RTD0007695	SGR Riverbank stabilization Construction		$1,400,265	$350,065	$0	$0	$1,750,330	Moved to FFY 2021
RTD0007696	SGR Replace 1 model year 2013 supervisory vehicle		$37,225	$9,305			$46,530	Complete

Part C. 3. Status on Implementation of FFY 2020 TIP Projects

FFY 2020 Transit Project List (Cont.)

5307								
Project Number	**Project Description**	**Federal Funds**	**State Funds**	**TDC**	**MAP**	**Local Funds**	**Total**	**Project Status**
RTD0008295	Northern Essex Elder Transport Driving For-ward 2020	$12,500	$0	$0		$12,500	$25,000	Ongoing
	Purchase On-board Automatic Passenger Counter (APC)	$371,280	$0	$92,820		$0	$371,280	Ongoing
RTD0008311	Town of Andover Buy replacement van (1)				$55,280	$13,820	$69,100	Ongoing
RTD0008320	Town of Salisbury Buy van for service expansion (1)				$54,400	$13,600	$68,000	Ongoing

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Part C. 4. Air Quality Conformity

Air Quality Conformity Determination
Merrimack Valley MPO
FFY 2021-2025 Transportation Improvement Program
and
2020-2040 Regional Transportation Plan

This section documents the latest air quality conformity determination for the 1997 ozone National Ambient Air Quality Standards (NAAQS) in the Merrimack Valley MPO Region. It covers the applicable conformity requirements according to the latest regulations, regional designation status, legal considerations, and federal guidance. Further details and background information are provided below:

Introduction

The 1990 Clean Air Act Amendments (CAAA) require metropolitan planning organizations within nonattainment and maintenance areas to perform air quality conformity determinations prior to the approval of Long-Range Transportation Plans (LRTPs) and Transportation Improvement Programs (TIPs), and at such other times as required by regulation. Clean Air Act (CAA) section 176(c) (42 U.S.C. 7506(c)) requires that federally funded or approved highway and transit activities are consistent with ("conform to") the purpose of the State Implementation Plan (SIP). Conformity to the purpose of the SIP means that means Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) funding and approvals are given to highway and transit activities that will not cause or contribute to new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS or any interim milestones (42 U.S.C. 7506(c)(1)). EPA's transportation conformity rules establish the criteria and procedures for determining whether metropolitan transportation plans, transportation improvement programs (TIPs), and federally supported highway and transit projects conform to the SIP (40 CFR Parts 51.390 and 93).

A nonattainment area is one that the U.S. Environmental Protection Agency (EPA) has designated as not meeting certain air quality standards. A maintenance area is a nonattainment area that now meets the standards and has been re-designated as maintaining the standard. A conformity determination is a demonstration that plans, programs, and projects are consistent with the State Implementation Plan (SIP) for attaining the air quality standards. The CAAA requirement to perform a conformity determination ensures that federal approval and funding go to transportation activities that are consistent with air quality goals.

Legislative and Regulatory Background

The entire Commonwealth of Massachusetts was previously classified as nonattainment for ozone, and was divided into two nonattainment areas. The Eastern Massachusetts ozone nonattainment area included Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, and Worcester counties. Berkshire, Franklin, Hampden, and Hampshire counties comprised the Western Massachusetts ozone nonattainment area. With these classifications, the 1990 Clean Air Act Amendments (CAAA) required the Commonwealth to reduce its emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx), the two major precursors to ozone formation to achieve attainment of the ozone standard.

The 1970 Clean Air Act defined a one-hour national ambient air quality standard (NAAQS) for ground-level ozone. The 1990 CAAA further classified degrees of nonattainment of the one-hour standard based on the severity of the 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.The attainment date was later extended, first to 2003 and a second time to 2007.

In 1997, the EPA proposed a new, eight-hour ozone standard that replaced the one- hour standard, effective June 15, 2005. Scientific information had shown that ozone could affect human health at lower levels, and over longer exposure times than one hour. The new standard was challenged in court, and after a lengthy legal battle, the courts upheld it. It was finalized in June 2004.The eight-hour standard is 0.08 parts per million, 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 the eight-hour values. Massachusetts as a whole was classified as being in moderate nonattainment for the eight-hour standard, and was separated into two nonattainment areas—Eastern Massachusetts and Western Massachusetts.

In March 2008, EPA published revisions to the eight-hour ozone NAAQS establishing a level of 0.075 ppm, (March 27, 2008; 73 FR 16483). In 2009, EPA announced it would reconsider this standard because it fell outside of the range recommended by the Clean Air Scientific Advisory Committee. However, EPA did not take final action on the re-consideration so the standard would remain at 0.075 ppm.

After reviewing data from Massachusetts monitoring stations, EPA sent a letter on December 16, 2011 proposing that only Dukes County would be designated as nonattainment for the new proposed 0.075 ozone standard. Massachusetts concurred with these findings.

On May 21, 2012, (77 FR 30088), the final rule 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 published on May 21, 2012 (77 FR 30160), revoked the 1997 ozone NAAQS to occur one year after the July 20, 2012 effective date of the 2008 NAAQS.

Also, on May 21, 2012, the air quality designations areas for the 2008 NAAQS were published in the Federal Register. In this Federal Register, the only area in Massachusetts that was designated as nonattainment is Dukes County. All other Massachusetts counties were designated as attainment/unclassified for the 2008 standard. 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 confirmed the removal of transportation conformity to the 1997 Ozone NAAQS.

However, on February 16, 2018, the United States Court of Appeals for the District of Columbia Circuit in South Coast Air Quality Mgmt. District v. EPA ("South Coast II," 882 F.3d 1138) held that transportation conformity determinations must be made in areas that were either nonattainment or maintenance for the 1997 ozone NAAQS and attainment for the 2008 ozone NAAQS when the 1997 ozone NAAQS was revoked. These conformity determinations are required in these areas after February 16, 2019. On November 29, 2018, EPA issued Transportation Conformity Guidance for the South Coast II Court Decision (EPA-420-B-18-050, November 2018) that addresses how transportation conformity determinations can be made in areas. According to the guidance, both Eastern and Western Massachusetts, along with several other areas across the country, are now defined as "orphan nonattainment areas" – areas that were designated as nonattainment for the 1997 ozone NAAQS at the time of its revocation (80 FR 12264, March 6, 2015) and were designated attainment for the 2008 ozone NAAQS in EPA's original designations rule for this NAQS (77 FR 30160, May 21, 2012)

Current Conformity Determination

After 2/16/19, as a result of the court ruling and the subsequent federal guidance, transportation conformity for the 1997 NAAQS – intended as an "anti-backsliding" measure – now applies to both of Massachusetts' orphan areas. Therefore, this conformity determination is being made for the 1997 ozone NAAQS on the Merrimack Valley MPO FFY 2021-2025 Transportation Improvement Program and 2020-2040 Regional Transportation Plan.
The transportation conformity regulation at 40 CFR 93.109 sets forth the criteria and procedures for determining conformity. The conformity criteria for TIPs and RTPs include: latest planning assumptions (93.110), latest emissions model (93.111), consultation (93.112), transportation control measures (93.113(b) and (c), and emissions budget and/or interim emissions (93.118 and/or 93.119).

For the 1997 ozone NAAQS areas, transportation conformity for TIPs and RTPs for the 1997 ozone NAAQS can be demonstrated without a regional emissions analysis, per 40 CFR 93.109(c). This provision states that the regional emissions analysis requirement applies one year after the effective date of EPA's nonattainment designation for a NAAQS and until the effective date of revocation of such NAAQS for an area. The 1997 ozone NAAQS revocation

was effective on April 6, 2015, and the South Coast II court upheld the revocation. As no regional emission analysis is required for this conformity determination, there is no requirement to use the latest emissions model, or budget or interim emissions tests.

Therefore, transportation conformity for the 1997 ozone NAAQS for the Merrimack Valley MPO FFY 2021-2025 Transportation Improvement Program and 2020-2040 Regional Transportation Plan can be demonstrated by showing that remaining requirements in Table 1 in 40 CFR 93.109 have been met. These requirements, which are laid out in Section 2.4 of EPA's guidance and addressed below, include:

Latest planning assumptions (93.110)

- Consultation (93.112)
- Transportation Control Measures (93.113)
- Fiscal Constraint (93.108)

Latest Planning Assumptions:

The use of latest planning assumptions in 40 CFR 93.110 of the conformity rule generally apply to regional emissions analysis. In the 1997 ozone NAAQS areas, the use of latest planning assumptions requirement applies to assumptions about transportation control measures (TCMs) in an approved SIP (See following section on Timely Implementation of TCMs).

Consultation:

The consultation requirements in 40 CFR 93.112 were addressed both for interagency consultation and public consultation. Interagency consultation was conducted with FHWA, FTA, US EPA Region 1, MassDEP, and the other Massachusetts MPOs, with the most recent conformity consultation meeting held on March 6, 2019 (this most recent meeting focused on understanding the latest conformity-related court rulings and resulting federal guidance). This ongoing consultation is conducted in accordance with the following:

- Massachusetts' Air Pollution Control Regulations 310 CMR 60.03 "Conformity to the State Implementation Plan of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 USC or the Federal Transit Act"
- The Commonwealth of Massachusetts Memorandum of Understanding by and between Massachusetts Department of Environmental Protection, Massachusetts Executive Office of Transportation and Construction, Massachusetts Metropolitan Planning Organizations concerning the conduct of transportation-air quality planning in the development and implementation of the state implementation plan" (note: this MOU is currently being updated)

Public consultation was conducted consistent with planning rule requirements in 23 CFR 450.

Title 23 CFR Section 450.324 and 310 CMR 60.03(6)(h) requires that the development of the TIP, RTP, and related certification documents provide an adequate opportunity for public review and comment. Section 450.316(b) also establishes the outline for MPO public participation programs. The Merrimack Valley MPO's Public Participation Plan was formally adopted in 2017. (MVMPO Public Participation Plan as Amended through March 2017) is posted on the MVPC.org website under Transportation - Merrimack Valley Metropolitan Planning Organization – Other MPO Documents. The Public Participation Plan ensures that the public will have access to the TIP/RTP and related documents, provides for public notification of the availability of the TIP/RTP and the public's right to review the document and comment thereon, and provides a 21-day public review and comment period prior to the adoption of the TIP/RTP and related certification documents.

The public comment period for this conformity determination commenced on May 1, 2020. Following the 21-day public comment period, any comments received will be incorporated into the document. This allows ample opportunity for public comment and MPO review of the draft document. The public comment period will close on May 21, 2020 and subsequently, the Merrimack Valley MPO is expected to endorse this air quality conformity determination before June 2020. These procedures comply with the associated federal requirements.

Timely Implementation of Transportation Control Measures:

Transportation Control Measures (TCMs) have been required in the SIP in revisions submitted to EPA in 1979 and 1982. All SIP TCMs have been accomplished through construction or through implementation of ongoing programs. All of the projects have been included in the Region's Transportation Plan (present or past) as recommended projects or projects requiring further study. These projects are:

Extension/ Addition of Bus Routes
Construction of Park and Ride Lots
Intersection Improvements
Demand Responsive Transit
Institution of Express/ Shuttle Bus Services
Subscription Van Service
Double peak-hour fixed route bus service in Lawrence and Haverhill

DEP submitted to EPA its strategy of programs to show Reasonable Further Progress of a 15% reduction of VOCs in 1996 and the further 9% reduction of NOx toward attainment of the National Ambient Air Quality Standards (NAAQS) for ozone in 1999. Within that strategy there are no specific TCM projects. The strategy does call for traffic flow improvements to reduce congestion and, therefore, improve air quality. Other transportation-related projects that have been included in the SIP control strategy are listed below:

- *Enhanced Inspection and Maintenance Program*

- *California Low Emission Vehicle Program*
- *Reformulated Gasoline for On- and Off-Road Vehicles*
- *Stage II Vapor Recovery at Gasoline Refueling Stations*
- *Tier I Federal Vehicle Standards*

Fiscal Constraint:

Transportation conformity requirements in 40 CFR 93.108 state that TIPs and transportation plans must be fiscally constrained consistent with DOT's metropolitan planning regulations at 23 CFR part 450. The Merrimack Valley MPO 2021-2025 Transportation Improvement Program and 2020-2040 Regional Transportation Plan are fiscally constrained, as demonstrated in the MVMPO RTP Fiscal Constraint Chapter and in the MVMPO TIP Part C.1. Highway Program Financial Plan and Part C.2. Transit program Financial Plan.

In summary and based upon the entire process described above, the Merrimack Valley MPO has prepared this conformity determination for the 1997 Ozone NAAQS in accordance with EPA's and Massachusetts' latest conformity regulations and guidance. This conformity determination process demonstrates that the FFY 2021-2025 Transportation Improvement Program and the 2020-2040 Regional Transportation Plan meet the Clean Air Act and Transportation Conformity Rule requirements for the 1997 Ozone NAAQS, and have been prepared following all the guidelines and requirements of these rules during this time period.

Therefore, the implementation of the Merrimack Valley MPO's FFY 2021-2025 Transportation Improvement Program and the 2020-2040 Regional Transportation Plan are consistent with the air quality goals of, and in conformity with, the Massachusetts State Implementation Plan.

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 administrated 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

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, 6th 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. 15.

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. 15.

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 15.

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15。

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15。

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 15.

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 15.

Russian

Если Вам необходима данная информация на любом другом языке, пожалуйста, свяжитесь с Координатором Титула VI/Защита от дескриминации в MVMPO по тел: 978-374-0519, добавочный 15.

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 15.

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 15.

Mon-Khmer, Cambodian

ប្រសិនបើលោក-អ្នកត្រូវការបកប្រែព័ត៌មាននេះ
សូមទាក់ទងអ្នកសម្របសម្រួលជំពូកទី6/គ្មានការរើសអើងរបស់ MVMPO តាមរយៈលេខទូរស័ព្ទ 978-374-0519 រួចភ្ជាប់ទៅលេខ 15។

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 وثم اضغط الأرقام 15.

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 Equity Working Group

The MVMPO Merrimack Valley Transportation Committee's (MVTC) 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 Equity 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 65% or less of area median income (AMI), and
c) there are concentrations of households with limited English proficiency (LEP).

The MVMPO established an Equity Working Group to provide the MVMPO members and staff with the perspectives of individuals and organizations representing low-income and 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. The MVMPO staff regularly consults with members of the Equity Working Group.

To help inform the work of the MVMPO, it is helpful to have members of the Equity Working Group who have 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

Part C. 8. Equity Analysis

The following tables illustrate a geographic and social equity analysis of highway funding in the Merrimack Valley MPO region. Haverhill, Lawrence and Methuen are designated as Title VI and Environmental Justice (EJ) communities. The Title VI communities have Census Tracts with higher than average percentage of minorities than the regional average percentage and the same three communities are EJ communities with lower than average median income in some Census Tracts.

