

# FFYS 2022-26 TIP: PROGRAMMING SCENARIO GUIDE (MARCH 18, 2021 MPO MEETING)

In response to discussions held during Boston Region Metropolitan Planning Organization (MPO) meetings in February and March, 2021, MPO staff explored three thematic scenarios to inform the Board's Transportation Improvement Program (TIP) programming decisions. The intention is for these scenarios to provide three distinct, yet complementary, lenses through which to consider the allocation of funds in the TIP. The three approaches taken below each center a different stated MPO priority as outlined in the Long-Range Transportation Plan (LRTP), TIP project selection criteria, and past MPO discussions on TIP programming:

- Scenario #2: Prioritizes maintenance of current MPO practices
- Scenario #3: Prioritizes transportation equity
- Scenario #4: Prioritizes select performance measures

Scenario #1 is not included in this analysis, as that scenario was presented at the MPO meeting on March 4, 2021, and significant updates to project funding and readiness details have occurred since then.

Though each scenario is guided by a specific thematic approach, all three scenarios also take into consideration overarching factors such as project readiness, evaluation scores, and project cost increases. Further, the geographic distribution of funding across the Boston region for each scenario is included below. Relationships between project funding levels and MPO LRTP Investment Program goals are shown at the bottom of each scenario as posted in the accompanying tables.

Please note that the following scenarios represent a foundation for discussion at the March 18 and 25, 2021, MPO meetings. These scenarios do not represent any final project funding decisions made by the MPO board.

## FFYS 2022-26 TIP SCENARIO #2: CURRENT PRACTICE SCENARIO

Scenario #2 carries forward the long-standing MPO practice of maintaining the MPO's commitments to all projects currently programmed in the TIP, including any year-to-year cost increases. This scenario operates under the assumption that it is more important to continue funding for projects already in the TIP than it is to more fully consider new projects for programming, even if those new projects have higher evaluation scores or other factors that may make them a high priority for funding.

## Assumptions

This project builds upon the information discussed in Scenario #1 on March 4, 2021. It also assumes the following:

- All project cost and readiness adjustments shared at the March 4, 2021, MPO meeting, as well as any cost changes that have occurred since then, have been included.
- The MPO will program all Community Connections projects submitted for federal fiscal years (FFYs) 2022, 2023, and 2024. The amount of funding needed to fund all Community Connections projects in FFY 2022 exceeds the standard annual programming amount of \$2 million per year, and this scenario funds the additional amount with surplus dollars available in FFY 2022. FFYs 2023, 2024, 2025, and 2026 include \$2 million per year for Community Connections projects. In this scenario, funding is not yet allocated to specific Community Connections projects in FFYs 2022-2026, but enough funding is reserved to do so in full.
- The MPO will keep \$5.5 million per year in the Transit Modernization program for FFYs 2025 and 2026.

## Approach

MPO staff have included all projects currently programmed in the FFYs 2021-25 TIP in Scenario #2. As the MPO has historically done, all project cost changes have been met in full. All projects are retained in the earliest programming year possible, given readiness concerns for individual projects. Furthermore, when projects do need to be delayed for readiness reasons, these projects are reprogrammed in the earliest year possible while maintaining the TIP's annual fiscal constraint. To assist in accomplishing these goals, some projects have had their funding allocated over multiple fiscal years if they meet the minimum cost threshold of \$25 million for taking this action.

