Merrimack Valley Metropolitan Planning Organization

Federal Fiscal Years 2023 to 2027

Transportation Improvement Program

Draft Report

April 2022

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 # 114679 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

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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.

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Endorsement Page for Federal TIP - Signatures

Merrimack Valley Metropolitan Planning Organization Endorsement of the FFYs 2023-2027 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 2023-2027 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 2023-2027 Transportation Improvement Program.

Signatory Certification: **Date: May 25, 2022**

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Jamey Tesler
Secretary/
CEO MassDOT

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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. 1. 23 USC 134, 49 USC 5303, and this subpart.
1. 2. Sections 174 and 176 (c) and (d) of the Clean Air Act, as amended (42 USC 7504, 7506 (c) and (d) and 40 CFR part 93 and for applicable State Implementation Plan projects.
1. 3. Title VI of the Civil Rights Act of 1964, as amended (42 USC 2000d-1) and 49 CFR Part 21.
1. 4. 49 USC 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity.
1. 5. Section 1101 (b) of the Fast Act (Pub. L. 114-357) and 49 CFR Part 26 regarding the involvement of disadvantaged business enterprises in U.S. DOT-funded projects.
2. 6. 23 CFR part 230, regarding implementation of an equal employment opportunity program on Federal and Federal-aid highway construction contracts.
1. 7. The provisions of the US DOT and of the Americans with Disabilities Act of 1990 (42 USC 12101 et seq.) and 49 CFR Parts 27, 37, and 38.
1. 8. The Older Americans Act, as amended (42 USC 6101), prohibiting discrimination on the basis of age in programs or activities receiving federal financial assistance.
1. 9. Section 324 of Title 23 USC regarding the prohibition of discrimination based on gender.
10. Section 504 of the Rehabilitation Act of 1973 (29 USC 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.

May 25, 2022

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Jamey L. Tesler, Secretary and Chief Executive Officer
Massachusetts Department of Transportation
Chair, Merrimack Valley MPO

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310 CMR 60.05: Global Warming Solutions Act – Signatures

310 CMR 60.05: Global Warming Solutions Act Requirements for Transportation

This will certify that the Transportation Improvement Program and Air Quality Conformity Determination for the Merrimack Valley MPO Long Range Transportation Plan is in compliance with all applicable requirements in the State Regulation 310 CMR 60.05: Global Warming Solutions Act Requirements for Transportation. The regulation requires the MPO to:

1. 310 CMR 60.05(5)(a)1.: Evaluate and report the aggregate transportation GHG emissions 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 impact analysis of RTPs and TIPs;
8. 310 CMR 60.05(8)(a)2.d.: Calculate aggregate transportation GHG emissions impacts for RTPs and TIPs;
9. 310 CMR 60.05(8)(a)2.e.: Develop public consultation procedures for aggregate transportation GHG emissions impact 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; and
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, STIPs or projects within 30 days of endorsement to the Department for review of the GHG assessment.

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Jamey Tesler, Secretary and CEO
Massachusetts Department of Transportation (MassDOT);
Chair, Merrimack Valley Metropolitan Planning Organization (OCMPO)

May 25, 2022
Date

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Merrimack Valley Metropolitan Planning Organization
FFYs 2023-2027 Transportation Improvement Program
Draft Report prepared April 2022

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 “Infrastructure Investment and Jobs Act (IIJA)” that was signed into law November 15, 2021, Public Law 117-58, also known as the “Bipartisan Infrastructure Law” (BIL). The IIJA funds $550 billion dollars for transportation, water infrastructure, resilience and broadband for Federal Fiscal Years (FFYs) 2022 through 2026.

The previous legislation “Moving Ahead for Progress in the 21st Century (MAP-21)” established planning factors known as the “MAP-21 eight planning factors” and the “FAST Act” added two new planning factors (I and J in the list that follows), continuing in the BIL stipulates that the metropolitan planning process...

> “provide for consideration of projects and strategies that will-
>
> A) support the economic vitality of the metropolitan planning 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 –Jamey L. Tesler
- MassDOT Highway Division Administrator –Jonathan L. Gulliver
- Merrimack Valley Planning Commission (MVPC) Director –Jerrard Whitten
- Administrator/CEO Merrimack Valley Regional Transit Authority –Noah Berger
- Mayor of Haverhill –James Fiorentini
- Mayor of Lawrence –Brian A. De Peña
- 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 – Richard McDermott
- Boston MPO, President MAPC –Erin Wortman
- Northern Middlesex MPO, Chairman NMCOG –Andrew Deslaurier
- Nashua MPO (NH), Chairman NRPC –Timothy Tenhave

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.

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 fully programming both of these projects in the 2023 to 2027 TIP is not financially feasible. Neither project would be ready to advertise until 2024 or later. The Route 114 project has a TEC score of 12.42, the Haverhill North Avenue project has a TEC score of 8.58. 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 2024 and then consumes all the regional target funding in FFYs 2025 and 2026 and will also need some of the FFY 2027 funding before funding is available for Haverhill North Avenue. North Avenue is programmed to begin in 2027, it is a three-year project, so it will be AC'd 2027 to 2029. Also, two sections of the Border-to-Boston Rail Trail were slated for 2020 to 2024, the Georgetown-Newbury Northern

Georgetown to Byfield section is programmed for Statewide funding in 2026, the other section is programmed in 2024 as it was in the RTP. Additionally, the Lawrence Reconstruction of Amesbury Street is in the 2030 to 2034 band, but this project has received earmark/discretionary funding which is available for this TIP.

Projects that appear in the TIP were initiated and selected from a number of sources. Bridge projects have been selected and developed by MassDOT's Bridge section largely based upon the results of their ongoing bridge maintenance program. 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. MassDOT’s Bicycle and Pedestrian Update 2021 illustrates some of the projects MassDOT has completed since releasing the Plans in 2019. These projects help meet the Plans’ goals “to increase the percentage of everyday trips made by biking and walking while eliminating fatalities and serious injuries”. 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 asset management process. MassDOT Highway Division submitted an initial TAMP to FHWA on April 30, 2018, the TAMP was finalized in September of 2019.

Beginning with the *Moving Ahead for Progress in the 21st Century Act (MAP-21)*, continuing in the *Fixing America's Surface Transportation Act (FAST)* and the *Infrastructure Investment and Jobs Act (IIJA)* also known as the Bipartisan Infrastructure Law (BIL), that was signed into law November 15, 2021, State DOTs and MPOs are required 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 were 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.

MassDOT's Tracker https://www.massdottracker.com/wp/ contains annual performance management reports. These performance targets and corresponding actuals are contained in the reports.

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 $PM_{2.5}$)

MassDOT collects data for and establishes targets for each of the performance measures and presents these to the MPO. The MVMPO then votes on whether to adopt the MassDOT targets, or establish their own. Projects are programmed for funding with consideration of meeting the targets established for each measure. The performance measures are 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 at its January 26, 2022 meeting chose to adopt the statewide safety performance measure targets set by MassDOT for Calendar Year (CY) 2022.

Total Fatalities: Per Federal Highway Administration (FHWA) guidance, the CY22 target setting process began with a trend line projection based on the most recent available data. Due to reduced vehicle miles traveled (VMT) related to the pandemic, actual 2020 fatalities did not follow this trend, so CY21 projections were based on trends from CY19 with CY20 data disregarded given the unique circumstances surrounding data from that year. CY22 projections are based on a 2.5% reduction in fatalities from CY21 resulting in a five-year average fatalities projection of 340. It is projected that fatalities will decrease based on MassDOT efforts in the areas of speed management and safe systems, among other safety strategies. As always, MassDOT's overarching goal is zero deaths and this goal will be pursued by implementing Strategic Highway Safety Plan (SHSP) strategies.

The Merrimack Valley Region number of fatalities averaged over the five years from 2016 to 2020 is 21, an increase of 3 over the previous 2015 to 2019 average which was 18. This large increase in the 5-year average can be attributed to the COVID-19 pandemic anomaly year when 28 fatalities occurred in the Merrimack Valley, CY 2016 had 20, CY 2017 had 19, CY 2018 had 18 and CY 2019 had 19. The open crash data for 2021 shows 19 fatalities in the region.

Fatality Rate: The fatality rate represents five-year average fatalities divided by five-year average VMTs. The COVID-19 pandemic greatly impacted VMT, causing fatality rates to spike in 2020 with significantly lower VMT and slightly higher fatalities. The 2022 projection is now 0.56 fatalities per 100 million vehicle miles traveled for 2022 (five-year average of 2018-2022). The long-term goal is towards zero deaths, so the long-term fatality rate target is 0 fatalities per 100 million VMTs.
The Merrimack Valley Region fatality rate increased from 0.47 fatalities per 100 million Vehicle Miles Travelled (VMT) averaged over 2015 to 2019 to 0.58 averaged from 2016 to 2020, which is slightly above the Statewide rate of 0.57 fatalities per 100 million VMT from 2016 to 2020.

Total Serious Injuries: It is anticipated that there will be an overall decrease in the number of serious injuries due to a continual downward trend line as well as the implementation of countermeasures that are being developed as part of the 2018 SHSP. MassDOT projections in this category have used CY19 as a base to reflect changes in VMT due to the pandemic, and the CY22 target of 2,504 was set to reflect this trend. Due to unpredictable fluctuations between 2019 and 2020 data and an overall decreasing trendline, a 3% reduction in annual serious injuries from 2018 to 2021, and a 4% annual reduction from 2021 to 2022, were assumed to calculate the CY22 target.

The Merrimack Valley Region Total Serious Injuries decreased slightly from 147 averaged from 2015 to 2019 to 146 serious injuries averaged from 2016 to 2020.

Serious Injuries Rate: Similar to the fatality rate, it is anticipated that the downward trend line will result in a drop in the rate of serious injuries from 4.28 per 100 million VMT between 2017–2021 to 4.11 between 2018–2022. Five-year VMT data were used between 2018 – 2022 to calculate this rate.

The Merrimack Valley Serious Injury Rate per 100 million VMT increased from 3.9 averaged over 2015 to 2019 to 4.1 from 2016 to 2020, but remains lower than the State average of 4.28 from 2016 to 2020.

Total Number of Non-Motorized Fatalities and Serious Injuries: In 2020, during the COVID-19 pandemic, Massachusetts experienced a steep decline in both non-motorized fatalities and serious injuries. Because of the high fluctuations in the data, to establish MassDOT's CY22 target, CY21 non-motorist fatalities and suspected serious injuries were set to be equal to the average of CY17, CY18 and CY19 data. To project the non-motorist fatality and serious injuries for CY22, a 2% reduction was estimated. Overall, this translated to a CY22 5-year average of 471 fatalities and serious injuries combined for non-motorists.

It is important to note that the inclusion criteria have changed for non-motorists. This year, the non-motorist type "not reported" was removed because, based on manual inspection, it appears that many of the persons in this category were not actually pedestrians or bicyclists but were bystanders (e.g. people who were in buildings when the building was struck by a vehicle). However, due to data quality and the ability, need and resources to manually review crashes, this field may continue to evolve.

Note: The fatality and serious injury data contained here was developed to align with the data included within MassDOT's annual Highway Safety Improvement Program (HSIP) report. As such, historical data may be different from what was reported in prior years.

In the Merrimack Valley region the total number of non-motorized fatalities and serious injuries in the most recent 5-year periods is 21 for the 2015 to 2019 and the 2016 to 2020 five year average. The total number of non-motorized fatalities and serious injuries was 20 from 2014 to 2018.

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.

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

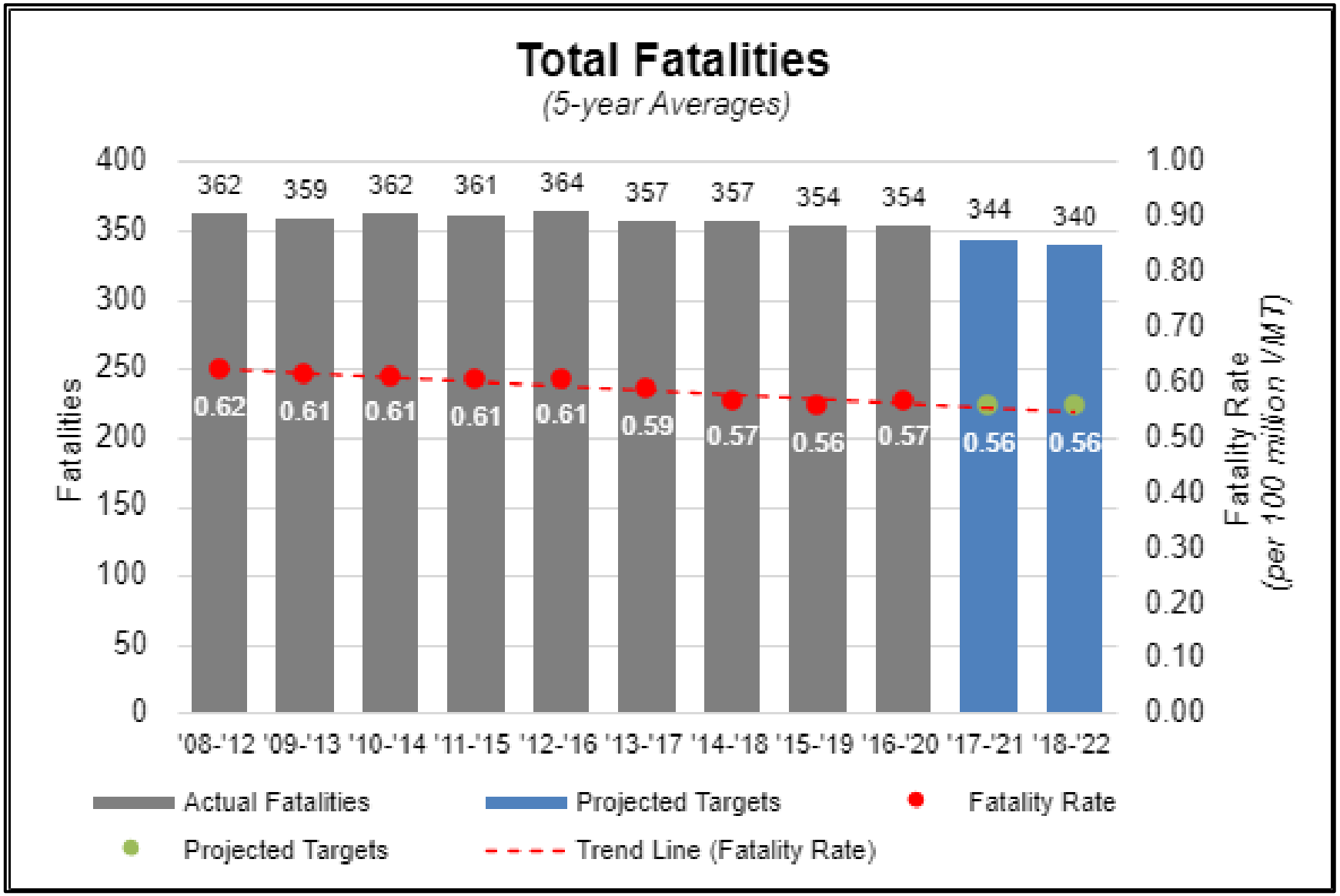


Figure 2 Merrimack Valley Total Fatalities and Fatal Crash Rates (5-Year Averages)

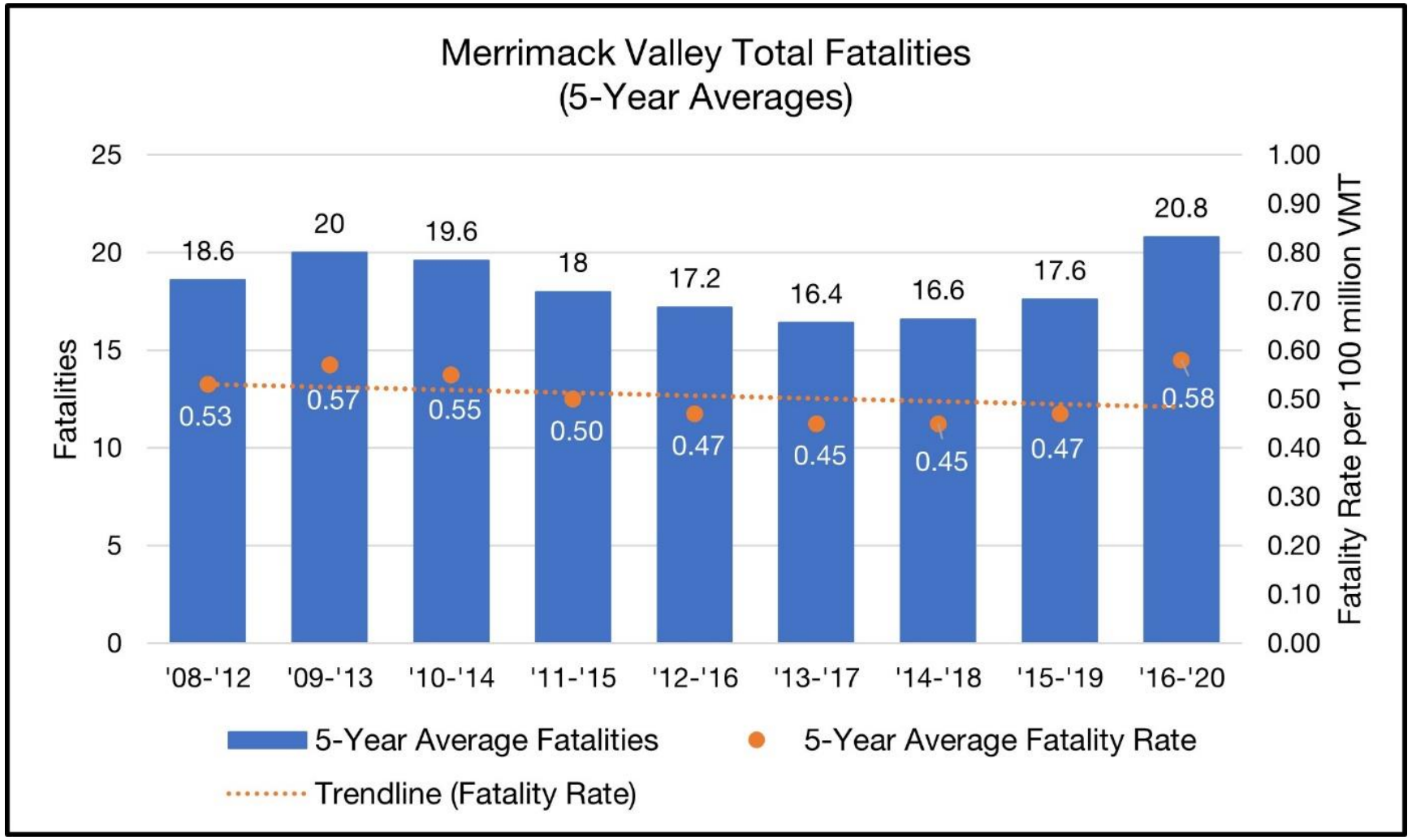


Figure 3 Statewide Total Serious Injuries and Serious Injury Crash Rates (5-Year Averages)

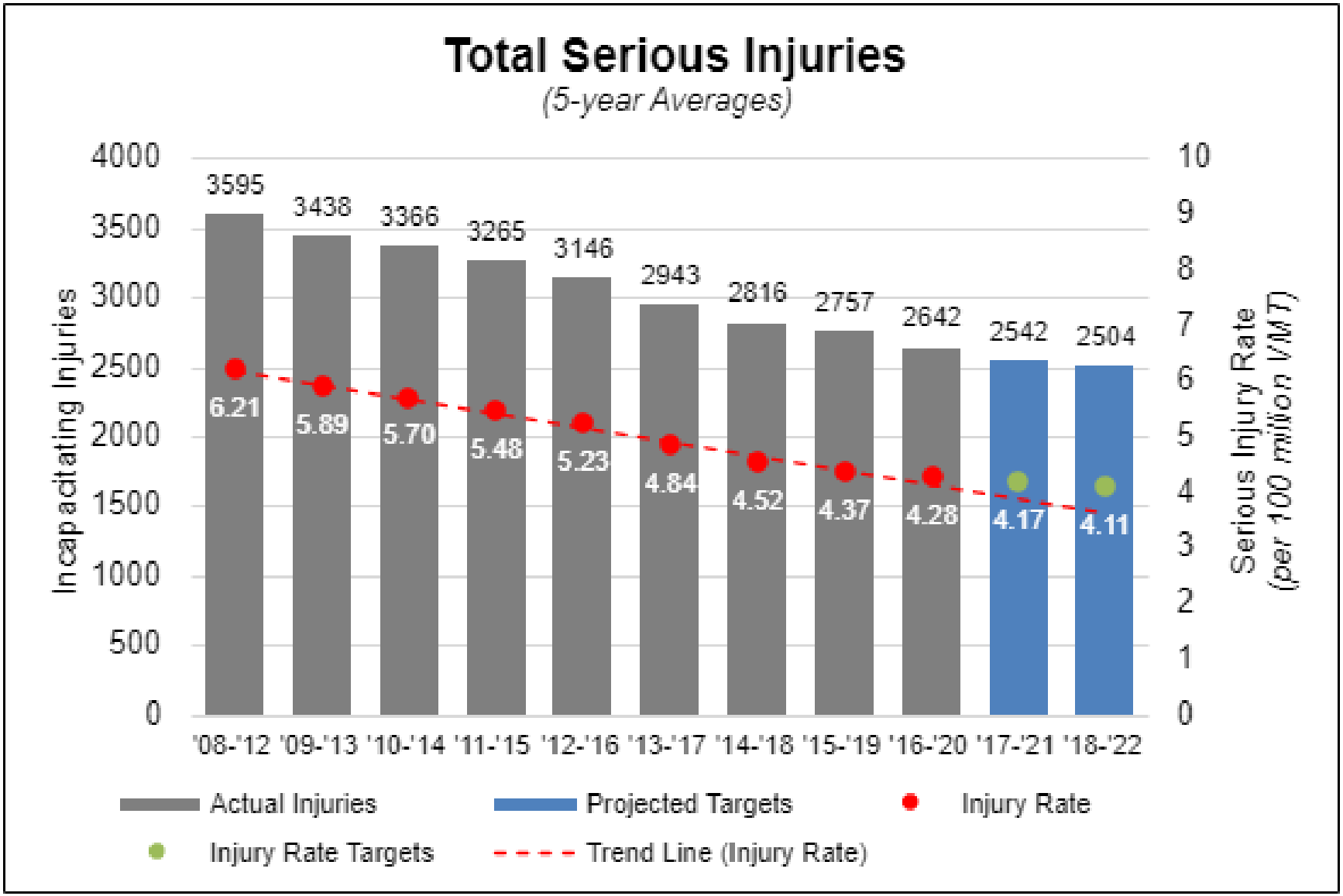


Figure 4 Merrimack Valley Total Serious Injuries and Serious Injury Crash Rates (5-Yr Averages)

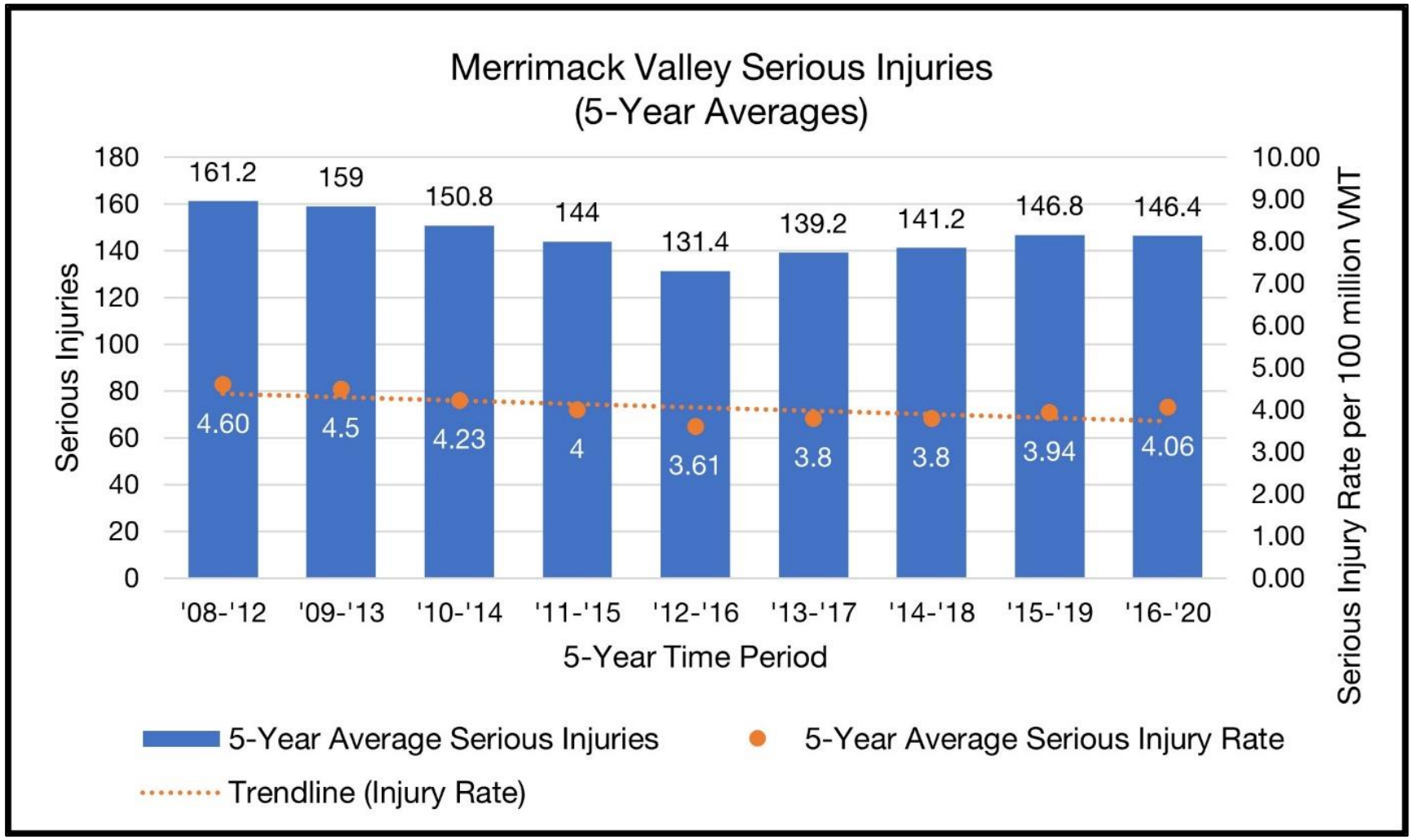


Figure 5 Statewide Total Combined Non-Motorized Injuries & Fatalities

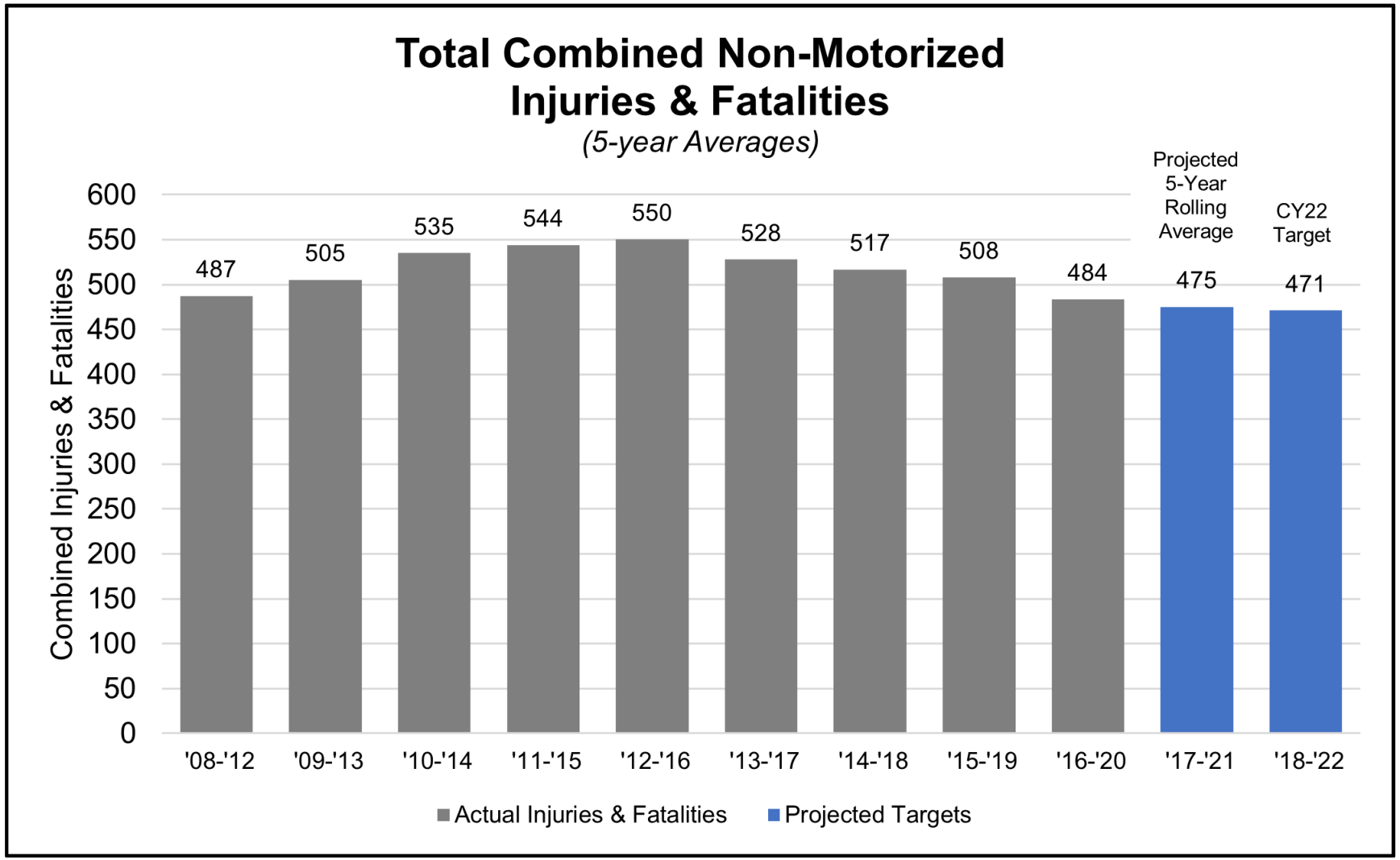
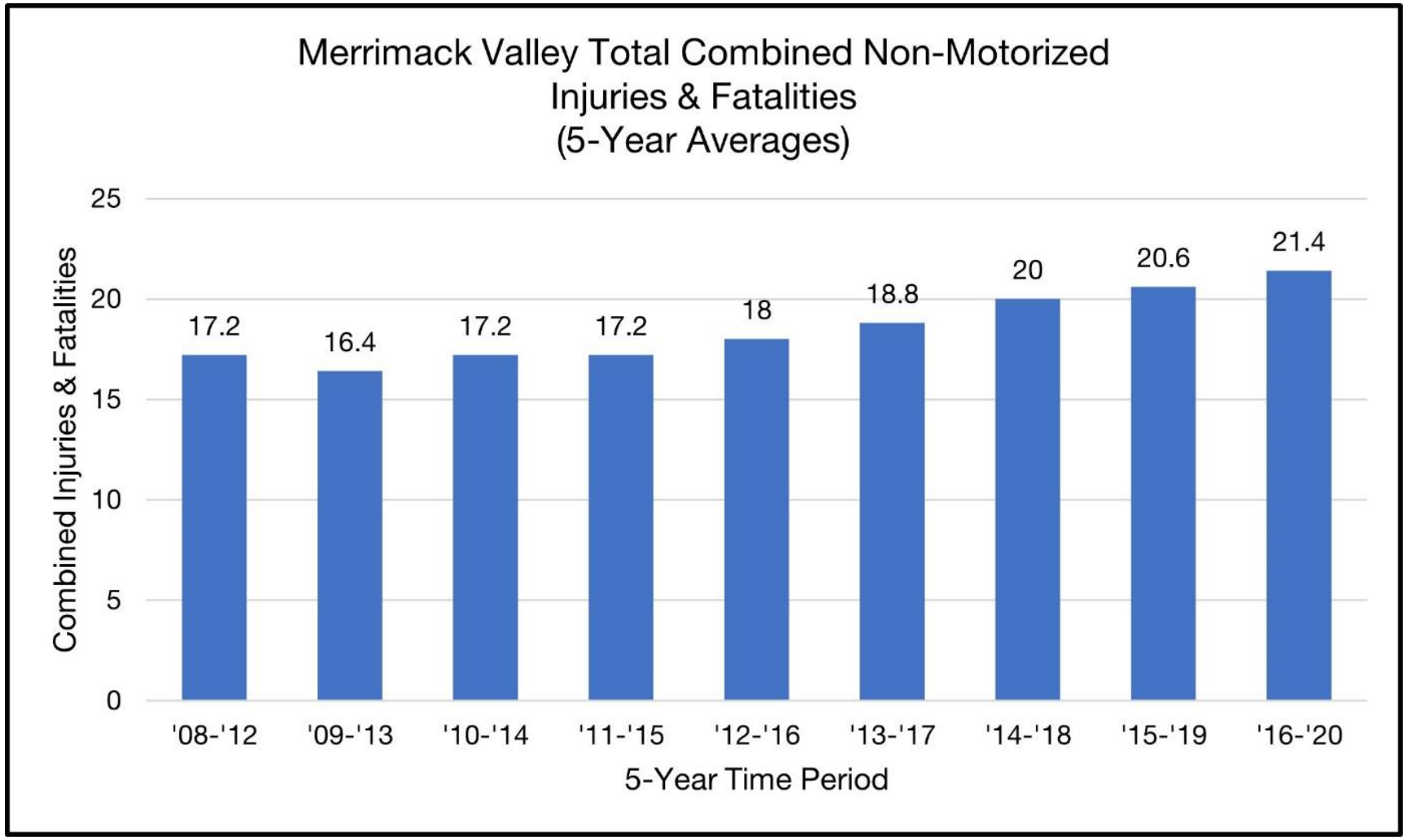


Figure 6 Merrimack Valley Total Combined Non-Motorized Injuries & Fatalities



Bridge & Pavement Performance Measures (PM 2)

On October 24, 2018 the Merrimack Valley MPO chose 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 baseline measures were revisited at the 2-year mark (2020) and reported by MassDOT in the 2020 Mid-performance report. (See table on next page.) The decision was made in the Mid-performance report to keep the pavement condition targets the same.