The following table shows the percent of population in Title VI / EJ communities relative to the percent of Federal highway funding programmed in the 2021 to 2025 TIP.

	Region Population (ACS 11 to 15)	Percent of Total Population	TIP Project Investment	Percent of Projects by Total Investment
Within Title VI / EJ community	189,490	55%	$212,238,824	69%
Outside Title VI / EJ community	154,420	45%	$94,064,256	31%
Total	343,910	100%	$306,303,080	100%

This table illustrates consistency between the percent of population in Title VI/ EJ areas and the percent of funding in those areas.

Persons with Limited English Proficiency (LEP) are those who self-report on the Census as speaking English 'less than very well'. USDOT guidance defines "Safe harbor" languages as those non-English languages that are spoken by LEP persons who make up at least 5% of the population, or 1,000 individuals, whichever is less. Using this definition for LEP people ages 5+ living in the region the number of LEP individuals exceeds the 1,000-person threshold in Spanish (32,513 people) and Chinese (1,124 people). The LEP persons in these two languages represent 83% of all LEP people in the region. Communities with more than 1,000 individuals whose "Safe-harbor" language is Spanish are Haverhill (3,010 people), Lawrence (25,355 people) and Methuen (3,352 people). Andover has the highest number of individuals (630 people) whose "Safe-harbor" language is Chinese. Therefore these 4 communities are considered LEP communities.

The following table shows the percent of population age 5+ in LEP communities relative to the percent of Federal highway funding programmed in the 2021 to 2025 TIP.

	Region Population Age 5+ (ACS 11 to 15)	Percent of Total Population Age 5+ (ACS 11 to 15)	TIP Project Investment	Percent of Projects by Total Investment
Within LEP community	208,754	65%	248,292,836	81%
Outside LEP community	112,973	35%	58,010,244	19%
Total	321,727	100%	$306,303,080	100%

This table illustrates consistency between the percent of population in LEP areas and the percent of funding in those areas.

All of the Federal transit funding (100%) is considered to benefit Title VI, EJ and LEP communities because all of the MVRTA fixed routes originate in the Title VI / EJ / LEP communities of Haverhill or Lawrence, or provide connections to these routes. The paratransit service also provides access to and from the Title VI, EJ and LEP communities.

All but one of the MVMPO region communities have had, or are programmed to have, Federally funded projects from 2016 to 2025. (Looking at the tables that follow West Newbury, which is not a Title VI / EJ or LEP community, does not have a federally funded project in the ten-year period, however it did have a Federally funded project in 2015.

The tables on the following pages show the projects included in the analysis for FFYs 2021 to 2025 and a summary chart showing the number of projects and the funding by community, and whether the community is a Title VI (high percentage of minorities), an EJ (high percentage of low-income households) and/or LEP community. This is followed by a table and analysis chart for projects programmed in FFYs 2016 to 2020.

For Title VI and EJ communities, the results show that for FFYs 2021 to 2025, 41% of the total number of projects are in Title VI and EJ communities. Considering the data for percent of funding, 69% of the funding is in Title VI and EJ communities.

For LEP communities, the results show that for FFYs 2021 to 2025, 45% of the total number of projects are in LEP communities. Considering the data for percent of funding, 81% of the funding is in LEP communities.

For Title VI and EJ communities, the results show that for FFYs 2016 to 2020, 57% of the total number of projects are in Title VI communities and EJ communities. Considering the data for percent of funding, 69% of the funding is in Title VI communities and EJ communities.

For LEP communities, the results show that for FFYs 2016 to 2020, 63% of the total number of projects are in LEP communities. Considering the data for percent of funding, 77% of the funding is in LEP communities.

All of the Transit funding (100%) is considered to benefit Title VI, EJ and LEP communities because all of the MVRTA fixed routes originate in Haverhill or Lawrence, or provide connections to these routes. The paratransit service also provides access to and from the Title VI and EJ communities. The only mappable transit project in the FFYs 2021 to 2025 TIP is the SGR Riverbank Stabilization project it is labelled on the relevant maps as RTD - 9131. It is also the only mappable transit project in FFYs 2016 to 2020 project list it is labelled on these maps as RTD-7695. The transit project maps also include the fixed-route bus service routes.

Equity Analysis Maps

MVMPO: FFYs 2021 to 2025 TIP Projects by Community
MVMPO: FFYs 2016 to 2020 Projects by Community
MVMPO: FFYs 2021 to 2025 Statewide and Regional Target Highway Projects overlaid on Low Income and Minority Tracts
MVMPO: FFYs 2021 to 2025 Transit Projects and MVRTA Bus Routes overlaid on Low Income and Minority Tracts
MVMPO: FFYs 2016 to 2020 Statewide and Regional Target Highway Projects overlaid on Low Income and Minority Tracts
MVMPO: FFYs 2016 to 2020 Transit Projects and MVRTA Bus Routes overlaid on Low Income and Minority Tracts

FFYs 2021 to 2025 MVMPO Statewide and Regional Target Highway Funding Projects by Community for Equity Analysis

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Andover	606522	Andover- Bridge Rehab., I-495 over Rt. 28 and RR	$36,054,012	2024 - 2025	No	No	Yes
Georgetown/ Boxford	607541	Georgetown/ Boxford Border to Boston Trail	$2,520,436	2022	No	No	No
Georgetown/ Newbury	607542	Georgetown/ Newbury Border to Boston Trail	$5,685,060	2024	No	No	No
Groveland	608298	Groveland Community Trail	$1,984,861	2021	No	No	No
Haverhill	605306	Haverhill- Bridge Replacement I-495 over Merrimack (H-12-039)	$46,503,796	2021 to 2023	Yes	Yes	Yes
Haverhill	609466	Haverhill- Bridge Replacement I-495 over Merrimack (H-12-040)	$94,747,200	2023 to 2025	Yes	Yes	Yes
Haverhill	605304	Haverhill- Bridge Replacement Bridge St (Rt 125) over Merrimack and B&M RR	$45,861,496	2024 to 2025	Yes	Yes	Yes

Projects by Community for Equity Analysis (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Haverhill	608761	Haverhill- Intersection Reconstruction Rt 108 (Newton Rd) at Rt 110	$1,980,067	2021	Yes	Yes	Yes
Lawrence	609509	Lawrence – Intersection Improvements at Merrimack Street and South Broadway (Route 28)	$1,610,960	2022	Yes	Yes	Yes
Lawrence	609251	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon Street	$1,013,739	2021	Yes	Yes	Yes
Lawrence	608930	Lawrence- Lawrence Manchester Rail Corridor (LMRC) Rail Trail	$16,087,005	2023	Yes	Yes	Yes
Methuen	610658	Methuen – Intersection Improvements at Riverside Drive and Burnham Road	$967,200	2022	Yes	Yes	Yes

Projects by Community for Equity Analysis (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Newbury/ Newburyport/ Salisbury	608494	Newbury/ Newburyport/ Salisbury Resurfacing Route 1	$9,807,200	2022	No	No	No
Newburyport	610663	Newburyport – Riverfront Clipper City Rail Trail Construction	$1,900,802	2021	No	No	No
North Andover	608095	North Andover-Corridor Rt.114 from Andover St. to Stop & Shop	$26,906,533	2023 to 2025	No	No	No
Rowley	609392	Rowley – Safety Improvements at Route 1, Central and Glen Streets	$2,368,068	2025	No	No	No
Salisbury	602202	Salisbury Reconstruction of Route 1 (Lafayette Rd)	$6,837,284	2023	No	No	No
MVRTA	S10777	MVRTA – Flex to FTA for 4 of 9 Buses	$3,467,361	2021	Yes	Yes	Yes
	Total	**Projects 21 to 25**	**$306,303,080**				

FFYs 2021 to 2025 MVMPO Equity Analysis Highway Funding

Community	Number of Projects	Percent Of Projects	TIP Funding	Percent of Funding	Title VI Com-mu-nity	EJ Com-mu-nity	LEP Com-mu-nity
Amesbury	0	0%	$0	0%	No	No	No
Andover	1	5%	$36,054,012	11.8%	No	No	Yes
Boxford	1	5%	$1,260,218	0.4%	No	No	No
Georgetown	2	9%	$4,102,748	1.3%	No	No	No
Groveland	1	5%	$1,984,861	0.6%	No	No	No
Haverhill	4	18%	$189,092,559	61.7%	Yes	Yes	Yes
Lawrence	3	14%	$18,711,704	6.1%	Yes	Yes	Yes
Merrimac	0	0%	$0	0.0%	No	No	No
Methuen	1	5%	$967,200	0.3%	Yes	Yes	Yes
Newbury	2	9%	$6,111,597	2.0%	No	No	No
Newburyport	2	9%	$5,169,869	1.7%	No	No	No
North Andover	1	5%	$26,906,533	8.8%	No	No	No
Rowley	1	5%	$2,368,068	0.8%	No	No	No
Salisbury	2	9%	$10,106,350	3.3%	No	No	No
West Newbury	0	0%	$0	0.0%	No	No	No
MVRTA	1	5%	$3,467,361	1.1%	Yes	Yes	Yes
Total	**22**		**$306,303,080**				

Percent of Projects in Title VI Community = 41%

Percent of Projects in EJ Community = 41%

Percent of Projects in LEP Community = 45%

Percent of Funding in Title VI Community = 69%

Percent of Funding in EJ Community = 69%

Percent of Funding in LEP Community = 81%

FFYs 2016 to 2020 MVMPO Statewide and Regional Target Highway Funding Projects by Community for Equity Analysis

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Amesbury	602418	Amesbury - Elm St. Reconstruction (2019 = $3,955,071, 2020 = $7,223,053)	$11,178,124	2019-2020	No	No	No
Amesbury	606669	Amesbury- Powwow Riverwalk	$671,207	2017	No	No	Yes
Amesbury/ Salisbury	607737	Amesbury-Salisbury Trail Connector at I-95	$3,167,723	2018	No	No	No
Andover/ Lawrence	606574	Andover/ Lawrence IM I-495	$14,396,000	2016	No/ Yes	No/ Yes	Yes/ Yes
Andover/ Methuen	607561	Andover/ Methuen IM I-93	$13,932,707	2017	No/ Yes	No/ Yes	Yes/ Yes
Groveland	605114	Groveland Rt 97 (School St & Salem St)	$2,040,502	2016	No	No	No
Haverhill	608027	Haverhill Bradford Rail Trail Ext.	$1,766,108	2020	Yes	Yes	Yes
Haverhill	607573	Haverhill- Route 97 (Broadway)	$6,526,912	2017	Yes	Yes	Yes

FFYs 2016 to 2020 MVMPO Statewide and Regional Target Highway Funding Projects by Community for Equity Analysis (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Haverhill	606161	Haverhill- Improvements on Main St (Rt. 125)	$3,635,519	2016	Yes	Yes	Yes
Haverhill	605306	Haverhill- Bridge Replacement I-495 over Merrimack (2018 = $19,797,733, 2019 = $23,703,426, 2020 = $15,305,880	$58,807,039	2018 - 2020	Yes	Yes	Yes
Haverhill/ Merrimac/ Amesbury/ Salisbury	608187	Guide Signs on I-495	$4,451,342	2017	Yes/ No	Yes/ No	Yes/ No
Lawrence	608946	Lawrence- Haverhill St (Route 110) at Ames Street	$1,267,500	2018	Yes	Yes	Yes
Lawrence	608261	Lawrence- Marston St./ Ferry St./ Commonwealth Ave.	$1,350,694	2017	Yes	Yes	Yes
Lawrence	608002	Lawrence- Safe Routes to School Bruce Elementary	$2,016,148	2017	Yes	Yes	Yes
Lawrence	608407	Lawrence- Signals/ ADA along Common & Lowell Streets	$2,880,512	2016	Yes	Yes	Yes

FFYs 2016 to 2020 MVMPO Statewide and Regional Target Highway Funding Projects by Community for Equity Analysis (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Lawrence/ North Andover	608809	Lawrence- North Andover- Resurfacing Route 114	$2,123,453	2018	Yes/ No	Yes/ No	Yes/ No
Lawrence/ North Andover	607985	Lawrence- North Andover- IM on I-495	$7,198,000	2016	Yes/ No	Yes/ No	Yes/ No
Methuen	607476	Methuen- Rt 213 Resurfacing and Bridge Repairs	$11,987,868	2016	Yes	Yes	No
Newburyport	608792	Newburyport- SRTS	$1,866,615	2019	No	No	No
North Andover	606159	North Andover- Rt 125/ Mass Ave	$5,446,662	2019	No	No	No
MVRTA	604585	Flex to FTA for MVRTA Cleaner Fuel Buses	$645,840	2017	Yes	Yes	Yes
MVRTA	MV0001	Flex to FTA for MVRTA Cleaner Fuel Buses	$698,541	2019	Yes	Yes	Yes
MVRTA	MV0003	Flex to FTA for MVRTA Bike Racks for Buses and for Transportation Centers	$110,000	2019	Yes	Yes	Yes

FFYs 2016 to 2020 MVMPO Statewide and Regional Target Highway Funding Projects by Community for Equity Analysis (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	Title VI Community	EJ Community	LEP Community
Salisbury	605020	Salisbury- Multi-use trail extension (Borders-to-Boston), includes new bridge S-02-004	$7,184,196	2018	No	No	No
		Total All Projects 2016 to 2020	**$182,908,965**				

FFYs 2016 to 2020 MVMPO Equity Analysis Highway Funding

Community	Number of Projects	Percent Of Projects	TIP Funding	Percent of Funding	Title VI Community	EJ Community	LEP Community
Amesbury	4	13%	$14,916	9%	No	No	No
Andover	2	7%	$14,164,354	9%	No	No	Yes
Boxford	0	0%	$0	0%	No	No	No
Georgetown	0	0%	$0	0%	No	No	No
Groveland	1	3%	$2,040,502	1%	No	No	No
Haverhill	5	17%	$72,219,359	46%	Yes	Yes	Yes
Lawrence	7	23%	$15,774,581	10%	Yes	Yes	Yes
Merrimac	1	3%	$1,483,781	1%	No	No	No
Methuen	2	7%	$18,954,222	12%	Yes	Yes	Yes
Newbury	0	0%	$0	0%	No	No	No
Newburyport	1	3%	$1,866,615	1%	No	No	No
North Andover	2	7%	$6,508,389	4%	No	No	No
Rowley	0	0%	$0	0%	No	No	No
Salisbury	2	7%	$8,768,057	6%	No	No	No
West Newbury	0	0%	$0	0%	No	No	No
MVRTA	3	10%	$1,454,381	1%			
Total	**38**		**$158,151,211**				