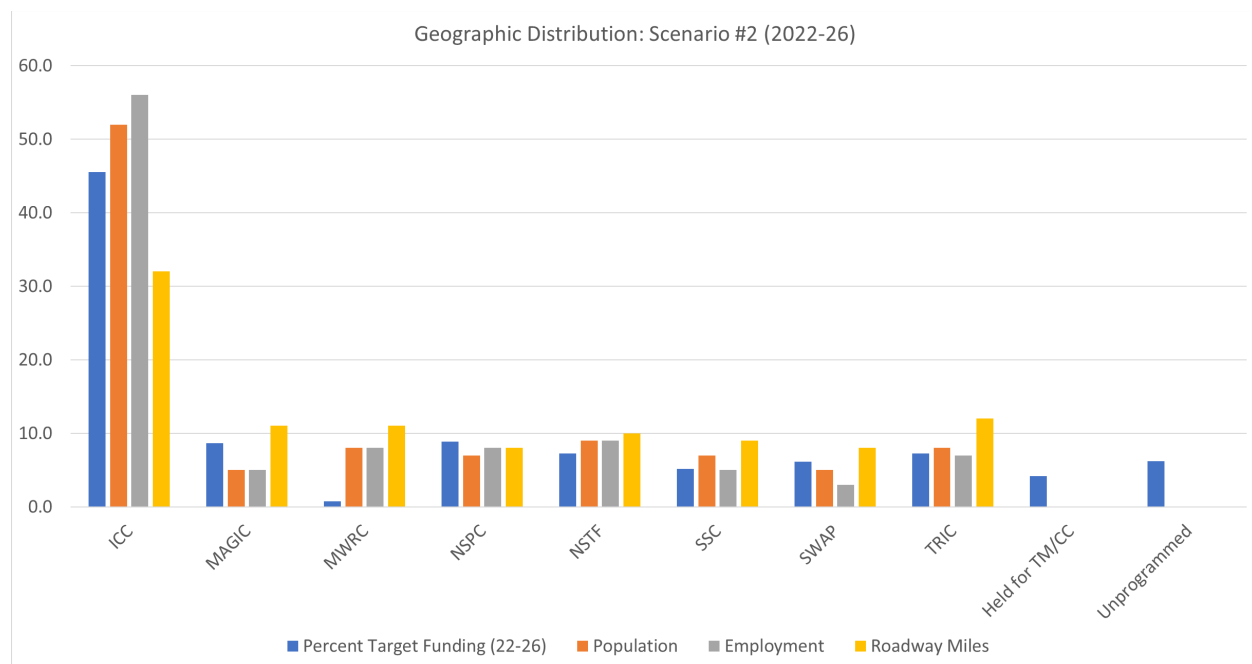
## Outcomes

Currently programmed projects removed: **0**

New projects added: **0**

Funding remaining: **\$33,334,437**

By employing the approach outlined above, the MPO is able to retain \$33,334,437 in available funding to allocate to prospective new projects in the FFYs 2022-26 TIP. A majority of this funding (\$19,485,083), however, is available in FFY 2022, presenting an allocation challenge, as any project that receives these funds would need to be ready to advertise for construction before September 30, 2022. The rest of the remaining funding is available in FFY 2026.



### Advantages

- This approach aligns the FFYs 2022-26 TIP with the expectations historically set by the MPO for project proponents with respect to maintaining adherence to project cost and schedule changes. Again, historical practice has been to fully accommodate all project cost and schedule issues regardless of scale or scope.
- By maintaining all existing commitments, this approach avoids the creation of situations where project proponents have capital funding delayed or rescinded after having made significant investments in project design and development.

### Limitations

- This approach limits the funding available for new projects and does not allow the MPO to fully consider prospective TIP projects in the context of currently programmed projects. In this case, the ability of the MPO to advance progress on its goals for the region (Safety, System Preservation and Modernization, etc.) is inherently constrained by the commitments made to currently programmed projects.
- By continuing current practice, this approach does not provide a disincentive for projects to increase in cost over their TIP life cycle.

## FFYS 2022-26 TIP SCENARIO #3: EQUITY SCENARIO

MPO staff explored the creation of an equity-focused scenario to see how an analysis of the current distribution of MPO funds to projects serving different populations in the region might inform the MPO Board's TIP programming decisions, in concert with other factors such as project readiness, evaluation scores, and project cost increases.

### Assumptions

This project builds upon the information included in Scenario #2 in terms of project costs and readiness. It also assumes the following:

- The MPO will program all Community Connections projects submitted for federal fiscal years (FFYs) 2022, 2023, and 2024. The amount of funding needed to fund all Community Connections projects in FFY 2022 exceeds the standard annual programming amount of \$2 million per year, and this scenario funds the additional amount with surplus dollars available in FFY 2022. FFYs 2023, 2024, 2025, and 2026 include \$2 million per year for Community Connections projects.
- The MPO will keep \$5.5 million per year in the Transit Modernization program for FFYs 2025 and 2026.
- The MPO will allocate the available funds in FFY 2022 (\$19,485,083) to a transit project through its Transit Modernization Investment Program. The assumption is that this funding would further advance the MPO's transportation equity goals by funding a transit project or projects that serve equity populations.