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 Measures	Baseline	2-Year Condition/ Performance	2-year target (2020)	4-year target (2022)
Percentage of Pavements of the Interstate System in Good Condition		75.6%		70.0%
Percentage of Pavements of the Interstate System in Poor Condition		0.1%		4.0%
Percentage of Pavements of the Non-Interstate NHS in Good Condition	32.9%	34.1%	30.0%	30.0%
Percentage of Pavements of the Non-Interstate NHS in Poor Condition	31.4%	31.4%	30.0%	30.0%
Percentage of NHS Bridges Classified as in Good Condition	15.1%	15.6%	15.0%	16.0%
Percentage of NHS Bridges Classified as in Poor Condition	13.1%	13.5%	13.0%	12.0%

Reliability, Congestion, & Emissions Performance Measures (PM3)

On October 24, 2018 the Merrimack Valley MPO chose 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. These baseline measures were revisited at the 2-year mark (2020) and reported by MassDOT in the 2020 Mid-performance report. (See table on next page.) The decision was made in the Mid-performance report to keep the LOTTR and TTTR performance targets 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. The 2016 baseline measure was revisited at the 2-year mark (2020) and reported by MassDOT in the 2020 Mid-performance report. (See table on next page.) The decision was made in the Mid-performance report to develop new targets for this measure for 2022. The new data for 2017 showed that the share of Non-Single Occupancy Vehicle Trips was 34.1%, which is higher than the 33.9% figure previously predicted by MassDOT for that year. Similarly, the 34.6% share of trips measured in 2018 was higher than the 34.2% share that was previously projected. As a result, MassDOT increased the target for 2022 to 35.8%. Technically the Merrimack Valley MPO does not have to adopt this target because we are an Attainment Area. However, since the MVMPO supports the idea of increasing the percentage of non-single occupancy vehicle travel in the region, the MVMPO adopted the new 2022 target of 35.8% for percentage of non-SOV travel measure on June 23, 2021.

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 6:00 am and 10:00 am, and between 3:00 pm and 7:00 pm) 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. This baseline measure was revisited at the 2-year mark (2020) and reported by MassDOT in the 2020 Mid-performance report. (See table on next page.) The decision was made in the Mid-performance report to keep the PHED target the same.

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. The Merrimack Valley MPO does not have any communities in Non-Attainment and therefore does not need to adopt the emissions reductions targets. They are included at the end of the table below for information.

Measure	Baseline	2-Year Condition/ Performance	2-year (2020)	4-year (2022)	4-year Adjusted Target
Percent of the Person - Miles Traveled on the Interstate That Are Reliable	70.0%	69.1%	68.0%	68.0%	
Percent of the Person - Miles Traveled on the Non-Interstate NHS That Are Reliable		82.4%		80.0%	
Truck Travel Time Reliability (TTTR) Index	1.84	1.86	1.85	1.85	
Annual Hours of Peak Hour Excessive Delay Per Capita (PHED): (Urbanized Area 1)		25.6		18.3	
Percent of Non-Single Occupancy Vehicle (Non-SOV) Travel: (Urbanized Area 1)	33.6% (2016)	34.6%	34.5%	35.1%	35.8%

Total Emissions Reductions: PM2.5	0.000		0.000	0.000	
Total Emissions Reductions: NOx	0.742	0.490	0.500	1.600	1.710
Total Emissions Reductions: VOC	1.667	0.534	0.600	0.900	0.559
Total Emissions Reductions: PM10	0.000		0.000		
Total Emissions Reductions: CO	24.452	6.637	1596.510	1596.510	6.530

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)	354 average number of fatalities/ year for 2016 to 2020	CY 2020 Target = 347 CY 2021 Target = 339 CY 2022 Target = 328 fatalities
PM1: HSIP and Safety	Fatality rate per 100 million vehicle-miles traveled.	0.57 fatalities per 100 million vehicles miles traveled per year average for 2016 to 2020	CY 2020 Target = 0.56 CY 2021 Target = 0.55 CY 2022 Target = 0.56 fatalities per 100 million vehicle miles traveled
PM1: HSIP and Safety	Number of Serious Injuries Statewide (All Public Roads)	2,642 average number of serious injuries per year average from 2016 to 2020	CY 2020 Target = 2,689 CY 2021 Target = 2,580 CY 2022 Target = 2,384 serious injuries
PM1: HSIP and Safety	Serious injury rate per 100 million vehicle-miles traveled.	4.28 serious injuries per 100 million vehicle miles traveled per year average for 2016 to 2020	CY 2020 Target = 4.30 CY 2021 Target = 4.23 CY 2022 Target = 3.83 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)	484 non-motorized five-year average combined serious injuries and fatalities per year for 2016 to 2020	CY 2020 Target = 505 CY 2021 Target = 506 CY 2022 Target = 483 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	75.6% (2-Yr Condition Mid-Performance Report)	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% (2-Yr Condition Mid-Performance Report)	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	34.1% (2-Yr Condition Mid-Performance Report)	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% (2-Yr Condition Mid-Performance Report)	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	15.6% (2-Yr Condition Mid-Performance Report)	CY 2020 Target = 15% CY 2022 Target = 16%
PM2: Pavement and Bridge Condition	Percentage of NHS bridges by deck area in Poor Condition Statewide	13.5% (2-Yr Condition Mid-Performance Report)	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	69.1% (2-Yr Performance Mid-Performance Report)	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	82.4% (2-Yr Performance Mid-Performance Report)	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	1.86 (2-Yr Performance Mid-Performance Report)	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	25.6 (2-Yr Performance Mid-Performance Report)	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	34.6% (2-Yr Performance Mid-Performance Report)	CY 2020 Target = 34.5% CY 2022 Target = 35.8%

Regional Target Projects' Relationship to Regional Planning Efforts and Performance Management

TIP Year	Project Description	Included in Regional Transportation Plan (RTP)	Included in Regional or State Modal Plan	Resulted from Corridor Study	Resulted from MPO Technical Assistance Request	Included in Other Plans (e.g. local Master Plan, CEDS, etc.)	Project's Relationship to Performance Measures/ Other Regional Goals
2027	Amesbury-Riverwalk Connector to the Salisbury Point Ghost Trail (# 611977)	No	Yes	No	No	• Will complete the Coastal Trails and Active Transportation Plan connection between Amesbury and Salisbury. Completes trail connection between 2 State Priority Development Areas.	**Performance Measures Project will help meet:** 1) Number of non-motorized fatalities and non-motorized serious injury. **Meets RTP Goals of:** 1) Increase Safety for all Modes 2) Create a Multi Modal Transportation System to Support Mode Shift 3) Promote Economic Vitality 4) Promote Environmental Sustainability

Regional Target Projects' Relationship to Regional Planning Efforts and Performance Management (Cont.)

TIP Year	Project Description	Included in Regional Transportation Plan (RTP)	Included in Regional or State Modal Plan	Resulted from Corridor Study	Resulted from MPO Technical Assistance Request	Included in Other Plans (e.g. local Master Plan, CEDS, etc.)	Project's Relationship to Performance Measures/ Other Regional Goals
2027	Haverhill- Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH (# 608788)	Yes	No	No	No	No	**Performance Measures Project will help meet:** 1) Number of non-motorized fatalities and non-motorized serious injury **Meets RTP Goals of:** 1) Maintain Existing Infrastructure in State of Good Repair 2) Increase Safety for all Modes 3) Create a Multi Modal Transportation System to Support Mode Shift

Regional Target Projects' Relationship to Regional Planning Efforts and Performance Management (Cont.)

TIP Year	Project Description	Included in Regional Transportation Plan (RTP)	Included in Regional or State Modal Plan	Resulted from Corridor Study	Resulted from MPO Technical Assistance Request	Included in Other Plans (e.g. local Master Plan, CEDS, etc.)	Project's Relationship to Performance Measures/ Other Regional Goals
2024	Methuen–Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	No	No	No	No	• Will improve pedestrian and bicyclist access to Raymond J. Martin Riverside Park recently renovated with a Massachusetts PARC Grant.	**Performance Measures Project will help meet:** 1) Number of non-motorized fatalities and non-motorized serious injury **Meets RTP Goals of:** 1) Maintain Existing Infrastructure in State of Good Repair 2) Increase Safety for all Modes 3) Create a Multi Modal Transportation System to Support Mode Shift 4) Transportation Equity

Regional Target Projects' Relationship to Regional Planning Efforts and Performance Management (Cont.)

TIP Year	Project Description	Included in Regional Transportation Plan (RTP)	Included in Regional or State Modal Plan	Resulted from Corridor Study	Resulted from MPO Technical Assistance Request	Included in Other Plans (e.g. local Master Plan, CEDS, etc.)	Project's Relationship to Performance Measures/ Other Regional Goals
2027	Newburyport–Intersection Improvements @ Route 1 & Merrimac Street (#608029)	Yes	No	No	Yes	Is in a State Priority Development Area. Is in an area with Highest Potential for Everyday Biking as presented in the Mass. Statewide Bicycle Plan.	**Performance Measures Project will help meet:** 1) Number of non-motorized fatalities and non-motorized serious injury **Meets RTP Goals of:** 1) Maintain Existing Infrastructure in State of Good Repair 2) Increase Safety for all Modes 3) Create a Multi Modal Transportation System to Support Mode Shift

Regional Target Projects' Relationship to Regional Planning Efforts and Performance Management (Cont.)

TIP Year	Project Description	Included in Regional Transportation Plan (RTP)	Included in Regional or State Modal Plan	Resulted from Corridor Study	Resulted from MPO Technical Assistance Request	Included in Other Plans (e.g. local Master Plan, CEDS, etc.)	Project's Relationship to Performance Measures/ Other Regional Goals
2024 to 2027	North Andover–Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street (# 608095)	Yes	Is in an area with High Potential for Everyday Biking in the Mass. Statewide Bicycle Plan.	Yes		• Local Priority Development Area • North Andover Master Plan	**Performance Measures Project will help meet:** 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 **Meets RTP Goals of:** 1) Maintain Existing Infrastructure in State of Good Repair 2) Increase Safety for all Modes 3) Create a Multi Modal Transportation System to Support Mode Shift 4) Promote Economic Vitality 5) Promote Environmental Sustainability 6) Transportation Equity

Regional Target Projects' Relationship to Regional Planning Efforts and Performance Management (Cont.)

TIP Year	Project Description	Included in Regional Transportation Plan (RTP)	Included in Regional or State Modal Plan	Resulted from Corridor Study	Resulted from MPO Technical Assistance Request	Included in Other Plans (e.g. local Master Plan, CEDS, etc.)	Project's Relationship to Performance Measures/ Other Regional Goals
2023 to 2024	Salisbury– Reconstruction of Route 1 (Lafayette Road)	Yes				• Will complete the roadway after a CEDS project to extend the sewer line along Route 1 is completed. • Local Priority Development Area.	**Performance Measures Project will help meet:** 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 **Meets RTP Goals of:** 5) Maintain Existing Infrastructure in State of Good Repair 6) Increase Safety for all Modes 7) Create a Multi Modal Transportation System to Support Mode Shift 8) Promote Economic Vitality 9) Promote Environmental Sustainability

Performance Target(s) Project Will Help Meet
(2023 to 2027 Statewide and Regional Target Funds)

Year(s) Program-med	City/ Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2027	Amesbury	Amesbury– Riverwalk Connector to the Salisbury Point Ghost Trail (# 611977)	$2,448,760	1) Number of non-motorized fatalities and non-motorized serious injury.
2025	Andover	Andover- Bridge Preservation, A-09-022, I-93 over Merrimack River (# 612193)	$38,102,400	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.
2023-2026	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)	$173,075,000	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.
2025	Andover	Andover– Bridge Replacement, A-09-015, Tewksbury Street over MBTA/ BMRR (# 612143)	$17,383,839	

Performance Target(s) Project Will Help Meet
(2023 to 2027 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	Andover-Tewksbury	Andover-Tewksbury- Interstate Maintenance and related work on I-93 (# 612045)	$18,525,197	1) Percentage of Pavements of the Interstate System in Good Condition and in Poor Condition 2) Percent of the Person-Miles Traveled on the Interstate that are Reliable. 3) Truck Travel Time Reliability (TTTR) Index on the Interstate System.
2024	Georgetown / Boxford	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.
2026	Georgetown / Newbury	Georgetown- Newbury Border to Boston Trail, (Northern Georgetown to Byfield Section) (# 607542)	$6,798,000	Number of non-motorized fatalities and non-motorized serious injury.
2026	Groveland	Groveland- Improvements at Dr. Elmer Bagnall Elementary (SRTS) (#S12208)	$1,858,080	Number of non-motorized fatalities and non-motorized serious injury.

Performance Target(s) Project Will Help Meet
(2023 to 2027 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
2024-2027	Haverhill	Haverhill– Bridge Replacement, H-12-007 & H-12-025, Bridge Street (SR 125) over the Merrimack River (# 605304) (AC Yrs 4 of 4)	$108,011,904	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 Reliable.
2024-2027	Haverhill	Haverhill– Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River (#609466) (AC Yrs 4 of 4)	$96,087,420	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.
2027	Haverhill	Haverhill– Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH (# 608788)	$5,798,257*	Number of non-motorized fatalities and non-motorized serious injury.

* Haverhill North Avenue is AC'd FFY 2028 and 2029 = $ 17,802,740 Total Project Cost =$23,600,997

Performance Target(s) Project Will Help Meet
(2023 to 2027 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
2026	Lawrence	Lawrence– Bridge Replacement, L-04-012, Short Street over Spicket River (# 612074)	$3,285,005	
2025	Lawrence	Lawrence– Community Day Arlington Improvements (SRTS) (# 612002)	$1,554,211	Number of non-motorized fatalities and non-motorized serious injury.
2024-2025	Lawrence	Lawrence– Lawrence Manchester Rail Corridor (LMRC) Rail Trail (# 608930)	$21,416,304	Number of non-motorized fatalities and non-motorized serious injury
2024	Lawrence	Lawrence– Roadway Reconstruction on Amesbury Street (# 610924)	$8,028,654	1) Number and rate of fatalities. 2) Number and rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury
2025	Methuen	Methuen- Bridge Replacement, M-17-026, Route 213 EB/WB over the Me-thuen Rail Trail (# 612158)	$4,598,252	1) Percentage of NHS bridges classified as in Good condition.
2024	Methuen	Methuen– Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	$2,063,889	1) Number and rate of fatalities. 2) Number and rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury

Performance Target(s) Project Will Help Meet
(2023 to 2027 Statewide and Regional Target Funds) (Cont.)

Year(s) Programmed	City/ Town	Project Description	Total Cost Programmed	Federal Performance Target(s) Project Will Help Meet
2027	Newburyport	Newburyport– Intersection Improvements @ Route 1 & Merrimac Street (# 608029)	$2,870,513	1) Number and rate of fatalities. 2) Number and rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury
2024-2027	North Andover	North Andover- Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street (# 608095)	$34,083,859	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
2023	Rowley	Rowley– Safety Improvements at Route 1, Central and Glen Streets (# 609392)	$1,330,785	1) Number and rate of fatalities. 2) Number and rate of Serious Injuries
2023-2024	Salisbury	Salisbury– Reconstruction of Route 1 (Lafayette Road) (# 602202)	$19,266,283	1) Number and rate of fatalities. 2) Number and rate of Serious Injuries 3) Number of non-motorized fatalities and non-motorized serious injury

Transit Asset Management (TAM) Plan Performance Management Targets

The MVRTA revised its TAM Plan July 8, 2021. The TAM Performance Management Targets were adopted by the MVRTA Advisory Board on July 8, 2021. The Merrimack Valley MPO adopted these targets at its July 28, 2021 MPO meeting.

The following information is from the MVRTA Transit Asset Management Plan

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 revised 7/8/2021, the MVRTA has prepared the following targets:

Transit TAM Targets

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

	FFY 2021	FFY 2022	FFY 2023	FFY 2024
Bus	17%	15%	15%	0%
Van	73%	0%	32%	0%

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

	FFY 2021	FFY 2022	FFY 2023	FFY 2024
Maintenance Trucks	0%	0%	0%	0%
SUV (Supervisory Vehicles)	0%	0%	0%	0%

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 2023-2027 Capital Plan.

On July 28, 2021 the Merrimack Valley MPO voted to adopt the transit TAM performance measure targets set by MVRTA for FFY 2021 through FFY 2024.

The following table lists the transit projects programmed in this TIP that help meet the Transit TAM Performance Measures.

TAM Performance Measures Transit Projects Help Meet

Year	**Project Title**	**Performance Measure Project helps meet**
2023	MVRTA Replace 8 Model Yr 2011 35' buses delivery 2023 (RTD0010750)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark
2023	MVRTA Replace 6 Model Yr 2017 Type E-2 vans delivery 2023 (RTD0010751)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark
2023	MVRTA Replace 1 Model Yr 2017 Supervisory Vehicle (RTD0010758)	Equipment - Percent of vehicles met or exceeded Useful Life Benchmark

TAM Performance Measures Transit Projects Help Meet (Cont.)

Year	Project Title	Performance Measure Project helps meet
2023	MVRTA- BUY REPLACEMENT VANS (RTD0011300)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark
2023	MVRTA- BUY REPLACEMENTS- CAPITAL BUS (RTD0011304)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark
2023	MVRTA- BUY REPLACEMENTS- CAPITAL BUS (RTD0011305)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark
2023	MVRTA- REHAB/RENOVATE- MISC EQUIPMENT (RTD0011306)	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.
2023	MVRTA- ENG/DESIGN- ADMIN/MAINT FACILITY (RTD0011307)	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.
2023	MVRTA- 5339 Bus & Bus Facility Discretionary: Improvements to the McGovern Transportation Center (RTDTBD13)	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.
2024	MVRTA Replace 1 Model Year 2018 Supervisory Vehicle (RTD0010759)	Equipment - Percent of vehicles met or exceeded Useful Life Benchmark
2024	MVRTA Replace 8 model yr 2012 35’ buses delivery 2024 (8 of 8) (RTD0010753)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark
2024	MVRTA - ENG/DESIGN - ADMIN/MAINT FACILITY (RTD0011308)	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.
2024	MVRTA - CONSTRUCT ADMIN/MAINT FACILITY (RTD0011309)	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.

TAM Performance Measures Transit Projects Help Meet (Cont.)

Year	Project Title	Performance Measure Project helps meet
2024	MVRTA - 5339 Bus & Bus Facility Discretionary: Expansion of MVRTA Bus Maintenance Facility & Possible New Bus Hub at Bradford CR Station (RTDTBD14)	Percentage of Assets with condition rating below 3.0 on FTA TERM Scale.
2025	MVRTA Replace 1 Model Year 2019 Supervisory Vehicle (RTD00010764)	Equipment - Percent of vehicles met or exceeded Useful Life Benchmark
2026	MVRTA Replace 1 Model Year 2020 Supervisory Vehicle (RTD00010769)	Equipment - Percent of vehicles met or exceeded Useful Life Benchmark
2027	MVRTA- BUY REPLACEMENT 35-FT BUS (RTD0011315)	Rolling Stock - Percent of vehicles met or exceeded Useful Life Benchmark

Public Transportation Agency Safety Plan (PTASP)

The MVRTA, as a recipient of FTA Urban Area Funding Grants, is required to develop a plan to implement a Safety Management System (SMS) that includes safety performance targets. The MVRTA adopted the Merrimack Valley Regional Transit Authority Safety Plan on November 10, 2020 and Revised it January 15, 2021 and transmitted the targets to the MVMPO 2/28/2021. The Merrimack Valley MPO adopted the MVRTA Safety Plan Targets on July 28, 2021. The MVRTA revised its Safety Plan with regard to personnel and responsibilities April 5, 2021, but did not change any targets.

Transit Safety Performance Targets

The following is from the MVRTA Safety Plan:

> Safety Performance Targets have been set for each of the 3 modes of transit service. They are based on the safety performance measures established by MVRTA over the last 3 Fiscal Years. All goals are expressed in number of occurrences per 100,000 miles. Below are the goals set by the MVRTA for our service.

Mode	Fatalities	Fatalities (per 100 thousand VRM)	Injuries (Total)	Injuries (per 100 thousand VRM)	Safety Events	Safety Events (per 100 thousand VRM)	System Reliability (VRM/ Failures)
Motor Bus	0	0	0	0	0	0	46461
Commuter Bus	0	0	0	0	0	0	For all
Demand Response	0	0	0	0	0	0	3 modes

Part A. 3. Prioritization

The FFYs 2023-2027 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 (FFY) of the proposed advertise date. Federal fiscal years begin on October 1 and run through September 30. For example, FFY 2023 begins on October 1, 2022 and ends on September 30, 2023. 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. Most of the time the community is responsible for funding the design of a project and therefore their priorities greatly influence which projects will be far enough along in the design process to be programmed in the TIP. The MPO process solicits community project priorities when developing the RTP and, when annually developing the UPWP, the communities are asked what transportation studies they would like the MPO to conduct for them. These often but not always are related to the project priorities that were identified in the RTP. These studies become the beginning of many locally generated project proposals.

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. When it comes to programming projects in the TIP, readiness becomes paramount, because the project needs to be through the 100% design process to be able to be advertised for construction.

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 relate to the performance measures.

Consideration of whether a project contributes to Climate Resiliency was 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.

The COVID-19 pandemic has not impacted the project scoring for this TIP. While the changes to travel patterns caused by the pandemic are certainly dramatic, it was not deemed necessary to change project scores or the transportation evaluation criteria at this time. The changes to travel patterns that have been observed in the Merrimack Valley and elsewhere in Massachusetts and New England, under total lock down, phased re-openings of the economy, and now with restrictions eliminated, but continued working from home, and virtual meetings it remains to be seen exactly how travel patterns will settle out. Consequently, it was considered inadvisable to change project scores or plans based on a temporary condition. The MVMPO will continue to monitor traffic counts and travel time reliability, but it will likely take a few years for travel patterns to settle into the “new normal”, whatever that is going to be.

The RITIS platform is a primary data source used to inform the Merrimack Valley MPO’s Congestion Management Process (CMP). The data generated by the CMP on travel times and travel reliability on the region’s NHS roadways is then considered in the roadway and trail project scoring system to evaluate the degree to which the magnitude and duration of congestion on the transportation network will be reduced through the construction of the proposed improvements.

The MVMPO's CMP currently considers RITIS travel time reliability and travel time data collected through the year 2020. As the RITIS data is slightly different than previously available travel time data, there are only a few years of this newer data to compare and it shows that there had not been much change in travel time reliability, or change in travel patterns. However, now that travel patterns have changed dramatically due to the COVID-19 pandemic and are likely to continue changing as travel reaches its "new normal" in a few years, we will then be able to examine how congestion and travel patterns have changed using the RITIS platform.

The following table provides the TEC scoring guidelines for each element scored and the Planning Factors and Performance Measures related to each scoring element.

TEC Element	Data	Scoring	Additional Notes	Planning Factors/ Performance Measures
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/ Performance Measures
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/ Performance Measures
Mobility				
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/ Performance Measures
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/ Performance Measures
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 is 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/ Performance Measures
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/ Performance Measures
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/ Performance Measures
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/ Performance Measures
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/ Performance Measures
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/ Performance Measures
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 BIL 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 BIL 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 2023-2027 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 for its program of projects. 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 federal transportation legislation at the time 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 2023-2027 Transportation Improvement Program, all MVMPO stakeholders were given notice that the process of

developing the FFYs 2023-2027 TIP was beginning. Stakeholders were also notified of the availability of the draft document for public review and comment.

Public Participation Plan (PPP) Stakeholders

Many categories of interested individuals, organizations and other stakeholders (Interested Parties) are identified by the MVMPO in the PPP. They are defined based on the individual groups identified in previous federal transportation authorizations.

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

The notices were sent directly to over 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 2023-2027 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 4, 2022 through May 24, 2022. It said that comments would be received through May 24, 2022 and that two separate Virtual public hearings on the document would take place on May 18, 2022 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 precautions and the fact that Virtual meetings are more accessible to more people. In addition, another Virtual Public Involvement (VPI) tool was used to allow public comments to be provided through a “Provide Comments Now”” button on the MVPC website in the Transportation MVMPO section. The MVMPO will summarize relevant comments that are received during the 21-day review and comment period and will include this summary in the Final FFYs 2023-2027 TIP.

Public input in developing the TIP was sought at the following meetings in 2022:

- January 26, 2022, February 23, 2022, March 23, 2022, April 27, 2022 and May 25, 2022 MVMPO Meetings (all held Virtually due to COVID-19 Virus precautions and accessibility to more people)
- February 3, 2022 and March 3, 2022 MVRTA Advisory Board meetings (all held as Hybrid (In-person and Virtual)) meetings
- January 13, 2022, March 10, 2022 and April 14, 2022 Merrimack Valley Transportation Committee (MVTC) meetings (all held Virtually due to COVID-19 Virus precautions and accessibility to more people)
- February 17, 2022, March 17, 2022, and April 21, 2022 Merrimack Valley Planning Commission (MVPC) meetings (all held as Hybrid (In-person and Virtual)) meetings
- March 2, 2022 and April 6, 2022 Merrimack Valley DPW/ Stormwater Collaborative meetings (all held Virtually due to COVID-19 Virus precautions and accessibility to more people)

Part A. 5. Amendment/ Adjustment Procedures

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.

The above Adjustments and Amendments align with MassDOT's definitions of Adjustments and Amendments. One difference from the MassDOT State Transportation Improvement Program (STIP) Project Revision Definitions and Procedures is that MassDOT defines an "Administrative Modification: A revision to the STIP that is minor enough in nature to require neither a public process nor FHWA/FTA approval, but that does involve a notification to federal partners."

This document does not have an "Administrative Modification". The only items that MassDOT defines as Administrative Modifications are minor changes to Project Description and a change in any item listed in the "Additional Information" column of the STIP not covered in any Amendment or Adjustment procedure. The MVMPO must use the Project Descriptions provided by MassDOT, the only time a Project Description changes is if MassDOT changes it, this would be considered an Adjustment to this document. Any changes to "Additional Information" not listed in the Amendment/ Adjustment procedures above would be coordinated with MassDOT and would not require action by the MVMPO.

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	Salisbury Section Complete. Remaining sections under Design.