Percent of Projects in Title VI Community = 57%

Percent of Projects in EJ Community = 57%

Percent of Projects in LEP Community = 63%

Percent of Funding in Title VI Community = 69%

Percent of Funding in EJ Community = 69%

Percent of Funding in LEP Community = 77%

FFYs 2021 to 2025 Transit Projects

FFY Year	Project Number	Project Description	Total Project Cost
2021	RTD0009132	SGR Replace Security Camera system at McGovern Center	$131,000
2021	RTD0008602	SGR Replace 1 Model Yr 2016 supervisory vehicle	$47,900
2021		Replace Model Yr 2009 Buses Delivery 2022 (2 of 9)	$990,674
2021	RTD0008595	Operating Assistance	$1,116,240
2021	RTD0008592	Preventive Maintenance	$3,495,970
2021	RTD0007686	Short Range Transit Planning	$100,000
2021	RTD0009131	Riverbank stabilization Construction	$1,750,330
2021	RTD0008596	Replace 16 Model Yr 2015 vans with new	$1,180,480
2021	RTD0008593	Non-Fixed Route ADA Para Serv	$1,741,065
2022	RTD0008609	SGR Replace 2 Model Yr 2016 supervisory vehicles	$97,740
2022	RTD0008597	Preventive Maintenance	$3,611,335
2022	RTD0008599	Short Range Transit Planning	$100,000
2022	RTD0008600	Operating Assistance	$1,289,890
2022	RTD0008598	Non-Fixed Route ADA Para Serv	$1,801,630

FFYs 2021 – 2025 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2023	RTD0008604	Operating Assistance	$1,478,730
2023	RTD0008606	Replace 4 Model Yr 2011 buses delivery 2023	$2,009,600
2023	RTD0008960	SGR Replace 1 Model Yr 2017 supervisory vehicle	$50,335
2023	RTD0008608	Short Range Transit Planning	$100,000
2023	RTD0008603	Preventive Maintenance	$3,730,510
2023	RTD0008607	Replace 6 Model Yr 2017 vans delivery 2023	$469,620
2023	RTD0008605	Non-Fixed Route ADA Para Serv	$1,861,090
2024	RTD0008961	SGR Replace 1 model year 2018 supervisory vehicle	$51,845
2024	RTD0008614	Short Range Transit Planning	$100,000
2024	RTD0008611	Preventive Maintenance	$3,618,265
2024	RTD0008613	Non-Fixed Route ADA Para Serv	$1,805,255
2024	RTD0008610	SGR Replace model yr 2011 Buses Delivery 2024 (4 of 8)	$2,098,970
2024	RTD0008612	Operating Assistance	$1,429,680
2025	RTD0008963	Preventive Maintenance	$3,690,630
2025	RTD0008665	Non-Fixed Route ADA Para Serv	$1,841,365

FFYs 2021 – 2025 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2025	RTD0008962	Short Range Transit Planning	$100,000
2025	RTD0008964	Operating Assistance	$1,458,270
2025	RTD0008615	SGR Replace model yr 2012 Buses Delivery 2025 (4 of 8)	$2,193,840
2025	RTD0008966	SGR Replace 1 model year 2019 supervisory vehicle	$52,880
		Total Transit Project Funding 2021 to 2025	**$45,595,139**

FFYs 2016 – 2020 MVMPO Transit Projects Funding

FFY Year	Project Number	Project Description	Total Project Cost
2016		ADA Operating Expense	$1,311,195
2016		Preventive Maintenance	$3,131,330
2016		Operating Assistance	$684,350
2016		Short Range Transit Planning	$50,000
2016		MVPC Technical Support to MVRTA	$50,000
2016		Replace 5 Model Yr 2011 Paratransit Vehicles	$320,000
2016		Acquire Support Vehicles	$90,000
2017	RTD0004541	ADA Operating Expense	$1,371,830
2017	RTD0004542	Preventive Maintenance	$3,054,810
2017	RTD0004552	Operating Assistance	$1,257,050
2017	RTD0004550	Short Range Transit Planning	$100,000
2017	RTD0004932	Replace 7 Model Yr 2004 Buses with new	$2,989,000
2017	RTD0004919	Replace Parking Facilities Revenue Collection Equipment	$300,000
2017	RTD0004989	Bus/ Van Mobile Location Project	$300,000

FFYs 2016 – 2020 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2017	RTD0004540	Refurbish Engines on 8 Model Year 2011 Buses	$280,000
2017	RTD0004990	Replace 1 Model Yr 2013 Support Vehicle	$46,350
2018	RTD0005637	ADA Operating Expense	$1,413,370
2018	RTD0005638	Preventive Maintenance	$3,152,905
2018	RTD0005639	Refurbish Engine/ trans 8 model year 2012 buses	$264,000
2018	RTD0005642	Operating Assistance	$643,010
2018	RTD0005643	Short Range Transit Planning	$100,000
2018	RTD0005656	Replace 6 Model Yr 2004 buses delivery 2018	$2,689,500
2018	RTD0005662	Replace 1 Model Yr 2013 Support Vehicle	$47,750
2019	RTD0006769	Preventive Maintenance	$3,250,095
2019	RTD0006770	ADA Operating Expense	$1,456,420
2019	RTD0006771	Short Range Transit Planning	$100,000
2019	RTD0006772	Operating Assistance	$780,250
2019	RTD0007127	SGR Riverbank stabilization Design/Per-mitting	$235,035

FFYs 2016 – 2020 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2019	RTD0007126	SGR Refurbish 4 vehicle lifts	$400,000
2019	RTD0006785	Replace 1 Model Yr 2013 Support Vehicle	$45,205
2020	RTD0007680	Preventive Maintenance	$3,323,160
2020	RTD0007681	Non-Fixed Route ADA Para Serv	$1,653,255
2020	RTD0007682	Short Range Transit Planning	$100,000
2020	RTD0007683	Operating Assistance	$861,550
2020	RTD0007687	Replace 3 Model Yr 2007 buses delivery 2020	$1,377,150
2020	RTD0007695	SGR Riverbank stabilization Construction	$1,750,330
2020	RDT0007696	SGR Replace 1 Model Year 2013 supervisory vehicle	$46,530
2020	RDT0008295	NEET Driving Forward 2020	$25,000
2020	RTD0008320	Town of Salisbury MAP Van for Svc Expansion (1)	$68,000
2020	RTD0008311	Town of Andover MAP Buy Replacement Van (1)	$69,100
2020	RTD0009193	Purchase On-board Automatic Passenger Counters (APC)	$371,280
		Total Transit Funding 2016 to 2020	**$39,558,810**

Appendix

Merrimack Valley Metropolitan Planning Organization

Federal Fiscal Years 2021 to 2025 Transportation Improvement Program

Appendix Final Report

May 2020

Prepared by the Merrimack Valley Planning Commission

This document was prepared in cooperation with the Massachusetts Department of Transportation and the U.S. Department of Transportation. (under Contract # 108056 with MassDOT) The views and opinions of the Merrimack Valley Planning Commission expressed herein do not necessarily state or reflect those of the Massachusetts Department of Transportation or the U.S. Department of Transportation.

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Appendices

Appendix A and B: Other Regional Priorities

Appendix A Other Regional Priority Bridge Projects

(No Funding Available)

Bridges That Do Not Fit into Fiscally Constrained Targets, and therefore have No Funding Available in Any Year (By Town):

ID	Location	Project Description	Estimated Total Project Cost
602322	Ames.	Amesbury - Bridge Replacement, A-07-008, Oak Street Over the B&M Railroad (Abandoned Line)	$1,000,000
	And.	Andover - Rehab. Bridge (A-09-001) Route 28 (North Main Street) Over the Shawsheen River	
605418	And.	Andover - Bridge Preservation, A-09-028, Chandler Road over I-93	$3,450,000
604839	Law.	Lawrence – Bridge Replacement, L-04-027, Lowell Street over B&M Railroad	$4,473,000
	Law.	Lawrence - Bridge Rehabilitation, L-04-042, South Union Connector over South Street	
	Nbypt.	Newburyport - Bridge (N-11-002) State Route 113 (High Street) Over Railroad	
	Nbypt.	Newburyport - Bridge (N-11-014) State Route 1A (High Street) over US 1	
607115	Nbypt.	Newburyport - Bridge Repairs, N-11-015, Washington St. over US 1	$1,400,000

Appendix B Other Regional Priority Roadway Projects

(No Funding Available)

Roadway Projects That Do Not Fit into Fiscally Constrained Targets, and therefore have No Funding Available in Any Year (By Town)

ID	Location	Project Description	Estimated Total Project Cost
608336	Andover	Andover – Reconstruction on Route 133 (Lowell Street), from Lovejoy Road to Route 28 (North Main Street) TEC = 11.00	$7,245,000
606721	Boxford	Boxford - Reconstruction of Route 133 (Washington Street) from North Andover town line to Main Street TEC = 5.60	$5,172,164
	Boxford	Boxford Reconstruction of Route 97 from Georgetown to Topsfield (2 miles)	$3,785,000
607540	Boxford	Boxford - Border to Boston Trail TEC = 3.32	$4,174,500
602843	Georgetown	Georgetown – Reconstruction on Route 97 (W. Main Street) from Moulton Street to Groveland T.L. TEC = 6.63	$6,662,599
	Haverhill	Haverhill -Intersection Improvements Route 110 and Elliott Street	
	Haverhill	Haverhill – Widen Route 97 (Broadway) from Computer Drive to Research Drive	

Appendix B Other Regional Priority Roadway Projects (Continued)

(No Funding Available)

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

ID	Location	Project Description	Estimated Total Project Cost
608788	Haverhill	Haverhill – Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH TEC = 8.25	$17,875,000
608721	Haverhill	Haverhill – Corridor Improvements on Water Street (Route 97/113), from Ginty Boulevard/Mill Street to Lincoln Boulevard/Riverside Avenue TEC = 8.18	$8,050,000
602339	Haverhill	Haverhill-Historic Waterfront Walkway Phase II (Construction)	$3,110,184
	Lawrence/ North Andover	Lawrence - North Andover - Reconstruction of Route 114 from I-495 in Lawrence to Rt. 125 (Andover St.) in North Andover TEC = 13.05	
	Newburyport	Newburyport -Route 1 Rotary Reconfiguration	
608029	Newburyport	Newburyport - Intersection Improvements Route 1 at Merrimac Street TEC = 7.67	$2,400,000

Appendix B Other Regional Priority Roadway Projects (Continued)

(No Funding Available)

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

ID	Location	Project Description	Estimated Total Project Cost
	North Andover	North Andover – Reconstruction of Mass. Ave. and Sidewalks (from Osgood St. to I-495)	
	North Andover	North Andover - Signals and turn lanes at Mass Ave. and I-495 NB and SB Ramps	
607710	Salisbury	Salisbury – Resurfacing and related work Route 1A	$2,300,000

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Appendix C Transportation Evaluation Criteria Summary

Appendix C Transportation Evaluation Criteria Summary

Programmed for Fund-ing in Final TIP	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 (2021-2025)
No		Lawrence –North Andover - Reconstruction of Rt. 114 from I-495 to Rt. 125 (Ando-ver St.)		30,000	5.6	3.00	3.00	3.00	1.80	1.75	0.50	**13.05**
Yes	608095	North Andover – Recon-struction of Rt. 114 from Rt. 125 (Andover St.) to Stop & Shop	$25,057	30,000	4.8	2.00	2.75	2.67	1.40	1.75	0.75	**11.32**
Yes	608930	Lawrence – LMRC Rail Trail	$14,895	NA	NA	1.00	1.75	2.00	3.00	2.50	1.00	**11.25**
No	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	1.50	**11.00**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in Final TIP	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 (2021-2025)
Yes	609509	Lawrence – Intersection Improvements at Merrimack Street and South Broadway (Route 28)	$1,549	NA	NA	2.50	2.25	2.00	1.20	2.25	0.50	**10.70**
Yes	602202	Salisbury – Reconstruction of Route 1 (Lafayette Road)	$6,331	12,147	4.8	2.00	2.00	2.33	0.60	1.5	0.5	**8.93**
Yes	608761	Haverhill - Intersection Improvements at Rt. 110 / Rt. 108	$1,980	NA	NA	1.50	1.75	1.67	1.20	1.75	1.00	**8.87**
No	608788	Haverhill - Reconstruction of North Ave. from Main St. to NH stateline	$17,875	13,172	4.0	2.50	1.75	1.00	2.00	0.00	1.00	**8.25**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in Final TIP	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 (2021-2025)
No	608721	Haverhill - Corridor Improvements on Water St. from Ginty Blvd / Mill St. to Lincoln Ave./ Riverside Ave.	$8,050	20,200	2.0	1.50	1.75	1.33	1.60	1.25	0.75	**8.18**
No	608029	Newburyport – Intersection Improvements Rt. 1 at Merrimac St.	$2,400	24,850	NA	2.00	0.50	2.67	1.00	1.25	0.25	**7.67**
No	602843	Georgetown – Reconstruction on Route 97 (W. Main) from Moulton St. to Groveland TL	$7,239	15,486	2.2	1.50	1.25	1.33	0.80	1.50	1.00	**7.38**
In 2020 TIP	608027	Haverhill – Bradford Rail Trail extension	$1,766	NA	NA	0.50	1.50	1.00	2.40	1.25	0.50	**7.15**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in Final TIP	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 (2021-2025)
Yes	609251	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon St.	$1,014	NA	NA	2.00	1.00	1.67	1.60	0.50	0.25	**7.02**
Yes	610663	Newburyport – Riverfront Clipper City Rail Trail	$1,901	NA	NA	1.50	1.25	1.00	1.00	1.75	0.50	**7.00**
Yes	610658	Methuen – Intersection Improvements at Riverside Drive and Burnham Road	$930	NA	NA	1.50	1.25	1.67	1.60	0.25	0.25	**6.52**
No	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	**5.60**
Yes	607542	Georgetown – Newbury – Border to Boston Trail (Northern Georgetown to Byfield Section)	$5,076	NA	NA	0.50	1.25	0.67	0.80	1.50	0.50	**5.22**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in Final TIP	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 (2021-2025)
Yes	607541	Georgetown – Boxford – Border to Boston Trail, from Georgetown Road to West Main Street (Route 97)	$2,423	NA	NA	0.50	1.25	0.67	0.80	1.25	0.75	**5.22**
Yes	608298	Groveland - Community Trail	$1,985	NA	NA	0.50	1.25	0.67	1.20	1.00	0.25	**4.87**
Yes	609392	Rowley – Safety Improvements at Route 1, Central and Glen Streets	$2,041	NA	NA	0.50	1.00	1.33	1.00	0.25	0.00	**4.08**
No	607540	Boxford – section of Border to Boston Trail	$4,175	NA	NA	0.50	1.00	0.67	0.40	0.50	0.25	**3.32**

Appendix D Sample Project Evaluation Worksheet

Sample Project Evaluation Worksheet
Merrimack Valley Planning Commission and MassDOT Evaluation Criteria
Project: Andover - Reconstruct Rt. 133 from Lovejoy Rd to Rt. 28 Project #: 608336
Project Cost: $7,245,000 AADT: 12,773 Distance: 2.2 Linear Lane Miles: 4.4

Condition	Score	Additional Comments
A. Magnitude of pavement condition improvement.	2	PNF indicates longitudinal & lateral pavement cracking, utility patch failure, shoving and rutting of pavement along route.
B. Magnitude of improvement of other infrastructure.	2	Current shoulder width 0' to 2', project to increase shoulder width to 4' or 5' for bikes and > safety for pedestrians, upgrade signals, drainage improvements
Condition Average	**2.0**	

Mobility	Score	Additional Comments
A. Effect on magnitude and duration of congestion.	3	Adding left turn lanes at intersection at MA-133/ Lovejoy /Greenwood. Also Rt 133/ Rt 28 improvements
B. Effect on travel time and connectivity / access.	2	Widening shoulder, realigning Rt 133/ Lovejoy and adding left turn lanes.
C. Effect on other modes using the facility.	3	Widening shoulder for bicycles, sidewalks on both sides.
D. Effect on regional and local traffic.	3	Widening shoulder, adding left turn lanes. Additional connector I-495 to I-93. NHS roadway.
Mobility Average	**2.75**	

Sample Project Evaluation Worksheet (Cont.)