### Approach

MPO staff performed a geographic analysis of all current and prospective TIP projects to determine the distribution of MPO funds to those people in the Boston region who live within one-half mile of a project area. This is the same analysis that is documented in Chapter 6 of the TIP each year, which is typically conducted as a post-decision analysis of funding distribution across the region. MPO staff compared the share of people living within these areas who identify as one of the MPO's six equity populations (minority, low income, limited-English proficiency, elderly, people with disabilities, and youth) with the shares of these populations in the region as a whole. From this analysis, MPO staff could determine which equity groups, if any, receive a disproportionately high or low share of funding in a given scenario. Once these disparities were identified, MPO staff could then add or remove projects from the baseline scenario to reduce or eliminate them.

### Outcomes

Currently programmed projects removed: **3**

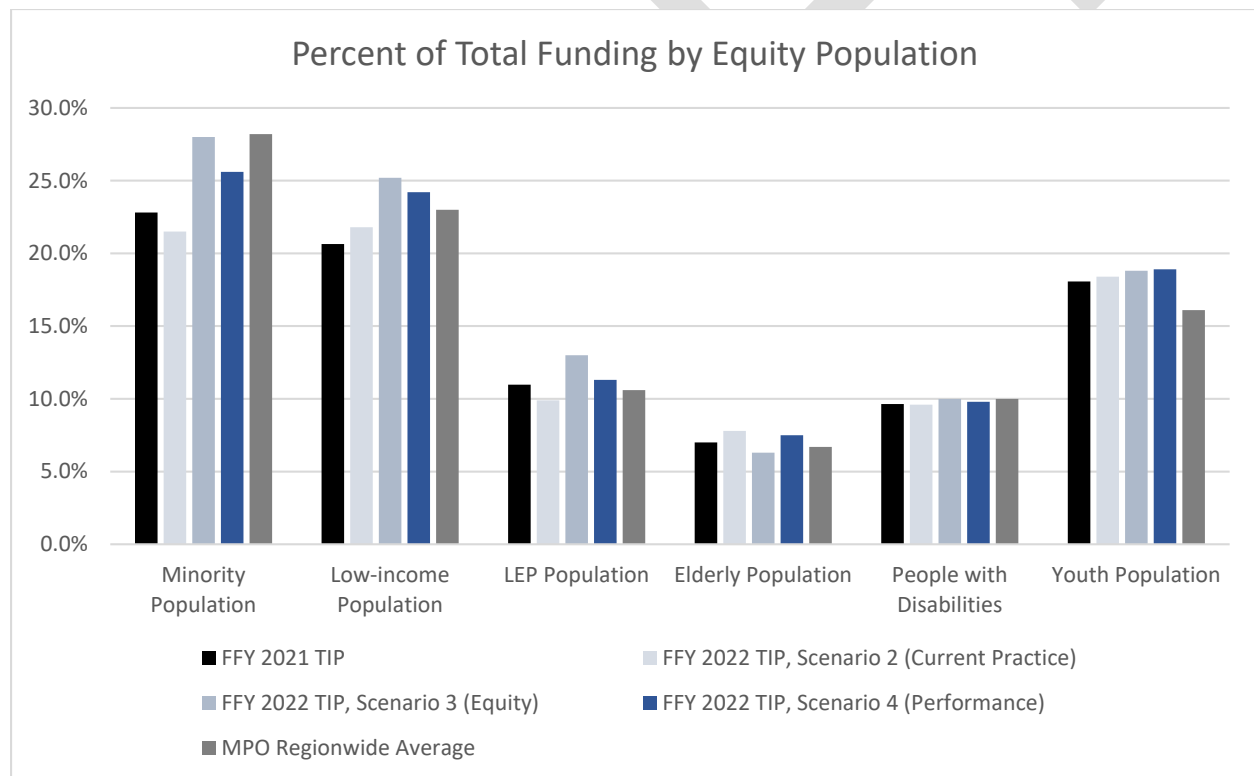
New projects added: **3**

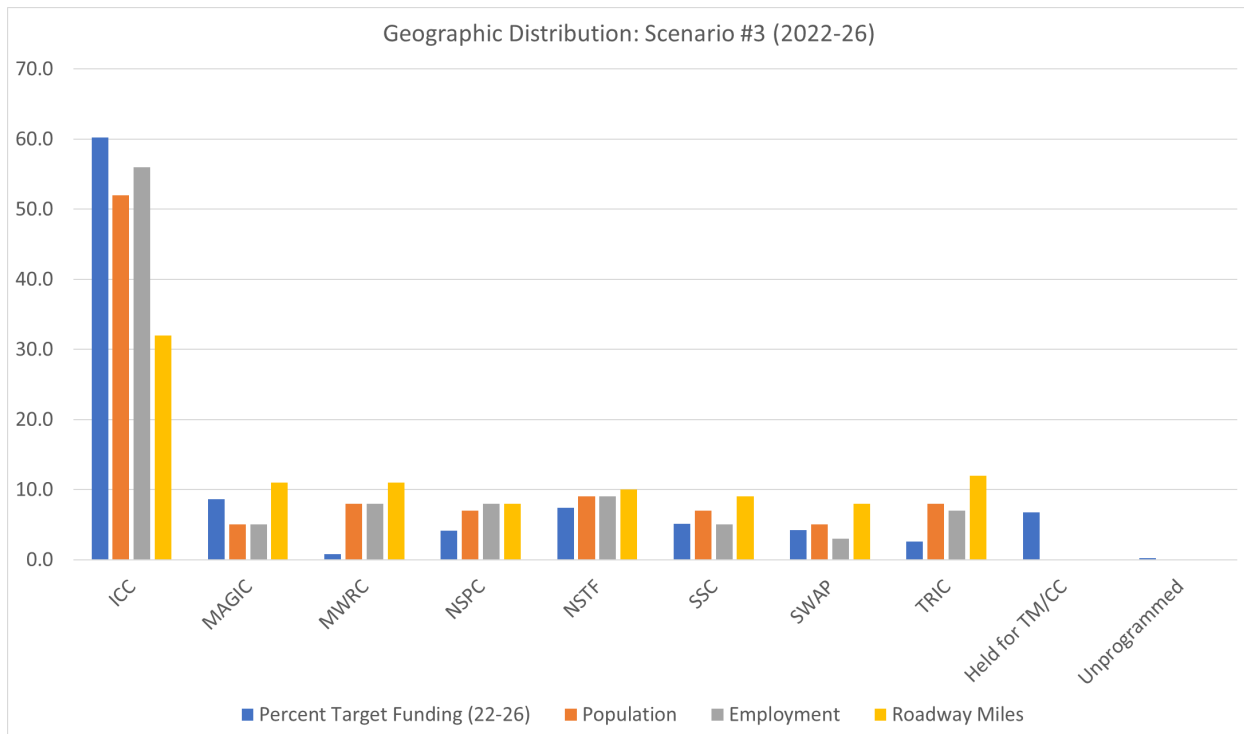
Funding remaining: **\$0**

The figure below provides an example of changes between the baseline scenario’s performance and the performance of the other scenarios in this guide with respect to addressing funding disparities between populations. In this case, MPO staff adjusted the baseline scenario by

- funding candidate project 609246 (Lynn, Western Avenue) in FFY 2026;
- funding candidate project 611983 (Chelsea, Park and Pearl Street) in FFY 2026;
- funding candidate project 607981 (Somerville, McGrath Boulevard) in FFYs 2025 and 2026;
- removing project 605857 (Norwood, Route 1) from FFYs 2025 and 2026
- removing project 608045 (Milford, Route 16) from FFY 2026; and
- removing project 608051 (Wilmington, Route 38) from FFYs 2025 and 2026.