Part A.6. High Priority Projects (Continued)

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

Regionally Significant Projects

Community	Project
North Andover	Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street (# 608095)

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 2023-2027 TIP using this Advance Construction (AC) method:

North Andover-	Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street
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
Haverhill-	Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH (# 608788) (Funding for FFY 2027 included in this TIP is AC year one of the three-year project.)
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)
Lawrence-	Lawrence-Manchester Rail Corridor (LMRC) Rail Trail
Salisbury-	Reconstruction of Route 1 (Lafayette Road)

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 2023 -2027 TIP are slated to use funding from the following Federal-aid funding programs identified in the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act Pub. L. 117-58 (November 15, 2021). Projects may also receive non-Federal Aid funding which is shown in the project listings for informational purposes.

Highway Projects

Bridge Formula Program ((BFP) (New in the BIL)) to replace, rehabilitate, preserve, protect and construct highway bridges. Sets aside 15% of a state's apportionment for use on "off-system" bridges.

Funding: Varies, Federal - 80%, State - 20%, but locally owned "off system" bridges funding Federal = 100%

Bridge Investment Program ((BIP) (New in the BIL)) Competitive Grant Program to replace, rehabilitate, preserve, protect bridges and culverts.

Funding: Varies, Federal - 80%, State - 20%, but locally owned "off system" bridges funding Federal = 100%

Coronavirus Response and Relief Supplemental Appropriations Act (CRRSAA) (New Highway Apportionments to the Commonwealth)- a subset of HIP funds to address COVID-19 impacts related to the HIP program.

Funding: Federal - 100%

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

Funding: Federal - 80%, State - 20%

Federal Lands Access Program ((FLAP) (continued in the BIL)) funds projects that improve multimodal transportation on facilities that access the Federal estate including recreation sites and economic generators.

Funding: Federal– 100%

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

Funding: Federal - 90%, State -10%

National Electric Vehicle Infrastructure Formula Program ((NEVI Formula) (new in the BIL)) to provide funding to States to strategically deploy electric vehicle (EV) charging infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability.

Funding: Federal - 80%, State - 20%

National Highway Freight Program ((NHFP) (continued in the BIL)) to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support several goals.

Funding: Federal - 80%, State - 20%

National Highway Performance Program ((NHPP) (continued in the BIL)) funds projects on all National Highway System Roadways. New in the BIL provides support for activities to increase the resiliency of the NHS to mitigate the cost of damages from sea level rise, extreme weather events, flooding, wildfires, or other natural disasters.

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

Railway-Highway Crossings Program ((RHCP) (continued in the BIL)) provides funds for safety improvements to reduce the number of fatalities, injuries, and crashes at public railway-highway grade crossings

Funding: Federal = 100% in the BIL, was Federal- 80%, State- 20% under FAST Act

RAISE Grants Local and Regional Project Assistance Grants (RAISE) (continued in the BIL)) provides supplemental funding for projects that will have significant local/regional impact.

Funding: Federal - 80%, State/Local – 20%,

Funding: Federal – 100% in rural areas, historically disadvantaged communities and areas of persistent poverty

Rural Surface Transportation Grant Program (RURAL) (new in the BIL)) funds highway, bridge and tunnel projects that improve freight, safety and improve access to improve local rural economies.

Funding: Federal - 80%, State/Local – 20%

Safe Streets and Roads for All (SS4A) (new in the BIL)) discretionary funding to support regional, local and Tribal initiatives to prevent roadway deaths and serious injuries.

Funding: Federal - 80%, State/Local – 20%

Surface Transportation Block Grant Program ((STBG) (continued in the BIL)) 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.

Funding: Federal- 80%, State- 20%

Transportation Alternatives ((TA) (continued in the BIL)) is a set aside of STBG funds for projects which can be defined as transportation alternatives including bicycle and pedestrian facilities, recreational trails, safe routes to school projects, community improvements, such as historic preservation and vegetation management, and environmental mitigations related to stormwater and habitat connectivity.

Funding: Federal- 80%, State- 20%

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%

Next Generation Bridge Program (NGBP)- Non-Federal Aid Massachusetts Transportation Bond Bill funds for bridges.

Funding: State- 100% (Transportation Bond Bill)

Transit Projects

The Merrimack Valley Regional Transit Authority (MVRTA) provides local and intercity fixed-route bus service, paratransit service for seniors and persons with disabilities, flexible Ring and Ride service is provided in some communities with no fixed route service, commuter service to Boston, weekday employment bus route from Lawrence to major employers of Raytheon and IRS, and one seasonal bus route to Salisbury and Hampton beaches.

Prior to the COVID-19 Pandemic, in FY 2019 (July 1, 2018 to June 30, 2019) the MVRTA fixed route services' ridership was over 1.9 million, with an additional 44,040 passengers on special routes. EZ Trans paratransit ridership was 60,397 ADA and 6,817 Non-ADA. The commuter buses to Boston carried 60,822 passengers and Ring and Ride provided service to 10,868 passengers, for a total of nearly 2.08 million rides provided by MVRTA in FY 2019.

The MVRTA went fare-free on March 1, 2022, a two-year pilot program on all fixed route and EZ Trans paratransit services. The Boston Commuter bus still has fares, but it is included in a MassDOT two-year pilot program that allows the buses to ride in the shoulder lane on I-93 between I-95 in Woburn and the HOV lane in Somerville between 6 am and 10 am southbound and between 3 pm and 7 pm northbound when the travel speeds in the other lanes are below 35 miles per hour.

Federal, State and local subsidies provide the majority of the funding for the MVRTA, for both capital and operating expenses. Any Federal funding and its match, generally State funding, is required to be listed in this TIP.

The projects in the FFYs 2023 -2027 TIP are slated to use funding from the following Federal-aid funding programs identified in the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act Pub. L. 117-58 (November 15, 2021). Projects may also receive non-Federal Aid funding which is shown in the project listings.

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.

Federal Transit Funding

Section 5307 Capital and Planning Urbanized Area Formula Program ((Section 5307) (continued in the BIL)) funds routine transit capital and operating assistance, and planning assistance in urbanized areas, job access and reverse commute projects. This is an urban formula grant program for MVRTA Preventative Maintenance and ADA costs.

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

Funding: Federal - 50%, State - 50% (Bond Issue Funds) for Operating Assistance

Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities Formula Grant Program ((Section 5310) (continued in the BIL) provides funds, through the State, to private non-profit corporations and organizations to assist them in providing transportation services to meet the special transportation needs of seniors and individuals with disabilities.

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

Section 5339 Buses and Bus Facilities Urbanized Area Formula Program and Competitive Grants ((Section 5339) (continued in the BIL)) provides capital funds, through the State, for bus and bus related equipment and facilities.

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

Section 5307 (h) Passenger Ferry Grant Program ((Section 5307(h)) (continued in the BIL)) provides competitive funding for projects that support passenger ferry service in urbanized areas.

Funding: Federal - 80%, State - 20%

State Transit Funding

Mobility Assistance Program (MAP) helps fund transportation services for seniors and people with disabilities.

Operating Assistance

State Contract Assistance (SCA) annual State funding which can be used for Federal operating expenses and as part of the match for Federal transit operating funding programs.

State Capital Assistance

Regional Transit Authority Capital Assistance Program (RTACAP) annual State funding which can be used to provide the match for Federal transit capital funding programs.

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 2023 to 2027 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 2023 to 2027 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.

Year– Federal Fiscal Year in which the project is programmed.

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– 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.

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.).

Adjusted TFPC- the 2023 Total Federal Participating Cost adjusted for inflation by 4% for projects that start in 2024; 8% for projects that start in 2025; 12% for projects that start in 2026 and 16% for projects that start in 2027.

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.

Other 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:

Division ID – Transit Project ID from MassDOT

Project Title – project title from MassDOT

Total – estimated total cost of project.

Bond Cap | State | 100% State– portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds for in order to receive Federal Funds, coming from Massachusetts Transportation Bond Bill.

Bond Cap | Match | Federal Transit Discretionary Grant– portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds for Federal Transit Discretionary Grant, in order to receive Federal Funds, coming from the Massachusetts Transportation Bond Bill.

Federal | FTA | Section 5307– Portion of Total Programmed Funds provided by Federal FTA Section 5307 Funding.

Federal | FTA | Other Federal Transit– Portion of Total Programmed Funds provided by Federal FTA Funding other than Section 5307 or a Discretionary Grant.

Federal | FTA | Federal Transit Discretionary Grant– Portion of Total Programmed Funds provided by Federal FTA Discretionary Grant.

Operating | Additional State Assistance | State Contract Assistance– portion of Total Programmed Funds not provided by Federal Funding, but required as matching funds for in order to receive Federal Funds, coming from State funding sources.

Other | Municipal and Local | Transit– 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.

Part B. Project Listings
Highway Projects

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2023							$95,373,638	$76,298,910	$19,074,728	
Section 1A / Regionally Prioritized Projects							$13,293,829	$10,635,063	$2,658,766	
Roadway Reconstruction							$13,293,829	$10,635,063	$2,658,766	
2023	602202	Merrimack Valley	Salisbury	SALISBURY- RECONSTRUCTION OF ROUTE 1 (LAFAYETTE ROAD)	STBG	$19,266,283	$13,293,829	$10,635,063	$2,658,766	a) Construction; b) $19,266,283 STBG; c) AC Year 1-2 FFY 2023-2024 d) TEC = 11.72 out of 18.
Section 2A / State Prioritized Reliability Projects							$82,079,809	$65,663,847	$16,415,962	
Bridge On-system NHS							$80,749,024	$64,599,219	$16,149,805	
2023	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)	NHPP	$173,075,000	$80,749,024	$64,599,219	$16,149,805	Project ACd over 2023-2026
Safety Improvements							$1,330,785	$1,064,628	$266,157	
2023	609392	Merrimack Valley	Rowley	ROWLEY- SAFETY IMPROVEMENTS AT ROUTE 1, CENTRAL AND GLEN STREETS	NHPP	$1,330,785	$1,330,785	$1,064,628	$266,157	a) Construction; b) $1,330,785 NHPP d) TEC = 6.5 out of 18.

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2024							$127,006,795	$103,211,167	$23,795,628	
Section 1A / Regionally Prioritized Projects							$13,468,779	$10,775,023	$2,693,756	
Roadway Reconstruction							$11,404,890	$9,123,912	$2,280,978	
2024	602202	Merrimack Valley	Salisbury	SALISBURY- RECONSTRUCTION OF ROUTE 1 (LAFAYETTE ROAD)	STBG	$19,266,283	$5,972,454	$4,777,963	$1,194,491	a) Construction; b) $19,266,283 STBG; c) AC Year 1-2 FFY 2023-2024 d) TEC = 11.72 out of 18.
2024	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN WAVERLY ROAD & WILLOW/MILL STREET	STBG	$34,083,859	$5,432,436	$4,345,949	$1,086,487	a) Construction; b) $34,083,859 STBG (inflated 4% from 2023 cost) = FFY 2024 ($5,495,380) + FFY 2025 ($13,239,974) + FFY 2026 ($12,916,056) + FFY 2027 ($2,432,449) c) AC years 1-4 FFY 2024-2027; d) TEC = 12.42 out of 18.
Intersection Improvements							$2,063,889	$1,651,111	$412,778	
2024	610658	Merrimack Valley	Methuen	METHUEN- INTERSECTION IMPROVEMENTS AT RIVERSIDE DRIVE AND BURNHAM ROAD	STBG	$2,063,889	$2,063,889	$1,651,111	$412,778	a) Construction; b) $2,000,945 STBG (inflated 4% from 2023 cost) d) TEC = 7.87 out of 18.
Section 1B / Earmark or Discretionary Grant Funded Projects							$8,028,654	$8,028,654	$0	
Earmark Discretionary							$8,028,654	$8,028,654	$0	
2024	610924	Merrimack Valley	Lawrence	LAWRENCE- ROADWAY RECONSTRUCTION ON AMESBURY STREET	CRRSAA	$8,028,654	$8,028,654	$8,028,654	$0	a) Construction; b) $8,028,654 (inflated 4% from 2023 cost) d) TEC = 11.15 out of 18.
Section 2A / State Prioritized Reliability Projects							$101,988,926	$81,591,141	$20,397,785	
Bridge On-system NHS							$101,988,926	$81,591,141	$20,397,785	
2024	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)	NHPP	$108,011,904	$20,600,000	$16,480,000	$4,120,000	Project ACd over 2024-2027
2024	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)	NHPP	$173,075,000	$60,000,000	$48,000,000	$12,000,000	Project ACd over 2023-2026
2024	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	NHPP	$96,087,420	$21,388,926	$17,111,141	$4,277,785	Project ACd over 2024-2027

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2024 (Cont.)										
Section 2C / State Prioritized Expansion Projects							$3,520,436	$2,816,349	$704,087	
Bicycle and Pedestrian							$3,520,436	$2,816,349	$704,087	
2024	607541	Merrimack Valley	Multiple	GEORGETOWN- BOXFORD- BORDER TO BOSTON TRAIL, FROM GEORGETOWN ROAD TO WEST MAIN STREET (ROUTE 97)	CMAQ	$2,520,436	$2,520,436	$2,016,349	$504,087	a) Construction; b) $2,520,436 CMAQ (inflated 4% from 2023 cost) d) TEC = 7.2 out of 18.
2024	608930	Merrimack Valley	Lawrence	LAWRENCE- LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	CMAQ	$21,416,304	$1,000,000	$800,000	$200,000	a) Construction; b) $21,416,304 CMAQ (inflated 4% from 2023 cost); c) AC Year 1-2 FFY 2024-2025: d) TEC = 11.25 out of 18.

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2025							$196,859,453	$111,272,489	$85,586,964	
Section 1A / Regionally Prioritized Projects							$13,239,974	$10,591,979	$2,647,995	
Roadway Reconstruction							$13,239,974	$10,591,979	$2,647,995	
2025	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN WAVERLY ROAD & WILLOW/MILL STREET	STBG	$34,083,859	$13,239,974	$10,591,979	$2,647,995	a) Construction; b) $34,083,859 STBG (inflated 4% from 2023 cost) = FFY 2024 ($5,495,380) + FFY 2025 ($13,239,974) + FFY 2026 ($12,916,056) + FFY 2027 ($2,432,449) c) AC years 1-4 FFY 2024-2027; d) TEC = 12.42 out of 18.
Section 2A / State Prioritized Reliability Projects							$101,564,473	$83,104,098	$18,460,375	
Bridge On-system NHS							$83,039,276	$66,431,421	$16,607,855	
2025	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)	NHPP	$108,011,904	$30,900,000	$24,720,000	$6,180,000	Project ACd over 2024-2027
2025	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)	NHPP	$173,075,000	$12,325,976	$9,860,781	$2,465,195	Project ACd over 2023-2026
2025	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	NHPP	$96,087,420	$39,813,300	$31,850,640	$7,962,660	Project ACd over 2024-2027
Interstate Pavement							$18,525,197	$16,672,677	$1,852,520	
2025	612045	Merrimack Valley	Andover	ANDOVER- TEWKSBURY- INTERSTATE MAINTENANCE AND RELATED WORKS ON I-93	NHPP-I	$18,525,197	$18,525,197	$16,672,677	$1,852,520	
Section 2B / State Prioritized Modernization Projects							$1,554,211	$1,243,369	$310,842	
Roadway Reconstruction							$1,554,211	$1,243,369	$310,842	
2025	612002	Merrimack Valley	Lawrence	LAWRENCE- COMMUNITY DAY ARLINGTON IMPROVEMENTS (SRTS)	TAP	$1,554,211	$1,554,211	$1,243,369	$310,842	a) Construction; b) $1,554,211 TAP (inflated 8% from 2023 cost).
Section 2C / State Prioritized Expansion Projects							$20,416,304	$16,333,043	$4,083,261	
Bicycle and Pedestrian							$20,416,304	$16,333,043	$4,083,261	
2025	608930	Merrimack Valley	Lawrence	LAWRENCE- LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	CMAQ	$21,416,304	$20,416,304	$16,333,043	$4,083,261	a) Construction; b) $21,416,304 CMAQ (inflated 4% from 2023 cost); c) AC Year 1-2 FFY 2024-2025: d) TEC = 11.25 out of 18.

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2025 (Cont.)										
Section 3B / Non-Federal Aid Funded							$60,084,491	$0	$60,084,491	
Bridge On-system Non-NHS							$17,383,839	$0	$17,383,839	
2025	612143	Merrimack Valley	Andover	ANDOVER- BRIDGE REPLACEMENT, A-09-015, TEWKSBURY STREET OVER MBTA/BMRR	NGBP	$17,383,839	$17,383,839	$0	$17,383,839	
Bridge On-system NHS							$42,700,652	$0	$42,700,652	
2025	612158	Merrimack Valley	Methuen	METHUEN- BRIDGE REPLACEMENT, M-17-026, ROUTE 213 EB/WB OVER THE METHUEN RAIL TRAIL	NGBP	$4,598,252	$4,598,252	$0	$4,598,252	
2025	612193	Merrimack Valley	Andover	ANDOVER- BRIDGE PRESERVATION, A-09-022, I-93 OVER MERRIMACK RIVER	NGBP	$38,102,400	$38,102,400	$0	$38,102,400	

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2026							$94,342,335	$75,473,868	$18,868,467	
Section 1A / Regionally Prioritized Projects							$12,916,056	$10,332,845	$2,583,211	
Roadway Reconstruction							$12,916,056	$10,332,845	$2,583,211	
2026	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN WAVERLY ROAD & WILLOW/MILL STREET	STBG	$34,083,859	$12,916,056	$10,332,845	$2,583,211	a) Construction; b) $34,083,859 STBG (inflated 4% from 2023 cost) = FFY 2024 ($5,495,380) + FFY 2025 ($13,239,974) + FFY 2026 ($12,916,056) + FFY 2027 ($2,432,449) c) AC years 1-4 FFY 2024-2027; d) TEC = 12.42 out of 18.
Section 2A / State Prioritized Reliability Projects							$72,770,199	$58,216,159	$14,554,040	
Bridge On-system NHS							$69,485,194	$55,588,155	$13,897,039	
2026	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)	NHPP	$108,011,904	$30,600,000	$24,480,000	$6,120,000	Project ACd over 2024-2027
2026	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)	NHPP	$173,075,000	$20,000,000	$16,000,000	$4,000,000	Project ACd over 2023-2026
2026	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	NHPP	$96,087,420	$18,885,194	$15,108,155	$3,777,039	Project ACd over 2024-2027
Bridge Off-system							$3,285,005	$2,628,004	$657,001	
2026	612074	Merrimack Valley	Lawrence	LAWRENCE- BRIDGE REPLACEMENT, L-04-012, SHORT STREET OVER SPICKET RIVER	STBG-BR-Off	$3,285,005	$3,285,005	$2,628,004	$657,001	
Section 2B / State Prioritized Modernization Projects							$1,858,080	$1,486,464	$371,616	
Roadway Reconstruction							$1,858,080	$1,486,464	$371,616	
2026	S12208	Merrimack Valley		GROVELAND - IMPROVEMENTS AT DR. ELMER BAGNALL ELEMENTARY SCHOOL (SRTS)	TAP	$1,858,080	$1,858,080	$1,486,464	$371,616	SRTS infrastructure project awarded in 2022. To be updated with project ID once approved by PRC. 12% inflation applied for FFY 2026.
Section 2C / State Prioritized Expansion Projects							$6,798,000	$5,438,400	$1,359,600	
Bicycle and Pedestrian							$6,798,000	$5,438,400	$1,359,600	
2026	607542	Merrimack Valley	Multiple	GEORGETOWN- NEWBURY- BORDER TO BOSTON TRAIL (NORTHERN GEORGETOWN TO BYFIELD SECTION)	CMAQ	$6,798,000	$6,798,000	$5,438,400	$1,359,600	a) Construction; b) $6,798,000 CMAQ (inflated 12% from 2023 cost) d) TEC = 6.82 out of 18.

STIP: 2023 - 2027 (D)

Year	MassDOT Project ID	MPO	Municipality	MassDOT Project Description	Funding Source	Adjusted TFPC	Total Programmed Funds	Federal Funds	Non-Federal Funds	Other Information
Federal Fiscal Year 2027							$55,524,827	$44,419,862	$11,104,965	
Section 1A / Regionally Prioritized Projects							$13,612,923	$10,890,338	$2,722,585	
Roadway Reconstruction							$11,164,163	$8,931,330	$2,232,833	
2027	608029	Merrimack Valley	Newburyport	NEWBURYPORT- INTERSECTION IMPROVEMENTS @ ROUTE 1 & MERRIMAC STREET	STBG	$2,870,513	$2,870,513	$2,296,410	$574,103	a) Construction; b) $2,870,513 STBG (inflated 16% from 2023 cost) d) TEC = 8.37 out of 18.
2027	608095	Merrimack Valley	North Andover	NORTH ANDOVER- CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN WAVERLY ROAD & WILLOW/MILL STREET	STBG	$34,083,859	$2,495,393	$1,996,314	$499,079	a) Construction; b) $34,083,859 STBG (inflated 4% from 2023 cost) = FFY 2024 ($5,495,380) + FFY 2025 ($13,239,974) + FFY 2026 ($12,916,056) + FFY 2027 ($2,432,449) c) AC years 1-4 FFY 2024-2027; d) TEC = 12.42 out of 18.
2027	608788	Merrimack Valley	Haverhill	HAVERHILL- ROADWAY RECONSTRUCTION ON NORTH AVENUE, FROM MAIN STREET (ROUTE 125) TO PLAISTOW NH	STBG	$23,600,997	$5,798,257	$4,638,606	$1,159,651	a) Construction; b) $23,600,997 STBG (inflated 16% from 2023 cost) = FFY 2027 ($5,861,201) + FFYs beyond; c) AC years 1-3 FFY 2027-2029; d) TEC = 8.58 out of 18.
Bicycle and Pedestrian							$2,448,760	$1,959,008	$489,752	
2027	611977	Merrimack Valley	Amesbury	AMESBURY- RIVERWALK CONNECTOR TO THE SALISBURY POINT GHOST TRAIL	STBG	$2,448,760	$2,448,760	$1,959,008	$489,752	a) Construction; b) $2,448,760 STBG (inflated 16% from 2023 cost) d) TEC = 6.85 out of 18.
Section 2A / State Prioritized Reliability Projects							$41,911,904	$33,529,523	$8,382,381	
Bridge On-system NHS							$41,911,904	$33,529,523	$8,382,381	
2027	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)	NHPP	$108,011,904	$25,911,904	$20,729,523	$5,182,381	Project ACd over 2024-2027
2027	609466	Merrimack Valley	Haverhill	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	NHPP	$96,087,420	$16,000,000	$12,800,000	$3,200,000	Project ACd over 2024-2027

Part B. Project Listings (Cont.)

Transit Projects

Merrimack Valley MPO Draft 2023 to 2027 Transportation Improvement Program

Transit Projects List

Division ID	Project Title	Total	Bond Cap | State | 100% State	Bond Cap | Match | Federal Transit Discretionary Grant	Federal | FTA | Section 5307	Federal | FTA | Other Federal Transit	Federal | FTA | Federal Transit Discretionary Grant	Operating | Additional State Assistance | State Contract Assistance	Other | Municipal and Local | Transit
	FFY 2023 Transit Federal-Aid								
RTD0010747	MVRTA - Preventative Maintenance for service	$3,730,510	$0	$0	$2,984,410	$0	$0	$746,100	$0
RTD0010748	MVRTA - Operating Assistance for Service	$1,478,730	$0	$0	$739,365	$0	$0	$739,365	$0
RTD0010749	MVRTA - ADA Paratransit Service	$1,861,090	$0	$0	$1,488,870	$0	$0	$372,220	$0
RTD0010750	MVRTA - Replace 8 Model Yr 2011 35' buses delivery 2023	$4,384,400	$876,880	$0	$3,507,520	$0	$0	$0	$0
RTD0010751	MVRTA - Replace 6 model yr 2017 Type E-2 vans delivery 2023	$469,620	$234,810	$0	$234,810	$0	$0	$0	$0
RTD0010752	Merrimack Valley MPO Short Range Transit Planning	$100,000	$0	$0	$80,000	$0	$0	$0	$20,000
RTD0010758	MVRTA - Replace 1 Model Year 2017 Supervisory Vehicle	$50,335	$10,070	$0	$40,265	$0	$0	$0	$0
RTD0011300	MVRTA - BUY REPLACEMENT VAN	$469,620	$234,810	$0	$234,810	$0	$0	$0	$0
RTD0011301	MVRTA - METROPOLITAN PLANNING	$65,000	$13,000	$0	$52,000	$0	$0	$0	$0
RTD0011304	MVRTA- BUY REPLACEMENTS - CAPITOL BUS	$2,983,200	$596,640	$0	$2,386,560	$0	$0	$0	$0
RTD0011305	MVRTA - BUY REPLACEMENTS - CAPITOL BUS	$1,401,200	$280,240	$0	$1,120,960	$0	$0	$0	$0
RTD0011306	MVRTA- REHAB/RENOVATE - MISC EQUIPMENT	$1,700,000	$340,000	$0	$1,360,000	$0	$0	$0	$0
RTD0011307	MVRTA- ENG/DESIGN - ADMIN/MAINT FACILITY	$800,000	$160,000	$0	$640,000	$0	$0	$0	$0
RTDTBD13	MVRTA - 5339 Bus & Bus Facility Discretionary: Improvements to the McGovern Transportation Center	$1,200,000	$0	$240,000	$0	$0	$960,000	$0	$0
	FFY 2023 Federal Aid Totals	**$20,693,705**	**$2,746,450**	**$240,000**	**$14,869,570**	**$0**	**$960,000**	**$1,857,685**	**$20,000**

Merrimack Valley MPO Draft 2023 to 2027 Transportation Improvement Program

Transit Projects List

Division ID	Project Title	Total	Bond Cap | State | 100% State	Bond Cap | Match | Federal Transit Discretionary Grant	Federal | FTA | Section 5307	Federal | FTA | Other Federal Transit	Federal | FTA | Federal Transit Discretionary Grant	Operating | Additional State Assistance | State Contract Assistance	Other | Municipal and Local | Transit
	FFY 2024 Transit Federal-Aid								
RTD0010753	MVRTA - Replace 8 model yr 2012 35' buses delivery 2024 8 of 8	$4,703,200	$2,351,600	$0	$2,351,600	$0	$0	$0	$0
RTD0010754	MVRTA - Preventative Maintenance for service	$3,618,265	$0	$0	$2,894,615	$0	$0	$723,650	$0
RTD0010755	MVRTA - Operating Assistance for Service	$1,429,680	$0	$0	$714,840	$0	$0	$714,840	$0
RTD0010756	MVRTA - ADA paratransit service service	$1,963,500	$0	$0	$1,570,800	$0	$0	$392,700	$0
RTD0010757	Merrimack Valley MPO Short Range Transit Planning	$100,000	$0	$0	$80,000	$0	$0	$0	$20,000
RTD0010759	MVRTA - Replace 1 Model Year 2018 Supervisory Vehicle	$51,845	$10,370	$0	$41,475	$0	$0	$0	$0
RTD0011302	MVRTA - METROPOLITAN PLANNING	$65,000	$13,000	$0	$52,000	$0	$0	$0	$0
RTD0011308	MVRTA - ENG/DESIGN - ADMIN/MAINT FACILITY	$1,250,000	$250,000	$0	$1,000,000	$0	$0	$0	$0
RTD0011309	MVRTA - CONSTRUCT ADMIN/MAINT FACILITY	$10,950,000	$2,190,000	$0	$8,760,000	$0	$0	$0	$0
RTDTBD14	MVRTA - 5339 Bus & Bus Facility Discretionary: Expansion of MVRTA Bus Maintenance Facility & Possible New Bus Hub at Bradford CR Station	$4,800,000	$0	$960,000	$0	$0	$3,840,000	$0	$0
RTDTBD15	MVRTA - 5307(h)Passenger Ferry Grant Discretionary Program: Capital costs for launch of Merrimack River ferryboat service between Haverhill and Newburyport	$750,000	$0	$150,000	$0	$0	$600,000	$0	$0
	FFY 2024 Federal Aid Totals	**$29,681,490**	**$4,814,970**	**$1,110,000**	**$17,465,330**	**$0**	**$4,440,000**	**$1,831,190**	**$20,000**

Merrimack Valley MPO Draft 2023 to 2027 Transportation Improvement Program

Transit Projects List

Division ID	Project Title	Total	Bond Cap | State | 100% State	Bond Cap | Match | Federal Transit Discretionary Grant	Federal | FTA | Section 5307	Federal | FTA | Other Federal Transit	Federal | FTA | Federal Transit Discretionary Grant	Operating | Additional State Assistance | State Contract Assistance	Other | Municipal and Local | Transit
	FFY 2025 Transit Federal-Aid								
RTD0010760	Merrimack Valley MPO Short Range Transit Planning	$100,000	$0	$0	$80,000	$0	$0	$0	$20,000
RTD0010761	MVRTA - Preventative Maintenance for service	$3,690,630	$0	$0	$2,952,505	$0	$0	$738,125	$0
RTD0010762	MVRTA - Operating Assistance for Service	$1,458,270	$0	$0	$729,135	$0	$0	$729,135	$0
RTD0010763	MVRTA - ADA Paratransit Service	$2,071,500	$0	$0	$1,657,200	$0	$0	$414,300	$0
RTD0010764	MVRTA - Replace 1 Model Year 2019 Supervissory Vehicle	$53,400	$10,680	$0	$42,720	$0	$0	$0	$0
RTD0011303	MVRTA - METROPOLITAN PLANNING	$65,000	$13,000	$0	$52,000	$0	$0	$0	$0
RTD0011317	MVRTA - CONSTRUCT - MISC EQUIPMENT	$625,000	$125,000	$0	$500,000	$0	$0	$0	$0
	FFY 2025 Federal Aid Totals	**$8,063,800**	**$148,680**	**$0**	**$6,013,560**	**$0**	**$0**	**$1,881,560**	**$20,000**

Merrimack Valley MPO Draft 2023 to 2027 Transportation Improvement Program

Transit Projects List

Division ID	Project Title	Total	Bond Cap | State | 100% State	Bond Cap | Match | Federal Transit Discretionary Grant	Federal | FTA | Section 5307	Federal | FTA | Other Federal Transit	Federal | FTA | Federal Transit Discretionary Grant	Operating | Additional State Assistance | State Contract Assistance	Other | Municipal and Local | Transit
	FFY 2026 Transit Federal-Aid								
RTD0010765	MVRTA - Preventative Maintenance for service	$3,810,350	$0	$0	$3,041,080	$0	$0	$769,270	$0
RTD0010766	MVRTA - ADA Paratransit Service	$2,185,500	$0	$0	$1,748,400	$0	$0	$437,100	$0
RTD0010767	Merrimack Valley MPO Short Range Transit Planning	$100,000	$0	$0	$80,000	$0	$0	$0	$20,000
RTD0010768	MVRTA - Operating Assistance for Service	$1,502,020	$0	$0	$751,010	$0	$0	$751,010	$0
RTD0010769	MVRTA - Replace 1 Model Yr 2020 Supervisory Vehicle	$55,000	$11,000	$0	$44,000	$0	$0	$0	$0
	FFY 2026 Federal Aid Totals	**$7,652,870**	**$11,000**	**$0**	**$5,664,490**	**$0**	**$0**	**$1,957,380**	**$20,000**
	FFY 2026 Transit Non-Federal Aid								
RTD0011318	MVRTA - CONSTRUCT - MISC EQUIPMENT	$125,000	$125,000	$0	$0	$0	$0	$0	$0

