

FFY 2019: EVALUATION CRITERIA AND APPROACH FOR FFYS 2019-23 TIP DEVELOPMENT

1 SAFETY: TRANSPORTATION BY ALL MODES WILL BE SAFE

Objectives

- Reduce the number and severity of crashes, all modes
- Reduce serious injuries and fatalities from transportation
- Protect transportation customers and employees from safety and security threats

Criteria and Subcriteria/Scoring (30 possible points)

For each project type, a measure of crash severity and a measure of crash rate is calculated and a score is assigned based on the point scales detailed below.

Crash severity is measured using the Equivalent Property Damage Only (EPDO) index. The crash rate is calculated based on the total number of crashes and the level of traffic. This measure is calculated differently for corridor (Complete Streets) versus intersection projects with a measure of *million annual vehicle miles traveled* used for corridor projects and a measure of *million annual entering vehicles* used for intersection projects. Points are assigned based on a comparison with the state's average crash rates.

If there is a corridor project that addresses intersection safety issues, the project is only assigned points under the corridor project scoring system. If there is an intersection project that addresses safety at more than one intersection, only the main intersection addressed by the proposed improvements is assigned points under the intersection project scoring system.

1a. Crash Severity Value: Equivalent Property Damage Only (EPDO) index (up to 5 points) [USED FOR ALL PROJECTS]

- +5 EPDO value of 300 or more
- +4 EPDO value between 200-299
- +3 EPDO value between 100-199
- +2 EPDO value between 50-99
- +1 EPDO value less than 50
- +0 No EPDO value

Description

EPDO is a weighted index that captures the severity of crashes by assigning a value to each crash based on whether the accident resulted in a fatality, injuries, or property damage. The number of crashes in the dataset is a total for the three-year period of the data.

A crash involving a fatality receives the most points (10), followed by a crash involving injuries (5), then a crash involving only property damage (1). Higher values indicate greater crash severity.

Methodology

The methodology is as follows:

1. Calculate the project length.
2. In GIS, draw a 50-foot buffer around the project area.
3. Count crashes within a 50-foot buffer (the three-year total from the MassDOT Registry of Motor Vehicles' crash database). These data can be found online in MassDOT's Crash Data Portal.
4. Calculate EPDO value (based on the EPDO index point values for type of crash).

Example Calculations:

- EPDO of 300 = 10 crashes involving a fatality (10×10), plus 20 crashes involving an injury (20×5) plus 100 crashes involving property damage (100×1)
- EPDO of 60 = 2 crashes involving a fatality (2×10) plus 4 crashes involving an injury (4×5) plus 20 crashes involving property damage (20×1)

Data Source

- MassDOT Registry of Motor Vehicles' crash data, compiled by crash incident and distributed by MassDOT Traffic Engineering Safety section

Crash data can be viewed in MassDOT's Crash Data Portal:
<https://services.massdot.state.ma.us/crashportal>.

1b. Crash Rate: Intersections and Corridors (up to 5 points)

**Table 1
Roadway Segment
Crash Rates (per Million Vehicle-Miles Traveled)**

Evaluation Score	Interstate and Principal Arterial—Other Freeways and Expressways	Principal Arterial—Other, Minor Arterial and Major-Minor Collector
0	0–0.40	0–2.05
1	0.40–0.59	2.05–3.15
2	0.59–1.00	3.15–4.25
3	1.00–1.40	4.25–5.35
4	1.40–1.81	5.35–6.45
5	> 1.81	> 6.45

**Table 2
Signalized and Unsignalized
Intersection Crash Rate (per Million Entering Vehicles)**

Evaluation Score	Signalized	Unsignalized
0	0–0.36	0–0.21
1	0.36–0.55	0.21–0.37
2	0.55–0.93	0.37–0.70
3	0.93–1.31	0.70–1.03
4	1.31–1.69	1.03–1.36
5	> 1.69	> 1.36

Description

A crash rate analysis is performed to compare the crash experience of similar locations in the jurisdiction, region, and state. This method compares

intersections or roadway segments within a jurisdiction by developing an average crash rate. The baseline average is developed by calculating crash rates at a number of locations (intersections and roadway segments) in the region. MassDOT provides crash rate averages both statewide and by MassDOT district.

Methodology

MassDOT's average crash rates for both intersections and roadway segments are used as a starting point to create crash rate evaluation scales. The scales address the roadway intersection/segment inequities by creating separate scoring criteria for each. The evaluation scales range from 0 to 5, providing a normalized score for intersections and roadway segments.

Average crash rates for intersections in the Boston region are based on the crash experience in approximately 200 intersections in the region and the type of traffic control (signalized/unsignalized) present. Average roadway segment crash rates are developed according to urban federal functional classification, the first group consisting of interstates, freeways and expressways, and the second consisting of principal arterials other than expressways, minor arterials, and major and minor collectors.

Data Source

Same as EPDO index scoring

1c. Truck Safety: Improves truck-related safety issue (up to 5 points)

- +3 High total effectiveness of truck safety countermeasures
- +2 Medium total effectiveness of truck safety countermeasures
- +1 Low total effectiveness of truck safety countermeasures
- +0 Does not implement truck safety countermeasures

If project scores points above, then it is eligible for additional points below:

- +2 Improves truck safety at HSIP¹ cluster

Description

This criterion examines the existing truck safety issues in the project area and assigns points based on whether truck safety countermeasures are included as part of the proposed project and, if so, how effective they are at addressing truck safety issues. Additional points are added if the project is located in an HSIP cluster.