This example shows how projects could be adjusted to more meaningfully advance the MPO’s equity goals while remaining in fiscal constraint.





### Advantages

- This approach enables MPO members and staff to see quantified changes funding distributions that can tell a story about whether changes to a set of projects could move the MPO closer to, or further from, parity in funding across equity populations in the Boston region.
- This approach also allows the MPO to more fully consider prospective TIP projects in the context of currently programmed projects, supporting the prioritization of projects that more meaningfully advance the MPO’s equity goals and more proactively address existing disparities in the distribution of funding to equity populations in the region.

### Limitations

- This analysis assumes that projects that are co-located with equity populations will serve those people. This assumption has historically guided MPO analyses of funding distribution in the TIP, but is simplistic. The MPO has recently made progress on the development of more meaningful equity analyses that better measure the relationship between project-level improvements and the populations being served by those improvements, including through the approval of new TIP project selection criteria in October 2020. Future iterations of this analysis will aim to explore these relationships further for all projects, including potentially rescoring programmed TIP projects for analytical purposes.

## FFYS 2022-26 TIP SCENARIO #4: PERFORMANCE SCENARIO

MPO staff explored performance-oriented scenarios to see how certain metrics—particularly those related to high-crash locations and greenhouse gas (GHG) emissions might inform the MPO Board’s TIP programming decisions, in concert with other factors such as project readiness, evaluation scores, transportation equity considerations, and project cost increases.