Merrimack Valley MPO Draft 2023 to 2027 Transportation Improvement Program

Transit Projects List

Division ID	Project Title	Total	Bond Cap | State | 100% State	Bond Cap | Match | Federal Transit Discretionary Grant	Federal | FTA | Section 5307	Federal | FTA | Other Federal Transit	Federal | FTA | Federal Transit Discretionary Grant	Operating | Additional State Assistance | State Contract Assistance	Other | Municipal and Local | Transit
	FFY 2027 Transit Federal-Aid								
RTD0011311	MVRTA- OPERATING ASSISTANCE	$1,585,000	$0	$0	$792,500	$0	$0	$792,500	$0
RTD0011312	MVRTA - PREVENTIVE MAINTENANCE	$2,500,000	$500,000	$0	$2,000,000	$0	$0	$0	$0
RTD0011313	MVRTA- PLANNING	$120,000	$24,000	$0	$96,000	$0	$0	$0	$0
RTD0011314	MVRTA - NON FIXED ROUTE ADA PARA SERV	$2,305,700	$0	$0	$1,844,560	$0	$0	$461,140	$0
RTD0011315	MVRTA - BUY REPLACEMENT 35-FT BUS	$10,000,000	$2,000,000	$0	$0	$8,000,000	$0	$0	$0
RTD0011316	MVRTA - CONSTRUCT - MISC EQUIPMENT	$5,000,000	$1,000,000	$0	$4,000,000	$0	$0	$0	$0
	FFY 2027 Federal Aid Totals	**$21,510,700**	**$3,524,000**	**$0**	**$8,733,060**	**$8,000,000**	**$0**	**$1,253,640**	**$0**
	FFY 2027 Transit Non-Federal Aid								
RTD0011319	MVRTA - CONSTRUCT - MISC EQUIPMENT	$125,000	$125,000	$0	$0	$0	$0	$0	$0

Summary of Highway Project Listings by Town

Summary of Highway Projects by Town
(2023 to 2027 Regional Target Funds)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2027	Amesbury	Amesbury– Riverwalk Connector to the Salisbury Point Ghost Trail (# 611977)	$2,448,760
2027	Haverhill	Haverhill– Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH (# 608788)	$5,798,257*
2024	Methuen	Methuen – Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	$2,063,889
2027	New-buryport	Newburyport– Intersection Improve-ments @ Route 1 & Merrimac Street (# 608029)	$2,870,513
2024-2027	North Andover	North Andover- Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street (# 608095)	$34,083,859
2023-2024	Salisbury	Salisbury – Reconstruction of Route 1 (Lafayette Road)	$19,266,283

* Haverhill North Avenue is AC'd FFY 2027, FFY 2028 and 2029 = $ 17,802,740, Total Project Cost =$23,600,997

Summary of Programmed Highway Funds by Town (2023 to 2027 Regional Target Funds)

Project Description	Total Cost Programmed
Amesbury Total	**$2,448,760**
Haverhill Total	**$5,798,257***
Methuen Total	**$2,063,889**
Newburyport Total	**$2,870,513**
North Andover Total	**$34,083,859**
Salisbury Total	**$19,266,283**
Regional Total	**$66,531,561**

Summary of Highway Projects by Town
(2023 to 2027 Statewide and Regional Target Funds)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2027	Amesbury	Amesbury– Riverwalk Connector to the Salisbury Point Ghost Trail (# 611977)	$2,448,760
2025	Andover	Andover- Bridge Preservation, A-09-022, I-93 over Merrimack River (# 612193)	$38,102,400
2023-2026	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)	$173,075,000
2025	Andover	Andover– Bridge Replacement, A-09-015, Tewksbury Street over MBTA/ BMRR (# 612143)	$17,383,839
2025	Andover-Tewksbury	Andover-Tewksbury- Interstate Maintenance and related work on I-93 (# 612045)	$18,525,197
2024	Georgetown / Boxford	Georgetown - Boxford Border to Boston Trail, from Georgetown Road to West Main Street (Route 97) (# 607541)	$2,520,436
2026	Georgetown / Newbury	Georgetown - Newbury Border to Boston Trail, (Northern Georgetown to Byfield Section) (# 607542)	$6,798,000
2026	Groveland	Groveland- Improvements at Dr. Elmer Bagnall Elementary (SRTS) (#S12208)	$1,858,080
2024-2027	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)	$108,011,904
2024-2027	Haverhill	Haverhill - Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River (# 609466)	$96,087,420

Summary of Highway Projects by Town
(2023 to 2027 Statewide and Target Funds) (Cont.)

Year (s) Programmed	City / Town	Project Description	Total Cost Programmed
2027	Haverhill	Haverhill– Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH (# 608788)	$5,798,257*
2026	Lawrence	Lawrence – Bridge Replacement, L-04-012, Short Street over Spicket River (# 612074)	$3,285,005
2025	Lawrence	Lawrence – Community Day Arlington Improvements (612002)	$1,554,211
2024-2025	Lawrence	Lawrence – Lawrence Manchester Rail Corridor (LMRC) Rail Trail (# 608930)	$21,416,304
2024	Lawrence	Lawrence – Roadway Reconstruction on Amesbury Street (# 610924)	$8,028,654
2025	Methuen	Methuen- Bridge Replacement, M-17-026, Route 213 EB/WB over the Methuen Rail Trail (# 612158)	$4,598,252
2024	Methuen	Methuen – Intersection Improvements at Riverside Drive and Burnham Road (# 610658)	$2,063,889
2027	Newburyport	Newburyport– Intersection Improvements @ Route 1 & Merrimac Street (# 608029)	$2,870,513
2024-2027	North Andover	North Andover- Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street (# 608095)	$34,083,859
2023	Rowley	Rowley – Safety Improvements at Route 1, Central and Glen Streets (# 609392)	$1,330,785
2023-2024	Salisbury	Salisbury – Reconstruction of Route 1 (Lafayette Road) (# 602202)	$19,266,283

* Haverhill North Avenue is AC'd FFY 2028 and 2029 = $ 17,802,740, Total Project Cost =$23,600,997

Summary of Programmed Highway Funds by Town (2023 to 2027 Statewide and Regional Target Funds)

Project Description	Total Cost Programmed
Amesbury Total	**$2,448,760**
Andover Total	**$247,086,436**
Boxford Total	**$1,260,218**
Georgetown Total	**$4,659,218**
Groveland Total	**$1,858,080**
Haverhill Total	**$209,897,581**
Lawrence Total	**$34,284,174**
Methuen Total	**$6,662,141**
Newbury Total	**$3,399,000**
Newburyport Total	**$2,870,513**
North Andover Total	**$34,083,859**
Rowley Total	**$1,330,785**
Salisbury Total	**$19,266,283**
Regional Total	**$569,107,048**

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 2023-2027 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. The tables show the “Current Obligation Authority” values from the current 2022 to 2026 TIPs based on Obligation Authorities from the FAST Act. The “Proposed Obligation Authority” values are estimated from the new federal transportation act titled “Infrastructure Investment and Jobs Act (IIJA)” that was signed into law November 15, 2021, Public Law 117-58, also known as the “Bipartisan Infrastructure Law” (BIL). There is about an 18% increase in Authorization in the new legislation versus the previous.

MassDOT receives a funding “Apportionment” or estimate of total available federal funding from the Federal Highway Administration (FHWA) then Congress looks at the budget each year and places a limit on how much can be spent from the expected highway Apportionment resulting in the obligation limitation MassDOT can spend in federal funding each year. The Proposed Base Obligation Authority estimated is based on a 2% growth rate from the actual FFY 2022 apportionment and average Fast Act Obligation Authority of 90% through FFY 2021. The MassDOT Highway Division programs are being revised based on new Accelerated Bridge Program (ABP) Grant Application Notes (GANs) repayment schedule and the proposed Obligation Authority, no changes are being made to the MPO TIP Targets for FFY 2023 to 2027. This estimated 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 778.6 million dollars and 849.5 million dollars for each of FFYs 2023 to 2027. The State then subtracts annual debt service payments for the Accelerated Bridge Program (ABP) Grant Application Notes (GANs) which range from 89.5 million dollars to more than 133.6 million dollars for each year over the five years of the TIP. Resulting in the Total non-earmarked funding available to the State ranging from 699.1 million dollars to 715.9 million dollars depending on the ABP GANS repayment schedule.

The funding for regional priorities is estimated to be 240 million dollars in 2023, 243.6 million dollars in 2024, The amount available to the regions is less in 2025, due to the increase in the ABP GANS repayment in 2025, leaving 238 million dollars in 2025. The amount available to the regions is even less in 2026, due to additional increase in the ABP GANS repayment in 2026, leaving 233.3 million dollars. The ABP GANS repayment

remains large in 2027, leaving 245.9 million dollars. The State generally provides the 20% match required for the Federal funds resulting in estimated funds ranging from approximately 299 million dollars to approximately 415 million dollars available for regional funding priorities for each of the five years of the TIP.

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 total funding available for MVMPO regional priorities with the 20% State match to be: $13,293,829 in FFY 2023; $13,468,779 in FFY 2024; $13,239,974 in FFY 2025: $12,916,056 in FFY 2026 and $13,612,923 in FFY 2027, an increase of approximately $2 million dollars per year compared to the FAST Act.

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 2023-2027 STIP

2023 - 2027 Regional Target Budgets (DRAFT)

	2022 Current Obligation Authority (federal aid only)	2022 Proposed Obligation Authority (90%)^	*2023 Current Obligation Authority (federal aid only)*	2023 Proposed Obligation Authority (90%)	*2024 Current Obligation Authority (federal aid only)*	2024 Proposed Obligation Authority (90%)	*2025 Current Obligation Authority (federal aid only)*	2025 Proposed Obligation Authority (90%)	*2026 Current Obligation Authority (federal aid only)*	2026 Proposed Obligation Authority (90%)
Apportionment	*$678,743,257*	$804,613,425	*$692,898,168*	$820,706,716	*$707,348,274*	$837,121,872	*$722,099,730*	$853,865,331	*$737,158,822*	$870,943,658
Balance Obligation Authority	*$617,656,364*	$724,152,083	*$630,537,333*	$738,636,044	*$643,686,929*	$753,409,685	*$657,110,754*	$768,478,798	*$670,814,528*	$783,849,292
Planned Redistribution Request	*$50,000,000*	$50,000,000	*$50,000,000*	$50,000,000	*$50,000,000*	$50,000,000	*$50,000,000*	$50,000,000	*$50,000,000*	$50,000,000
Total Estimated Funding Available	*$667,656,364*	$774,152,083	*$680,537,333*	$788,636,044	*$693,686,929*	$803,409,685	*$707,110,754*	$818,478,798	*$720,814,528*	$833,849,292
ABP GANS Repayment	*-$86,470,000*	-$86,740,000	*-$89,510,000*	-$89,510,000	*-$93,985,000*	-$93,985,000	*-$122,185,000*	-$122,185,000	*-$133,620,000*	-$133,620,000
Total Non-earmarked Funding Available	*$581,186,364*	$687,412,083	*$591,027,333*	$699,126,044	*$599,701,929*	$709,424,685	*$584,925,754*	$696,293,798	*$587,194,528*	$700,229,292
Funding for Regional Priorities**	*$198,629,796*	$234,934,145	*$202,968,036*	$240,090,826	*$205,628,284*	$243,573,204	*$200,827,858*	$237,969,614	*$195,612,737*	$233,268,128
Highway Division Programs ***	*$318,254,576*	$376,423,217	*$339,110,872*	$392,976,320	*$339,110,872*	$392,976,320	*$335,108,710*	$387,887,431		
				Delta (FA)	$108,098,711		$109,722,756		$111,368,044		$113,034,764
				Delta (Total)	$135,123,389		$137,153,445		$139,210,055		$141,293,455

	2027 Proposed Obligation Authority (90%)*
Balance Obligation Authority	$799,527,245
Planned Redistribution Request	$50,000,000
Total Estimated Funding Available	**$849,527,245**
ABP GANS Repayment	-$133,620,000

**Base Obligation Authority based on 2.0% growth rate from actual FFY 2022 Apportionment and average of FAST Act Obligation Authority (90%) through FFY 2021.*

***MPO TIP Targets will be held harmless from changes in proposed Obligation Authority*

****MassDOT Highway Division Programs are being revised based on new ABP Gans schedule and proposed Obligation Authority.*

Total Non-earmarked Funding Available	Regional Share (%)	MPO	$715,907,245	Total Funding
	3.5596%	**Berkshire Region**	$8,751,410	**$10,939,263**
	42.9671%	**Boston Region**	$105,636,228	**$132,045,285**
	4.5851%	**Cape Cod**	$11,272,640	**$14,090,801**
	8.6901%	**Central Mass**	$21,364,937	**$26,706,171**
	2.5397%	**Franklin Region**	$6,243,948	**$7,804,935**
	0.3100%	**Martha's Vineyard**	$762,147	**$952,683**
	4.4296%	**Merrimack Valley**	$10,890,338	**$13,612,922**
	4.4596%	**Montachusett**	$10,964,094	**$13,705,117**
	0.2200%	**Nantucket**	$540,878	**$676,098**
	3.9096%	**Northern Middlesex**	$9,611,898	**$12,014,873**
	4.5595%	**Old Colony**	$11,209,702	**$14,012,127**
	10.8100%	**Pioneer Valley**	$26,576,791	**$33,220,988**
	8.9601%	**Southeastern Mass**	$22,028,742	**$27,535,928**
		Funding for Regional Priorities	**$245,853,752**	**$307,317,191**
		Highway Division Programs	**$405,426,076**	**$506,782,595**

Statewide Transportation Improvement Program (STIP) Program Targets

Federal Fiscal Year 2023			$820,706,716						
		Current Obligation Authority (federal aid only)	Proposed Obligation Authority (90%*, BIL)	*Matching Funds*	Proposed Matching Funds	*FFY 2023 (Current Targets (federal aid + match)*	FFY 2023 - BIL (Proposed) (Fed Aid + Match)	FFY 2023 Programmed (Current)	**Programmed vs. FFY 2023 Proposed Targets**
	Balance Obligation Authority	*$630,537,333*	$738,636,044	*$108,098,711*					
	Planned Redistribution Request	*$50,000,000*	$50,000,000						
	Total Non-earmarked Funding Available	*$680,537,333*	$788,636,044	*$226,845,778*	$153,592,717	*$907,383,111*	$942,228,761		
Planning/Adjustments/Pass-throughs		*$138,458,425*	$155,568,899	*$11,802,279*	$15,579,052	*$150,260,704*	$171,147,950	$148,410,760	$ 22,737,190
ABP GANS Repayment		*$89,510,000*	$89,510,000	*$0*	$0	*$89,510,000*	$89,510,000	$89,510,000	$ -
Award Adjustments, Change Orders, etc.		*$12,383,176*	$27,019,379	*$2,938,744*	$6,412,171	*$15,321,920*	$33,431,550	$15,321,920	$ 18,109,630
Metropolitan Planning		*$10,008,876*	$10,886,010	*$2,502,219*	$2,721,503	*$12,511,095*	$13,607,513	$12,511,095	$ 1,096,418
State Planning & Research		*$20,431,055*	$22,955,893	*$5,107,764*	$5,738,973	*$25,538,819*	$28,694,866	$25,538,819	$ 3,156,047
Recreational Trails		*$1,186,729*	$1,186,729	*$296,682*	$296,682	*$1,483,411*	$1,483,411	$1,483,411	$ 0
Railroad Grade Crossings		*$2,000,000*	$2,371,999	*$222,222*	$0	*$2,222,222*	$2,371,999	$2,222,222	$ 149,777
SRTS Education		*$1,458,634*	$1,638,890	*$364,659*	$409,722	*$1,823,293*	$2,048,612	$1,823,293	$ 225,319
Transit Grant Program		*$1,479,955*	$0	*$369,989*	$0	*$1,849,944*	$0	$0	$ -
Flex to FTA		*$0*	$0	*$0*	$0	*$0*	$0	$0	$ -
Regional Priorities									
Regional Share (%)	**MPO**	***$202,968,036***	**$240,090,826**	***$50,742,009***	**$60,022,706**	***$253,710,045***	**$300,113,532**	**$245,657,642**	$ 54,455,890
3.5596	Berkshire Region	*$7,224,850*	$8,546,273	*$1,806,213*	$2,136,568	*$9,031,063*	$10,682,841	$6,768,098	$ 3,914,743
42.9671	Boston Region	*$87,209,479*	$103,160,065	*$21,802,370*	$25,790,016	*$109,011,849*	$128,950,081	$108,908,329	$ 20,041,752
4.5851	Cape Cod	*$9,306,287*	$11,008,404	*$2,326,572*	$2,752,101	*$11,632,859*	$13,760,506	$11,209,113	$ 2,551,393
8.6901	Central Mass	*$17,638,125*	$20,864,133	*$4,409,531*	$5,216,033	*$22,047,657*	$26,080,166	$22,015,408	$ 4,064,758
2.5397	Franklin Region	*$5,154,779*	$6,097,587	*$1,288,695*	$1,524,397	*$6,443,474*	$7,621,983	$6,443,474	$ 1,178,509
0.3100	Martha's Vineyard	*$629,201*	$744,282	*$157,300*	$186,070	*$786,501*	$930,352	$0	$ 930,352
4.4296	Merrimack Valley	*$8,990,672*	$10,635,063	*$2,247,668*	$2,658,766	*$11,238,340*	$13,293,829	$11,238,340	$ 2,055,489
4.4596	Montachusett	*$9,051,563*	$10,707,090	*$2,262,891*	$2,676,773	*$11,314,453*	$13,383,863	$10,961,234	$ 2,422,629
0.2200	Nantucket	*$446,530*	$528,200	*$111,632*	$132,050	*$558,162*	$660,250	$0	$ 660,250
3.9096	Northern Middlesex	*$7,935,238*	$9,386,591	*$1,983,810*	$2,346,648	*$9,919,048*	$11,733,239	$9,524,030	$ 2,209,209
4.5595	Old Colony	*$9,254,328*	$10,946,941	*$2,313,582*	$2,736,735	*$11,567,910*	$13,683,676	$11,567,910	$ 2,115,766
10.8100	Pioneer Valley	*$21,940,845*	$25,953,818	*$5,485,211*	$6,488,455	*$27,426,056*	$32,442,273	$27,208,514	$ 5,233,759
8.9601	Southeastern Mass	*$18,186,139*	$21,512,378	*$4,546,535*	$5,378,095	*$22,732,674*	$26,890,473	$19,813,192	$ 7,077,281
Highway**		***$339,110,872***	**$392,976,320**	***$77,990,959***	**$77,990,959**	***$417,101,831***	**$470,967,279**	**$415,292,003**	$ 55,675,276
	Grand Total (Formula Programs Only)	***$680,537,333***	**$788,636,044**	***$140,535,247***	**$153,592,717**	***$821,072,580***	**$942,228,761**	**$809,360,405**	$ 132,868,356
	Difference from Funds Available	***$0***		***$86,310,531***		***$86,310,531***			

*FFY 2023-2027 Development STIP assumes 90% obligation limitation based on average of previous 5 years.

**Highway Program sizes subject to change following 2022 TIP Readiness Days Review

Statewide Transportation Improvement Program (STIP) Program Targets

Federal Fiscal Year 2024			$837,121,872						
		Current Obligation Authority (federal aid only)	Proposed Obligation Authority (90%, BIL)	*Matching Funds*	Proposed Matching Funds	*FFY 2024(Current Targets (federal aid + match)*	FFY 2024 - BIL (Proposed) (Fed Aid + Match)	FFY 2024 Programmed (Current)	**Programmed vs. FFY 2024 Proposed Targets**
Balance Obligation Authority		*$643,686,929*	$753,409,685						
Planned Redistribution Request		*$50,000,000*	$50,000,000						
Total Non-earmarked Funding Available		*$693,686,929*	$803,409,685	*$231,228,976*	$154,932,461	*$924,915,905*	$958,342,146		
Planning/Adjustments/Pass-throughs		*$142,974,186*	$160,491,599	*$11,812,469*	$15,688,335	*$154,786,655*	$176,179,933	$154,786,655	$ 21,393,278
ABP GANS Repayment		*$93,985,000*	$93,985,000	*$0*	$0	*$93,985,000*	$93,985,000	$93,985,000	$ -
Award Adjustments, Change Orders, etc.		*$12,383,176*	$27,227,636	*$2,938,744*	$6,461,594	*$15,321,920*	$33,689,230	$15,321,920	$ 18,367,310
Metropolitan Planning		*$10,008,876*	$11,103,730	*$2,502,219*	$2,775,933	*$12,511,095*	$13,879,663	$12,511,095	$ 1,368,568
State Planning & Research		*$20,431,055*	$22,934,299	*$5,107,764*	$5,733,575	*$25,538,819*	$28,667,873	$25,538,819	$ 3,129,054
Recreational Trails		*$1,186,729*	$1,186,729	*$296,682*	$296,682	*$1,483,411*	$1,483,411	$1,483,411	$ 0
Railroad Grade Crossings		*$2,000,000*	$2,371,999	*$222,222*	$0	*$2,222,222*	$2,371,999	$2,222,222	$ 149,777
SRTS Education		*$1,498,596*	$1,682,206	*$374,649*	$420,552	*$1,873,245*	$2,102,758	$1,873,245	$ 229,513
Transit Grant Program		*$1,480,754*	$0	*$370,189*	$0	*$1,850,943*	$0	$1,850,943	$ (1,850,943)
Flex to FTA		*$0*	$0	*$0*	$0	*$0*	$0	$0	$ -
Regional Priorities									
Regional Share (%)	**MPO**	**$205,628,284**	**$243,250,477**	***$51,407,071***	**$60,812,619**	***$257,035,353***	**$304,063,096**	**$245,196,969**	$ 58,866,127
3.5596	Berkshire Region	*$7,319,544*	$8,658,744	*$1,829,886*	$2,164,686	*$9,149,430*	$10,823,430	$8,804,198	$ 2,019,232
42.9671	Boston Region	*$88,352,510*	$104,517,676	*$22,088,128*	$26,129,419	*$110,440,638*	$130,647,095	$110,440,638	$ 20,206,457
4.5851	Cape Cod	*$9,428,262*	$11,153,278	*$2,357,066*	$2,788,319	*$11,785,328*	$13,941,597	$11,785,328	$ 2,156,269
8.6901	Central Mass	*$17,869,303*	$21,138,710	*$4,467,326*	$5,284,677	*$22,336,629*	$26,423,387	$22,093,208	$ 4,330,179
2.5397	Franklin Region	*$5,222,342*	$6,177,832	*$1,305,586*	$1,544,458	*$6,527,928*	$7,722,290	$4,591,249	$ 3,131,041
0.3100	Martha's Vineyard	*$637,448*	$754,076	*$159,362*	$188,519	*$796,810*	$942,596	$796,810	$ 145,786
4.4296	Merrimack Valley	*$9,108,510*	$10,775,023	*$2,277,128*	$2,693,756	*$11,385,638*	$13,468,779	$11,385,638	$ 2,083,141
4.4596	Montachusett	*$9,170,199*	$10,847,998	*$2,292,550*	$2,712,000	*$11,462,749*	$13,559,998	$11,400,000	$ 2,159,998
0.2200	Nantucket	*$452,382*	$535,151	*$113,096*	$133,788	*$565,478*	$668,939	$0	$ 668,939
3.9096	Northern Middlesex	*$8,039,243*	$9,510,121	*$2,009,811*	$2,377,530	*$10,049,054*	$11,887,651	$9,249,040	$ 2,638,611
4.5595	Old Colony	*$9,375,622*	$11,091,006	*$2,343,906*	$2,772,751	*$11,719,528*	$13,863,757	$7,037,491	$ 6,826,266
10.8100	Pioneer Valley	*$22,228,417*	$26,295,377	*$5,557,104*	$6,573,844	*$27,785,521*	$32,869,221	$27,202,550	$ 5,666,671
8.9601	Southeastern Mass	*$18,424,500*	$21,795,486	*$4,606,125*	$5,448,872	*$23,030,625*	$27,244,358	$20,410,819	$ 6,833,539
Highway		***$345,084,459***	**$399,667,609**	***$79,364,803***	**$78,431,507**	***$424,449,262***	**$478,099,116**	**$413,784,289**	$ 64,314,827
	Grand Total	***$693,686,929***	**$803,409,685**	***$142,584,342***	**$154,932,461**	***$836,271,269***	**$958,342,146**	**$813,767,913**	$ 144,574,233

*FFY 2023-2027 Development STIP assumes 90% obligation limitation based on average of previous 5 years.

**Highway Program sizes subject to change following 2022 TIP Readiness Days Review

Statewide Transportation Improvement Program (STIP) Program Targets

Federal Fiscal Year 2025			$853,665,331						
		Current Obligation Authority (federal aid only)	Proposed Obligation Authority (90%, BIL)	*Matching Funds*	Proposed Matching Funds	*FFY 2025 (Current Targets (federal aid + match)*	FFY 2025 - BIL (Proposed) (Fed Aid + Match)	FFY 2025 Programmed (Current)	**Programmed vs. FFY 2025 Proposed Targets**
Balance Obligation Authority		*$657,110,754*	$768,478,798						
Planned Redistribution Request		*$50,000,000*	$50,000,000						
Total Non-earmarked Funding Available		*$707,110,754*	$818,478,798	*$139,089,947*	$109,327,957	*$846,200,701*	$927,806,755		
Planning/Adjustments/Pass-throughs		*$171,174,185*	$191,473,179	*$11,812,468*	$16,348,766	*$182,986,653*	$207,821,945	$176,447,834	$ 31,374,111
ABP GANS Repayment		*$122,185,000*	$122,185,000	*$0*	$0	*$122,185,000*	$122,185,000	$122,185,000	$ -
Award Adjustments, Change Orders, etc.		*$12,383,176*	$29,984,445	*$2,938,744*	$7,115,833	*$15,321,920*	$37,100,278	$15,321,920	$ 21,778,358
Metropolitan Planning		*$10,008,876*	$11,325,805	*$2,502,219*	$2,831,451	*$12,511,095*	$14,157,257	$12,511,095	$ 1,646,162
State Planning & Research		*$20,431,055*	$22,853,908	*$5,107,764*	$5,713,477	*$25,538,819*	$28,567,385	$19,000,000	$ 9,567,385
Recreational Trails		*$1,186,729*	$1,186,729	*$296,682*	$296,682	*$1,483,411*	$1,483,411	$1,483,411	$ 0
Railroad Grade Crossings		*$2,000,000*	$2,371,999	*$222,222*	$0	*$2,222,222*	$2,371,999	$2,222,222	$ 149,777
SRTS Education		*$1,399,349*	$1,565,293	*$349,837*	$391,323	*$1,749,186*	$1,956,617	$1,749,186	$ 207,431
Transit Grant Program		*$1,580,000*	$0	*$395,000*	$0	*$1,975,000*	$0	$1,975,000	$ (1,975,000)
Flex to FTA		*$0*	$0	*$0*	$0	*$0*	$0	$0	$ -
Regional Priorities									
Regional Share (%)	**MPO**	**$200,827,858**	**$239,118,188**	**$50,206,964**	**$59,779,547**	***$251,034,822***	**$298,897,735**	**$238,296,199**	$ 60,601,536
3.5596	Berkshire Region	*$7,148,668*	$8,511,651	*$1,787,167*	$2,127,913	*$8,935,835*	$10,639,564	$8,153,760	$ 2,485,804
42.9671	Boston Region	*$86,289,907*	$102,742,151	*$21,572,477*	$25,685,538	*$107,862,384*	$128,427,689	$107,862,383	$ 20,565,306
4.5851	Cape Cod	*$9,208,158*	$10,963,808	*$2,302,040*	$2,740,952	*$11,510,198*	$13,704,760	$10,411,714	$ 3,293,046
8.6901	Central Mass	*$17,452,142*	$20,779,610	*$4,363,036*	$5,194,902	*$21,815,178*	$25,974,512	$18,679,131	$ 7,295,381
2.5397	Franklin Region	*$5,100,425*	$6,072,885	*$1,275,106*	$1,518,221	*$6,375,531*	$7,591,106	$6,375,531	$ 1,215,575
0.3100	Martha's Vineyard	*$622,566*	$741,266	*$155,642*	$185,317	*$778,208*	$926,583	$334,267	$ 592,316
4.4296	Merrimack Valley	*$8,895,871*	$10,591,979	*$2,223,968*	$2,647,995	*$11,119,839*	$13,239,974	$11,119,839	$ 2,120,135
4.4596	Montachusett	*$8,956,119*	$10,663,715	*$2,239,030*	$2,665,929	*$11,195,149*	$13,329,643	$11,183,187	$ 2,146,456
0.2200	Nantucket	*$441,821*	$526,060	*$110,455*	$131,515	*$552,276*	$657,575	$0	$ 657,575
3.9096	Northern Middlesex	*$7,851,566*	$9,348,565	*$1,962,892*	$2,337,141	*$9,814,458*	$11,685,706	$8,676,332	$ 3,009,374
4.5595	Old Colony	*$9,156,746*	$10,902,594	*$2,289,187*	$2,725,648	*$11,445,933*	$13,628,242	$10,458,468	$ 3,169,774
10.8100	Pioneer Valley	*$21,709,491*	$25,848,676	*$5,427,373*	$6,462,169	*$27,136,864*	$32,310,845	$23,991,612	$ 8,319,233
8.9601	Southeastern Mass	*$17,994,377*	$21,425,229	*$4,498,594*	$5,356,307	*$22,492,971*	$26,781,536	$21,049,975	$ 5,731,561
Highway		***$335,108,710***	**$387,887,431**	***$77,070,514***	**$33,199,644**	***$412,179,224***	**$421,087,075**	**$412,451,446**	$ 8,635,629
	Grand Total	***$707,110,753***	**$818,478,798**	***$139,089,947***	**$109,327,957**	***$846,200,699***	**$927,806,755**	**$827,195,479**	$ 100,611,276

*FFY 2023-2027 Development STIP assumes 90% obligation limitation based on average of previous 5 years.