Project: Andover - Reconstruct Rt. 133 from Lovejoy Rd to Rt. 28 Project #: 608336

Safety and Security	Score	Additional Comments
A. Effect on crash rate compared to State average.	3	PNF Rt 133/ Lovejoy / Greenwood has a crash rate of .94, District 4 average is .78 and the arterial between two signalized intersections is 3.8, Avg. is 2.12. Have had 1 pedestrian with injuries and 1 bicycle crash.
B. Effect on bicycle and pedestrian safety.	2	Widening shoulder for bicycles and provides greater safety for pedestrians.
C. Effect on transportation security and evacuation routes/	1	Is an NHS roadway. Is an evacuation route.
Safety and Security Average	**2.00**	

Community Effects and Support	Score	Additional Comments
A. Residential effects: ROW, noise, aesthetics, cut through traffic, and other.	2	For the most part all within ROW. General appearance and less noise from better pavement conditions.
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	1	
Community Effects and Support Average	**1.00**	

Sample Project Evaluation Worksheet (Cont.)

Project: Andover - Reconstruct Rt. 133 from Lovejoy Rd to Rt. 28 Project #: 608336

Land Use and Economic Development	Score	Additional Comments
A. Business effects; ROW, noise, traffic, parking, freight access, other.	2	Improve access to existing businesses.
B. Sustainable development effects. Consistent with MVPGS.	2	Access to MVPGS Rolling Green Regional PDA. Improves transportation choice (walk/bike) for area residents.
C. Consistent with regional land-use and economic development plans and PGS.	2	Access to MVPGS Rolling Green Regional PDA. Improves transportation choice (walk/bike) for area residents.
D. Effect on job creation.	1	Should provide better access to Brickstone Square State PDA.
Land Use and Economic Development Average	**1.75**	

Sample Project Evaluation Worksheet (Cont.)

Project: Andover - Reconstruct Rt. 133 from Lovejoy Rd to Rt. 28 Project #: 608336

Environmental Effects	Score	Additional Comments
A. Air quality / Climate effects. GHG Impact Description – Assumed Nominal Decrease in Emissions from Other Improvements	2	Adding bike lanes and sidewalks. Reducing delays at intersections.
B. Water quality/supply effects; wetlands effects.	1	There will be deep sump catch basins
C. Historic and cultural resources effects.	3	Shawsheen Village Historic District
D. Effect on wildlife habitat and endangered species.	0	Not endangered species habitat area.
Environmental Effects Average	**1.5**	
Overall Project TEC score	**11.00**	

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Appendix E Greenhouse Gas (GHG) Tracking

2021 - 2025
Transportation Improvement Program
Greenhouse Gas Tracking

This section summarizes the greenhouse gas (GHG) impacts that are anticipated to result from the projects that are included in this FFY 2021 – 2025 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 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 (DEP) 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 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

The Role of Metropolitan Planning Organizations

The Commonwealth's MPOs are integrally involved in supporting the GHG reductions mandated under the GWSA. The MPOs are most directly involved in helping to achieve the GHG emissions reductions through the promotion of healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments – and assisting smart growth development patterns through the creation of a balanced multi-modal transportation system. This is 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. GHG tracking and evaluation processes

enable the MPOs to identify the anticipated GHG impacts of planned and programmed projects, and also to use GHG impacts as a criterion in prioritizing transportation projects.

Project-Level GHG Tracking and Evaluation in TIPs

It is also important to monitor and evaluate the GHG impacts of the transportation projects that are programmed in the MPOs' TIPs. The TIPs include both the larger, regionally-significant projects from the RTPs, which are reported in the Statewide GHG report, as well as smaller projects that are not included in the RTP but that may nevertheless have impacts on GHG emissions. The primary 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.

Calculation of GHG Impacts for TIP Projects

MassDOT has adopted spreadsheets used by MPOs to determine CMAQ eligibility and that also include CO_2 impacts. The data and analysis required for these calculations is available from functional design reports that are submitted for projects that would produce a measurable GHG impact.

Projects with Quantified Impacts

RTP Projects

Major capacity expansion projects are expected to have a significant impact on GHG emissions. These projects are included in each MPO's RTP and analyzed using either the statewide model or Boston MPO's regional model, which reflect GHG impacts. As a result, no independent TIP calculations are required.

Quantified Decrease in Emissions

For those projects that are expected to produce a measurable decrease in emissions, the approach for calculating these impacts is described below. These projects are 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 enables 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 enables increased transit ridership and decreased VMT.
- **Quantified Decrease in Emissions from a Park and Ride Lot** - A park-and-ride lot that enables increased transit ridership/ increased ridesharing and decreased VMT.
- **Quantified Decrease in Emissions from Bus Replacement**
  A bus replacement that directly reduces GHG emissions generated by 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 Alternative Fuel Vehicle Procurements –** A vehicle procurement where alternative fuel/ advanced technology vehicles replace traditional gas or diesel vehicles.
- **Quantified Decrease in Emissions from Anti-idling Strategies –** Implementation of policies such as limiting idling allowed, incorporationg anti-idling technology into fleets and using LED lights on trucks for the purpose of illuminating worksites.
- **Quantified Decrease in Emissions from Bike Share Projects –** A new bike share project or capacity added to existing project.
- **Quantified Decrease in Emissions from Induced Travel Projects –** A project that changes roadway capacity.
- **Quantified Decrease in Emissions from Speed Reduction Programs –** Programs that reduce speed to no less than 55 miles per hour.
- **Quantified Decrease in Emissions from Transit Signal Priority Projects –** A project that applies this technology to a signal intersection or along a corridor that impacts bus service.
- **Quantified Decrease in Emissions from Truck Stop Electrification Projects –** A new truck stop electrification project or capacity added to an existing project.
- **Quantified Decrease in Emissions from Other Improvement**

Quantified Increase in Emissions

Projects expected to produce a measurable increase in emissions.

Projects with No Assumed Impacts

No Assumed Impact/Negligible Impact on Emissions - Projects that do not change the capacity or use of a facility (e.g. roadway median barrier or retaining wall replacement, or

bridge rehabilitation/replacement that restores the bridge to its previous condition) are assumed to have no/negligible GHG impact.

Qualitative Decrease in Emissions

Projects expected to produce a minor decrease in emissions that cannot be calculated with any precision. Examples of such projects include roadway repaving, signage improvement, ITS improvement, or transit marketing/customer experience improvement.

Qualitative Increase in Emissions

Projects expected to produce a minor increase in emissions that cannot be calculated with any precision.

Regional Greenhouse Gas Impact Summary Tables for FFYs 2021 – 2025 TIP

The following tables summarize the calculated quantitative and assumed qualitative impacts of the projects included in the regional FFYs 2021 – 2025 TIP by year.

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FFYs 2021 to 2025 Projects GHG Tracking Summary

2021 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
608761	HAVERHILL- INTERSECTION RECONSTRUCTION ON ROUTE 108 (NEWTON ROAD) AT ROUTE 110 (KENOZA AVENUE AND AMESBURY ROAD)	$1,980,067	Quantified	8,307	Quantified De-crease in Emis-sions from Traffic Operational Im-provement	$1,980,067	
609251	LAWRENCE – INTERSECTION IMPROVEMENTS AT SOUTH BROADWAY (ROUTE 28) AND MOUNT VERNON STREET	$1,013,739	Quantified	380,222	Quantified De-crease in Emis-sions from Traffic Operational Im-provement	$1,013,739	

2021 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
S10777	MVRTA – FLEX TO FTA TO REPLACE YR 2009 BUSES WITH NEW BUSES DELIVERY 2022 (7 OF 9)	$3,467,361	Quantified	20,049	Quantified Decrease in Emissions from Bus Replacement	$3,467,361	
608298	GROVELAND-GROVELAND COMMUNITY TRAIL FROM MAIN STREET TO KING STREET	$1,984,861	Quantified	2,710	Quantified Decrease in Emissions from Bi-cycle and Pedestrian Infrastructure	$1,984,861	

2021 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
610663	NEWBURYPORT – RIVERFRONT CLIPPER CITY RAIL TRAIL CONSTRUCTION	$1,900,802	Qualitative		Qualitative De-crease in Emis-sions	$1,900,802	GHG emis-sions had been in-cluded in quantifying Newburyport Clipper City Rail Trail Phase II Pro-ject # 606503 which has been com-pleted.
605306	HAVERHILL- BRIDGE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	$15,305,880	Qualitative		No assumed im-pact/ negligible im-pact on emissions	$108,833,832	AC Yr 4 of 6.

2022 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 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)	$2,520,436	Quantified	2,667	Quantified De-crease in Emis-sions from Bicycle and Pedestrian In-frastructure	$2,520,436	
605306	HAVERHILL- BRIDGE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	$18,203,683	Qualitative		No assumed im-pact/ negligible im-pact on emissions	$108,833,832	AC Yr 5 of 6.

2022 (Cont.) Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
609509	LAWRENCE – INTERSECTION IMPROVEMENTS AT MERRIMACK STREET AND SOUTH BROADWAY (ROUTE 28)	$1,610,960	Quantified	52,372	Quantified De-crease in Emis-sions from Traffic Operational Im-provement	$1,610,960	
610658	METHUEN – INTERSECTION IMPROVEMENTS AT RIVERSIDE DRIVE AND BURNHAM ROAD	$967,200	Quantified	333,725	Quantified De-crease in Emis-sions from Traffic Operational Im-provement	$967,200	
608494	NEWBURY-NEWBURYPORT-SALISBURY-RESURFACING AND RELATED WORK ON ROUTE 1	$9,807,200	Qualitative		Qualitative De-crease in Emis-sions	$9,807,200	

2023 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary

Mass DOT/ FTA Project ID	MassDOT/ FTA Project Description	Total Pro-grammed Funds	GHG Analysis Type	GHG CO_2 Impact (kg/yr)	GHG Impact Description	Total Cost	Additional Information
602202	SALISBURY-RECONSTRUCTION OF ROUTE 1 (LAFAYETTE ROAD)	$6,837,284	Qualitative		Qualitative Decrease in Emissions	$6,837,284	
608095	NORTH ANDOVER-CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN ROUTE 125 (ANDOVER STREET) & STOP & SHOP DRIVEWAY	$4,401,056	Qualitative		RTP project included in the Statewide model.	$27,061,794	AC Yr 1 of 4
608930	LAWRENCE-LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	$16,087,005	Quantified	175,927	Quantified Decrease in Emissions from Bi-cycle and Pedestrian Infrastructure	$16,087,005	

2023 (Cont.) Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Im-pact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
605306	HAVERHILL- BRIDGE REPLACEMENT, H-12-039, I-495 (NB & SB) OVER MERRIMACK RIVER	$12,994,233	Qualitative		No assumed impact/ negligible impact on emissions	$108,833,832	AC Yr 6 of 6.
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$22,901,531	Qualitative		No assumed impact/ negligible impact on emissions	$99,783,090	AC Yr 1 of 3.

2024 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Im-pact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
606522	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)	$15,056,661	Qualitative		No assumed impact/ negligible impact on emissions	$131,458,071	AC Yr 1 of 5
607542	GEORGETOWN-NEWBURY- BORDER TO BOSTON TRAIL, (NORTHERN GEORGETOWN TO BYFIELD SECTION)	$5,685,059	Quantified	15,682	Quantified Decrease in Emissions from Bicycle and Pedestrian Infra-structure	$5,685,059	

2024 (Cont.) Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary

Mass DOT/ FTA Project ID	MassDOT/ FTA Project Description	Total Pro-grammed Funds	GHG Analysis Type	GHG CO_2 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	$11,385,638	Qualitative		RTP project included in the Statewide model.	$27,061,794	AC Yr 2 of 4
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$43,180,558	Qualitative		No assumed impact/ negligible impact on emissions	$99,783,090	AC Yr 2 of 3.

2024 (Cont.) Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Im-pact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
605304	HAVERHILL- BRIDGE REPLACEMENT, H-12-007 & H-12-025, BRIDGE STREET (SR 125) OVER MERRIMACK RIVER AND THE ABANDONED B&M RR (PROPOSED BIKEWAY)	$17,912,404	Qualitative		No assumed impact/ negligible impact on emissions	$116,320,512	AC Yr 1 of 5.

2025 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Im-pact (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	$11,119,839	Qualitative		RTP project included in the Statewide Model.	$27,061,794	AC Yr 3 of 4
609392	ROWLEY – SAFETY IMPROVEMENTS AT ROUTE 1, CENTRAL AND GLEN STREETS	$2,368,068	Qualitative		Not enough infor-mation available to quantify.	$2,368,068	
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$33,701,001	Qualitative		No assumed impact/ negligible impact on emissions	$99,783,090	AC Yr 3 of 3.