MPO staff examined four metrics, based on MPO goals, the availability of data, whether they could be applied to both programmed and candidate TIP projects. These include

- The expected amount of in annual tons of carbon dioxide (CO<sub>2</sub>) that would be reduced should a set of projects be implemented, to reflect the MPO’s interest in addressing climate change.
- The number of Massachusetts Department of Transportation (MassDOT) identified Highway Safety Improvement Program (HSIP) “all mode” crash clusters that are expected to be addressed by selected projects. These include clusters reflecting motor vehicle crashes at intersections in general.
- The number of MassDOT HSIP bicycle crash clusters that are expected to be addressed by selected projects. These reflect bicyclist-involved motor vehicle crashes.
- The number of MassDOT HSIP pedestrian crash clusters that are expected to be addressed by selected projects. These reflect pedestrian-involved motor vehicle crashes.

Crash clusters identified by MassDOT are ranked based on their Equivalent Property Damage Only (EPDO) value, and projects addressing clusters in the top five percent in an MPO region are eligible to receive HSIP dollars.<sup>1</sup> MPO staff selected this measure as a proxy for investments that have a high potential to reduce fatalities and serious injuries on the region’s roadways, including those experienced by people traveling by non-motorized modes

### Assumptions

This project builds upon the information included in Scenario #2 in terms of project costs and readiness. It also assumes the following:

- The MPO will program all Community Connections projects submitted for federal fiscal years (FFYs) 2022, 2023, and 2024. The amount of funding needed to fund all Community Connections projects in FFY 2022 exceeds the standard annual programming amount of \$2 million per year, and this scenario funds the additional amount with surplus dollars available in FFY 2022. FFYs 2023, 2024, 2025, and 2026 include \$2 million per year for Community Connections projects.

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<sup>1</sup> The all-mode HSIP clusters reflect crash data from 2015 to 2017, while the bicycle and pedestrian HSIP clusters reflect data from 2008 to 2017.

- The MPO will keep \$5.5 million per year in the Transit Modernization program for FFYs 2025 and 2026.

## Approach

MPO staff reviewed the locations of MPO projects with respect to MassDOT HSIP clusters and whether each project proposes improvements to safety for those modes. MPO staff also compiled information about expected GHG reductions or increases resulting from project implementation. Staff then calculated baseline values for the number of HSIP all mode, bicycle, and pedestrian clusters and the expected reduction in GHG emissions for the set of already-programmed Regional Target projects. Next, staff experimented by removing already-programmed new projects and adding candidate projects. When removing already-programmed projects, staff considered not only GHG and crash cluster values, but also the percent by which the project's cost had changed since it was initially programmed and the project's previous evaluation score. When selecting new projects to add in, staff considered project scores and readiness as well as performance values.

## Outcomes

Currently programmed projects removed: **2**

New projects added: **2**

Funding remaining: **\$19,807,092**

The table on the following page provides an example of changes between the baseline scenario's performance and a modified scenario's performance. In this case, MPO staff adjusted the baseline scenario by

- funding candidate project 609246 (Lynn, Western Avenue) in FFYs 2025 and 2026;
- funding candidate project 610666 (Swampscott Rail Trail) in FFY 2026;
- removing project 608045 (Milford, Route 16) from FFY 2026; and
- removing project 608051 (Wilmington, Route 38) from FFYs 2025 and 2026.

This example shows how projects could be adjusted to achieve desirable impacts in identified performance metrics while remaining in fiscal constraint.