**Highway Program sizes subject to change following 2022 TIP Readiness Days Review

Statewide Transportation Improvement Program (STIP) Program Targets

Federal Fiscal Year 2026		*$737,158,821.98*	$870,943,658						
		Current Obligation Authority (federal aid only)	Proposed Obligation Authority (90%, BIL)	*Matching Funds*	Proposed Matching Funds	*FFY 2026 (Current Targets (federal aid + match)*	FFY 2026 - BIL (Proposed) (Fed Aid + Match)	FFY 2026 Programmed (Current)	**Programmed vs. FFY 2026 Proposed Targets**
Balance Obligation Authority		*$670,814,528*	$783,849,292						
Planned Redistribution Request		*$50,000,000*	$50,000,000						
Total Non-earmarked Funding Available		*$720,814,528*	$833,849,292	*$139,460,228*	$108,584,873	*$860,274,756*	$942,434,165		
Planning/Adjustments/Pass-throughs		*$182,609,185*	$204,264,787	*$11,802,279*	$17,068,197	*$194,411,464*	$221,332,984	$187,882,794	$ 33,450,190
ABP GANS Repayment		*$133,620,000*	$133,620,000	*$0*	$0	*$132,620,000*	$133,620,000	$133,620,000	$ -
Award Adjustments, Change Orders, etc.		*$12,383,176*	$31,114,469	*$2,938,744*	$7,778,617	*$15,321,920*	$38,893,087	$15,321,920	$ 23,571,167
Metropolitan Planning		*$10,008,876*	$11,552,321	*$2,502,219*	$2,888,080	*$12,511,095*	$14,440,401	$12,511,095	$ 1,929,306
State Planning & Research		*$20,431,055*	$22,853,971	*$5,107,764*	$5,713,493	*$25,538,819*	$28,567,464	$19,000,000	$ 9,567,464
Recreational Trails		*$1,186,729*	$1,186,729	*$296,682*	$296,682	*$1,483,411*	$1,483,411	$1,483,411	$ 0
Railroad Grade Crossings		*$2,000,000*	$2,371,999	*$222,222*	$0	*$2,222,222*	$2,371,999	$2,222,222	$ 149,777
SRTS Education		*$1,399,349*	$1,565,298	*$364,659*	$391,324	*$1,823,293*	$1,956,622	$1,749,146	$ 207,476
Transit Grant Program		*$1,580,000*	$0	*$369,989*	$0	*$1,849,944*	$0	$1,975,000	$ (1,975,000)
Flex to FTA		*$0*	$0	*$0*	$0	*$0*	$0	$0	$ -
Regional Priorities									
Regional Share (%)	**MPO**	***$195,612,737***	**$233,268,128**	***$48,903,185***	**$58,317,032**	***$244,515,922***	**$291,585,161**	**$210,364,252**	$ 81,220,909
3.5596	Berkshire Region	*$6,963,031*	$8,303,412	*$1,740,758*	$2,075,853	*$8,703,789*	$10,379,265	$8,703,788	$ 1,675,477
42.9671	Boston Region	*$84,049,120*	$100,228,550	*$21,012,280*	$25,057,138	*$105,061,400*	$125,285,688	$84,712,046	$ 40,573,642
4.5851	Cape Cod	*$8,969,040*	$10,695,577	*$2,242,260*	$2,673,894	*$11,211,300*	$13,369,471	$11,211,300	$ 2,158,171
8.6901	Central Mass	*$16,998,942*	$20,271,234	*$4,249,736*	$5,067,808	*$21,248,678*	$25,339,042	$17,989,196	$ 7,349,846
2.5397	Franklin Region	*$4,967,977*	$5,924,311	*$1,241,994*	$1,481,078	*$6,209,971*	$7,405,388	$3,619,452	$ 3,785,936
0.3100	Martha's Vineyard	*$606,399*	$723,131	*$151,600*	$180,783	*$757,999*	$903,914	$0	$ 903,914
4.4296	Merrimack Valley	*$8,664,862*	$10,332,845	*$2,166,216*	$2,583,211	*$10,831,078*	$12,916,056	$10,831,078	$ 2,084,978
4.4596	Montachusett	*$8,723,546*	$10,402,825	*$2,180,887*	$2,600,706	*$10,904,433*	$13,003,532	$10,863,274	$ 2,140,258
0.2200	Nantucket	*$430,348*	$513,190	*$107,587*	$128,297	*$537,935*	$641,487	$0	$ 641,487
3.9096	Northern Middlesex	*$7,647,676*	$9,119,851	*$1,911,919*	$2,279,963	*$9,559,595*	$11,399,813	$9,559,595	$ 1,840,218
4.5595	Old Colony	*$8,918,963*	$10,635,860	*$2,229,741*	$2,658,965	*$11,148,704*	$13,294,825	$11,148,703	$ 2,146,122
10.8100	Pioneer Valley	*$21,145,737*	$25,216,285	*$5,286,434*	$6,304,071	*$26,432,171*	$31,520,356	$22,487,591	$ 9,032,765
8.9601	Southeastern Mass	*$17,527,097*	$20,901,058	*$4,381,774*	$5,225,264	*$21,908,871*	$26,126,322	$19,238,229	$ 6,888,093
Highway		***$342,592,606***	**$396,316,377**	***$78,754,765***	**$33,199,644**	***$421,347,371***	**$429,516,020**	**$419,335,424**	$ 10,180,596
	Grand Total	***$720,814,528***	**$833,849,292**	***$139,460,228***	**$108,584,873**	***$860,274,757***	**$942,434,165**	**$817,582,470**	$ 124,851,695

*FFY 2023-2027 Development STIP assumes 90% obligation limitation based on average of previous 5 years.

**Highway Program sizes subject to change following 2022 TIP Readiness Days Review

Statewide Transportation Improvement Program (STIP) Program Targets

Federal Fiscal Year 2027			$888,363,605							
		*Assumed Obligation Authority (federal aid only)^*	OA - BIL (Fed Aid only)*	*Matching Funds*	Matching Funds - BIL	*FFY 2027 (Proposed) (Fed Aid + Match)*	FFY 2027 - BIL (Proposed) (Fed Aid + Match)	FFY 2027 Programmed (Current)	**Programmed vs. FFY 2027 Proposed Targets**	
	Balance Obligation Authority	*$684,230,819*	$799,527,245							
	Planned Redistribution Request	*$50,000,000*	$50,000,000							
	Total Non-earmarked Funding Available	$734,230,819	$849,527,245	*$139,460,228*	$178,383,812	*$873,691,047*	$1,027,911,056			
Planning/Adjustments/Pass-throughs		$185,261,368	$198,247,416	*$11,802,279*	$15,563,854	*$197,063,647*	$213,811,271	$0	$	213,811,271
ABP GANS Repayment		*$136,292,400*	$133,620,000	*$0*	$0	*$132,620,000*	$133,620,000		$	133,620,000
Award Adjustments, Change Orders, etc.		*$12,630,840*	$24,773,827	*$2,938,744*	$6,193,457	*$15,321,920*	$30,967,284		$	30,967,284
Metropolitan Planning		*$10,209,054*	$11,552,321	*$2,502,219*	$2,888,080	*$12,511,095*	$14,440,401		$	14,440,401
State Planning & Research		*$20,839,676*	$23,315,205	*$5,107,764*	$5,828,801	*$25,538,819*	$29,144,006		$	29,144,006
Recreational Trails		*$1,210,464*	$1,186,729	*$296,682*	$296,682	*$1,483,411*	$1,483,411		$	1,483,411
Railroad Grade Crossings		*$2,040,000*	$2,371,999	*$222,222*	$0	*$2,222,222*	$2,371,999		$	2,371,999
SRTS Education		*$1,427,336*	$1,427,336	*$364,659*	$356,834	*$1,823,293*	$1,784,170		$	1,784,170
Transit Grant Program		*$1,611,600*	$0	*$369,989*	$0	*$1,849,944*	$0		$	-
Flex to FTA		*$0*	$0	*$0*	$0	*$0*	$0		$	-
Regional Priorities										
Regional Share (%)	**MPO**	***$199,524,992***	**$245,853,752**	***$48,903,185***	**$61,463,438**	***$248,428,177***	**$307,317,191**	**$0**	$	307,317,191
3.5596	Berkshire Region	*$7,102,292*	$8,751,410	*$1,740,758*	$2,187,853	*$9,031,063*	$10,939,263		$	10,939,263
42.9671	Boston Region	*$85,730,102*	$105,636,228	*$21,012,280*	$26,409,057	*$109,011,849*	$132,045,285		$	132,045,285
4.5851	Cape Cod	*$9,148,421*	$11,272,640	*$2,242,260*	$2,818,160	*$11,632,859*	$14,090,801		$	14,090,801
8.6901	Central Mass	*$17,338,921*	$21,364,937	*$4,249,736*	$5,341,234	*$22,047,657*	$26,706,171		$	26,706,171
2.5397	Franklin Region	*$5,067,337*	$6,243,948	*$1,241,994*	$1,560,987	*$6,443,474*	$7,804,935		$	7,804,935
0.3100	Martha's Vineyard	*$618,527*	$762,147	*$151,600*	$190,537	*$786,501*	$952,683		$	952,683
4.4296	Merrimack Valley	*$8,838,159*	$10,890,338	*$2,166,216*	$2,722,584	*$11,238,340*	$13,612,922		$	13,612,922
4.4596	Montachusett	*$8,898,017*	$10,964,094	*$2,180,887*	$2,741,023	*$11,314,453*	$13,705,117		$	13,705,117
0.2200	Nantucket	*$438,955*	$540,878	*$107,587*	$135,220	*$558,162*	$676,098		$	676,098
3.9096	Northern Middlesex	*$7,800,630*	$9,611,898	*$1,911,919*	$2,402,975	*$9,919,048*	$12,014,873		$	12,014,873
4.5595	Old Colony	*$9,097,342*	$11,209,702	*$2,229,741*	$2,802,425	*$11,567,910*	$14,012,127		$	14,012,127
10.8100	Pioneer Valley	*$21,568,652*	$26,576,791	*$5,286,434*	$6,644,198	*$27,426,056*	$33,220,988		$	33,220,988
8.9601	Southeastern Mass	*$17,877,639*	$22,028,742	*$4,381,774*	$5,507,186	*$22,732,674*	$27,535,928		$	27,535,928
Highway		***$349,444,458***	**$405,426,076**	***$78,754,765***	**$101,356,519**	***$428,199,223***	**$506,782,595**	**$0**	$	506,782,595
	Grand Total	***$734,230,819***	**$849,527,245**	***$139,460,228***	**$178,383,812**	***$873,691,047***	**$1,027,911,056**	**$0**	$	1,027,911,056

^FFY 2027 Totals are based on increasing program based on Current FY 2026 Program inflated 2%

*FFY 2023-2027 Development STIP assumes 90% obligation limitation based on average of previous 5 years.

**Highway Program sizes subject to change following 2022 TIP Readiness Days Review

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. All but one of the Regionally Prioritized Projects (Section 1A) are considered maintenance projects, the Amesbury Riverwalk Connector to the Salisbury Point Ghost Trail is a capitol improvement project, as it is new construction. The State Prioritized Modernization Projects (Section 2B) and Expansion Projects (Section 2C) are considered capital improvement projects, the rest of the State Prioritized Projects (Section 2A) and are considered maintenance projects. The Section 1B Earmark or Discretionary Grant Funded Project is considered a maintenance project. 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 2023-2027 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*
2023	$95.37	$0	$95.37	$95.37
2024	$123.49	$3.52	$127.01	$127.01
2025	$114.80	$21.97	$136.77	$136.77
2026	$85.69	$8.66	$94.35	$94.35
2027	$53.08	$2.44	$55.52	$55.52

* Millions of dollars

The financial plan contained herein is financially constrained and indicates that the Merrimack Valley Metropolitan Planning Organization's FFYs 2023-2027 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 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)	$10,635.06	$13,293.83	$13,293.83
Regional Target Subtotals	**$10,635.06**	**$13,293.83**	**$13,293.83**
Statewide (SW) Bridge On-System NHS (NHPP)	$64,599.22	$80,749.02	$80,749.02
Statewide Safety Improvements (NHPP)	$1,064.63	$1,330.79	$1,330.79
Statewide Bicycle and Pedestrian (CMAQ)			
Total FFY 2023	**$76,298.91**	**$95,373.64**	**$95,373.64**

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)	$10,775.02	$13,468.78	$13,468.78
Regional Target Subtotals	**$10,775.02**	**$13,468.78**	**$13,468.78**
Statewide Bicycle and Pedestrian (CMAQ)	$2,816.35	$3,520.44	$3,520.44
Statewide (SW) Bridge On-System NHS (NHPP)	$81,591.14	$101,988.93	$101,988.93
Earmark Discretionary (CRRSAA)	8,028.65	8,028.65	8,028.65
Total FFY 2024	**$103,211.16**	**$127,006.80**	**$127,006.80**

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)	$10,591.98	$13,239.97	$13,239.97
Regional Target Subtotals	**$10,591.98**	**$13,239.97**	**$13,239.97**
Statewide Bicycle and Pedestrian (CMAQ)	$16,333.04	$20,416.30	$20,416.30
Statewide Bridge On-System NHS (NHPP)	$66,431.42	$83,039.28	$83,039.28
Statewide Interstate Pavement (NHPP-I)	$16,672.68	$18,525.20	$18,525.20
Statewide Roadway Reconstruction SRTS (TAP)	$1,243.37	$1,554.21	$1,554.21
Total Federal Aid FFY 2025	**$111,272.49**	**$136,774.96**	**$136,774.96**
Non-Federal Aid		**Non-Federal Aid Total Project Cost**	**Non-Federal Aid Available Resources**
Non-Federal Aid Bridge On-system Non-NHS (NGBP)		$17,383.84	$17,383.84
Non-Federal Aid Bridge On-system NHS (NGBP)		$42,700.65	$42,700.65
Total NFA Next Generation Bridge Program (NGBP)		**$60,084.49**	**$60,084.49**

Cost Estimates and Available Resources

Summary by Funding Category

Highway Projects Federal Fiscal Year 2026

Highway FFY 2026	**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)	$10,332.84	$12,916.06	$12,916.06
Regional Target Subtotals	**$10,332.84**	**$12,916.06**	**$12,916.06**
Statewide Bicycle and Pedestrian (CMAQ)	$5,438.40	$6,798.00	$6,798.00
Statewide Bridge On-System NHS (NHPP)	$55,588.16	$69,485.19	$69,485.19
Statewide Bridge Off-System (STBG-BR-Off)	$2,628.00	$3,285.01	$3,285.01
Statewide Roadway Reconstruction SRTS (TAP)	$1,486.46	$1,858.08	$1,858.08
Total FFY 2026	**$75,473.86**	**$94,342.34**	**$94,342.34**

Cost Estimates and Available Resources
Summary by Funding Category
Highway Projects Federal Fiscal Year 2027

Highway FFY 2027	**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)	$10,890.34	$13,612.92	$13,612.92
Regional Target Subtotals	**$10,890.34**	**$13,612.92**	**$13,612.92**
Statewide Bridge On-System NHS (NHPP)	$33,529.52	$41,911.90	$41,911.90
Total FFY 2027	**$44,419.86**	**$55,524.82**	**$55,524.82**

The table on the following pages shows the MassDOT Highway Operating and Maintenance expenditure estimates as of March 2022.

Operating and Maintenance Expenditures as of March 2022

Statewide and District Contracts plus Expenditures within MPO boundaries

Program Group/Sub Group	Est SFY 2022 Spending	Est SFY 2023 Spending	Est SFY 2024 Spending	Est SFY 2025 Spending	Est SFY 2026 Spending
Part 1: Non-Federal Aid					
Section I - Non Federal Aid Maintenance Projects - State Bondfunds					
01 - ADA Retrofits					
Sidewalk Construction and Repairs	$ 78,719	$ 114,000	$ 52,000	$ -	$ -
02 - Bicycles and pedestrians program					
Bikeway/Bike Path Construction	$ -	$ -	$ -	$ -	$ -
03 - Bridge					
Bridge Maintenance	$ 47,360,434	$ 22,008,112	$ 7,019,328	$ 345,318	$ -
Bridge Maintenance - Deck Repairs	$ 13,072,586	$ 8,334,358	$ 5,311,045	$ 443,585	$ -
Bridge Maintenance - Joints	$ 3,793,035	$ 2,804,206	$ 1,208,481	$ 68,432	$ -
Bridge Preservation	$ 2,882,033	$ 11,816,698	$ 4,974,667	$ 317,981	$ -
Drawbridge Maintenance	$ 5,575,223	$ 2,560,174	$ -	$ -	$ -
Painting - Structural	$ 6,162,363	$ 1,605,861	$ -	$ -	$ -
Structures Maintenance	$ 284,948	$ 142,680	$ -	$ -	$ -
04 - Capacity					
Highway Relocation	$ -	$ -	$ -	$ -	$ -
Hwy Reconstr - Added Capacity	$ -	$ -	$ -	$ -	$ -
Hwy Reconstr - Major Widening	$ -	$ -	$ -	$ -	$ -
05 - Facilities					
Vertical Construction (Ch 149)	$ 6,669,216	$ 5,718,204	$ 1,651,487	$ 114,754	$ -
07 - Intersection Improvements					
Traffic Signals	$ 3,488,759	$ 2,224,126	$ 1,914,764	$ 94,957	$ -
08 - Interstate Pavement					
Resurfacing Interstate	$ -	$ -	$ -	$ -	$ -
09 - Intelligent Transportation Systems Program					
Intelligent Transportation System	$ -	$ -	$ -	$ -	$ -
10 - Non-interstate DOT Pavement Program					
Milling and Cold Planing	$ 625,000	$ 695,000	$ 65,316	$ -	$ -
Resurfacing	$ 6,415,673	$ 4,437,466	$ 3,658,730	$ 956,730	$ -
Resurfacing DOT Owned Non-Interstate	$ 5,222,136	$ 3,704,756	$ 1,345,715	$ 178,272	$ -
11 - Roadway Improvements					
Asbestos Removal	$ -	$ -	$ -	$ -	$ -
Catch Basin Cleaning	$ 1,966,347	$ 1,455,089	$ 310,866	$ -	$ -
Contract Highway Maintenance	$ 3,190,450	$ 3,000,531	$ 1,668,618	$ 100,901	$ -
Crack Sealing	$ 1,672,864	$ 1,194,760	$ 706,377	$ 109,600	$ -
Culvert Maintenance	$ -	$ -	$ -	$ -	$ -
Culvert Reconstruction/Rehab	$ -	$ -	$ -	$ -	$ -
Drainage	$ 7,341,532	$ 6,292,153	$ 1,154,896	$ 103,925	$ -
Dredging	$ -	$ -	$ -	$ -	$ -
Guard Rail & Fencing	$ 3,429,456	$ 4,146,615	$ 1,845,428	$ 278,197	$ -
Highway Sweeping	$ 963,234	$ 1,007,278	$ 141,245	$ -	$ -
Landscaping	$ 233,427	$ 600,000	$ 244,014	$ -	$ -
Mowing and Spraying	$ 2,002,002	$ 1,038,229	$ 357,576	$ 29,565	$ -
Sewer and Water	$ 3,904	$ 20,843	$ 10,580	$ -	$ -
Tree Trimming	$ 3,939,855	$ 2,625,059	$ 722,777	$ -	$ -
12 - Roadway Reconstruction					
Hwy Reconstr - No Added Capacity	$ 6,001	$ -	$ -	$ -	$ -
Hwy Reconstr - Restr and Rehab	$ 646,014	$ 109,047	$ 265,670	$ 177,113	$ -
Roadway - Reconstr - Sidewalks and Curbing	$ 1,879,857	$ 748,676	$ -	$ -	$ -
13 - Safety Improvements					
Electrical	$ 398,549	$ -	$ -	$ -	$ -
Impact Attenuators	$ 1,068,681	$ 911,141	$ 346,248	$ 129,196	$ -
Lighting	$ 3,735,830	$ 2,267,423	$ 1,281,166	$ 116,870	$ -
Pavement Marking	$ 3,332,465	$ 3,166,821	$ 1,623,975	$ 343,891	$ -
Safety Improvements	$ 227,620	$ 33,595	$ -	$ -	$ -
Sign Installation/Upgrading	$ 545,832	$ 833,711	$ 827,507	$ 65,739	$ -
Structural Signing	$ 359,312	$ 129,607	$ -	$ -	$ -
Section I Total:	**$ 138,573,354**	**$ 95,746,219**	**$ 38,708,474**	**$ 3,975,025**	**$ -**
Section II - Non Federal Aid Highway Operations - State Operating Budget Funding					
Snow and Ice Operations & Materials					
	$ 83,800,000	$ 95,000,000	$ 95,000,000	$ 95,000,000	$ 95,000,000
District Maintenance Payroll					
Mowing, Litter Mgmt, Sight Distance Clearing, Etc.	$ 34,400,000	$ 35,440,000	$ 36,510,000	$ 37,610,000	$ 38,740,000
Section II Total:	**$ 118,200,000**	**$ 130,440,000**	**$ 131,510,000**	**$ 132,610,000**	**$ 133,740,000**
Grand Total NFA:	**$ 256,773,354**	**$ 226,186,219**	**$ 170,218,474**	**$ 136,585,025**	**$ 133,740,000**

Operating and Maintenance Expenditures as of March 2022

Statewide and District Contracts plus Expenditures within MPO boundaries

Program Group/Sub Group	Est SFY 2022 Spending	Est SFY 2023 Spending	Est SFY 2024 Spending	Est SFY 2025 Spending	Est SFY 2026 Spending
Part 2: Federal Aid					
Section I - Federal Aid Maintenance Projects					
01 - ADA Retrofits					
Sidewalk Construction and Repairs	$ -	$ -	$ -	$ -	$ -
02 - Bicycles and pedestrians program					
Bikeway/Bike Path Construction	$ -	$ -	$ -	$ -	$ -
03 - Bridge					
Bridge Maintenance	$ 3,805,564	$ 502,504	$ 2,357,142	$ -	$ -
Bridge Maintenance - Deck Repairs	$ -	$ -	$ 1,038,762	$ 952,198	$ -
Bridge Maintenance - Joints	$ -	$ -	$ -	$ -	$ -
Bridge Preservation	$ -	$ -	$ -	$ -	$ -
Bridge Reconstruction/Rehab	$ -	$ -	$ -	$ -	$ -
Drawbridge Maintenance	$ -	$ -	$ -	$ -	$ -
Painting - Structural	$ 3,401,816	$ 378,207	$ -	$ -	$ -
Structures Maintenance	$ 238,348	$ 2,860,181	$ 1,430,090	$ -	$ -
04 - Capacity					
Hwy Reconstr - Added Capacity	$ -	$ -	$ -	$ -	$ -
05 - Facilities					
Vertical Construction (Ch 149)	$ -	$ -	$ -	$ -	$ -
07 - Intersection Improvements					
Traffic Signals	$ -	$ -	$ -	$ -	$ -
08 - Interstate Pavement					
Resurfacing Interstate	$ -	$ -	$ -	$ -	$ -
09 - Intelligent Transportation Systems Program					
Intelligent Transportation System	$ -	$ -	$ -	$ -	$ -
10 - Non-interstate DOT Pavement Program					
Milling and Cold Planing	$ -	$ -	$ -	$ -	$ -
Resurfacing	$ -	$ -	$ -	$ -	$ -
Resurfacing DOT Owned Non-Interstate	$ -	$ -	$ -	$ -	$ -
11 - Roadway Improvements					
Asbestos Removal	$ -	$ -	$ -	$ -	$ -
Catch Basin Cleaning	$ -	$ -	$ -	$ -	$ -
Contract Highway Maintenance	$ -	$ -	$ -	$ -	$ -
Crack Sealing	$ -	$ -	$ -	$ -	$ -
Culvert Maintenance	$ -	$ -	$ -	$ -	$ -
Culvert Reconstruction/Rehab	$ -	$ -	$ -	$ -	$ -
Drainage	$ -	$ -	$ -	$ -	$ -
Guard Rail & Fencing	$ -	$ -	$ -	$ -	$ -
Highway Sweeping	$ -	$ -	$ -	$ -	$ -
Landscaping	$ -	$ -	$ -	$ -	$ -
Mowing and Spraying	$ -	$ -	$ -	$ -	$ -
Sewer and Water	$ -	$ -	$ -	$ -	$ -
Tree Trimming	$ -	$ -	$ -	$ -	$ -
12 - Roadway Reconstruction					
Hwy Reconstr - Restr and Rehab	$ -	$ -	$ -	$ -	$ -
13 - Safety Improvements					
Electrical	$ -	$ -	$ -	$ -	$ -
Impact Attenuators	$ -	$ -	$ -	$ -	$ -
Lighting	$ 5,557,056	$ 9,931	$ 978,483	$ -	$ -
Pavement Marking	$ -	$ -	$ -	$ -	$ -
Safety Improvements	$ -	$ -	$ -	$ -	$ -
Sign Installation/Upgrading	$ -	$ -	$ -	$ -	$ -
Structural Signing	$ 583,693	$ 99,450	$ -	$ -	$ -
Section I Total:	**$ 13,586,477**	**$ 3,850,272**	**$ 5,804,478**	**$ 952,198**	**$ -**
Grand Total Federal Aid:	**$ 13,586,477**	**$ 3,850,272**	**$ 5,804,478**	**$ 952,198**	**$ -**

Operating and Maintenance Expenditures as of March 2022

Statewide and District Contracts

Program Group/Sub Group	Est SFY 2022 Spending	Est SFY 2023 Spending	Est SFY 2024 Spending	Est SFY 2025 Spending	Est SFY 2026 Spending
Part 1: Non-Federal Aid					
Section I - Non Federal Aid Maintenance Projects - State Bondfunds					
01 - ADA Retrofits					
Sidewalk Construction and Repairs	$ 78,719	$ 114,000	$ 52,000	$ -	$ -
02 - Bicycles and pedestrians program					
Bikeway/Bike Path Construction	$ -	$ -	$ -	$ -	$ -
03 - Bridge					
Bridge Maintenance	$ 36,405,775	$ 18,815,892	$ 6,183,863	$ 345,318	$ -
Bridge Maintenance - Deck Repairs	$ 13,072,586	$ 8,334,358	$ 5,311,045	$ 443,585	$ -
Bridge Maintenance - Joints	$ 3,793,035	$ 2,804,206	$ 1,208,481	$ 68,432	$ -
Bridge Preservation	$ 722,817	$ 1,510,000	$ 635,000	$ -	$ -
Drawbridge Maintenance	$ 5,575,223	$ 2,560,174	$ -	$ -	$ -
Painting - Structural	$ 4,516,054	$ 1,605,861	$ -	$ -	$ -
Structures Maintenance	$ 284,948	$ 142,680	$ -	$ -	$ -
04 - Capacity					
Highway Relocation	$ -	$ -	$ -	$ -	$ -
Hwy Reconstr - Added Capacity	$ -	$ -	$ -	$ -	$ -
Hwy Reconstr - Major Widening	$ -	$ -	$ -	$ -	$ -
05 - Facilities					
Vertical Construction (Ch 149)	$ 4,429,468	$ 2,368,944	$ 929,429	$ 114,754	$ -
07 - Intersection Improvements					
Traffic Signals	$ 3,488,759	$ 2,224,126	$ 1,914,764	$ 94,957	$ -
08 - Interstate Pavement					
Resurfacing Interstate	$ -	$ -	$ -	$ -	$ -
09 - Intelligent Transportation Systems Program					
Intelligent Transportation System	$ -	$ -	$ -	$ -	$ -
10 - Non-interstate DOT Pavement Program					
Milling and Cold Planing	$ 625,000	$ 695,000	$ 65,316	$ -	$ -
Resurfacing	$ 6,415,673	$ 4,437,466	$ 3,658,730	$ 956,730	$ -
Resurfacing DOT Owned Non-Interstate	$ 5,203,927	$ 3,704,756	$ 1,345,715	$ 178,272	$ -
11 - Roadway Improvements					
Asbestos Removal	$ -	$ -	$ -	$ -	$ -
Catch Basin Cleaning	$ 1,966,347	$ 1,455,089	$ 310,866	$ -	$ -
Contract Highway Maintenance	$ 3,055,450	$ 2,387,018	$ 1,154,312	$ 72,342	$ -
Crack Sealing	$ 1,672,864	$ 1,194,760	$ 706,377	$ 109,600	$ -
Culvert Maintenance	$ -	$ -	$ -	$ -	$ -
Culvert Reconstruction/Rehab	$ -	$ -	$ -	$ -	$ -
Drainage	$ 6,789,520	$ 5,478,547	$ 1,040,684	$ 103,925	$ -
Dredging	$ -	$ -	$ -	$ -	$ -
Guard Rail & Fencing	$ 3,429,456	$ 4,146,615	$ 1,845,428	$ 278,197	$ -
Highway Sweeping	$ 963,234	$ 1,007,278	$ 141,245	$ -	$ -
Landscaping	$ 233,427	$ 600,000	$ 244,014	$ -	$ -
Mowing and Spraying	$ 1,984,043	$ 822,728	$ 177,992	$ 29,565	$ -
Sewer and Water	$ 3,904	$ 20,843	$ 10,580	$ -	$ -
Tree Trimming	$ 3,939,855	$ 2,625,059	$ 722,777	$ -	$ -
12 - Roadway Reconstruction					
Hwy Reconstr - No Added Capacity	$ 6,001	$ -	$ -	$ -	$ -
Hwy Reconstr - Restr and Rehab	$ 646,014	$ 109,047	$ 265,670	$ 177,113	$ -
Roadway - Reconstr - Sidewalks and Curbing	$ 1,879,857	$ 748,676	$ -	$ -	$ -
13 - Safety Improvements					
Electrical	$ 398,549	$ -	$ -	$ -	$ -
Impact Attenuators	$ 1,068,681	$ 842,686	$ 181,956	$ 47,050	$ -
Lighting	$ 3,735,830	$ 2,267,423	$ 1,281,166	$ 116,870	$ -
Pavement Marking	$ 3,332,465	$ 3,166,821	$ 1,623,975	$ 343,891	$ -
Safety Improvements	$ 227,620	$ 33,595	$ -	$ -	$ -
Sign Installation/Upgrading	$ 467,832	$ 573,711	$ 646,592	$ 65,739	$ -
Structural Signing	$ 359,312	$ 129,607	$ -	$ -	$ -
Section I Total:	**$ 120,772,243**	**$ 76,926,966**	**$ 31,657,976**	**$ 3,546,339**	**$ -**
Section II - Non Federal Aid Highway Operations - State Operating Budget Funding					
Snow and Ice Operations & Materials					
	$ 83,800,000	$ 95,000,000	$ 95,000,000	$ 95,000,000	$ 95,000,000
District Maintenance Payroll					
Mowing, Litter Mgmt, Sight Distance Clearing, Etc.	$ 34,400,000	$ 35,440,000	$ 36,510,000	$ 37,610,000	$ 38,740,000
Section II Total:	**$ 118,200,000**	**$ 130,440,000**	**$ 131,510,000**	**$ 132,610,000**	**$ 133,740,000**
Grand Total NFA:	**$ 238,972,243**	**$ 207,366,966**	**$ 163,167,976**	**$ 136,156,339**	**$ 133,740,000**