2025 (Cont.) Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Im-pact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
605304	HAVERHILL- BRIDGE REPLACEMENT, H-12-007 & H-12-025, BRIDGE STREET (SR 125) OVER MERRIMACK RIVER AND THE ABANDONED B&M RR (PROPOSED BIKEWAY)	$27,949,092	Qualitative		No assumed impact/ negligible impact on emissions	$116,320,512	AC Yr 2 of 5.
606522	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)	$20,997,351	Qualitative		No assumed impact/ negligible impact on emissions	$131,458,071	AC Yr 2 of 5

2021 Merrimack Valley Region Transit Projects GHGs						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008592	Preventive Maintenance	$3,495,970	Qualitative		No assumed impact/ negligible impact on emissions	$3,495,970
RTD0008593	Non-Fixed Route ADA Para Serv	$1,741,065	Qualitative		No assumed impact/ negligible impact on emissions	$1,741,065
RTD0008594	Short Range Transit Plan-ning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0008595	Operating Assistance	$1,116,240	Qualitative		No assumed impact/ negligible impact on emissions	$1,116,240
RTD0008596	Replace 16 Model Yr 2015 vans with new	$1,180,480	Quantified	33,208	Quantified Decrease in Emissions from Bus Replacement	$1,180,480

2021 MerrimackValley Region Transit Projects GHGs (Cont.)						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0007697	SGR Replace 1 model yr 2016 supervisory vehicle	$47,900	Qualitative		No assumed impact/ negligible impact on emissions	$47,900
RTD0009132	SGR Replace Security Cam-era System at McGovern Center	$131,000	Qualitative		No assumed impact/ negligible impact on emissions	$131,000
RTD0009131	Riverbank Stabilization Con-struction	$1,750,330	Qualitative		No assumed impact/ negligible impact on emissions	$1,750,330
TBD	Replace Model Yr 2009 Buses Delivery 2022 (2 of 9)	$990,674	Quantified	5,728	Quantified Decrease in Emissions from Bus Replacement	$990,674

2022 Merrimack Valley Region Transit Projects GHGs						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008597	Preventive Maintenance	$3,611,335	Qualitative		No assumed impact/ negligible impact on emissions	$3,611,335
RTD0008598	Non-Fixed Route ADA Para Serv	$1,801,630	Qualitative		No assumed impact/ negligible impact on emissions	$1,801,630
RTD0008599	Short Range Transit Plan-ning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0008600	Operating Assistance	$1,289,890	Qualitative		No assumed impact/ negligible impact on emissions	$1,289,890
RTD0008609	SGR Replace 2 model year 2016 supervisory vehicles	$97,740	Qualitative		No assumed impact/ negligible impact on emissions	$97,740

2023 Merrimack Valley Region Transit Projects GHGs						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008603	Preventive Maintenance	$3,730,510	Qualitative		No assumed impact/ negligible impact on emissions	$3,730,510
RTD0008604	Operating Assistance	$1,478,730	Qualitative		No assumed impact/ negligible impact on emissions	$1,478,730
RTD0008605	Non-Fixed Route ADA Para Serv	$1,861,090	Qualitative		No assumed impact/ negligible impact on emissions	$1,861,090
RTD0008606	Replace 4 Model Yr 2011 buses delivery 2023	$2,009,600	Qualitative		Not enough information to calculate	$2,009,600
RTD0008607	Replace 6 model yr 2017 vans delivery 2023	$469,620	Qualitative		Not enough information to calculate	$469,620

2023 Merrimack Valley Region Transit Projects GHGs (Cont.)						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008608	Short Range Transit Plan-ning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0008960	SGR Replace 1 model yr 2017 supervisory vehicle	$50,335	Qualitative		No assumed impact/ negligible impact on emissions	$50,335

2024 Merrimack Valley Region Transit Projects GHGs						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008611	Preventive Maintenance	$3,618,265	Qualitative		No assumed impact/ negligible impact on emissions	$3,618,265
RTD0008613	Non-Fixed Route ADA Para Serv	$1,805,255	Qualitative		No assumed impact/ negligible impact on emissions	$1,805,255
RTD0008612	Operating Assistance	$1,429,680	Qualitative		No assumed impact/ negligible impact on emissions	$1,429,680
RTD0008614	Short Range Transit Plan-ning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0008610	SGR Replace model year 2011 buses delivery 2024 (4 of 8)	$2,098,970	Qualitative		Not enough information to calculate	$2,098,970

2024 Merrimack Valley Region Transit Projects GHGs (Cont.)						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008961	SGR Replace 1 model yr 2018 supervisory vehicle	$51,845	Qualitative		No assumed impact/ negligible impact on emissions	$51,845

2025 Merrimack Valley Region Transit Projects GHGs						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008963	Preventive Maintenance	$3,690,630	Qualitative		No assumed impact/ negligible impact on emissions	$3,690,630
RTD0008965	Non-Fixed Route ADA Para Serv	$1,841,365	Qualitative		No assumed impact/ negligible impact on emissions	$1,841,365
RTD0008964	Operating Assistance	$1,458,270	Qualitative		No assumed impact/ negligible impact on emissions	$1,458,270
RTD0008962	Short Range Transit Plan-ning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0008615	SGR Replace model yr 2012 buses 4 of 8 delivery 2025	$2,193,840	Qualitative		Not enough information to calculate	$2,193,840

2025 Merrimack Valley Region Transit Projects GHGs (Cont.)						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0008966	SGR Replace 1 model yr 2019 supervisory vehicle	$52,880	Qualitative		No assumed impact/ negligible impact on emissions	$52,880

Georgetown - Boxford Border-to-Boston Trail **CMAQ Air Quality Worksheet**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR: **2022**

MPO: **Merrimack Valley** **Municipality: Georgetown, Boxford**

Project: **# 607541 Georgetown-Boxford Border to Boston Trail**

Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):

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

A.	Facility Length **(L)**:	2.0	Miles	
B.	Service Area Radius **(R)**:	1.0	Miles	(Default = 1)
C.	Service Area of Community(ies) **(SA)**: L * 2R = SA	4	Sq. Miles	
D.	Total Land Area of Community(ies) **(T)**:	36.5	Sq. Miles	
E.	Service Area % of Community(ies) Land Area **(LA)**: SA / T = LA	11.0%		
F.	Total Population of Community(ies) **(TP)**:	16,579	Persons	
G.	Population Served by Facility **(P)**: LA * TP = P	1,817	Persons	
H.	Total Number of Households in Community(ies) **(HH)**:	5,828	HH	
I.	Number of Households Served by Facility **(HS)**: LA * HH = HS	639	HH	
J.	Total Number of Workers Residing in Community(ies) **(W)**:	8,647	Persons	
K.	Workers Per household **(WPHH)**: W / HH = WPHH	1.48	Persons	
L.	Workers in Service Area **(WSA)**: HS * WPHH = WSA	948	Persons	
M.	Population Density of the Service area **(PD)**: P / SA = PD	454	Persons Per Sq. Mile	

Georgetown - Boxford Border-to-Boston Trail **CMAQ Air Quality Worksheet (Cont.)**

N. If the bicycle and pedestrian commuter mode share is known, enter the percentage at the right. **(BMS)** 0.8%

If not, use US Census - American Community Survey data to determine the mode share and enter the percentage.
http://www.census.gov/programs-surveys/acs/guidance/estimates.html

O. Bike and Ped. Work Utilitarian Trips **(BWT)**: WSA * BMS = BWT 7 One-Way Trips

P. Bike and Ped. Non-Work Utilitarian Trips **(BNWT)**: BWT * 1.7 = BNWT 12 One-Way Trips

(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)

Step 2: Calculate the VMT Reduction Per Day:

A. ((2 * BWT) + (2 * BNWT)) * (0.5* L) = VMTR 39.4 VMTR Per Day

B. VMTR * Operating Days Per Year 39.4 * 200 = 7,872 VMTR Per Year

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

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

Step 3: MOVES 2014a Emission Factors for Unrestricted PM:

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

2020 Passenger Summer VOC Factor grams/mile	2020 Passenger Summer NOx Factor grams/mile	2020 Passenger Summer CO Factor grams/mile	2020 Passenger Summer CO2 Factor grams/mile
0.030	**0.081**	**2.095**	**338.769**

Georgetown - Boxford Border-to-Boston Trail **CMAQ Air Quality Worksheet (Cont.)**

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

Summer VOC	Summer NOx	Summer CO	Summer CO2
0.2	**0.7**	**16.8**	**2,666.9**

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	$2,520,436	/	0.2 =	**$10,545,326**
Summer NOx	$2,520,436	/	0.7 =	**$3,860,574**
Summer CO	$2,520,436	/	16.8 =	**$150,023**
Summer CO2	$2,520,436	/	2,666.9 =	**$945**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Georgetown - Newbury Border to Boston Trail **CMAQ Air Quality Worksheet**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR: **2024**

MPO: **Merrimack Valley** **Municipality: Georgetown, Newbury**

Project: **# 607542 Georgetown-Newbury Border to Boston Trail**

Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):

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

A.	Facility Length **(L)**:	3.6	Miles	
B.	Service Area Radius **(R)**:	1.0	Miles	(Default = 1)
C.	Service Area of Community(ies) **(SA)**: L * 2R = SA	7.2	Sq. Miles	
D.	Total Land Area of Community(ies) **(T)**:	36.3	Sq. Miles	
E.	Service Area % of Community(ies) Land Area **(LA)**: SA / T = LA	19.8%		
F.	Total Population of Community(ies) **(TP)**:	15,088	Persons	
G.	Population Served by Facility **(P)**: LA * TP = P	2,993	Persons	
H.	Total Number of Households in Community(ies) **(HH)**:	5,808	HH	
I.	Number of Households Served by Facility **(HS)**: LA * HH = HS	1,152	HH	
J.	Total Number of Workers Residing in Community(ies) **(W)**:	8,055	Persons	
K.	Workers Per household **(WPHH)**: W / HH = WPHH	1.39	Persons	
L.	Workers in Service Area **(WSA)**: HS * WPHH = WSA	1,598	Persons	
M.	Population Density of the Service area **(PD)**: P / SA = PD	416	Persons Per Sq. Mile	

Georgetown - Newbury Border to Boston Trail **CMAQ Air Quality Worksheet (Cont.)**

N. If the bicycle and pedestrian commuter mode share is known, enter the percentage at the ri **(BMS)** 1.5%
If not, use US Census - American Community Survey data to determine the mode share and enter the percentage.
http://www.census.gov/programs-surveys/acs/guidance/estimates.html

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 40 One-Way Trips
(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)

Step 2: Calculate the VMT Reduction Per Day:

A. ((2 * BWT) + (2 * BNWT)) * (0.5* L) = VMTR 231.5 VMTR Per Day

B. VMTR * Operating Days Per Year 231.5 * 200 = 46,290 VMTR Per Year
If the Vehicle Miles Traveled Reduction is known enter in the box to the right. VMTR Per Year
Note: A manual entry of the VMTR will override the calculated cell.

Step 3: MOVES 2014a Emission Factors for Unrestricted PM:

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

2020 Passenger Summer VOC Factor grams/mile	2020 Passenger Summer NOx Factor grams/mile	2020 Passenger Summer CO Factor grams/mile	2020 Passenger Summer CO2 Factor grams/mile
0.030	**0.081**	**2.095**	**338.769**

Georgetown - Newbury Border to Boston Trail **CMAQ Air Quality Worksheet (Cont.)**

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

Summer VOC	Summer NOx	Summer CO	Summer CO2
1.4	**3.8**	**98.8**	**15,681.6**

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	$5,685,059	/	1.4	=	**$4,045,217**
Summer NOx	$5,685,059	/	3.8	=	**$1,480,927**
Summer CO	$5,685,059	/	98.8	=	**$57,549**
Summer CO2	$5,685,059	/	15,681.6	=	**$363**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Groveland Community Trail Project # 608298 **CMAQ Air Quality Worksheet**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR:	**2022**		
MPO:	**Merrimack Valley**	**Municipality:**	Groveland
Project:	**Groveland Community Trail Project # 608298**		

Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):

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

A.	Facility Length **(L)**:	2.2	Miles	
B.	Service Area Radius **(R)**:	1.0	Miles	(Default = 1)
C.	Service Area of Community(ies) **(SA)**: L * 2R = SA	4.4	Sq. Miles	
D.	Total Land Area of Community(ies) **(T)**:	8.9	Sq. Miles	
E.	Service Area % of Community(ies) Land Area **(LA)**: SA / T = LA	49.4%		
F.	Total Population of Community(ies) **(TP)**:	6,646	Persons	
G.	Population Served by Facility **(P)**: LA * TP = P	3,286	Persons	
H.	Total Number of Households in Community(ies) **(HH)**:	2,385	HH	
I.	Number of Households Served by Facility **(HS)**: LA * HH = HS	1,179	HH	
J.	Total Number of Workers Residing in Community(ies) **(W)**:	3,405	Persons	
K.	Workers Per household **(WPHH)**: W / HH = WPHH	1.43	Persons	
L.	Workers in Service Area **(WSA)**: HS * WPHH = WSA	1,683	Persons	
M.	Population Density of the Service area **(PD)**: P / SA = PD	747	Persons Per Sq. Mile	

Groveland Community Trail Project # 608298 **CMAQ Air Quality Worksheet (Cont.)**

N. If the bicycle and pedestrian commuter mode share is known, enter the percentage at the righ **(BMS)** 0.4%

If not, use US Census - American Community Survey data to determine the mode share and enter the percentage.
http://www.census.gov/programs-surveys/acs/guidance/estimates.html

O. Bike and Ped. Work Utilitarian Trips **(BWT)**: WSA * BMS = BWT 7 One-Way Trips

P. Bike and Ped. Non-Work Utilitarian Trips **(BNWT)**: BWT * 1.7 = BNWT 11 One-Way Trips

(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)

Step 2: Calculate the VMT Reduction Per Day:

A. ((2 * BWT) + (2 * BNWT)) * (0.5* L) = VMTR 40.0 VMTR Per Day

B. VMTR * Operating Days Per Year 40.0 * 200 = 7,999 VMTR Per Year

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

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

Step 3: MOVES 2014a Emission Factors for Unrestricted PM:

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

2020 Passenger Summer VOC Factor grams/mile	2020 Passenger Summer NOx Factor grams/mile	2020 Passenger Summer CO Factor grams/mile	2020 Passenger Summer CO2 Factor grams/mile
0.030	**0.081**	**2.095**	**338.769**

Groveland Community Trail Project # 608298 **CMAQ Air Quality Worksheet (Cont.)**

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

Summer VOC	Summer NOx	Summer CO	Summer CO2
0.2	**0.7**	**17.1**	**2,709.9**

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	$2,064,255	/	0.2	=	**$8,499,667**
Summer NOx	$2,064,255	/	0.7	=	**$3,111,672**
Summer CO	$2,064,255	/	17.1	=	**$120,920**
Summer CO2	$2,064,255	/	2,709.9	=	**$762**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Haverhill - Intersection Reconstruction on Route 108 at Route 110 **CMAQ Air Quality Analysis Worksheet**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR **2021**

MPO: **Merrimack Valley** **Municipality:** **Haverhill**

Project: **# 608761 Intersection Reconstruction on Route 108 (Newton Road) at Roiute 110 (Kenoza Av & Amesbury Rd)**

Step 1: Calculate Existing AM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
	NB	0	1.00	0.0	=	0	+	350	1.00	0.0	=	0	+	12	1.00	0.0	=	0	=	0
Rt 108	SB	0	1.00	0.0	=	0	+	610	1.00	0.0	=	0	+	114	1.00	0.0	=	0	=	0
Rt 110	EB	0	1.00	0.0	=	0	+	411	1.00	0.0	=	0	+	185	1.00	0.0	=	0	=	0
Rt 110	WB	0	1.00	0.0	=	0	+	458	1.00	0.0	=	0	+	21	1.00	0.0	=	0	=	0

Total Intersection Delay/Seconds = **0**

Step 2: Calculate Existing PM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
	NB		1.00		=	0	+	0	1.00		=	0	+		1.00		=	0	=	0
Rt 108	SB	40	1.00	43.3	=	1,732	+	0	1.00		=	0	+	134	1.00	43.3	=	5,802	=	7,534
Rt 110	EB	253	1.00	9.7	=	2,454	+	463	1.00	0.0	=	0	+	0	1.00		=	0	=	2,454
Rt 110	WB	0	1.00		=	0	+	421	1.00	0.0	=	0	+	145	1.00	0.0	=	0	=	0

Total Intersection Delay/Seconds = **9,988**

Step 3: The spreadsheet automatically chooses the peak hour with the longer total intersection delay for the next step in the analysis.