**Table 1  
Programming Outcomes for Thematic Scenarios**

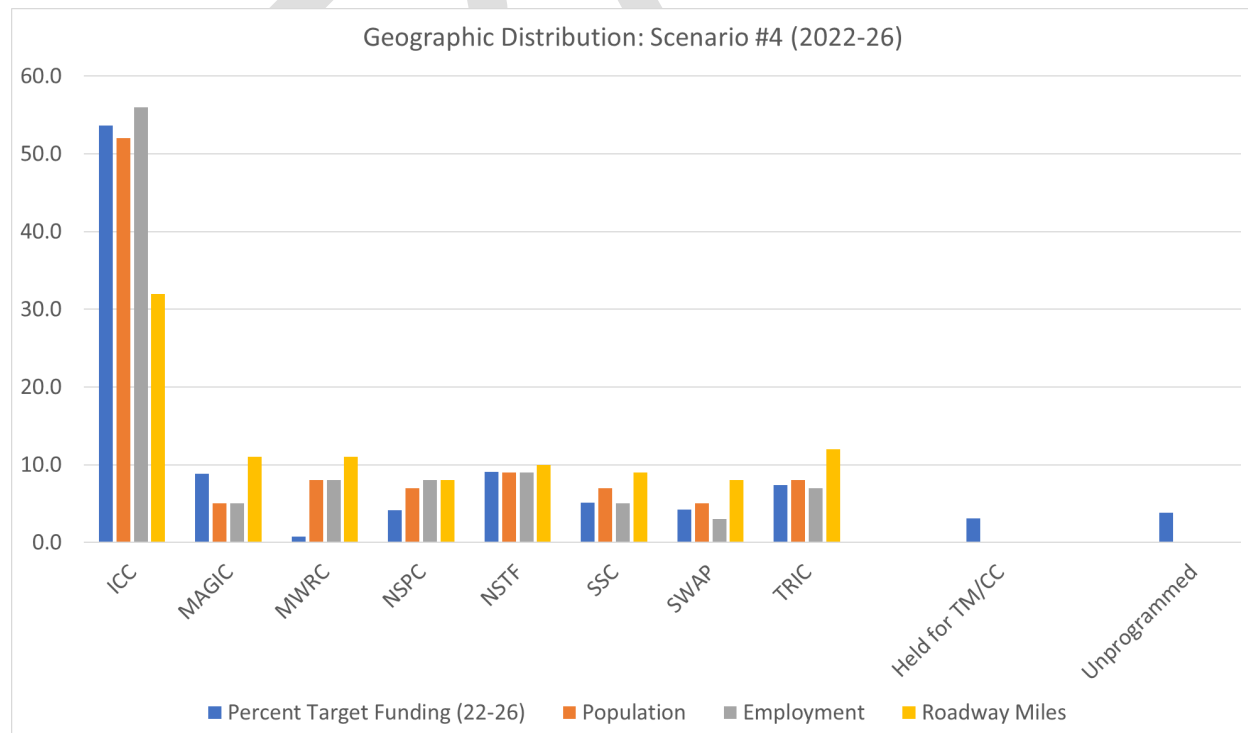
Test Case	HSIP All-Mode Clusters	HSIP Pedestrian Clusters	HSIP Bicycle Clusters	Annual Tons of CO <sub>2</sub> Reduced*	Programming Impacts
<b>Scenario #2 (Baseline)</b>	18	9	2	-11,400	Surplus of \$19,542,392 in FFY 2022, Surplus of \$13,849,353 in FFY 2026
<b>Scenario #3 (Equity)</b>	25	12	7	-10,900	No funding surplus
<b>Scenario #4 (Performance)</b>	24	9	5	-12,000	Surplus of \$19,542,392 in FFY 2022, Surplus of \$332,009

Note: HSIP all-mode clusters are based on crash data collected from 2015 to 2017. HSIP bicycle and pedestrian clusters are based on crash data collected from 2008 to 2017.

\* Tons of CO<sub>2</sub> reduced have been rounded to the nearest hundred. Negative CO<sub>2</sub> values indicate an emissions reduction. Project-specific CO<sub>2</sub> data was not available for project 608266 (Rutherford Avenue, Boston), project 606476 (Sumner Tunnel, Boston) and several Community Connections projects in the baseline scenario.

CO<sub>2</sub> = carbon dioxide. HSIP = Highway Safety Improvement Program

Source: Boston Region Metropolitan Planning Organization staff.



## Advantages

- This approach enables MPO members and staff to see quantified changes in metrics that can tell a story about whether changes to a set of projects could move the MPO closer to, or further from, a particular goal.
- This approach also allows the MPO to more fully consider prospective TIP projects in the context of currently programmed projects, supporting the prioritization of high-performing projects.

## Limitations

- This analysis is dependent on data that were readily available to MPO staff. If project scopes have been recently updated, MPO staff may not have had the information or time available to update metrics for these projects.
- Methodologies for estimating these metrics should be refined or improved over time. In particular, Major Infrastructure projects such as Rutherford Avenue in Boston are typically analyzed as a set when MPO staff produce an air quality analysis for the LRTP. In this analysis, staff did not have GHG reduction values for Rutherford Avenue or the Sumner Tunnel project. While this did not affect the net change in GHG values, in the future these values should be incorporated into the baseline amount.
- This approach emphasizes elements that are already captured in TIP project evaluation scores. It provides two quantitative lenses that can be used to select projects, but in doing so it assigns additional weight to factors beyond the weighting built into the TIP evaluation framework.