Operating and Maintenance Expenditures as of March 2022

Statewide and District Contracts

Program Group/Sub Group	Est SFY 2022 Spending	Est SFY 2023 Spending	Est SFY 2024 Spending	Est SFY 2025 Spending	Est SFY 2026 Spending
Part 2: Federal Aid					
Section I - Federal Aid Maintenance Projects					
01 - ADA Retrofits					
Sidewalk Construction and Repairs	$ -	$ -	$ -	$ -	$ -
02 - Bicycles and pedestrians program					
Bikeway/Bike Path Construction	$ -	$ -	$ -	$ -	$ -
03 - Bridge					
Bridge Maintenance	$ 2,557,469	$ 502,504	$ -	$ -	$ -
Bridge Maintenance - Deck Repairs	$ -	$ -	$ -	$ -	$ -
Bridge Maintenance - Joints	$ -	$ -	$ -	$ -	$ -
Bridge Preservation	$ -	$ -	$ -	$ -	$ -
Bridge Reconstruction/Rehab	$ -	$ -	$ -	$ -	$ -
Drawbridge Maintenance	$ -	$ -	$ -	$ -	$ -
Painting - Structural	$ 3,401,816	$ 378,207	$ -	$ -	$ -
Structures Maintenance	$ -	$ -	$ -	$ -	$ -
04 - Capacity					
Hwy Reconstr - Added Capacity	$ -	$ -	$ -	$ -	$ -
05 - Facilities					
Vertical Construction (Ch 149)	$ -	$ -	$ -	$ -	$ -
07 - Intersection Improvements					
Traffic Signals	$ -	$ -	$ -	$ -	$ -
08 - Interstate Pavement					
Resurfacing Interstate	$ -	$ -	$ -	$ -	$ -
09 - Intelligent Transportation Systems Program					
Intelligent Transportation System	$ -	$ -	$ -	$ -	$ -
10 - Non-interstate DOT Pavement Program					
Milling and Cold Planing	$ -	$ -	$ -	$ -	$ -
Resurfacing	$ -	$ -	$ -	$ -	$ -
Resurfacing DOT Owned Non-Interstate	$ -	$ -	$ -	$ -	$ -
11 - Roadway Improvements					
Asbestos Removal	$ -	$ -	$ -	$ -	$ -
Catch Basin Cleaning	$ -	$ -	$ -	$ -	$ -
Contract Highway Maintenance	$ -	$ -	$ -	$ -	$ -
Crack Sealing	$ -	$ -	$ -	$ -	$ -
Culvert Maintenance	$ -	$ -	$ -	$ -	$ -
Culvert Reconstruction/Rehab	$ -	$ -	$ -	$ -	$ -
Drainage	$ -	$ -	$ -	$ -	$ -
Guard Rail & Fencing	$ -	$ -	$ -	$ -	$ -
Highway Sweeping	$ -	$ -	$ -	$ -	$ -
Landscaping	$ -	$ -	$ -	$ -	$ -
Mowing and Spraying	$ -	$ -	$ -	$ -	$ -
Sewer and Water	$ -	$ -	$ -	$ -	$ -
Tree Trimming	$ -	$ -	$ -	$ -	$ -
12 - Roadway Reconstruction					
Hwy Reconstr - Restr and Rehab	$ -	$ -	$ -	$ -	$ -
13 - Safety Improvements					
Electrical	$ -	$ -	$ -	$ -	$ -
Impact Attenuators	$ -	$ -	$ -	$ -	$ -
Lighting	$ -	$ -	$ -	$ -	$ -
Pavement Marking	$ -	$ -	$ -	$ -	$ -
Safety Improvements	$ -	$ -	$ -	$ -	$ -
Sign Installation/Upgrading	$ -	$ -	$ -	$ -	$ -
Structural Signing	$ 583,693	$ 99,450	$ -	$ -	$ -
Section I Total:	**$ 6,542,978**	**$ 980,161**	**$ -**	**$ -**	**$ -**
Grand Total Federal Aid:	**$ 6,542,978**	**$ 980,161**	**$ -**	**$ -**	**$ -**

Part C. 2. Transit Program Financial Plan

MVRTA Financial Status

The BIL 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 2023-2027 TIP meet this criterion.

The MVRTA is apportioned FTA Section 5307, 5337, and 5339 funds directly based on urbanized area population and the 20 agreed-upon funding splits between other public transit agencies that fall into the Boston MA-NH-RI Urbanized Zone Area (UZA). The following tables depict the resulting financial plan for each of the five fiscal years.

Planning Justification for Transit Projects

The Merrimack Valley region's FFYs 2023-2027 TIP federal aid transit projects are to be carried out using Sections 5307 and Section 5339 funding received by the MVRTA from the FTA with the exception of the provision of operating assistance, the planning justification for the Section 5307 and Section 5339 projects are contained in the Merrimack Valley Regional Transit Authority's Five-Year Capital Program for 2023-2027.

The next table shows the “Operating and Maintenance” vs.” Capital plus Other” transit project costs programmed in this TIP. MVMPO Short Range Transit Planning; MVPC support for transit route development and stops; planning, design and engineering of transit facilities are considered “Other”, and the construction of these facilities are considered “Capital” expenses. The remainder of the transit projects are considered to be “Operating and Maintenance” projects.

Transit Program Financial Plan Table

Merrimack Valley Metropolitan Planning Organization
FFYs 2023-2027 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*
2023	$19.72	$.97	$20.69	$20.69
2024	$11.77	$17.91	$29.68	$29.68
2025	$7.27	$0.79	$8.06	$8.06
2026	$7.55	$0.23	$7.78	$7.78
2027	$16.39	$5.25	$21.64	$21.64

* Millions of dollars

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 (Authorization 2023 minus Regional TIP 2023)**
Section 5307 Capital and Planning Formula	$7,443,500	$0	$7,443,500
Section 5307 Transit Enhancements			
Subtotal	**$7,443,500**	**$0**	**$7,443,500**
Section 5307 Capital and Planning Formula Carryover	$24,031,315	$14,869,570	$9,161,745
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$24,031,315**	**$14,869,570**	**$9,161,745**
Section 5307 Total	**$31,474,815**	**$14,869,570**	**$16,605,245**
CARES Act Funding			$0
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5339 Bus and Bus Related Equipment and Facilities	$960,000	$960,000	$0
Federal Aid Total	**$32,434,815**	**$15,829,570**	**$16,605,245**
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 (Authorization 2024 minus Regional TIP 2024)**
Section 5307 Capital and Planning Formula	$7,815,675	$860,085	$6,955,590
Section 5307 Transit Enhancements			
Subtotal	**$7,815,675**	**$860,085**	**$6,955,590**
Section 5307 Capital and Planning Formula Carryover	$16,605,245	$16,605,245	$0
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$16,605,245**	**$16,605,245**	**$0**
Section 5307 Total	**$24,420,920**	**$17,465,330**	**$6,955,590**
Section 5307(h) Passenger Ferry Grant	600,000	600,000	$0
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5339 Bus and Bus Related Equipment and Facilities	$3,840,000	$3,840,000	$0
Federal Aid Total	**$28,860,920**	**$21,905,330**	**$6,955,590**
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 (Authorization 2025 minus Regional TIP 2025)**
Section 5307 Capital and Planning Formula	$8,206,450	$0	$8,206,450
Section 5307 Transit Enhancements			
Subtotal	**$8,206,450**	**$0**	**$8,206,450**
Section 5307 Capital and Planning Formula Carryover	$6,955,590	$6,013,560	$942,030
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$6,955,590**	**$6,013,560**	**$942,030**
Section 5307 Total	**$15,162,040**	**$6,013,560**	**$9,148,480**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5339 Bus and Bus Related Equipment and Facilities			
Federal Aid Total	**$15,162,040**	**$6,013,560**	**$9,148,480**
Other Transit Funding (Non-Federal Aid)	$0	$0	$0

Cost Estimates and Available Resources
Summary by Funding Category
2026 Transit Projects
FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority FTA Funding Programs	**Estimated Authorization FFY 2026**	**Regional TIP FFY 2026**	**Balance FFY 2026 (Authorization 2026 minus Regional TIP 2026)**
Section 5307 Capital and Planning Formula	$8,616,780	$0	$8,616,780
Section 5307 Transit Enhancements			
Subtotal	**$8,616,780**	**$0**	**$8,616,780**
Section 5307 Capital and Planning Formula Carryover	**$9,148,480**	$5,664,490	$3,483,990
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$9,148,480**	**$5,664,490**	**$3,483,990**
Section 5307 Total	**$17,765,260**	**$5,664,490**	**$12,100,770**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5309 Total			
Section 5310 Elderly and Disabled			
Section 5339 Bus and Bus Related Equipment and Facilities			
Federal Aid Total	**$17,765,260**	**$5,664,490**	**$12,100,770**
Other Transit Funding (Non-Federal Aid)	$125,000	$125,000	$0

Summary of Transit Funding Categories

Cost Estimates and Available Resources
Summary by Funding Category
2027 Transit Projects
FTA Funding Program Summaries (Federal dollars only)

Merrimack Valley Regional Transit Authority **FTA Funding Programs**	**Estimated Authorization FFY 2027**	**Regional TIP FFY 2027**	**Balance FFY 2027 (Authorization 2027 minus Regional TIP 2027)**
Section 5307 Capital and Planning Formula	$9,047,620		$9,047,620
Section 5307 Transit Enhancements			
Subtotal	**$9,047,620**		**$9,047,620**
Section 5307 Capital and Planning Formula Carryover	$12,100,770	$8,733,060	$3,367,710
Section 5307 Operating Carryover			
Section 5307 Transit Enhancements Carryover			
Subtotal	**$12,100,770**	**$8,733,060**	**$3,367,710**
Section 5307 Total	**$21,148,390**	**$8,733,060**	**$12,415,330**
Section 5309 Bus			
Section 5309 Fixed Guideway			
Section 5310 Elderly and Disabled			
Other Federal Transit	$8,000,000	$8,000,000	0
Federal Aid Total	**$29,148,390**	**$16,733,060**	**$12,415,330**
Other Transit Funding (Non-Federal Aid)	$125,000	$125,000	$0

MVRTA Transit Operations and Maintenance Summary Table

State Fiscal Year 2021 (Actual), 2022 (Adopted Budget), and 2023 to 2027 (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**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**
Operating Revenue	**Actual**	**Jan 2022 Revised**	**Yr One**	**Yr Two**	**Yr Three**	**Yr Four**	**Yr Five**
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Farebox	$561,308	$665,420	$0	$0	$0	$0	$0
Section 5307			$7,443,500	$7,815,675	$8,206,450	$8,616,780	$9,047,620
Section 5311							
CARES	$6,036,070	$6,512,135	$3,811,895	$0	$0	$0	$0
CMAQ/TDM							

MVRTA Transit Operations and Maintenance Summary Table
State Fiscal Year 2021 (Actual), 2022 (Adopted Budget), and 2023 to 2027 (Projected) (Continued)

	Audit	**Adopted Budget**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**
Operating Revenue	**Actual**	**Jan 2022 Re-vised**	**Yr One**	**Yr Two**	**Yr Three**	**Yr Four**	**Yr Five**
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Advertising	$25,000	$25,000	$75,000	$75,000	$75,000	$75,000	$75,000
Interest Income	$1,049	$1,250	$2,500	$2,500	$2,500	$2,500	$2,500
Rental Income							
State Contract Assistance*	$7,509,670	$7,697,410	$8,120,768	$8,567,410	$9,038,617	$9,535,741	$10,060,207
Local Assessment	$4,144,670	$4,481,940	$4,593,989	$4,708,838	$4,826,559	$4,947,223	$5,070,904
Other: 5339 & other Discretionary funds	$357,000	$518,500	$1,200,000	$550,000	$0	$0	$5,000,000
Total Revenue	$18,015,585	$19,901,655	$25,247,651	$21,719,423	$22,149,126	$23,177,244	$29,256,231

MVRTA Transit Operations and Maintenance Summary

State Fiscal Year 2021 (Actual), 2022 (Adopted Budget), and 2023 to 2027 (Projected) (Continued)

Operating Expenses **	**Actual**	**Jan 2022 Revised**	**Yr One**	**Yr Two**	**Yr Three**	**Yr Four**	**Yr Five**
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Total (See Below)	$18,015,585	$19,901,655	$25,247,651	$21,719,423	$22,149,126	$23,177,244	$29,256,231

Footnotes:

* 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 2022 TIP Projects
FFY 2022 Highway Project List

Regional Target Projects

Project ID	Location	Project Description	Funding Category	Total Pro-grammed Funds	Project Status
609509	Lawrence	Lawrence– Intersection Improvements at Merrimack Street and South Broadway (Route 28)	STBG	$1,502,354	FFY 2022.
610923	Lawrence	Lawrence- Intersection Reconstruction at Marston Street & East Haverhill Street	STBG	$1,658,011	FFY 2022.
S12107		MVRTA Flex to FTA to Replace Yr 2011 Buses with New Clean Diesel Buses Order 1/2022 Delivery 6/2023 (6 of 8)	STBG	$2,983,200	Pending Flex funds received
S12108		MVRTA Flex to FTA to Replace Yr 2011 Buses with New Hybrid Buses Order 1/2022 Delivery 6/2023 (2 of 8)	STBG	$1,401,200	Pending Flex funds received
S12109		MVRTA Flex to FTA to Repower five (5) 2015 Transit Buses	STBG	$314,185	Pending Flex funds received
S12110		MVRTA Flex to FTA to Repower five (5) 2016 Transit Buses	STBG	$328,560	Pending Flex funds received
S12111		MVRTA Flex to FTA to Upgrade CAD/AVL and Automated Vehicle Announcement (AVA)	STBG	$946,210	Pending Flex funds received

Part C. 3. Status on Implementation of FFY 2022 TIP Projects (Cont.)

Transit Projects

Division ID	Project Title	Federal Funds	RTACAP	SCA	Local Funds	Total	Status
RTD0009672	MVRTA Operating Assistance	$644,945	$0	$644,945	$0	$1,289,890	Ongoing
RTD0009669	MVRTA Preventative Maintenance	$2,889,070	$0	$722,265	$0	$3,611,335	Ongoing
RTD0009671	MVMPO Short Range Transit Planning	$80,000	$0	$0	$20,000	$100,000	Ongoing
RTD0009673	MVRTA Replace 9 Model Yr 2009 35’ buses delivery 2022	3,269,223	1,188,807			4,458,030	Ordered, Delivered in February, in process of registration
RTD0010053	MVRTA HQ Facility Repairs	$545,600	$136,400	$0	$0	$682,000	Ongoing
RTD0009680	MVRTA Replace 1 model year 2016 supervisory vehicle	39,095	9,775			$48,870	Complete
RTD0009670	MVRTA ADA Paratransit Service	$1,441,305	$0	$360,325	$0	$1,801,630	Ongoing
RTD0010107	MVRTA Riverbank Stabilization Construction	$2,036,800	$509,200			$2,546,000	Under Construction

Part C. 3. Status on Implementation of FFY 2022 TIP Projects (Cont.)

Transit Projects (Cont.)

Division ID	Project Title	Federal Funds	RTACAP	TDC	Total	Status
RTD0010061 (Non-Federal Aid)	MVRTA Acquire Bus Plus Payment Software		$40,735		$40,735	Canceled due to fare free policy
S12107	MVRTA Flex to FTA to Replace Yr 2011 Buses with New Clean Diesel Buses Order 1/2022 Delivery 6/2023 (6 of 8)	$2,386,560**	$596,640		$2,983,200**	Ordered
S12108	MVRTA Flex to FTA to Replace Yr 2011 Buses with New Hybrid Buses Order 1/2022 Delivery 6/2023 (2 of 8)	$1,120,960**	$280,240		$1,401,200**	Ordered
S12109	MVRTA Flex to FTA to Repower five (5) 2015 Transit Buses	$251,350**		$62,835*	$251,350*	Ordered
S12110	MVRTA Flex to FTA to Repower five (5) 2016 Transit Buses	$262,850**		$65,710*	$262,850*	Ordered
S12111	MVRTA Flex to FTA to Upgrade CAD/AVL and Automated Vehicle Announcement (AVA)	$756,970**		$189,240*	$756,970*	Pending Flex funds received

* TDC (Transportation Development Credits) are not included in totals.

** The Federal dollars are being Flexed to FTA from Highway Regional Target Funding

Part C. 4. Air Quality Conformity

Air Quality Conformity Determination
Merrimack Valley Metropolitan Planning Organization (MVMPO)
FFY 2023-2027 Transportation Improvement Program

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 reconsideration 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 and the replacement with the 2008 Ozone NAAQS, which (with actually a stricter level of allowable ozone concentration than the 1997 standards) classified Massachusetts as "Attainment/unclassifiable" (except for Dukes County).

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. 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 these 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 NAAQS (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, a conformity determination was made for the 1997 ozone NAAQS on the 2020-2040 Regional Transportation Plans. This conformity determination was finalized in July 2019 following each MPO's previous endorsement of their regional transportation plan, and approved by the Massachusetts Divisions of FHWA and FTA on October 15, 2019. This conformity determination continues to be valid for the Merrimack Valley MPO FFY 2023-2027 Transportation Improvement Program, and Massachusetts' FFY 2023-2027 STIP, as each is developed from the conforming 2020-2040 Regional Transportation Plans.

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 2023-2027 Transportation Improvement Program and 2020-2040 Regional Transportation Plans 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 Massachusetts MPOs on March 6, 2019 to discuss the latest conformity-related court rulings and resulting federal guidance. Regular and recurring interagency consultations have been held since on an (at least) annual schedule, with the most recent conformity consultation held on April 27, 2022. 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 among the Massachusetts Department of Transportation, Massachusetts Department of

Environmental Protection, Massachusetts Metropolitan Planning Organizations, and Regional Transit Authorities, titled The Conduct of Air Quality Planning and Coordination for Transportation Conformity (dated September 16, 2019)

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. It can be found on the Merrimack Valley Planning Commission website at https://mvpc.org/wp-content/uploads/MVMPO-final-PPP-as-Amended-through-March-2017-1.pdf. The Public Participation Plan ensures that the public will have access to the TIP and all supporting documentation, provides for public notification of the availability of the TIP 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 and related certification documents.

The public comment period for this conformity determination commenced on May 4, 2022. During the 21-day public comment period, any comments received were incorporated into this Plan. This allowed ample opportunity for public comment and MPO review of the draft document. The public comment period will close on May 24, 2022 and subsequently, the Merrimack Valley MPO is expected to endorse this air quality conformity determination before June 2, 2022. 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.

Fiscal Constraint:

Transportation conformity requirements in 40 CFR 93.108 state that TIPs and transportation plans and must be fiscally constrained consistent with DOT’s metropolitan planning regulations at 23 CFR part 450. The Merrimack Valley MPO 2023-2027 Transportation Improvement Program and 2020-2040 Regional Transportation Plan are fiscally constrained, as demonstrated in this document.

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 2023-2027 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 2023-2027 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. 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. 7. 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 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 highway funding programmed in the 2023 to 2027 TIP.

	Region Population (ACS 15 to 19)	Percent of Total Population	TIP Project Investment	Percent of Projects by Total Investment
Within or Adjacent to Title VI / EJ community	200,647	57%	$337,381,396	59%
Outside Title VI / EJ community	153,349	43%	$231,725,652	41%
Total	353,996	100%	$569,107,048	100%

This table illustrates 59% of the investment is in or adjacent to Title VI and EJ communities, which is consistent with 57% of the population living in those communities. One project, the 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) costing $173,075,000 is 30% of the TIP investment dollars and is adjacent to and one end extends into Lawrence, a Title VI and EJ community. The project is adjacent to Lawrence therefore the funding for this project is split between Andover (not a Title VI or EJ community) and Lawrence. The Lawrence population will benefit from and is served by this project.

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 2023 to 2027 TIP.

	Region Population Age 5+ (ACS 15 to 19)	Percent of Total Population Age 5+ (ACS 15 to 19)	TIP Project Investment	Percent of Projects by Total Investment
Within LEP community	215,364	64%	497,930,332	87%
Outside LEP community	118,749	36%	71,176,716	13%
Total	334,113	100%	$569,107,048	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 2018 to 2027. (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 2023 to 2027 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 2018 to 2022.

For Title VI and EJ communities, the results show that for FFYs 2023 to 2027, 42% of the total number of projects are in Title VI and EJ communities. Considering the data for percent of funding, 59% of the funding is in Title VI and EJ communities. 57% of the population lives in those communities.

For LEP communities, the results show that for FFYs 2023 to 2027, 58% of the total number of projects are in LEP communities. Considering the data for percent of funding, 87% of the funding is in LEP communities.

For Title VI and EJ communities, the results show that for FFYs 2018 to 2022, 59% of the total number of projects are in Title VI communities and EJ communities. Considering the data for percent of funding, 66% of the funding is in Title VI communities and EJ communities.

For LEP communities, the results show that for FFYs 2018 to 2022, 59% of the total number of projects are in LEP communities. Considering the data for percent of funding, 66% 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 in Lawrence, or provide connections to these routes. The paratransit service also provides access to and from the Title VI and EJ communities. The total federal aid transit funding for FFYs 2023 to 2027 is $87,602,565. The total federal transit funding for FFYs 2018 to 2022 is $46,317,028. There are two mappable transit projects in the FFYs 2023 to 2027 TIP. MVRTA-1 New Transit Hub and Maintenance Facility at Bradford Station and MVRTA-2 McGovern Transportation Center Upgrades. There are two mappable transit projects in the FFYs 2018 to 2022 project list. The MVRTA Headquarters (HQ) Facility Repairs project is labeled MVRTA – C4 and the Riverbank Stabilization project is labeled MVRTA – C5. The maps also show the MVRTA fixed route bus system.

Equity Analysis Maps

MVMPO: FFYs 2023 to 2027 Statewide and Regional Target Highway Projects overlaid on Low Income and Minority Tracts

MVMPO: FFYs 2023 to 2027 Transit Projects and MVRTA Bus Routes overlaid on Low Income and Minority Tracts

MVMPO: FFYs 2018 to 2022 Statewide and Regional Target Highway Projects overlaid on Low Income and Minority Tracts

MVMPO: FFYs 2018 to 2022 Transit Projects and MVRTA Bus Routes overlaid on Low Income and Minority Tracts

FFYs 2023 to 2027 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	611977	Amesbury– Riverwalk Connector to the Salisbury Point Ghost Trail	$2,448,760	2027	No	No	No
Andover	612193	Andover- Bridge Preservation, A-09-022, I-93 over Merrimack River	$38,102,400	2025	No	No	Yes
Andover	606522	Andover- Bridge Rehab., I-495 over Rt. 28 and RR	$173,075,000*	2023 to 2026	Yes*	Yes*	Yes*
Andover	612143	Andover– Bridge Replacement, A-09-015, Tewksbury Street over MBTA/BMRR	$17,383,839	2025	No	No	Yes
Andover/ Tewksbury	612045	Andover-Tewksbury-Interstate Maintenance and related work on I-93	$18,525,197	2025	No	No	Yes
Georgetown/ Boxford	607541	Georgetown/ Boxford Border to Boston Trail	$2,520,436	2024	No	No	No

* Project is adjacent to Lawrence and project extents go into Lawrence. The Lawrence population is served by and benefits from this project therefore one half of the total project cost = $86,537,500 is being attributed to Lawrence for this analysis.

FFYs 2023 to 2027 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
Georgetown/ Newbury	607542	Georgetown/ Newbury Border to Boston Trail	$6,798,000	2026	No	No	No
Groveland	S12208	Groveland- Improvements at Dr. Elmer Bagnall Elementary School	$1,858,080	2026	No	No	No
Haverhill	609466	Haverhill- Bridge Replacement I-495 over Merrimack (H-12-040)	$96,087,420	2024 to 2027	Yes	Yes	Yes
Haverhill	605304	Haverhill- Bridge Replacement Bridge St (Rt 125) over Merrimack and B&M RR	$108,011,904	2024 to 2027	Yes	Yes	Yes
Haverhill	609466	Haverhill– Roadway Reconstruction on North Avenue	$5,798,257	2027	Yes	Yes	Yes
Lawrence	612074	Lawrence– Bridge Replacement, L-04-012, Short Street over Spicket River	$3,285,005	2026	Yes	Yes	Yes
Lawrence	612002	Lawrence – Community Day Arlington Improvements (SRTS)	$1,554,211	2025	Yes	Yes	Yes

FFYs 2023 to 2027 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	608930	Lawrence- Lawrence Manchester Rail Corridor (LMRC) Rail Trail	$21,416,304	2024 to 2025	Yes	Yes	Yes
Lawrence	610924	Lawrence– Roadway Reconstruction on Amesbury Street	$8,028,654	2024	Yes	Yes	Yes
Methuen	612158	Methuen- Bridge Replacement, M-17-026, Route 213 EB/WB over the Methuen Rail Trail	$4,598,252	2025	Yes	Yes	Yes
Methuen	610658	Methuen– Intersection Improvements at Riverside Drive and Burnham Road	$2,063,889	2024	Yes	Yes	Yes
Newburyport	608029	Newburyport– Intersection Improvements @ Route 1 & Merrimac Street	$2,870,513	2027	No	No	No
North Andover	608095	North Andover- Route 114, between Waverly Road & Willow/Mill Street	$34,083,859	2024 to 2027	No	No	No

FFYs 2023 to 2027 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
Rowley	609392	Rowley – Safety Improvements at Route 1, Central and Glen Streets	$1,330,785	2023	No	No	No
Salisbury	602202	Salisbury- Reconstruction of Route 1 (Lafayette Rd)	$19,266,283	2023 to 2024	No	No	No
		Total All Projects 2023 to 2027	**$569,107,048**				

FFYs 2023 to 2027 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	1	4%	$2,448,760	0.4%	No	No	No
Andover	4	17%	$160,548,936	28.2%	No	No	Yes
Boxford	1	4%	$1,260,218	0.2%	No	No	No
Georgetown	2	8%	$4,659,218	0.8%	No	No	No
Groveland	1	4%	$1,858,080	0.3%	No	No	No
Haverhill	3	13%	$209,897,581	36.9%	Yes	Yes	Yes
Lawrence	5	21%	$120,821,674	21.2%	Yes	Yes	Yes
Merrimac	0	0%	$0	0.0%	No	No	No
Methuen	2	8%	$6,662,141	1.2%	Yes	Yes	Yes
Newbury	1	4%	$3,399,000	0.6%	No	No	No
Newburyport	1	4%	$2,870,513	0.5%	No	No	No
North Andover	1	4%	$34,083,859	6.0%	No	No	No
Rowley	1	4%	$1,330,785	0.2%	No	No	No
Salisbury	1	4%	$19,266,283	3.4%	No	No	No
West Newbury	0	0%	$0	0.0%	No	No	No
MVRTA	0	0%	$0	0.0%	Yes	Yes	Yes
Total	**24**		**$569,107,048**				

Percent of Projects in Title VI Community = 42%

Percent of Projects in EJ Community = 42%

Percent of Projects in LEP Community = 58%

Percent of Funding in Title VI Community = 59%

Percent of Funding in EJ Community = 59%

Percent of Funding in LEP Community = 87%

FFYs 2018 to 2022 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/ Salisbury	607737	Amesbury- Salisbury Trail Connector at I-95	$3,167,723	2018	No	No	No
Groveland	608298	Groveland – Community Trail from Main Street to King Street	$1,984,861	2021	No	No	No
Haverhill	608761	Haverhill – Rt. 108 (Newton Road) at Rt. 110 (Kenoza Ave. and Amesbury Rd.)	$1,980,067	2021	Yes	Yes	Yes
Haverhill	608027	Haverhill Bradford Rail Trail Ext.	$1,766,108	2020	Yes	Yes	Yes

FFYs 2018 to 2022 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	605306	Haverhill- Bridge Replacement I-495 over Merrimack (2018 = $19,797,733, 2019 = $23,703,426, 2020 = $15,305,880, 2021 = $0 (used obligation authority in Aug 2020 instead), 2022 = 12,994,233	$71,801,272	2018 - 2022	Yes	Yes	Yes
Lawrence	608946	Lawrence- Haverhill St (Route 110) at Ames Street	$1,267,500	2018	Yes	Yes	Yes
Lawrence	609251	Lawrence – Intersection Improvements at South Broadway (Route 28) and Mount Vernon Street	$1,218,368	2021	Yes	Yes	Yes
Lawrence/ North Andover	608809	Lawrence- North Andover- Resurfacing Route 114	$2,123,453	2018	Yes/ No	Yes/ No	Yes/ No
Lawrence	609509	Lawrence – Intersection Improvements at Merrimack Street and South Broadway (Route 28)	$1,502,354	2022	Yes	Yes	Yes

FFYs 2018 to 2022 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	610923	Lawrence – Intersection Reconstruction at Marston Street and East Haverhill Street	$1,658,011	2022	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
MVRTA	S10777	MVRTA Flex to FTA to Replace Yr 2009 Buses with New Buses Delivery 2022 (7 of 9)	$3,467,361	2021	Yes	Yes	Yes
MVRTA	S12107	MVRTA – Flex to FTA to Replace Yr 2011 Buses with New Clean Diesel Buses Order 1/2022 Delivery 6/2023 (6 of 8)	$2,983,200	2022	Yes	Yes	Yes