Peak Hour: PM Total Intersection Delay: 9,988

Step 4: Calculate the existi PM Peak Hour Total Intersection Delay with Improvements:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
	NB		1.00		=	0	+		1.00		=	0	+		1.00		=	0	=	0
Rt 108	SB	40	1.00	60.6	=	2,424	+	0	1.00		=	0	+	134	1.00	13.1	=	1,755	=	4,179
Rt 110	EB	253	1.00	9.7	=	2,454	+	463	1.00		=	0	+	0	1.00		=	0	=	2,454
Rt 110	WB	0	1.00		=	0	+	421	1.00		=	0	+	145	1.00		=	0	=	0

Total Intersection Delay/Seconds = **6,634**

Haverhill - Intersection Reconstruction on Route 108 at Route 110 **CMAQ Air Quality Analysis Worksheet (Cont.)**

Step 5: Calculate vehicle delay in hours per day:

	(	Delay in seconds	X	Hours per day)	/	Seconds per hour	=	Delay in hours / day
Existing peak hour intersection delay	(	9,988	X	10	) /	3600	=	27.7
Peak hour intersection delay w/ improvements	(	6,634	X	10	) /	3600	=	18.4

Step 6: MOVES 2014a emission factors for idling speed: AM or PM **PM**

2020 Summer VOC Factor grams/hour	2020 Summer NOx Factor grams/hour	2020 Winter CO Factor grams/hour	2020 Summer CO2 Factor grams/hour
0.249	**0.630**	**3.569**	**3565.610**

Step 7: Calculate net emissions change in kilograms per day:

	Delay in Hours per Day	Summer VOC Emissions kilograms/day	Summer NOx Emissions kilograms/day	Winter CO Emissions kilograms/day	Summer CO2 Emissions kilograms/day
Existing Conditions	27.7	0.007	0.017	0.099	98.929
With Improvements	18.4	0.005	0.012	0.066	65.701
Net Change		**-0.002**	**-0.006**	**-0.033**	**-33.228**

Step 8: Calculate net emissions change in kilograms per year (seasonally adjusted)

	Net change per day (kg)		Avg. weekdays per year		Seasonal adj. factor		Adj. net change in kg per year
Summer VOC Emissions	-0.002	X	250	X	1.0188	=	**-0.591**
Summer NOx Emissions	-0.006	X	250	X	1.0188	=	**-1.494**
Winter CO Emissions	-0.033	X	250	X	0.9812	=	**-8.158**
Summer CO2 Emissions	-33.228	X	250	X	1.000		**-8,306.881**

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

Emission	Project Cost		Adj. net change in kg per year	=	First year cost per kilogram
Summer VOC	$1,980,067	/	-0.591	=	**3,352,093**
Summer NOx	$1,980,067	/	-1.494	=	**1,324,943**
Winter CO	$1,980,067	/	-8.158	=	**242,707**
Summer CO2	$1,980,067	/	-8,306.881	=	**238**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Lawrence - Intersection Improvements at South Broadway (Rt 28) and Mount Vernon St **CMAQ Air Quality Analysis Worksheet**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: **2021**

MPO: **Merrimack Valley** **Municipality:** **Lawrence**

Project: **#609251 Intersection Improvements at South Broadway (Routet 28) and Mount Vernon St**

Step 1: Calculate Existing AM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
S. Broadway	NB	185	0.95	230.1	=	44,809	+	335	0.95	230.1	=	81,141	+	0	0.95	230.1	=	0	=	125,949
S. Broadway	SB	0	0.95	15.9	=	0	+	543	0.95	15.9	=	9,088	+	42	0.95	15.9	=	703	=	9,791
Mt. Vernon St	EB	87	0.95	26.3	=	2,409	+	0	0.95	26.3	=	0	+	313	0.95	26.3	=	8,665	=	11,074
McKinley Ave	WB	5	0.95	15.0	=	79	+	0	0.95		=	0	+	10	0.95	15.0	=	158	=	237
																		Total Intersection Delay/Seconds	=	**147,051**

Lawrence - Intersection Improvements at South Broadway (Rt 28) and Mount Vernon St **CMAQ Air Quality Analysis Worksheet (Cont.)**

Step 2: Calculate Existing PM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
S. Broadway	NB	213	0.95	235.5	=	52,802	+	494	0.95	235.5	=	122,460	+	0	0.95	235.5	=	0	=	175,262
S. Broadway	SB	0	0.95	14.0	=	0	+	454	0.95	14.0	=	6,691	+	67	0.95	14.0	=	987	=	7,678
Mt. Vernon St	EB	90	0.95	24.4	=	2,312	+	0	0.95	24.4	=	0	+	228	0.95	24.4	=	5,856	=	8,168
McKinley Ave	WB	3	0.95	21.1	=	67	+	0	0.95	21.1	=	0	+	2	0.95	21.1	=	44	=	111
																		Total Intersection Delay/Seconds	=	**191,218**

Step 3: The spreadsheet automatically chooses the peak hour with the longer total intersection delay for the next step in the analysis.

Peak Hour: PM Total Intersection Delay: 191,218

Step 4: Calculate the existing PM Peak Hour Total Intersection Delay with Improvements:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
S. Broadway	NB	213	0.95	15.0	=	3,363	+	489	0.95	14.7	=	7,567	+	5	0.95	14.7	=	77	=	11,007
S. Broadway	SB	5	0.95	23.1	=	122	+	452	0.95	23.1	=	10,991	+	66	0.95	23.1	=	1,605	=	12,717
Mt. Vernon St	EB	89	0.95	40.6	=	3,804	+	1	0.95	40.6	=	43	+	228	0.95	40.6	=	9,744	=	13,590
McKinley Ave	WB	2	0.95	66.1	=	139	+	1	0.95	66.1	=	70	+	2	0.95	66.1	=	139	=	348
																		Total Intersection Delay/Seconds	=	**37,663**

Lawrence - Intersection Improvements at South Broadway (Rt 28) and Mount Vernon St **CMAQ Air Quality Analysis Worksheet (Cont.)**

Step 5: Calculate vehicle delay in hours per day:

	(	Delay in seconds	X	Hours per day)	/	Seconds per hour	=	Delay in hours / day
Existing peak hour intersection delay	(	191,218	X	10	)	/ 3600	=	531.2
Peak hour intersection delay w/ improvements	(	37,663	X	10	)	/ 3600	=	104.6

Step 6: MOVES 2014a emission factors for idling speed: AM or PM **PM**

2020 Summer VOC Factor grams/hour	2020 Summer NOx Factor grams/hour	2020 Winter CO Factor grams/hour	2020 Summer CO2 Factor grams/hour
0.249	**0.630**	**3.569**	**3565.610**

Step 7: Calculate net emissions change in kilograms per day:

	Delay in Hours per Day	Summer VOC Emissions kilograms/day	Summer NOx Emissions kilograms/day	Winter CO Emissions kilograms/day	Summer CO2 Emissions kilograms/day
Existing Conditions	531.2	0.132	0.334	1.896	1,893.914
With Improvements	104.6	0.026	0.066	0.373	373.027
Net Change		**-0.106**	**-0.269**	**-1.522**	**-1,520.887**

Step 8: Calculate net emissions change in kilograms per year (seasonally adjusted)

	Net change per day (kg)		Avg. weekdays per year		Seasonal adj. factor		Adj. net change in kg per year
Summer VOC Emissions	-0.106	X	250	X	1.0188	=	**-27.037**
Summer NOx Emissions	-0.269	X	250	X	1.0188	=	**-68.404**
Winter CO Emissions	-1.522	X	250	X	0.9812	=	**-373.419**
Summer CO2 Emissions	-1,520.887	X	250	X	1.000		**-380,221.742**

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

Emission	Project Cost	/	Adj. net change in kg per year	=	First year cost per kilogram
Summer VOC	$1,013,739	/	-27.037	=	**37,494**
Summer NOx	$1,013,739	/	-68.404	=	**14,820**
Winter CO	$1,013,739	/	-373.419	=	**2,715**
Summer CO2	$1,013,739	/	-380,221.742	=	**3**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Lawrence - Intersection Improvements at Merrimack St and South Broadway (Rt 28) **CMAQ Air Quality Analysis Worksheet**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: **2022**

MPO: **Merrimack Valley** **Municipality:** **Lawrence**

Project: **# 609509 Intersection Improvements at Merrimack Street and South Broadway (Route 28)**

Step 1: Calculate Existing AM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
S. Broadway	NB	0	0.95	21.8	=	0	+	596	0.95	21.8	=	13,677	+	101	0.95	21.8	=	2,318	=	15,994
Broadway	SB	163	0.95	47.3	=	8,116	+	741	0.95	27.2	=	21,216	+	1	0.95	27.2	=	29	=	29,360
Wolcott Ave	EB	1	0.95	11.5	=	12	+	0	0.95	11.5	=	0	+	0	0.95	11.5	=	0	=	12
Merrimack St	WB	245	0.95	18.9	=	4,874	+	0	0.95	18.9	=	0	+	134	0.95	18.9	=	2,666	=	7,540
																		Total Intersection Delay/Seconds	=	**52,907**

Step 2: Calculate Existing PM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
S. Broadway	NB	0	0.95	24.7	=	0	+	616	0.95	24.7	=	16,016	+	100	0.95	24.7	=	2,600	=	18,616
Broadway	SB	187	0.95	91.4	=	17,991	+	682	0.95	23.8	=	17,086	+	2	0.95	23.8	=	50	=	35,127
Wolcott Ave	EB	6	0.95	11.6	=	73	+	2	0.95	11.6	=	24	+	2	0.95	11.6	=	24	=	122
Merrimack St	WB	168	0.95	20.4	=	3,608	+	1	0.95	20.4	=	21	+	249	0.95	20.4	=	5,347	=	8,976

Total Intersection Delay/Seconds = **62,841**

Step 3: The spreadsheet automatically chooses the peak hour with the longer total intersection delay for the next step in the analysis.

Peak Hour: PM Total Intersection Delay: 62,841

Step 4: Calculate the existing PM Peak Hour Total Intersection Delay with Improvements:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
S. Broadway	NB	0	0.95	22.5	=	0	+	616	0.95	22.5	=	14,589	+	100	0.95	4.9	=	516	=	15,105
Broadway	SB	187	0.95	14.6	=	2,874	+	682	0.95	14.0	=	10,051	+	2	0.95	14.0	=	29	=	12,954
Wolcott Ave	EB	6	0.95	50.5	=	319	+	2	0.95	50.5	=	106	+	2	0.95	50.5	=	106	=	532
Merrimack St	WB	168	0.95	31.5	=	5,571	+	1	0.95	31.5	=	33	+	249	0.95	28.6	=	7,496	=	13,100

Total Intersection Delay/Seconds = **41,691**

Lawrence - Intersection Improvements at Merrimack St and South Broadway (Rt 28) **CMAQ Air Quality Analysis Worksheet (Cont.)**

Step 5: Calculate vehicle delay in hours per day:

	(	Delay in seconds	X	Hours per day)	/	Seconds per hour	=	Delay in hours / day
Existing peak hour intersection delay	(	62,841	X	10	)	/ 3600	=	174.6
Peak hour intersection delay w/ improvements	(	41,691	X	10	)	/ 3600	=	115.8

Step 6: MOVES 2014a emission factors for idling speed: AM or PM **PM**

2020 Summer VOC Factor grams/hour	2020 Summer NOx Factor grams/hour	2020 Winter CO Factor grams/hour	2020 Summer CO2 Factor grams/hour
0.249	**0.630**	**3.569**	**3565.610**

Step 7: Calculate net emissions change in kilograms per day:

	Delay in Hours per Day	Summer VOC Emissions kilograms/day	Summer NOx Emissions kilograms/day	Winter CO Emissions kilograms/day	Summer CO2 Emissions kilograms/day
Existing Conditions	174.6	0.043	0.110	0.623	622.412
With Improvements	115.8	0.029	0.073	0.413	412.924
Net Change		**-0.015**	**-0.037**	**-0.210**	**-209.488**

Lawrence - Intersection Improvements at Merrimack St and South Broadway (Rt 28) **CMAQ Air Quality Analysis Worksheet (Cont.)**

Step 8: Calculate net emissions change in kilograms per year (seasonally adjusted)

	Net change per day (kg)		Avg. weekdays per year		Seasonal adj. factor		Adj. net change in kg per year
Summer VOC Emissions	-0.015	X	250	X	1.0188	=	**-3.724**
Summer NOx Emissions	-0.037	X	250	X	1.0188	=	**-9.422**
Winter CO Emissions	-0.210	X	250	X	0.9812	=	**-51.435**
Summer CO2 Emissions	-209.488	X	250	X	1.000		**-52,371.982**

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

Emission	Project Cost	/	Adj. net change in kg per year	=	First year cost per kilogram
Summer VOC	$1,610,960	/	-3.724	=	**432,573**
Summer NOx	$1,610,960	/	-9.422	=	**170,978**
Winter CO	$1,610,960	/	-51.435	=	**31,320**
Summer CO2	$1,610,960	/	-52,371.982	=	**31**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Lawrence Manchester Rail Corridor Rail Trail **CMAQ Air Quality Worksheet**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR:	**2023**		
MPO:	**Merrimack Valley**	**Municipality:**	Lawrence
Project:	**Lawrence Manchester Rail Corridor (LMRC) Rail Trail Project # 608930**		

Step 1: Calculate Estimated Reduction in Vehicle Miles Traveled (VMT):

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

A.	Facility Length **(L)**:	1.5	Miles	
B.	Service Area Radius **(R)**:	1.0	Miles	(Default = 1)
C.	Service Area of Community(ies) **(SA)**: L * 2R = SA	2.92	Sq. Miles	
D.	Total Land Area of Community(ies) **(T)**:	6.93	Sq. Miles	
E.	Service Area % of Community(ies) Land Area **(LA)**: SA / T = LA	42.1%		
F.	Total Population of Community(ies) **(TP)**:	79,337	Persons	
G.	Population Served by Facility **(P)**: LA * TP = P	33,429	Persons	
H.	Total Number of Households in Community(ies) **(HH)**:	25,759	HH	
I.	Number of Households Served by Facility **(HS)**: LA * HH = HS	10,854	HH	
J.	Total Number of Workers Residing in Community(ies) **(W)**:	33,261	Persons	
K.	Workers Per household **(WPHH)**: W / HH = WPHH	1.29	Persons	
L.	Workers in Service Area **(WSA)**: HS * WPHH = WSA	14,015	Persons	
M.	Population Density of the Service area **(PD)**: P / SA = PD	11,448	Persons Per Sq. Mile	

Lawrence Manchester Rail Corridor Rail Trail **CMAQ Air Quality Worksheet (Cont.)**

N. If the bicycle and pedestrian commuter mode share is known, enter the percentage at the right **(BMS)** 4.7%

If not, use US Census - American Community Survey data to determine the mode share and enter the percentage.
http://www.census.gov/programs-surveys/acs/guidance/estimates.html

O. Bike and Ped. Work Utilitarian Trips **(BWT)**: WSA * BMS = BWT 659 One-Way Trips

P. Bike and Ped. Non-Work Utilitarian Trips **(BNWT)**: BWT * 1.7 = BNWT 1,120 One-Way Trips

(Latest planning assumptions estimate non-work utilitarian trips to be 1.7 times the work utilitarian.)