FFYs 2018 to 2022 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
MVRTA	S12108	MVRTA – Flex to FTA to Replace Yr 2011 Buses with New Hybrid Buses Order 1/2022 Delivery 6/2023 (2 of 8)	$1,401,200	2022	Yes	Yes	Yes
MVRTA	S12109	MVRTA – Flex to FTA to Repower five (5) 2015 Transit Buses	$314,185	2022	Yes	Yes	Yes
MVRTA	S12110	MVRTA – Flex to FTA to Repower five (5) 2016 Transit Buses	$328,560	2022	Yes	Yes	Yes
MVRTA	S12111	MVRTA – Flex to FTA to Upgrade CAD/AVL and Automated Vehicle Announcement (AVA)	$946,210	2022	Yes	Yes	Yes
Newburyport	608792	Newburyport- SRTS	$1,866,615	2019	No	No	No
Newbury/ Newburyport/ Salisbury	608494	Newbury/ Newburyport/ Salisbury Resurfacing Route 1	$15,735,772	2022	No	No	No
North Andover	606159	North Andover- Rt 125/ Mass Ave	$5,446,662	2019	No	No	No

FFYs 2018 to 2022 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 2018 to 2022	**$140,130,343**				

FFYs 2018 to 2022 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	2	7%	$12,761,986	9%	No	No	No
Andover	0	0%	$0	0%	No	No	Yes
Boxford	0	0%	$0	0%	No	No	No
Georgetown	0	0%	$0	0%	No	No	No
Groveland	1	4%	$1,984,861	1%	No	No	No
Haverhill	3	11%	$75,547,447	54%	Yes	Yes	Yes
Lawrence	5	19%	$6,707,960	5%	Yes	Yes	Yes
Merrimac	0	0%	$0	0%	No	No	No
Methuen	0	0%	$0	0%	Yes	Yes	Yes
Newbury	1	4%	$5,245,257	4%	No	No	No
Newburyport	2	7%	$7,111,872	5%	No	No	No
North Andover	2	7%	$6,508,389	5%	No	No	No
Rowley	0	0%	$0	0%	No	No	No
Salisbury	3	11%	$14,013,315	10%	No	No	No
West Newbury	0	0%	$0	0%	No	No	No
MVRTA	8	30%	$10,249,257	7%			
Total	**27**		**$140,130,343**				

Percent of Projects in Title VI Community = 59%

Percent of Projects in EJ Community = 59%

Percent of Projects in LEP Community = 59%

Percent of Funding in Title VI Community = 66%

Percent of Funding in EJ Community = 66%

Percent of Funding in LEP Community = 66%

FFYs 2023 – 2027 MVMPO Transit Projects Funding

FFY Year	Project Number	Project Description	Total Project Cost
2023	RTD0010747	Preventative Maintenance for Service	$3,730,510
2023	RTD0010748	Operating Assistance for Service	$1,478,730
2023	RTD0010749	ADA Paratransit Service	$1,861,090
2023	RTD0010750	Replace 8 Model Yr 2011 35’ buses delivery 2023	$4,384,400
2023	RTD0010751	Replace 6 Model Yr 2017 Type E-2 vans delivery 2023	$469,620
2023	RTD0010752	Merrimack Valley Short Range Transit Planning	$100,000
2023	RTD0010758	Replace 1 Model Year 2017 Supervisory Vehicle	$50,335
2023	RTD0011300	MVRTA - BUY REPLACEMENT VAN	$469,620
2023	RTD0011301	MVRTA - METROPOLITAN PLANNING	$65,000
2023	RTD0011304	MVRTA- BUY REPLACEMENTS- CAPITOL BUS	$2,983,200
2023	RTD0011305	MVRTA - BUY REPLACEMENTS- CAPITOL BUS	$1,401,200
2023	RTD0011306	MVRTA- REHAB/RENOVATE - MISC EQUIPMENT	$1,700,000
2023	RTD0011307	MVRTA- ENG/DESIGN - ADMIN/MAINT FACILITY	$800,000
2023	RTDTBD13	MVRTA - 5339 Bus & Bus Facility Discretionary: Improvements to the McGovern Transportation Center	$1,200,000

FFYs 2023 – 2027 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2024	RTD0010753	MVRTA - Replace 8 model yr 2012 35' buses delivery 2024 8 of 8	$4,703,200
2024	RTD0010754	MVRTA - Preventative Maintenance for service	$3,618,265
2024	RTD0010755	MVRTA - Operating Assistance for Service	$1,429,680
2024	RTD0010756	MVRTA - ADA paratransit service	$1,963,500
2024	RTD0010757	Merrimack Valley MPO Short Range Transit Planning	$100,000
2024	RTD0010759	MVRTA - Replace 1 Model Year 2018 Supervisory Vehicle	$51,845
2024	RTD0011302	MVRTA - METROPOLITAN PLANNING	$65,000
2024	RTD0011308	MVRTA - ENG/DESIGN - ADMIN/MAINT FACILITY	$1,250,000
2024	RTD0011309	MVRTA - CONSTRUCT ADMIN/MAINT FACILITY	$10,950,000
2024	RTDTBD14	MVRTA - 5339 Bus & Bus Facility Discretionary: Expansion of MVRTA Bus Maintenance Facility & Possible New Bus Hub at Bradford CR Station	$4,800,000
2024	RTDTBD15	MVRTA - 5307(h) Passenger Ferry Grant Discretionary Program: Capital costs for launch of Merrimack River ferryboat service between Haverhill and Newburyport	$750,000

FFYs 2023 – 2027 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2025	RTD0010760	Merrimack Valley MPO Short Range Transit Planning	$100,000
2025	RTD0010761	MVRTA - Preventative Maintenance for service	$3,690,630
2025	RTD0010762	MVRTA - Operating Assistance for Service	$1,458,270
2025	RTD0010763	MVRTA - ADA Paratransit Service	$2,071,500
2025	RTD0010764	MVRTA - Replace 1 Model Year 2019 Supervisory Vehicle	$53,400
2025	RTD0011303	MVRTA - METROPOLITAN PLANNING	$65,000
2025	RTD0011317	MVRTA - CONSTRUCT - MISC EQUIPMENT	$625,000
2026	RTD0010765	MVRTA - Preventative Maintenance for service	$3,810,350
2026	RTD0010766	MVRTA - ADA Paratransit Service	$2,185,500
2026	RTD0010767	Merrimack Valley MPO Short Range Transit Planning	$100,000
2026	RTD0010768	MVRTA - Operating Assistance for Service	$1,502,020
2026	RTD0010769	MVRTA - Replace 1 Model Yr 2020 Supervisory Vehicle	$55,000

FFYs 2023 – 2027 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2027	RTD0011311	MVRTA- OPERATING ASSISTANCE	$1,585,000
2027	RTD0011312	MVRTA - PREVENTIVE MAINTENANCE	$2,500,000
2027	RTD0011313	MVRTA- PLANNING	$120,000
2027	RTD0011314	MVRTA - NON FIXED ROUTE ADA PARA SERV	$2,305,700
2027	RTD0011315	MVRTA - BUY REPLACEMENT 35-FT BUS	$10,000,000
2027	RTD0011316	MVRTA - CONSTRUCT - MISC EQUIPMENT	$5,000,000
		Total Transit Project Funding 2023 to 2027	**$87,602,565**

FFYs 2018 – 2022 MVMPO Transit Projects Funding

FFY Year	Project Number	Project Description	Total Project Cost
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/Permitting	$235,035
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

FFYs 2018 – 2022 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2020	RTD0007687	Replace 3 Model Yr 2007 buses delivery 2020	$1,377,150
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
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	RTD0009132	SGR Replace Security Camera System at McGovern Center	$131,000
2021	RTD0008595	Operating Assistance	$1,116,240
2021	RTD0008592	Preventive Maintenance	$3,495,970
2021	RTD0008594	Short Range Transit Planning	$100,000
2021	RTD0008596	Replace 16 Model Yr 2015 vans with new Delivery 2021	$1,180,480
2021	RTD0008593	Non Fixed Route ADA Paratransit Service	$1,741,065

FFYs 2018 – 2022 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2021	RTD0010047	SGR Replace 1 model yr 2016 Supervisory Vehicle	$46,000
2021	RTD0010048	SGR Replace piping and related connections to underground gasoline tank	$50,000
2021	RTD0010049	Purchase of new bus and van tires to replace used tires	$65,000
2021	RTD0010050	Purchase licenses to upgrade diagnostic engine and transmission software	$5,000
2021	RTD0010051	SGR Replace HVAC Unit in Money Room	$6,938
2021	RTD0010305	Replace 2 servers/ related switches at MVRTA HQ	$19,022
2021	RTD0010306	Replace Security Surveillance system at Gateway Parking Area	$147,339
2021	RTD0010307	Replace Security Surveillance system at MVRTA Haverhill Intermodal Parking Facility	$64,516
2021	RTD0010308	Purchase MDT units, camera and communication equipment for 9 ADA service vehicles	$78,793
2021	RTD0010309	Upgrade security front gate entrance Control Pad at MVRTA HQ	$2,500
2021	RTD0010310	Install Cloud Based data storage system at MVRTA HQ	$12,891
2021	RTD0010311	Replace external security cameras on buses and vans	$5,380

FFYs 2018 – 2022 MVMPO Transit Projects Funding (Cont.)

FFY Year	Project Number	Project Description	Total Project Cost
2022	RTD0009669	Preventative Maintenance	$3,611,335
2022	RTD0009671	Short Range Transit Planning	$100,000
2022	RTD0009672	Operating Assistance	$1,289,890
2022	RTD0009670	ADA Paratransit Service	$1,801,630
2022	RTD0009673	Replace 9 Model Yr 2009 35’ buses delivery 2022	$4,458,030
2022	RTD0010053	MVRTA HQ Facility Repairs	$682,000
2022	RTD0009680	Replace 1 Model Yr 2016 supervisory vehicle	$48,870
2022	RTD0010107	Riverbank Stabilization Construction	$2,546,000
		Total Transit Funding 2018 to 2022	**$46,317,028**

Massachusetts Environmental Justice Analysis

MassDOT maps its highway projects on a State of Massachusetts environmental justice map. The website for Massachusetts Environmental Justice https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts#what-is-an-environmental-justice-population?- defines environmental justice populations:

> "In Massachusetts, a neighborhood is defined as an Environmental Justice population if one or more of the following four criteria are true:
>
> 1. the annual median household income is not more than 65 per cent of the statewide annual median household income;
> 2. minorities comprise 40 per cent or more of the population;
> 3. 25 per cent or more of households lack English language proficiency; or
> 4. minorities comprise 25 per cent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 per cent of the statewide annual median household income."

The following table shows the percent of highway investment in Massachusetts Environmental Justice Neighborhoods versus percent investment not in Massachusetts EJ Neighborhoods.

	TIP Highway Project Investment	Percent of Investment
Projects in Massachusetts EJ Neighborhoods	$522,221,049	92%
Projects outside Massachusetts EJ Neighborhood	$46,885,999	8%
Total	$569,107,048	100%

This table illustrates 92% of the investment is in Massachusetts EJ Neighborhoods.

The table on the following pages shows which 2023 to 2027 TIP highway projects are located in Massachusetts Environmental Justice Neighborhoods.

FFYs 2023 to 2027 MVMPO Statewide and Regional Target Highway Funding Project in Massachusetts Environmental Justice Neighborhood or not

Community	Project Number	Project Description	Total Funding Programmed	FFY	In Massachusetts Environmental Justice Neighborhood
Amesbury	611977	Amesbury– Riverwalk Connector to the Salisbury Point Ghost Trail	$2,448,760	2027	No
Andover	612193	Andover- Bridge Preservation, A-09-022, I-93 over Merrimack River	$38,102,400	2025	Yes
Andover	606522	Andover- Bridge Rehab., I-495 over Rt. 28 and RR	$173,075,000	2023 to 2026	Yes
Andover	612143	Andover– Bridge Replacement, A-09-015, Tewksbury Street over MBTA/BMRR	$17,383,839	2025	No
Andover/ Tewksbury	612045	Andover-Tewksbury-Interstate Maintenance and related work on I-93	$18,525,197	2025	Yes
Georgetown/ Boxford	607541	Georgetown/ Boxford Border to Boston Trail	$2,520,436	2024	Yes
Georgetown/ Newbury	607542	Georgetown/ Newbury Border to Boston Trail	$6,798,000	2026	Yes

FFYs 2023 to 2027 MVMPO Statewide and Regional Target Highway Funding Project in Massachusetts Environmental Justice Neighborhood or not (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	In Massachusetts Environmental Justice Neighborhood
Groveland	S12208	Groveland- Improvements at Dr. Elmer Bagnall Elementary School	$1,858,080	2026	No
Haverhill	609466	Haverhill- Bridge Replacement I-495 over Merrimack (H-12-040)	$96,087,420	2024 to 2027	Yes
Haverhill	605304	Haverhill- Bridge Replacement Bridge St (Rt 125) over Merrimack and B&M RR	$108,011,904	2024 to 2027	Yes
Haverhill	609466	Haverhill– Roadway Reconstruction on North Avenue	$5,798,257	2027	Yes
Lawrence	612074	Lawrence– Bridge Replacement, L-04-012, Short Street over Spicket River	$3,285,005	2026	Yes
Lawrence	612002	Lawrence – Community Day Arlington Improvements (SRTS)	$1,554,211	2025	Yes

FFYs 2023 to 2027 MVMPO Statewide and Regional Target Highway Funding Project in Massachusetts Environmental Justice Neighborhood or not (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	In Massachusetts Environmental Justice Neighborhood
Lawrence	608930	Lawrence- Lawrence Manchester Rail Corridor (LMRC) Rail Trail	$21,416,304	2024 to 2025	Yes
Lawrence	610924	Lawrence– Roadway Reconstruction on Amesbury Street	$8,028,654	2024	Yes
Methuen	612158	Methuen- Bridge Replacement, M-17-026, Route 213 EB/WB over the Methuen Rail Trail	$4,598,252	2025	No
Methuen	610658	Methuen– Intersection Improvements at Riverside Drive and Burnham Road	$2,063,889	2024	Yes
Newburyport	608029	Newburyport– Intersection Improvements @ Route 1 & Merrimac Street	$2,870,513	2027	Yes
North Andover	608095	North Andover- Route 114, between Waverly Road & Willow/Mill Street	$34,083,859	2024 to 2027	Yes

FFYs 2023 to 2027 MVMPO Statewide and Regional Target Highway Funding Project in Massachusetts Environmental Justice Neighborhood or not (Cont.)

Community	Project Number	Project Description	Total Funding Programmed	FFY	In Massachusetts Environmental Justice Neighborhood
Rowley	609392	Rowley – Safety Improvements at Route 1, Central and Glen Streets	$1,330,785	2023	No
Salisbury	602202	Salisbury- Reconstruction of Route 1 (Lafayette Rd)	$19,266,283	2023 to 2024	No
		Total All Projects 2023 to 2027	**$569,107,048**		

Appendix

Appendix

Merrimack Valley Metropolitan Planning Organization

Federal Fiscal Years 2023 to 2027 Transportation Improvement Program

Appendix Draft Report

April 2022

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 # 114679 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
611957	Andover	Andover– Reconstruction on Route 133 (Lowell Street), from Shawsheen Road to Route 28 (North Main Street) TEC = 12.03	$10,080,306
606721	Boxford	Boxford- Reconstruction of Route 133 (Washington Street) from North Andover town line to Main Street TEC = 5.65	$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 = 4.35	$4,174,500
602843	Georgetown	Georgetown – Reconstruction on Route 97 (W. Main Street) from Moulton Street to Groveland T.L. TEC = 9.03	$6,662,599
	Haverhill	Haverhill -Intersection Improvements Route 110 and Elliott Street	
	Haverhill	Haverhill – Widen Route 97 (Broadway) from Computer Drive to Research Drive	
608721	Haverhill	Haverhill – Corridor Improvements on Water Street (Route 97/113), from Ginty Boulevard/Mill Street to Lincoln Boulevard/Riverside Avenue TEC = 9.35	$8,050,000

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
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 Waverly Road in North Andover TEC = 12.70	
	Lawrence	Lawrence – Corridor Improvements on Broad-way (Route 28) from Water Street/ Canal Street to Haverhill Street (Route 110)	
	Newbury-port	Newburyport -Route 1 Rotary Reconfiguration	
	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 TEC = 7.98.	$2,300,000

Appendix C Transportation Evaluation Criteria Summary

Appendix C Transportation Evaluation Criteria Summary

Programmed for Fund-ing in 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 (2023-2027)
No		Lawrence –North Andover - Reconstruction of Rt. 114 from I-495 to Rt. 125 (Andover St.)		30,000	5.6	2.50	3.00	2.00	2.20	2.25	0.75	**12.70**
Yes	608095	North Andover– Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street	$32,773	30,000	4.8	2.00	2.75	2.67	2.00	2.25	0.75	**12.42**
No	611957	Andover – Reconstruction of Rt. 133 (Lowell Street) from Shawsheen Road to Route 28 (North Main Street)	$10,080	12,773	2.3	2.50	2.75	2.33	1.20	1.75	1.50	**12.03**
Yes	602202	Salisbury – Reconstruction of Rt. 1 (Lafayette Road)	$17,514	12,147	4.8	2.50	2.50	2.67	0.80	2.5	0.75	**11.72**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in 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 (2023-2027)
Yes	610924	Lawrence – Roadway Reconstruction on Amesbury Street	$7,720	16,446	1.5	2.00	2.25	2.00	2.40	2.25	0.25	**11.15**
No	608721	Haverhill - Corridor Improvements on Water St. from Ginty Blvd / Mill St. to Lincoln Ave./ Riverside Ave.	$8,050	20,200	2.0	2.00	1.75	2.00	1.60	1.75	1.00	**10.10**
No	602843	Georgetown – Reconstruction on Route 97 (W. Main) from Moulton St. to Groveland TL	$7,567	15,486	2.2	1.50	1.25	1.33	1.20	1.75	2.00	**9.03**
Yes	608788	Haverhill - Reconstruction of North Ave. from Main St. to NH state line	$20,346	13,172	4.0	2.50	2.00	1.33	2.00	0.00	0.75	**8.58**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in 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 (2023-2027)
Yes	608029	Newburyport – Intersection Improvements Rt. 1 at Merrimac St.	$2,475	24,850	NA	2.00	0.50	2.67	1.20	1.25	0.75	**8.37**
No		Salisbury – Reconstruction of Route 1A		5,356	4.1	3.00	1.25	1.33	0.40	1.25	0.75	**7.98**
Yes	610658	Methuen - Intersection Improvements at Riverside Drive and Burnham Road	$1,924	NA	NA	2.00	1.25	1.67	2.20	0.50	0.25	**7.87**
Yes	607541	Georgetown- Boxford– Border to Boston Trail, from Georgetown Road to West Main Street (Route 97)	$2,423	NA	NA	1.00	1.75	1.00	1.20	2.00	0.25	**7.20**
Yes	611977	Amesbury – Riverwalk Connector to the Salisbury Point Ghost Trail	$2,111	NA	NA	0.00	1.50	1.00	1.6	2.25	0.50	**6.85**

Appendix C Transportation Evaluation Criteria Summary (Cont.)

Programmed for Funding in 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 (2023-2027)
Yes	607542	Georgetown– Newbury – Border to Boston Trail (Northern Georgetown to Byfield Section)	$6,070	NA	NA	1.00	1.25	0.67	1.40	2.00	0.50	**6.82**
Yes	609392	Rowley – Safety Improvements at Route 1, Central and Glen Streets	$1,331	NA	NA	1.50	1.25	2.00	1.00	0.25	0.50	**6.50**
No	606721	Boxford - Route 133 (North Andover TL to Main St.)	$5,172	6,149	2.9	1.50	1.00	1.00	0.40	0.50	1.25	**5.65**
No	607540	Boxford – section of Border to Boston Trail	$4,175	NA	NA	0.50	1.25	1.00	0.60	0.50	0.50	**4.35**

Appendix D Sample Project Evaluation Worksheet

Sample Project Evaluation Worksheet
Merrimack Valley Planning Commission and MassDOT Evaluation Criteria
Project: Andover - Reconstruct Rt. 133 from Shawsheen Rd to Rt. 28 Project #: 611957
Project Cost: $10,080,305 AADT: 12,773 Distance: 1.17 Linear Lane Miles: 2.34

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.	3	Sidewalk one side. 10' Shared Use Path with 5' buffer on other side for bicycles and > safety for pedestrians, upgrade signals, drainage improvements
Condition Average	**2.5**	

Mobility	**Score**	**Additional Comments**
A. Effect on magnitude and duration of congestion.	3	Project includes Shawsheen Square as well.
B. Effect on travel time and connectivity / access.	2	New Shared Use Path
C. Effect on other modes using the facility.	3	New shared use path, 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 Shawsheen Rd to Rt. 28 Project #: 611957

Safety and Security	**Score**	**Additional Comments**
A. Effect on crash rate compared to State average.	3	Rt 28 and 133 is HSIP crash cluster, crash rate = 1.75, And arterial between the two signalized intersections is 3.8, State Avg. = 2.12.
B. Effect on bicycle and pedestrian safety.	3	Shared Use Path and extra sidewalk, shoulder for bicycles, and provides greater safety for bicycles and pedestrians.
C. Effect on transportation security and evacuation routes/	1	Is an NHS roadway. Is an evacuation route.
Safety and Security Average	**2.33**	
Community Effects and Support	**Score**	**Additional Comments**
A. Residential effects: ROW, noise, aesthetics, cut through traffic, and other.	2	May need easements for retaining wall. For the most part all within ROW. General appearance and less noise from better pavement conditions.
B. Public, local government, legislative, and regional support.	3	Letter of support from Sen. Finegold
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	**1.20**	

Sample Project Evaluation Worksheet (Cont.)

Project: Andover - Reconstruct Rt. 133 from Shawsheen Rd to Rt. 28 Project #: 611957

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 Brickstone Square State 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 Brickstone Square State 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 Shawsheen Rd to Rt. 28 Project #: 611957

Environmental Effects	Score	Additional Comments
A. Air quality / Climate effects. GHG Impact Description – Assumed Nominal Decrease in Emissions from Other Improvements	2	Shared Use Path and sidewalks. Reduced 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	**12.03**	

Appendix E Greenhouse Gas (GHG) Tracking

2023 to 2027
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 2023 to 2027 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 2023 to 2027 TIP

The following tables summarize the calculated quantitative and assumed qualitative impacts of the projects included in the regional FFYs 2023 to 2027 TIP by year.

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FFYs 2023 to 2027 Projects GHG Tracking Summary

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
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)	$80,749,024	Qualitative		No assumed impact/ negligible impact on emissions	$173,075,000	AC Yr 1 of 4
602202	SALISBURY- RECONSTRUCTION OF ROUTE 1 (LAFAYETTE ROAD)	$13,293,829	Quantitative		Quantified Decrease in Emissions from Bi-cycle and Pedestrian Infrastructure	$19,266,283	AC Yr 1 of 2 Quantity of GHG impact is in year 2
609392	ROWLEY – SAFETY IMPROVEMENTS AT ROUTE 1, CENTRAL AND GLEN STREETS	$1,330,785	Qualitative		No assumed impact/ negligible impact on emissions	$1,330,785	

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 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
610658	METHUEN – INTERSECTION IMPROVEMENTS AT RIVERSIDE DRIVE AND BURNHAM ROAD	$2,063.889	Quantitative	333,725	Quantified Decrease in Emissions from Traffic Operational Improvement	$2,063.889	
608095	NORTH ANDOVER-CORRIDOR IMPROVEMENTS ON ROUTE 114, BETWEEN WAVERLY ROAD & WILLOW/MILL STREET	$5,432,436	Qualitative		RTP project included in the Statewide model.	$34,083,859	AC Yr 1 of 4
602202	SALISBURY-RECONSTRUCTION OF ROUTE 1 (LAFAYETTE ROAD)	$5,972,454	Quantitative	27,932	Quantified Decrease in Emissions from Bi-cycle and Pedestrian Infrastructure	$19,266,283	AC Yr 2 of 2

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
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)	$60,000,000	Qualitative		No assumed impact/ negligible impact on emissions	$173,075,000	AC Yr 2 of 4
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)	$20,600,000	Qualitative		No assumed impact/ negligible impact on emissions	$108,011,904	AC Yr 1 of 4.

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**
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$21,388,926	Qualitative		No assumed impact/ negligible impact on emissions	$96,087,420	AC Yr 1 of 4.
607541	GEORGETOWN-BOXFORD- BORDER TO BOSTON TRAIL, FROM GEORGETOWN ROAD TO WEST MAIN STREET (ROUTE 97)	$2,520,436	Quantitative	2,667	Quantified Decrease in Emissions from Bicycle and Pedes-trian Infrastructure	$2,520,436	
608930	LAWRENCE- LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	$1,000,000	Quantitative		Quantified Decrease in Emissions from Bicycle and Pedes-trian Infrastructure	$21,416,304	AC Yr 1 of 2 Quantity of GHG impact is in year 2

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**
610924	LAWRENCE-ROADWAY RECONSTRUCTION ON AMESBURY STREET	$8,028,654	Qualitative			$8,028,654	Not yet enough in-formation to generate an estimate

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 WAVERLY ROAD & WILLOW/MILL STREET	$13,239,974	Qualitative		RTP project included in the Statewide Model.	$34,083,859	AC Yr 2 of 4
612193	ANDOVER- BRIDGE PRESERVATION, A-09-022, I-93 OVER MERRIMACK RIVER	$38,102,400	Qualitative		No assumed impact/ negligible impact on emissions	$38,102,400	
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)	$12,325,976	Qualitative		No assumed impact/ negligible impact on emissions	$173,075,000	AC Yr 3 of 4

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**
612143	ANDOVER- BRIDGE REPLACEMENT, A-09-015, TEWKSBURY STREET OVER MBTA/BMRR	$17,383,839	Qualitative		No assumed impact/ negligible impact on emissions	$17,383,839	
612045	ANDOVER-TEWKSBURY-INTERSTATE MAINTENANCE AND RELATED WORK ON I-93	$18,525,197	Qualitative		No assumed impact/ negligible impact on emissions	$18,525,197	
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$39,813,300	Qualitative		No assumed impact/ negligible impact on emissions	$96,087,420	AC Yr 2 of 4.

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)	$30,900,000	Qualitative		No assumed impact/ negligible impact on emissions	$108,011,904	AC Yr 2 of 4.
612002	LAWRENCE – COMMUNITY DAY ARLINGTON IMPROVEMENTS (SRTS) (# 612002)	$1,554,211	Qualitative		No assumed impact/ negligible impact on emissions		$1,554,211

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 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
608930	LAWRENCE- LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	$20,416,304	Quantitative	175,927	Quantified Decrease in Emissions from Bi-cycle and Pedestrian Infrastructure	$21,416,304	AC Yr 2 of 2
612158	METHUEN- BRIDGE REPLACEMENT, M-17-026, ROUTE 213 EB/WB OVER THE METHUEN RAIL TRAIL	$4,598,252	Qualitative		No assumed impact/ negligible impact on emissions	$4,598,252	

2026 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 WAVERLY ROAD & WILLOW/MILL STREET	$12,916,056	Qualitative		RTP project included in the Statewide Model.	$34,083,859	AC Yr 3 of 4
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)	$20,000,000	Qualitative		No assumed impact/ negligible impact on emissions	$173,075,000	AC Yr 4 of 4

2026 (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**
607542	GEORGETOWN-NEWBURY- BORDER TO BOSTON TRAIL, (NORTHERN GEORGETOWN TO BYFIELD SECTION)	$6,798,000	Quantitative	15,682	Quantified Decrease in Emissions from Bicycle and Pedestrian Infra-structure	$6,798,000	
S12208	GROVELAND IMPROVEMENTS AT DR. ELMER BAGNALL ELEMENTARY (SRTS)	$1,858,080	Qualitative		Qualitative decrease in emissions	$1,858,080	
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$18,885,194	Qualitative		No assumed impact/ negligible impact on emissions	$96,087,420	AC Yr 3 of 4.

2026 (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)	$30,600,000	Qualitative		No assumed impact/ negligible impact on emissions	$108,011,904	AC Yr 3 of 4.
612074	LAWRENCE – BRIDGE REPLACEMENT, L-04-012, SHORT STREET OVER SPICKET RIVER	$3,285,005	Qualitative		No assumed impact/ negligible impact on emissions	$3,285,005	

2027 Merrimack Valley Region MPO TIP Highway Projects GHG Tracking Summary							
Mass DOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Programmed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**	**Additional Information**
611977	AMESBURY- RIVERWALK CONNECTOR TO THE SALISBURY POINT GHOST TRAIL	$2,448,760	Quantitative	195	Quantified decrease in emissions from bicycle and pedestrian infrastructure	$2,448,760	
608788	HAVERHILL- ROADWAY RECONSTRUCTION ON NORTH AVENUE, FROM MAIN STREET (ROUTE 125) TO PLAISTOW, NH	$5,798,257	Quantitative	214,372	Quantified Decrease in Emissions from Traffic Operational Improvement	$23,600,997	AC YR 1 OF 3
608029	NEWBURYPORT- INTERSECTION IMPROVEMENTS ROUTE 1 & MERRIMAC STREET	$2,870,513	Qualitative		No assumed impact/ negligible impact on emissions	$2,870,513	Not yet enough information to generate an estimate

2027 (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 WAVERLY ROAD & WILLOW/MILL STREET	$2,495,393	Qualitative		RTP project in-cluded in the Statewide Model.	$34,083,859	AC Yr 4 of 4
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)	$25,911,904	Qualitative		No assumed impact/ negligi-ble impact on emissions	$108,011,904	AC Yr 4 of 4.

2027 (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**
609466	HAVERHILL- BRIDGE REPLACEMENT, H-12-040, I-495 (NB & SB) OVER MERRIMACK RIVER	$16,000,000	Qualitative		No assumed impact/ negligible impact on emissions	$96,087,420	AC Yr 4 of 4.

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**
RTD0010747	MVRTA Preventative Maintenance for Service	$3,730,510	Qualitative		No assumed impact/ negligible impact on emissions	$3,730,510
RTD0010748	MVRTA Operating Assistance for Service	$1,478,730	Qualitative		No assumed impact/ negligible impact on emissions	$1,478,730
RTD0010749	MVRTA ADA Paratransit Service	$1,861,090	Qualitative		No assumed impact/ negligible impact on emissions	$1,861,090
RTD0010750	MVRTA Replace 8 Model Yr 2011 35’ buses delivery 2023	4,384,400	Qualitative		Qualitative Decrease in Emissions.	4,384,400
RTD0010751	MVRTA Replace 6 Model Yr 2017 Type E-2 vans delivery 2023	$469,620	Qualitative		Qualitative Decrease in Emissions.	$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**
RTD0010752	MVMPO Short Range Transit Planning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0010758	MVRTA Replace 1 Model Yr 2017 supervisory vehicle	$50,335	Qualitative		No assumed impact/ negligible impact on emissions	$50,335
RTD0011300	MVRTA - BUY REPLACEMENT VAN	$469,620	Qualitative		Qualitative Decrease in Emissions.	$469,620
RTD0011301	MVRTA - METROPOLITAN PLANNING	$65,000	Qualitative		No assumed impact/ negligible impact on emissions	$65,000
RTD0011304	MVRTA- BUY REPLACEMENTS-CAPITOL BUS	$2,983,200	Qualitative		Qualitative Decrease in Emissions.	$2,983,200
RTD0011305	MVRTA - BUY REPLACEMENTS-CAPITOL BUS	$1,401,200	Qualitative		Qualitative Decrease in Emissions.	$1,401,200

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**
RTD0011306	MVRTA- REHAB/ RENOVATE - MISC EQUIPMENT	$1,700,000	Qualitative		No assumed impact/ negligible impact on emissions	$1,700,000
RTD0011307	MVRTA- ENG/DESIGN - ADMIN/MAINT FACILITY	$800,000	Qualitative		No assumed impact/ negligible impact on emissions	$800,000
RTDTBD13	MVR - 5339 Bus & Bus Facil-ity Discretionary: Improve-ments to the McGovern Transportation Center	$1,200,000	Qualitative		No assumed impact/ negligible impact on emissions	$1,200,000

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**
RTD0010753	MVRTA Replace 8 model yr 2012 35' buses delivery 2024 (8 of 8)	$4,703,200	Qualitative		Qualitative Decrease in Emissions.	$4,703,200
RTD0010754	MVRTA Preventative Maintenance for Service	$3,618,265	Qualitative		No assumed impact/ negligible impact on emissions	$3,618,265
RTD0010755	MVRTA Operating Assistance for Service	$1,429,680	Qualitative		No assumed impact/ negligible impact on emissions	$1,429,680
RTD0010756	MVRTA ADA Paratransit Service	$1,963,500	Qualitative		No assumed impact/ negligible impact on emissions	$1,963,500
RTD0010757	MVMPO Short Range Transit Planning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000

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**
RTD0010759	MVRTA Replace 1 Model Year 2018 Supervisory Vehi-cle	$51,845	Qualitative		No assumed impact/ negligible impact on emissions	$51,845
RTD0011302	MVRTA- METROPOLITAN PLANNING	$65,000	Qualitative		No assumed impact/ negligible impact on emissions	$65,000
RTD0011308	MVRTA- ENG/DESIGN - ADMIN/MAINT FACILITY	$1,250,000	Qualitative		No assumed impact/ negligible impact on emissions	$1,250,000
RTD0011309	MVRTA- CONSTRUCT ADMIN/MAINT FACILITY	$10,950,000	Qualitative		No assumed impact/ negligible impact on emissions	$10,950,000

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**
RTDTBD14	MVRTA- 5339 Bus & Bus Facility Discretionary: Expan-sion of MVRTA Bus Mainte-nance Facility & Possible New Bus Hub at Bradford CR Station	$4,800,000	Qualitative		No assumed impact/ negligible impact on emissions	$4,800,000
RTDTBD15	MVRTA- 5307(h) Passenger Ferry Grant Discretionary Program: Capital costs for launch of Merrimack River ferryboat service between Haverhill and Newburyport	$750,000	Qualitative		Qualitative Decrease in Emissions.	$750,000

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**
RTD0010760	MVMPO Short Range Transit Planning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0010761	MVRTA Preventative Maintenance for Service	$3,690,630	Qualitative		No assumed impact/ negligible impact on emissions	$3,690,630
RTD0010762	MVRTA Operating Assistance for Service	$1,458,270	Qualitative		No assumed impact/ negligible impact on emissions	$1,458,270
RTD0010763	MVRTA ADA Paratransit Service	$2,071,500	Qualitative		No assumed impact/ negligible impact on emissions	$2,071,500
RTD0010764	MVRTA Replace 1 Model Year 2019 Supervisory Vehicle	$53,400	Qualitative		No assumed impact/ negligible impact on emissions	$53,400

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**
RTD0011303	MVRTA- METROPOLITAN PLANNING	$65,000	Qualitative		No assumed impact/ negligible impact on emissions	$65,000
RTD0011317	MVRTA- CONSTRUCT - MISC EQUIPMENT	$625,000	Qualitative		No assumed impact/ negligible impact on emissions	$625,000

2026 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**
RTD0010765	MVRTA- Preventative Maintenance for service	$3,810,350	Qualitative		No assumed impact/ negligible impact on emissions	$3,810,350
RTD0010766	MVRTA- ADA Paratransit Service	$2,185,500	Qualitative		No assumed impact/ negligible impact on emissions	$2,185,500
RTD0010767	Merrimack Valley MPO Short Range Transit Planning	$100,000	Qualitative		No assumed impact/ negligible impact on emissions	$100,000
RTD0010768	MVRTA- Operating Assis-tance for Service	$1,502,020	Qualitative		No assumed impact/ negligible impact on emissions	$1,502,020
RTD0010769	MVRTA- Replace 1 Model Yr 2020 Supervisory Vehicle	$55,000	Qualitative		No assumed impact/ negligible impact on emissions	$55,000

2026 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**
RTD0011318	MVRTA- CONSTRUCT - MISC EQUIPMENT	$125,000	Qualitative		No assumed impact/ negligible impact on emissions	$125,000

2027 Merrimack Valley Region Transit Projects GHGs						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Programmed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0011311	MVRTA- OPERATING ASSISTANCE	$1,585,000	Qualitative		No assumed impact/ negligible impact on emissions	$1,585,000
RTD0011312	MVRTA- PREVENTIVE MAINTENANCE	$2,500,000	Qualitative		No assumed impact/ negligible impact on emissions	$2,500,000
RTD0011313	MVRTA- PLANNING	$120,000	Qualitative		No assumed impact/ negligible impact on emissions	$120,000
RTD0011314	MVRTA- NON FIXED ROUTE ADA PARA SERV	$2,305,700	Qualitative		No assumed impact/ negligible impact on emissions	$2,305,700
RTD0011315	MVRTA- BUY REPLACEMENT 35-FT BUS	$10,000,000	Qualitative		Qualitative Decrease in Emissions.	$10,000,000

2027 Merrimack Valley Region Transit Projects GHGs (Cont.)						
MassDOT/ FTA Project ID	**MassDOT/ FTA Project Description**	**Total Programmed Funds**	**GHG Analysis Type**	**GHG CO_2 Impact (kg/yr)**	**GHG Impact Description**	**Total Cost**
RTD0011316	MVRTA- CONSTRUCT - MISC EQUIPMENT	$5,000,000	Qualitative		No assumed impact/ negligible impact on emissions	$5,000,000
RTD0011319	MVRTA- CONSTRUCT - MISC EQUIPMENT	$125,000	Qualitative		No assumed impact/ negligible impact on emissions	$125,000

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR: 2027

MPO: Merrimack Valley **Municipality:** Amesbury

Project: Riverwalk Connector to the Salisbury Point Ghost Trail # 611977

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)**:	0.2	Miles	
B.	Service Area Radius **(R)**:	1.0	Miles	(Default = 1 M
C.	Service Area of Community(ies) **(SA)**: L * 2R = SA	0.44	Sq. Miles	
D.	Total Land Area of Community(ies) **(T)**:	12.3	Sq. Miles	
E.	Service Area % of Community(ies) Land Area **(LA)**: SA / T = LA	3.6%		
F.	Total Population of Community(ies) **(TP)**:	17,366	Persons	
G.	Population Served by Facility **(P)**: LA * TP = P	621	Persons	
H.	Total Number of Households in Community(ies) **(HH)**:	7,215	HH	
I.	Number of Households Served by Facility **(HS)**: LA * HH = HS	258	HH	
J.	Total Number of Workers Residing in Community(ies) **(W)**:	9,688	Persons	
K.	Workers Per household **(WPHH)**: W / HH = WPHH	1.34	Persons	
L.	Workers in Service Area **(WSA)**: HS * WPHH = WSA	347	Persons	
M.	Population Density of the Service area **(PD)**: P / SA = PD	1,412	Persons Per Sq. Mile	

N. If the bicycle and pedestrian commuter mode share is known, enter the percentage at the right. **(BMS)** 1.4%

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 5 One-Way Trips

P. Bike and Ped. Non-Work Utilitarian Trips **(BNWT)**: BWT * 1.7 = BNWT 8 One-Way Trips

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

Step 2: Calculate the VMT Reduction Per Day:

A. ((2 * BWT) + (2 * BNWT)) * (0.5* L) = VMTR 2.9 VMTR Per Day

B. VMTR * Operating Days Per Year 2.9 * 200 = 576 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: Emission Factors for Unrestricted PM:

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

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

Summer VOC	Summer NOx	Summer CO	Summer CO2
0.0	**0.0**	**1.2**	**195.3**

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	$2,111,000	/	0.0	=	**$119,826,223**
Summer NOx	$2,111,000	/	0.0	=	**$44,380,083**
Summer CO	$2,111,000	/	1.2	=	**$1,715,889**
Summer CO2	$2,111,000	/	195.3	=	**$10,811**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR: 2025

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 Mile)
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	

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 or Western 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

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	$2,423,496	/	0.2	=	**$10,139,736**
Summer NOx	$2,423,496	/	0.7	=	**$3,712,090**
Summer CO	$2,423,496	/	16.8	=	**$144,253**
Summer CO2	$2,423,496	/	2,666.9	=	**$909**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR: 2025

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 Mile)
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	
N.	If the bicycle and pedestrian commuter mode share is known, enter the percentage at the right.	**(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 or Western 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

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	$5,075,946	/	1.4	=	**$3,611,802**
Summer NOx	$5,075,946	/	3.8	=	**$1,322,257**
Summer CO	$5,075,946	/	98.8	=	**$51,383**
Summer CO2	$5,685,059	/	15,681.6	=	**$363**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: 2027

MPO: Merrimack Valley **Municipality:** Haverhill

Project: North Avenue Reconstruction

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
Main St	NB	2 / 0.95	9.1	= 19 +	547 / 0.95	9.1	= 5,240 +	161 / 0.95	9.1	= 1,542	= 6,801
Main St	SB	5 / 0.95	9.2	= 48 +	597 / 0.95	9.2	= 5,781 +	2 / 0.95	9.2	= 19	= 5,849
16th Ave	EB	4 / 0.95	27.0	= 114 +	3 / 0.95	27.0	= 85 +	12 / 0.95	27.0	= 341	= 540
North Ave	WB	170 / 0.95	255.0	= 45,632 +	0 / 0.95	255.0	= 0 +	36 / 0.95	255.0	= 9,663	= 55,295
										Total Intersection Delay/Seconds	= **68,485**

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
Main St	NB	2 / 0.95	9.2	= 19 +	1,555 / 0.95	9.2	= 15,059 +	472 / 0.95	9.2	= 4,571	= 19,649
Main St	SB	8 / 0.95	11.3	= 95 +	1,347 / 0.95	11.3	= 16,022 +	8 / 0.95	11.3	= 95	= 16,213
16th Ave	EB	2 / 0.95	28.5	= 60 +	1 / 0.95	28.5	= 30 +	17 / 0.95	28.5	= 510	= 600
North Ave	WB	274 / 0.95	700.0	= 201,895 +	0 / 0.95	700.0	= 0 +	46 / 0.95	700.0	= 33,895	= 235,789
										Total Intersection Delay/Seconds	= **272,251**

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

Peak Hour (AM/PM): PM Total Intersection Delay: 272,251

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
Main St	NB	2 / 0.95	9.2	= 19 +	1,555 / 0.95	9.2	= 15,059 +	472 / 0.95	9.2	= 4,571	= 19,649
Main St	SB	8 / 0.95	11.3	= 95 +	1,347 / 0.95	11.3	= 16,022 +	8 / 0.95	11.3	= 95	= 16,213
16th Ave	EB	2 / 0.95	28.4	= 60 +	1 / 0.95	28.4	= 30 +	17 / 0.95	28.4	= 508	= 598
North Ave	WB	274 / 0.95	481.0	= 138,731 +	0 / 0.95	481.0	= 0 +	46 / 0.95	481.0	= 23,291	= 162,021
										Total Intersection Delay/Seconds	= **198,481**

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	(272,251	X	10)	/ 3600	= 756.3
Peak hour intersection delay w/ improvements	(198,481	X	10)	/ 3600	= 551.3

Step 6: MOBILE 6 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	756.3	0.188	0.476	2.699	2,696.505
With Improvements	551.3	0.137	0.347	1.968	1,965.847
Net Change		**-0.051**	**-0.129**	**-0.731**	**-730.658**

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

	Net change per day (kg)	X Avg. weekdays per year	X Seasonal adj. factor	= Adj. net change in kg per year
Summer VOC Emissions	-0.051	X 250	X 1.0188	= **-12.996**
Summer NOx Emissions	-0.129	X 250	X 1.0188	= **-32.881**
Winter CO Emissions	-0.731	X 250	X 0.9812	= **-179.401**
Summer CO2 Emissions	-730.658	X 250	X 1.0000	**-182,664.532**

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		/ -12.996	= **$0**
Summer NOx		/ -32.881	= **$0**
Winter CO		/ -179.401	= **$0**
Summer CO2		/ -182,664.532	= **$0**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: 2027

MPO: Merrimack Valley **Municipality:** Haverhill

Project: North Avenue Reconstruction North Ave Marsh and Tenadel Aves.

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
Marsh Ave	NB	2 / 0.95	8.4	= 18	+ 269 / 0.95	8.4	= 2,379	+ 20 / 0.95	8.4	= 177	= 2,573
North Ave	SB	127 / 0.95	8.3	= 1,110	+ 413 / 0.95	8.3	= 3,608	+ 0 / 0.95	8.3	= 0	= 4,718
Tenadel Ave	EB	3 / 0.95	29.8	= 94	+ 0 / 0.95	29.8	= 0	+ 4 / 0.95	29.8	= 125	= 220
North Ave	WB	27 / 0.95	16.8	= 477	+ 0 / 0.95	16.8	= 0	+ 131 / 0.95	16.8	= 2,317	= 2,794
										Total Intersection Delay/Seconds	= **10,305**

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
Marsh Ave	NB	3 / 0.95	7.8	= 25	+ 854 / 0.95	7.8	= 7,012	+ 33 / 0.95	7.8	= 271	= 7,307
North Ave	SB	227 / 0.95	8.7	= 2,079	+ 441 / 0.95	8.7	= 4,039	+ 0 / 0.95	8.7	= 0	= 6,117
Tenadel Ave	EB	1 / 0.95	35.0	= 37	+ 0 / 0.95	35.0	= 0	+ 2 / 0.95	35.0	= 74	= 111
North Ave	WB	28 / 0.95	20.3	= 598	+ 1 / 0.95	20.3	= 21	+ 418 / 0.95	20.3	= 8,932	= 9,552
										Total Intersection Delay/Seconds	= **23,087**

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

Peak Hour (AM/PM): PM Total Intersection Delay: 23,087

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
Marsh Ave	NB	3 / 0.95	7.2	= 23	+ 854 / 0.95	7.2	= 6,472	+ 33 / 0.95	7.2	= 250	= 6,745
North Ave	SB	227 / 0.95	5.3	= 1,266	+ 441 / 0.95	5.3	= 2,460	+ 0 / 0.95	5.3	= 0	= 3,727
Tenadel Ave	EB	1 / 0.95	4.0	= 4	+ 0 / 0.95	4.0	= 0	+ 2 / 0.95	4.0	= 8	= 13
North Ave	WB	28 / 0.95	8.5	= 251	+ 1 / 0.95	8.5	= 9	+ 418 / 0.95	8.5	= 3,740	= 3,999
										Total Intersection Delay/Seconds	= **14,484**

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	(23,087	X	10)	/ 3600	= 64.1
Peak hour intersection delay w/ improvements	(14,484	X	10)	/ 3600	= 40.2

Step 6: MOBILE 6 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	64.1	0.016	0.040	0.229	228.665
With Improvements	40.2	0.010	0.025	0.144	143.457
Net Change		**-0.006**	**-0.015**	**-0.085**	**-85.208**

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

	Net change per day (kg)	X Avg. weekdays per year	X Seasonal adj. factor	= Adj. net change in kg per year
Summer VOC Emissions	-0.006	X 250	X 1.0188	= **-1.516**
Summer NOx Emissions	-0.015	X 250	X 1.0188	= **-3.835**
Winter CO Emissions	-0.085	X 250	X 0.9812	= **-20.921**
Summer CO2 Emissions	-85.208	X 250	X 1.0000	**-21,301.913**

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		/ -1.516	= **$0**
Summer NOx		/ -3.835	= **$0**
Winter CO		/ -20.921	= **$0**
Summer CO2		/ -21,301.913	= **$0**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: 2027

MPO: Merrimack Valley **Municipality:** Haverhill

Project: North Avenue Reconstruction North Ave, Gile St and West Gile 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
North Ave	NB	0 / 0.95	9.1	= 0 +	343 / 0.95	9.1	= 3,286 +	57 / 0.95	9.1	= 546	= 3,832
North Ave	SB	28 / 0.95	8.3	= 245 +	668 / 0.95	8.3	= 5,836 +	1 / 0.95	8.3	= 9	= 6,090
West Gile St	EB	0 / 0.95	20.8	= 0 +	0 / 0.95	20.8	= 0 +	2 / 0.95	20.8	= 44	= 44
Gile St	WB	78 / 0.95	35.7	= 2,931 +	0 / 0.95	35.7	= 0 +	30 / 0.95	35.7	= 1,127	= 4,059
										Total Intersection Delay/Seconds	= **14,023**

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
North Ave	NB	0 / 0.95	8.5	= 0 +	900 / 0.95	8.5	= 8,053 +	113 / 0.95	8.5	= 1,011	= 9,064
North Ave	SB	36 / 0.95	10.8	= 409 +	470 / 0.95	10.8	= 5,343 +	0 / 0.95	10.8	= 0	= 5,752
West Gile St	EB	0 / 0.95	40.7	= 0 +	0 / 0.95	40.7	= 0 +	0 / 0.95	40.7	= 0	= 0
Gile St	WB	74 / 0.95	144.0	= 11,217 +	0 / 0.95	144.0	= 0 +	48 / 0.95	144.0	= 7,276	= 18,493
										Total Intersection Delay/Seconds	= **33,309**

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

Peak Hour (AM/PM): PM Total Intersection Delay: 33,309

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
North Ave	NB	0 / 0.95	8.5	= 0 +	900 / 0.95	8.5	= 8,053 +	113 / 0.95	8.5	= 1,011	= 9,064
North Ave	SB	36 / 0.95	10.8	= 409 +	470 / 0.95	10.8	= 5,343 +	0 / 0.95	10.8	= 0	= 5,752
West Gile St	EB	0 / 0.95	41.5	= 0 +	0 / 0.95	41.5	= 0 +	0 / 0.95	41.5	= 0	= 0
Gile St	WB	74 / 0.95	171.0	= 13,320 +	0 / 0.95	171.0	= 0 +	48 / 0.95	19.2	= 970	= 14,290
										Total Intersection Delay/Seconds	= **29,106**

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	(33,309	X	10)	/	3600	=	92.5
Peak hour intersection delay w/ improvements	(29,106	X	10)	/	3600	=	80.9

Step 6: MOBILE 6 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	92.5	0.023	0.058	0.330	329.905
With Improvements	80.9	0.020	0.051	0.289	288.282
Net Change		**-0.003**	**-0.007**	**-0.042**	**-41.624**

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

	Net change per day (kg)	X Avg. weekdays per year	X Seasonal adj. factor	= Adj. net change in kg per year
Summer VOC Emissions	-0.003	X 250	X 1.0188	= **-0.740**
Summer NOx Emissions	-0.007	X 250	X 1.0188	= **-1.873**
Winter CO Emissions	-0.042	X 250	X 0.9812	= **-10.220**
Summer CO2 Emissions	-41.624	X 250	X 1.0000	**-10,405.951**

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		/ -0.740	= **$0**
Summer NOx		/ -1.873	= **$0**
Winter CO		/ -10.220	= **$0**
Summer CO2		/ -10,405.951	= **$0**

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 Corriodr (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 Mile)
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	

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 or Western 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**

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	$20,592,600	/	15.8	=	**$1,306,100**
Summer NOx	$20,592,600	/	43.1	=	**$478,155**
Summer CO	$20,592,600	/	1,108.2	=	**$18,581**
Summer CO2	$20,592,600	/	175,927.3	=	**$117**

CMAQ Air Quality Analysis Worksheet for Traffic Flow and Intersection Improvements

FILL IN SHADED BOXES ONLY

TIP YEAR: 2023

MPO: Merrimack Valley **Municipality:** Methuen

Project: # 610658 Intersection Improvements at Methuen Riverside Dr and Burnham 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
Driveway	NB	2	0.95	16.8	=	35	+ 2	0.95	16.8	=	35	+ 9	0.95	16.8	=	159	=	230
Burnham Road	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 Road	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 (AM/PM): 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 Road	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**

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: MOBILE 6 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)	X	Avg. weekdays per year	X	Seasonal adj. factor	=	Adj. net change in kg per year
Summer VOC Emissions	-0.093	X	250	X	1.0188	=	**-23.743**
Summer NOx Emissions	-0.236	X	250	X	1.0188	=	**-60.074**
Winter CO Emissions	-1.336	X	250	X	0.9812	=	**-327.762**
Summer CO2 Emissions	-1,334.900	X	250	X	1.0000		**-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	$930,000	/	-23.743	=	**$39,169**
Summer NOx	$930,000	/	-60.074	=	**$15,481**
Winter CO	$930,000	/	-327.762	=	**$2,837**
Summer CO2	$930,000	/	-333,724.936	=	**$3**

CMAQ Air Quality Analysis Worksheet for Bicycle and Pedestrian Project

FILL IN SHADED BOXES ONLY

TIP YEAR: 2023

MPO: Merrimack Valley **Municipality:** Salisbury

Project: # 602202 Reconstruction of Route 1 (Lafayette Road) Shared Use Path

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)**:	2.1	Miles	
B.	Service Area Radius **(R)**:	1.0	Miles	(Default = 1 Mile)
C.	Service Area of Community(ies) **(SA)**: L * 2R = SA	4.2	Sq. Miles	
D.	Total Land Area of Community(ies) **(T)**:	15.4	Sq. Miles	
E.	Service Area % of Community(ies) Land Area **(LA)**: SA / T = LA	27.3%		
F.	Total Population of Community(ies) **(TP)**:	9,379	Persons	
G.	Population Served by Facility **(P)**: LA * TP = P	2,558	Persons	
H.	Total Number of Households in Community(ies) **(HH)**:	3,889	HH	
I.	Number of Households Served by Facility **(HS)**: LA * HH = HS	1,061	HH	
J.	Total Number of Workers Residing in Community(ies) **(W)**:	6,059	Persons	
K.	Workers Per household **(WPHH)**: W / HH = WPHH	1.56	Persons	
L.	Workers in Service Area **(WSA)**: HS * WPHH = WSA	1,652	Persons	
M.	Population Density of the Service area **(PD)**: P / SA = PD	609	Persons Per Sq. Mile	
N.	If the bicycle and pedestrian commuter mode share is known, enter the percentage at the right.	**(BMS)**	4.4%	

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	73	One-Way Trips
P.	Bike and Ped. Non-Work Utilitarian Trips **(BNWT)**: BWT * 1.7 = BNWT	124	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		412.3	VMTR Per Day
B.	VMTR * Operating Days Per Year	412.3 * 200 =	82,451	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: Emission Factors for Unrestricted PM:

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

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

Summer VOC	Summer NOx	Summer CO	Summer CO2
2.5	**6.8**	**176.0**	**27,931.8**

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	$954,000	/	2.5	=	**$378,567**
Summer NOx	$954,000	/	6.8	=	**$140,210**
Summer CO	$954,000	/	176.0	=	**$5,421**
Summer CO2	$954,000	/	27,931.8	=	**$34**

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	Quantitative	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	Quantitative	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	Quantitative	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	Quantitative	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	Quantitative	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	$11,178,124	Quantitative	1,336	Quantified Decrease in Emissions from Complete Streets Project	Advertised 7/13/2019. Notice to Pro-ceed 12/13/19. AC 2019 and 2020	
607737	AMESBURY- SALISBURY- TRAIL CONNECTOR @ I-95	$2,574,805	Quantitative	3,972	Quantified Decrease in Emissions from Bicycle and Pedes-trian Infrastructure	Advertised 9/15/2018 Notice to Pro-ceed 4/18/19	2019

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	Quantitative	482,727	Quantified Decrease in Emissions from Traffic Operational Improvement	Advertised 1/12/2019 Notice to Pro-ceed 8/14/19	2019

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)**
608027	HAVERHILL-BRADFORD RAIL TRAIL EXTENSION, FROM ROUTE 125 TO RAILROAD STREET	$1,766,108	Quantitative	422	Quantified Decrease in Emissions from Bicycle and Pedes-trian Infrastructure	Notice to Pro-ceed 10/23/2020	2020
609251	LAWRENCE – INTERSECTION IMPROVEMENTS AT SOUTH BROADWAY (ROUTE 28) AND MOUNT VERNON STREET	$1,218,368	Quantitative	380,222	Quantified Decrease in Emissions from Traffic Operational Improvement	Advertised 1/16/2021	2021

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)**
608298	Groveland – Community Trail from Main Street to King Street	$2,954,832	Quantitative	2,710	Quantified Decrease in Emissions from Bicycle and Pedes-trian Infrastructure	Notice to Pro-ceed 9/27/2021	2021
608761	Haverhill – Intersection Reconstruction on Rt. 108 (Newton Road) at Rt. 110 (Kenoza Ave. and Amesbury Rd.)	$3,376,283	Quantitative	8,307	Quantified Decrease in Emissions from Traffic Operational Improvement	Advertised 8/21/21. Notice to Pro-ceed 10/22/21.	

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 Description**	**Fiscal Year Programmed (2015 and forward)**
	MVRTA	Purchase Replacement Vans 11 Model Year 2009 Delivery 2015	$627,000	Quantitative	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	Quantitative	12,557	Quantified Decrease in Emissions from Bus Replacement		2015
111215	MVRTA	Replace 5 Model Year 2011 Paratransit Vehicles (Delivery 2016)	$320,000	Quantitative	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	Quantitative	18,271	Quantified Decrease in Emissions from Bus Replacement		2017
111202	MVRTA	Replace 6 Model Year 2004 Buses (Delivery 2018)	$2,689,500	Quantitative	15,661	Quantified Decrease in Emissions from Bus Replacement		2018
RTD0007687	MVRTA	Replace 3 Model Yr 2007 buses delivery 2020	$1,377,150	Quantitative	8,166	Quantified Decrease in Emissions from Bus Replacement		2020
RTD0008596	MVRTA	Replace 16 Model Yr 2015 vans with new delivery 2021	$1,180,480	Quantitative	33,208	Quantified Decrease in Emissions from Bus Replacement		2021

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)
RTD0009673	MVRTA	MVRTA Replace 9 Model Yr 2009 35' buses delivery 2022	$4,458,030	Quantitative	25,777	Quantified Decrease in Emissions from Bus Replacements		2022

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
	BFP	Bridge Formula Program
	BIL	Bipartisan Infrastructure Bill (BIL) signed into law as the Infrastructure Investment and Jobs Act November 15, 2021 Public Law 117-58
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.)		
C	(Cont.)	
	CRRSAA	Coronavirus Response and Relief Supplemental Appropriations Act
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 Common-wealth)
	EPA	U.S. Environmental Protection Agency
F	FA	Federal-Aid
	FAPRO	Federal Aid Program Reimbursement Office
	FAST Act	Fixing America's Surface Transportation Act legis-lation 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	IIJA	Infrastructure Investment and Jobs Act signed into law November 15, 2021 Public Law 117-58 also known as the Bipartisan Infrastructure Bill (BIL)
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	Mobility Assistance Program
	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
	NGBP	Next Generation Bridge Program
	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	611977	Amesbury	Amesbury– Riverwalk Connector to the Salisbury Point Ghost Trail
2	612193	Andover	Andover- Bridge Preservation, A-09-022, I-93 over Merrimack River
3	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)
4	612143	Andover	Andover– Bridge Replacement, A-09-015, Tewksbury Street over MBTA/BMRR
5	612045	Andover-Tewksbury	Andover-Tewksbury- Interstate Maintenance and related work on I-93
6	607541	Georgetown-Boxford	Georgetown– Boxford Border to Boston Trail from Georgetown Road to West Main Street (Route 97)
6	607542	Georgetown-Newbury	Georgetown– Newbury Border to Boston Trail (Northern Georgetown to Byfield Section)
7	S12208	Groveland	Groveland- Improvements at Dr. Elmer Bagnall Elementary School
8	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)
9	609466	Haverhill	Haverhill– Bridge Replacement, H-12-040, I-495 (NB & SB) over Merrimack River
10	608788	Haverhill	Haverhill– Roadway Reconstruction on North Avenue, from Main Street (Route 125) to Plaistow, NH

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

Map Number	Project Number	City/Town	Project Description
11	612074	Lawrence	Lawrence– Bridge Replacement, L-04-012, Short Street over Spicket River
12	612002	Lawrence	Lawrence– Community Day Arlington Improvements (SRTS)
11	608930	Lawrence	Lawrence- Lawrence Manchester Rail Corridor (LMRC) Rail Trail
11	610924	Lawrence	Lawrence– Roadway Reconstruction on Amesbury Street
13	612158	Methuen	Methuen- Bridge Replacement, M-17-026, Route 213 EB/WB over the Methuen Rail Trail
2	610658	Methuen	Methuen– Intersection Improvements at Riverside Drive and Burnham Road
8	MVRTA-1	MVRTA	MVRTA- New facility and/or division gargage in Bradford
11	MVRTA- 2	MVRTA	MVRTA- McGovern Transportation Center upgrades
14	608029	Newburyport	Newburyport– Intersection Improvements @ Route 1 & Merrimac Street
3	608095	North Andover	North Andover- Corridor Improvements on Route 114, between Waverly Road & Willow/Mill Street
15	609392	Rowley	Rowley– Safety Improvements at Route 1, Central and Glen Streets
1	602202	Salisbury	Salisbury– Reconstruction of Route 1 (Lafayette Road)