Step 2: Calculate the VMT Reduction Per Day:

A. ((2 * BWT) + (2 * BNWT)) * (0.5* L) = VMTR 2596.6 VMTR Per Day

B. VMTR * Operating Days Per Year 2,596.6 * 200 = 519,313 VMTR Per Year

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

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

Step 3: MOVES 2014a Emission Factors for Unrestricted PM:

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

2020 Passenger Summer VOC Factor grams/mile	2020 Passenger Summer NOx Factor grams/mile	2020 Passenger Summer CO Factor grams/mile	2020 Passenger Summer CO2 Factor grams/mile
0.030	**0.081**	**2.095**	**338.769**

Lawrence Manchester Rail Corridor Rail Trail **CMAQ Air Quality Worksheet (Cont.)**

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

Summer VOC	Summer NOx	Summer CO	Summer CO2
15.8	**43.1**	**1,108.2**	**175,927.3**

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	$16,087,005	/	15.8	=	**$1,020,330**
Summer NOx	$16,087,005	/	43.1	=	**$373,536**
Summer CO	$16,087,005	/	1,108.2	=	**$14,516**
Summer CO2	$16,087,005	/	175,927.3	=	**$91**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Methuen - Intersection Improvements at Riverside Dr and Burnham Rd **CMAQ Air Quality Analysis Worksheet**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: **2022**

MPO: **Merrimack Valley** **Municipality:** **Methuen**

Project: **# 610658 Intersection Improvements at Riverside Drive and Burnham Road**

Step 1: Calculate Existing AM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
Driveway	NB	2	0.95	16.8	=	35	+	2	0.95	16.8	=	35	+	9	0.95	16.8	=	159	=	230
Burnham Rd	SB	60	0.95	36.3	=	2,293	+	10	0.95	36.3	=	382	+	63	0.95	36.3	=	2,407	=	5,082
Riverside Dr	EB	50	0.95	2.1	=	111	+	250	0.95	2.1	=	553	+	2	0.95	2.1	=	4	=	668
Riverside Dr	WB	5	0.95	0.2	=	1	+	290	0.95	0.2	=	61	+	80	0.95	0.2	=	17	=	79
																		Total Intersection Delay/Seconds	=	**6,058**

Step 2: Calculate Existing PM Peak Hour Total Intersection Delay in Seconds:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
Driveway	NB	1	0.95	23.4	=	25	+	10	0.95	23.4	=	246	+	12	0.95	23.4	=	296	=	567
Burnham Rd	SB	182	0.95	524.3	=	100,445	+	12	0.95	524.3	=	6,623	+	76	0.95	524.3	=	41,944	=	149,012
Riverside Dr	EB	80	0.95	2.9	=	244	+	315	0.95	2.9	=	962	+	4	0.95	2.9	=	12	=	1,218
Riverside Dr	WB	16	0.95	0.5	=	8	+	395	0.95	0.5	=	208	+	127	0.95	0.5	=	67	=	283
																		Total Intersection Delay/Seconds	=	**151,079**

Step 3: The spreadsheet automatically chooses the peak hour with the longer total intersection delay for the next step in the analysis.

Peak Hour: PM Total Intersection Delay: 151,079

Step 4: Calculate the existing PM Peak Hour Total Intersection Delay with Improvements:

Street Name	Dir	Left-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	+	Thru (Vol / PHF)		X delay per veh	=	Total move. delay	+	Right-Turns (Vol / PHF)		X delay per veh	=	Total move. delay	=	Total approach delay
Driveway	NB	1	0.95	9.0	=	9	+	10	0.95	9.0	=	95	+	12	0.95	9.0	=	114	=	218
Burnham Rd	SB	182	0.95	12.8	=	2,452	+	12	0.95	12.8	=	162	+	76	0.95	12.8	=	1,024	=	3,638
Riverside Dr	EB	80	0.95	11.7	=	985	+	315	0.95	11.7	=	3,879	+	4	0.95	11.7	=	49	=	4,914
Riverside Dr	WB	16	0.95	13.3	=	224	+	395	0.95	13.3	=	5,530	+	127	0.95	13.3	=	1,778	=	7,532
																		Total Intersection Delay/Seconds	=	**16,302**

Methuen - Intersection Improvements at Riverside Dr and Burnham Rd **CMAQ Air Quality Analysis Worksheet (Cont.)**

Step 5: Calculate vehicle delay in hours per day:

	(	Delay in seconds	X	Hours per day)	/	Seconds per hour	=	Delay in hours / day
Existing peak hour intersection delay	(	151,079	X	10	) /	3600	=	419.7
Peak hour intersection delay w/ improvements	(	16,302	X	10	) /	3600	=	45.3

Step 6: MOVES 2014a emission factors for idling speed: AM or PM **PM**

2020 Summer VOC Factor grams/hour	2020 Summer NOx Factor grams/hour	2020 Winter CO Factor grams/hour	2020 Summer CO2 Factor grams/hour
0.249	**0.630**	**3.569**	**3565.610**

Step 7: Calculate net emissions change in kilograms per day:

	Delay in Hours per Day	Summer VOC Emissions kilograms/day	Summer NOx Emissions kilograms/day	Winter CO Emissions kilograms/day	Summer CO2 Emissions kilograms/day
Existing Conditions	419.7	0.104	0.264	1.498	1,496.360
With Improvements	45.3	0.011	0.029	0.162	161.461
Net Change		**-0.093**	**-0.236**	**-1.336**	**-1,334.900**

Step 8: Calculate net emissions change in kilograms per year (seasonally adjusted)

	Net change per day (kg)		Avg. weekdays per year		Seasonal adj. factor		Adj. net change in kg per year
Summer VOC Emissions	-0.093	X	250	X	1.0188	=	**-23.731**
Summer NOx Emissions	-0.236	X	250	X	1.0188	=	**-60.039**
Winter CO Emissions	-1.336	X	250	X	0.9812	=	**-327.755**
Summer CO2 Emissions	-1,334.900	X	250	X	1.000		**-333,724.936**

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

Emission	Project Cost		Adj. net change in kg per year		First year cost per kilogram
Summer VOC	$967,200	/	-23.731	=	**40,757**
Summer NOx	$967,200	/	-60.039	=	**16,110**
Winter CO	$967,200	/	-327.755	=	**2,951**
Summer CO2	$967,200	/	-333,724.936	=	**3**

Spreadsheet Template Prepared by Office of Transportation Planning Updated March 2016

Merrimack Valley RTA Replace 7 (2009) Buses with 7 (2022) Buses

CMAQ Bus Replacement Air Quality Analysis Worksheet

FILL IN SHADED BOXES ONLY

TIP YEAR: **2021** **Bus Replacements**

MPO: **Merrimack Valley**

RTA: **Merrimack Valley**

Project # S10777 - Flex to FTA to Replace 7 (2009) Buses with 7 (2022) Buses

Emission Rates in grams/mile at assumed operating speed bin of : 18 MPH (Bin 5 (17.5-22.5))

Scenario Comparison		Model Year	**Summer VOC** (grams/mile)	**Summer NOx** (grams/mile)	**Winter CO** (grams/mile)	**Summer CO2** (grams/mile)
Existing Model*	=	2009	0.115	3.750	0.659	1,203.080
New Bus Purchase**	=	2022	0.048	0.764	0.275	1,133.23

* Please contact OTP for assistance on Existing Model emission factors

** MOVES 2014a Commercial Emission Factors - Please Specify the Following:

AM or PM: PM Restricted or Unrestricted: Unrestricted

Change (Buy-Base)	-0.067	-2.986	-0.384	-69.850

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
247,441	1.16	287,032	**355**	809

Merrimack Valley RTA Replace 7 (2009) Buses with 7 (2022) Buses (Cont.)

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	809	1.0188	**-0.055**
Change in Summer NOx	-2.986	1,000	809	1.0188	**-2.460**
Change in Winter CO	-0.384	1,000	809	0.9812	**-0.305**
Change in Summer CO2	-69.850	1,000	809	1.0000	**-56.476**

Calculate emissions change in kilograms per year

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.055	355	-19.593
Summer NOx	-2.460	355	-873.189
Winter CO	-0.305	355	-108.148
Summer CO2	-56.476	355	-20049.154

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	**$3,467,361**	**12**	19.593	**$14,748**
Summer NOx	**$3,467,361**	**12**	873.189	**$331**
Winter CO	**$3,467,361**	**12**	108.148	**$2,672**
Summer CO2	**$3,467,361**	**12**	20049.154	**$14**

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Merrimack Valley RTA Replace 16 (2015) Vans with 16 (2021) Vans

CMAQ Bus Replacement Air Quality Analysis Worksheet

FILL IN SHADED BOXES ONLY

TIP YEAR: **2021** **Bus Replacements**

MPO: **Merrimack Valley**

RTA: **Merrimack Valley**

Project #RTD0008596 - Replace 16 (2015) Vans with 16 (2021) vans

Emission Rates in grams/mile at assumed operating speed bin of : 18 MPH (Bin 5 (17.5-22.5))

Scenario Comparison		Model Year	**Summer VOC** (grams/mile)	**Summer NOx** (grams/mile)	**Winter CO** (grams/mile)	**Summer CO2** (grams/mile)
Existing Model*	=	2015	0.008	0.058	2.014	501.185
New Bus Purchase**	=	2021	0.003	0.025	0.593	435.854

* Please contact OTP for assistance on Existing Model emission factors

** MOVES 2014a Commercial Emission Factors - Please Specify the Following:

AM or PM: PM Restricted or Unrestricted: Unrestricted

Change (Buy-Base)	-0.005	-0.033	-1.421	-65.331

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
457,933		1.11	508,306	**355**	1,432

Merrimack Valley RTA Replace 16 (2015) Vans with 16 (2021) Vans (Cont.)

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	1,432	1.0188	**-0.007**
Change in Summer NOx	-0.033	1,000	1,432	1.0188	**-0.048**
Change in Winter CO	-1.421	1,000	1,432	0.9812	**-1.996**
Change in Summer CO2	-65.331	1,000	1,432	1.0000	**-93.544**

Calculate emissions change in kilograms per year

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.007	355	-2.589
Summer NOx	-0.048	355	-17.089
Winter CO	-1.996	355	-708.723
Summer CO2	-93.544	355	-33208.115

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	**$1,180,480**	**4**	2.589	**$113,976**
Summer NOx	**$1,180,480**	**4**	17.089	**$17,269**
Winter CO	**$1,180,480**	**4**	708.723	**$416**
Summer CO2	**$1,180,480**	**4**	33208.115	**$9**

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Merrimack Valley RTA Replace 2 (2009) Buses with 2 (2022) Buses

CMAQ Bus Replacement Air Quality Analysis Worksheet

FILL IN SHADED BOXES ONLY

TIP YEAR: **2021** **Bus Replacements**

MPO: **Merrimack Valley**

RTA: **Merrimack Valley**

FTA Sect 5307 Project # TBD Replace 2 (2009) Buses with 2 (2022) Buses

Emission Rates in grams/mile at assumed operating speed bin of : 18 MPH (Bin 5 (17.5-22.5))

Scenario Comparison		Model Year	**Summer VOC** (grams/mile)	**Summer NOx** (grams/mile)	**Winter CO** (grams/mile)	**Summer CO2** (grams/mile)
Existing Model*	=	2009	0.115	3.750	0.659	1,203.080
New Bus Purchase**	=	2022	0.048	0.764	0.275	1,133.23

* Please contact OTP for assistance on Existing Model emission factors

** MOVES 2014a Commercial Emission Factors - Please Specify the Following:

AM or PM: PM Restricted or Unrestricted: Unrestricted

Change (Buy-Base)	-0.067	-2.986	-0.384	-69.850

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
70,698	1.16	82,010	**355**	231

FTA Sect 5307 Project # TBD Replace 2 (2009) Buses with 2 (2022) Buses

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	231	1.0188	**-0.016**
Change in Summer NOx	-2.986	1,000	231	1.0188	**-0.703**
Change in Winter CO	-0.384	1,000	231	0.9812	**-0.087**
Change in Summer CO2	-69.850	1,000	231	1.0000	**-16.136**

Calculate emissions change in kilograms per year

Pollutant	= change/day in kg	X op.days per year	= change per year in kg
Summer VOC	-0.016	355	-5.598
Summer NOx	-0.703	355	-249.485
Winter CO	-0.087	355	-30.900
Summer CO2	-16.136	355	-5728.376

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	**$990,674**	**12**	5.598	**$14,748**
Summer NOx	**$990,674**	**12**	249.485	**$331**
Winter CO	**$990,674**	**12**	30.900	**$2,672**
Summer CO2	**$990,674**	**12**	5728.376	**$14**

Template prepared by the Office of Transportation Plannning Updated March 2016

Appendix F Completed Highway and Transit Projects GHG Summary

Merrimack Valley Region MPO TIP Completed Highway Projects GHG Tracking Summary							
Mass DOT/ Project ID	**MassDOT Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Im-pact (kg/yr)**	**GHG Impact Description**	**Additional Description**	**Fiscal Year of Contract Award (2015 and forward)**
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 Infra-structure	Advertised 9/19/2015 Notice to Pro-ceed 4/1/2016	2016
606161	HAVERHILL-IMPROVEMENTS ON MAIN STREET (ROUTE 125)	$3,635,519	Quantified	16,491	Quantified Decrease in Emissions from Traffic Operational Improve-ment	Advertised 9/17/2016 Notice to Pro-ceed 4/12/2017	2017
607573	HAVERHILL-RECONSTRUCTION ON ROUTE 97 (BROADWAY), FROM SILVER BIRCH LANE TO RESEARCH DRIVE	$6,526,912	Quantified	41,800	Quantified Decrease in Emissions from Traffic Operational Improve-ment	Advertised 5/13/2017 Notice to Pro-ceed 2/9/2018	

Merrimack Valley Region MPO TIP Completed Highway Projects GHG Tracking Summary (Cont.)

Mass DOT/ Project ID	MassDOT Project Description	Total Pro-grammed Funds	GHG Analysis Type	GHG CO_2 Im-pact (kg/yr)	GHG Impact Description	Additional Description	Fiscal Year of Contract Award (2015 and forward)
604585	FLEX TO FTA FOR MVRTA NEW BUS UPGRADE TO CLEANER FUEL BUSES	$645,840	Quantified	26,343	Quantified Decrease in Emissions from Bus Replacement	Flexed to FTA	2017
605020	SALISBURY- MULTI-USE TRAIL EXTENSION (BORDERS TO BOSTON TRAIL), INCLUDES NEW BRIDGE S-02-004 AND BOARDWALK (S-02-012) (BYX)	$5,918,500	Quantified	18,631	Quantified Decrease in Emissions from Bicycle and Pedestrian Infra-structure	Advertised 8/25/2018 Contract Awarded 12/12/18 Notice to Pro-ceed 1/18/19	2018

Merrimack Valley Region MPO TIP Completed Highway Projects GHG Tracking Summary (Cont.)							
Mass DOT/ Project ID	**MassDOT Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Additional Description**	**Fiscal Year of Contract Award (2015 and forward)**
602418	AMESBURY- RECONSTRUCTION OF ELM STREET	$7,223,053	Quantified	1,336	Quantified Decrease in Emissions from Complete Streets Project	Advertised 7/13/19. Ac'd 2019 and 2020. Total Project Cost = $11,178,124	
607737	AMESBURY- SALISBURY- TRAIL CONNECTOR @ I-95	$2,574,805	Quantified	3,972	Quantified Decrease in Emissions from Bicycle and Pedes-trian Infrastructure	Advertised 9/15/2018 Notice to Pro-ceed 4/18/19	

Merrimack Valley Region MPO TIP Completed Highway Projects GHG Tracking Summary (Cont.)							
Mass DOT/ Project ID	**MassDOT Project Description**	**Total Pro-grammed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Additional Description**	**Fiscal Year of Contract Award (2015 and forward)**
606159	NORTH ANDOVER-INTERSECTION & SIGNAL IMPROVEMENTS AT ROUTE 125 & MASSACHUSETTS AVENUE	$5,446,662	Quantified	482,727	Quantified Decrease in Emissions from Traffic Operational Improvement	Advertised 1/12/2019 Notice to Pro-ceed 8/14/19	

Merrimack Valley Region MPO TIP Completed Transit Projects GHG Tracking Summary								
FTA Activity Line Item	**Transit Agency**	**Project Description**	**Total Cost**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Additional Descrip-tion**	**Fiscal Year Pro-grammed (2015 and forward)**
	MVRTA	Purchase – Re-placement 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	Quantified	12,557	Quantified Decrease in Emissions from Bus Replacement		2015
111215	MVRTA	Replace 5 Model Year 2011 Para-transit Vehicles (De-livery 2016)	$320,000	Quantified	15,992	Quantified Decrease in Emissions from Bus Replacement		2016

Merrimack Valley Region MPO TIP Completed Transit Projects GHG Tracking Summary (Cont.)

FTA Activity Line Item	Transit Agency	Project Description	Total Cost	GHG Analysis Type	GHG CO_2 Impact (kg/yr)	GHG Impact Description	Additional Description	Fiscal Year Programmed (2015 and forward)
111202	MVRTA	Replace 7 MY 2004 Transit Buses with new buses	$2,989,000	Quantified	18,271	Quantified Decrease in Emissions from Bus Replacement		2017
111202	MVRTA	Replace 6 Model Year 2004 Buses (Delivery 2018)	$2,689,500	Quantified	15,661	Quantified Decrease in Emissions from Bus Replacement		2018
RTD0007687	MVRTA	Replace 3 Model Yr 2007 buses delivery 2020	$1,377,150	Quantified	8,166	Quantified Decrease in Emissions from Bus Replacement		2020

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Appendix G List of Acronyms

MVMPO List of Commonly Used Acronyms		
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
	AQ	Air Quality
B	B to B	Border to Boston Rail Trail
C	3C	Continuing, Comprehensive and Coordinated (Transportation Planning)
	CAAA	Clean Air Act Amendments of 1990
	CFR	Code of Federal Regulations
	CIP	Capital Investment Plan
	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
	CO_2	Carbon Dioxide

MVMPO List of Commonly Used Acronyms (Cont.)		
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
	FAPRO	Federal Aid Program Reimbursement Office
	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 Gas
H	HPP	USDOT High Priority Project
	HSIP	Highway Safety Improvement Program

MVMPO List of Commonly Used Acronyms (Cont.)		
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	MAP-21	Moving Ahead for Progress in the 21st 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
	MVPGS	Merrimack Valley Priority Growth Strategy
	MVRTA	Merrimack Valley Regional Transit Authority

MVMPO List of Commonly Used Acronyms (Cont.)		
N	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&M	Operations and Maintenance
	OTP	MassDOT Office of Transportation Planning
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
	PS&E	The Plans, Specifications and Estimate to be used by contractors to bid on construction proposals

MVMPO List of Commonly Used Acronyms (Cont.)		
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 Transportation 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
	TAM	Transit Asset Management
	TAP	Transportation Alternatives Program
	TCSP	Transportation and Community System Preservation Grant Program
	TDM	Transportation Demand Management

MVMPO List of Commonly Used Acronyms (Cont.)		
T (Con.)	TEA-21	Transportation Equity Act for the 21st Century
	TEC	Transportation Project Evaluation Criteria
	TERM score	Transit Economic Requirements Model score used to rate transit facility conditions
	TIP	Transportation Improvement Program
	TMA	Transportation Management Area
	TMC	Turning Movement Count
	TOD	Transit-Oriented Development
	TRB	Transportation Research Board
U	ULB	Useful Life Benchmark
	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

Massachusetts Executive Orders		
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

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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
1	606522	Andover	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)
2	607541	Georgetown-Boxford	Georgetown – Boxford Border to Boston Trail from Georgetown Road to West Main Street (Route 97)
2	607542	Georgetown-Newbury	Georgetown– Newbury Border to Boston Trail (Northern Georgetown to Byfield Section)
3	608298	Groveland	Groveland- Groveland Community Trail, from Main Street to King Street
4	RTD - 9131	MVRTA	SGR Riverbank Stabilization Construction
4	605306	Haverhill	Haverhill – Bridge Replacement, H-12- 039, I-495 (NB & SB) over Merrimack River
4	609466	Haverhill	Haverhill – Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River
4	605304	Haverhill	Haverhill- Bridge Replacement, H-12-007 & H-12-025, Bridge Street (SR 125) over Merrimack River and the Abandoned B&M RR (Proposed Bikeway)

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

Map Number	Project Number	City/Town	Project Description
5	608761	Haverhill	Haverhill – Intersection Reconstruction on Route 108 (Newton Road) at Route 110 (Kenoza Avenue and Amesbury Road)
6	608930	Lawrence	Lawrence - Lawrence Manchester Rail Corridor (LMRC) Rail Trail
7	609251	Lawrence	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon Street
7	609509	Lawrence	Lawrence – Intersection Imporvements at Merrimack Street and South Broadway (Route 28)
8	610658	Methuen	Methuen – Intersection Improvements at Riverside Drive and Burnham Road
9	608494	Newbury / Newburyport / Salisbury	Resurfacing of Route 1
10	610663	Newburyport	Newburyport – Riverfront Clipper City Rail Trail Construction

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

Map Number	Project Number	City/Town	Project Description
11	608095	North Andover	North Andover- Corridor Improvements on Route 114, between Route 125 (Andover Street) & Stop & Shop driveway
12	609392	Rowley	Rowley – Safety Improvements at Route 1, Central and Glen Streets
13	602202	Salisbury	Salisbury – Reconstruction of Route 1 (Lafayette Road)

Appendix I Comments Received on Draft MVMPO FFYs 2021 to 2025 TIP

Comments Received regarding the Draft MVMPO FFYs 2021 to 2025 TIP

The MVRTA sent the new Transit Asset Management (TAM) targets that were adopted by the MVRTA Advisory Board on May 7, 2020.

Change: The Transit Asset Management (TAM) Plan Performance Management Targets section, draft pages 34 to 36, final pages 38 to 40, has been updated to include the recently adopted targets from the MVRTA March 6, 2020 TAM Plan.

City of Haverhill Comments:

The City of Haverhill commented that the City Council voted May 12 to authorize funding for the design of the North Avenue project. The project is moving forward.

The City of Haverhill is pleased that the Groveland Trail project is slated for FFY 2021. The City of Haverhill eventually wants to connect their trails to the Groveland Trail.

MassDOT Comments:

Please consider making the Title VI/Translation information viewable near the beginning of the document as well (currently on page 127 of document).

Change made.

Please make sure appendices remain available on MVPC website with TIP once endorsed (currently separate document(s)).

Will make change.

Additional Comment field is missing from TIP Draft (present in ESTIP).
Additional Comment field has been added.

MassDOT and D4 will have feedback about Haverhill North Ave project at/before May MPO meeting.

FHWA Comments

Merrimack Valley MPO FFY 2021-2025 TIP Review
FHWA Comments

Page	Comment
11	Regarding Safety Performance Measures: • Update Rate of Fatalities/Serious Injuries to full measure language: ○ Fatality rate per 100 million vehicle-miles traveled ○ Serious injury rate per 100 million vehicle-miles traveled
12	Regarding the Transportation Asset Management Plan (TAMP): • Update that the TAMP was finalized in September 2019
21	Regarding the TAMP: • Update that the TAMP was finalized in September 2019. Posted here: https://www.mass.gov/service-details/massdot-asset-management
25	Regarding Safety Performance Measures: • Update Rate of Fatalities/Serious Injuries to full measure language in table: ○ Fatality rate per 100 million vehicle-miles traveled ○ Serious injury rate per 100 million vehicle-miles traveled
35	Regarding the Transit Safety: • Either in this section or Safety above, MPO should add language about the Public Transportation Agency Safety Plan (PTASP) Final Rule. Originally with a deadline of July 2020, RTAs now have until December 2020 to develop the plan. More information here: https://www.transit.dot.gov/about/news/us-department-transportation-provides-greater-flexibility-transit-agencies-meet-safety
76	Regarding Financial Plan/Programming -- *more a question for discussion than a comment to address* • In an effort to align with the MTP (Table 5.1), the total funding available would be roughly $214 million for FY21-25. Could be misreading this, but can you explain how you arrived at $306 million here? Related to project readiness, AC/state funding changes?

The changes to address the FHWA comments have been made.

Coastal Trails Coalition Comments

Two members of the Coastal Trails Coalition expressed concern over the programming of the Georgetown to Newbury section of the Border to Boston Trail (Project #607542) in FFY 2024 rather than in FFY 2023 as was the case in last year's TIP and questioned what was causing this delay.

Town of North Andover

North Andover Town Manager Melissa Murphy-Rodrigues, Esq. submitted a letter of support (see following page) for the Route 114 Reconstruction Project (#608095) to be programmed in the FFY 2023 element of the FFYs 2021-2025 TIP.

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Town Manager

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May 26, 2020

RE: Corridor Improvements on Route 114, Between Rt 125 (Andover St) & Stop & Shop Driveway (# 608095)

Dear Members of the Merrimack Valley Metropolitan Planning Organization (MPO),

I am writing to express my firm support, on behalf of the Town of North Andover, for any scenario in which the Transportation Improvement Project (TIP) described as "Corridor Improvements on Route 114, Between Rt 125 (Andover St) & Stop & Shop Driveway (# 608095)" begins funding in Federal Fiscal Year 2023.

Once completed, this project, critical to addressing improvements to the busiest stretch of roadway in North Andover, will help to meet four (4) Federal Performance Targets:

1. Number of non-motorized fatalities and non-motorized serious injury.
2. Percentage of Pavements of the non-Interstate NHS in Good condition.
3. Percent of the Person-Miles Traveled on the non-Interstate NHS that are Reliable.
4. Number and Rate of Serious Injuries

Over the last few years, the Town has been partnering with MassDOT and its consultant on this project to engage public participation, incorporate safety enhancements and improve the corridor. Per the attached schedule, the project has already advanced significantly. Project designers will be prepared to submit 25% design drawings to MassDOT by the end of June 2020. If funding for this project begins in FFY23 as is currently planned, advertisement can begin in January of 2023, with a projected date of completion of the entire project by May of 2026.

Given where the project area is located, improvements will benefit not only the Town of North Andover, but also the Town of Andover and City of Lawrence, in terms of being able to facilitate a smoother and safer route of travel to/from those areas.

Not only is this project critical to neighboring municipalities, but it also represents a critical priority for major private property owners along Rt. 114. Merrimack College, one of the fastest-growing educational institutions in the country serves a total student population over 4,200 and has over the past few years completed major facilities upgrades and expansions to its campus. In the near term, it plans to renovate its Collegiate Church of Christ the Teacher facility into a 28,600 square foot full-service student activities center. The completion of improvements to Rt. 114 as currently proposed in the TIP will serve to ensure safer accommodations for students, staff, and others who visit Merrimack College's campus.

Across from Merrimack College sits Royal Crest Estates; the owner of which is currently in negotiations with Boston-based developer Trinity Financial to redevelop the property into a mixed-use development

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consisting of multi-family housing (apartments and townhomes), commercial office, retail, a hotel, and dormitories that will primarily serve Merrimack College students. Many details of this major private redevelopment project are in flux, but it will be transformational to the immediate region in being able to provide improved housing and jobs, through an influx of private investment. Trinity Financial and Merrimack College have both been intimately involved in the design process and are relying on the completion of this project by mid-2026.

Again, I strongly urge the MPO to vote in favor of a scenario that will keep funding for the Rt. 114 improvements in North Andover in FFY23, which will allow project completion by mid-2026. I do not endorse any decision that would delay the start of funding for this project to a later Federal Fiscal Year. Thank you for your consideration.

Sincerely,

M. M. Rodrigues

Melissa Murphy-Rodrigues, Esq.
Town Manager

Attachment: Project Schedule