¹Highway Safety Improvement Program (HSIP)

The basic truck safety countermeasure is the reconstruction of a roadway to current design standards. The effectiveness of a modern reconstruction in improving safety is directly related to the deficiencies of the system being rebuilt. If the existing conditions are very deficient with respect to safety, the safety benefit can be high. If the existing conditions are not particularly unsafe, the safety benefit will be lower.

The overall benefit, in turn, depends on the quantity of trucks benefiting from the improved road. The determination of a high, medium, or low level of benefit is based upon comparing the significance of the safety improvement realized through reconstruction with the volumes of trucks expected to travel through the project area.

Methodology

The key to assigning a meaningful score is a thorough understanding of the proposed improvements. The functional design report describes the proposed improvements at an approximately 25 percent level of design. When reviewing these reports, however, it is important to be cognizant of any significant project features that might only be under consideration as options.

By reviewing the information in a project's functional design report and specialized data developed by MPO staff, it is possible to estimate the effectiveness of truck safety measures.

High effectiveness:

- Existing conditions are very deficient with respect to safety
- Truck traffic is relatively high (trucks representing more than eight percent of traffic or more than 400 trucks per day)

Medium effectiveness:

- Existing conditions are moderately deficient and truck volumes are high
- Existing conditions are very deficient and truck volumes are moderate

Low effectiveness:

- Existing conditions are moderately deficient and truck volumes are moderate

Projects that provide negligible safety improvements or serve an inconsequential number of trucks may be given no points at all.

HSIP clusters are identified independently of the TIP process, and the extra two points are applied automatically.

Data Sources

Functional design reports

Land use patterns from town records or Google Earth

1d. Bicycle Safety: Improves bicycle safety (up to 5 points)

- +3 High total effectiveness of bicycle safety countermeasures
- +2 Medium total effectiveness of bicycle safety countermeasures
- +1 Low total effectiveness of bicycle safety countermeasures
- +0 Does not implement bicycle safety countermeasures

If a project scores points above, then it is eligible for additional points below:

- +2 Improves bicycle safety at HSIP bicycle cluster
- +1 Improves bicycle safety at HSIP cluster

Description

This criterion examines the existing bicycle safety issues in the project area and assigns points based on whether bicycle safety countermeasures are included as part of the proposed project and, if so, how effective they are. Additional points are added if the project is located in either a bicycle HSIP cluster or a vehicle HSIP cluster.

Methodology

Determining this score is dependent on an understanding of the following:

1. **Existing conditions:** An assessment of the existing conditions of bicycle safety is made by understanding the existing bicycle facilities and their potential for safety effectiveness; existing bicycle safety concerns in the project area; and existing bicycle use in the project area.
 - Safety effectiveness of existing bicycle facilities:
 - Potential high-effectiveness facilities (physically separated bicycle facilities) are defined as one of the following:
 - A vertical barrier between bicyclists
 - Bicycle facilities at curb/sidewalk level, accompanied by separation between bicyclists and pedestrians
 - Separate paths for bicyclists and pedestrians (for shared-use paths)
 - Potential medium-effectiveness facilities (buffered bicycle facilities) are defined as one of the following:

- A horizontal separation between motorists and bicyclists such as painted buffer zone between a bike lane and vehicle travel lanes
 - Bicycle facilities at curb/sidewalk level without a sidewalk buffer to separate bicyclists and pedestrians
 - Combined paths for bicyclists and pedestrians (for shared-use paths)
- Potential low-effectiveness facilities (standard bicycle facilities) are defined as one of the following:
 - No vertical or horizontal separation between motorists and bicyclists
 - Provision of a bicycle-designated travel zone, such as a bike lane, on a road
- Existing bicycle safety concerns are identified based on a qualitative description by the project proponent in addition to HSIP data.
- Existing bicycle use is determined based on a qualitative description by the project proponent in addition to available data on bicycle use.

2. **Proposed/anticipated future conditions:** Once existing bicycle safety conditions are understood, the potential effectiveness of the proposed project and future safety conditions can be assessed by considering the following:

- Desired bicycle use is determined based on a qualitative description by the project proponent.
- Proposed bicycle safety countermeasures are determined based on a qualitative description by the project proponent.

An overall score of the effectiveness of bicycle safety countermeasures is based on professional judgement considering the existing facilities, safety issues, current use, desired/anticipated future use, and the proposed bicycle safety countermeasures planned to be implemented as part of the project. The following factors are considered when determining the effectiveness of countermeasures:

High total effectiveness of bicycle safety countermeasures:

- Existing bicycle infrastructure and safety is very deficient.
- Existing bicycle use is high and expected to increase.
- Proposed improvements are in the highly effective category.

Medium total effectiveness of bicycle safety countermeasures:

- Existing bicycle infrastructure and safety is very deficient and existing bicycle use is moderate and expected to increase.

- Existing bicycle infrastructure and safety is moderately deficient and existing bicycle use is high and expected to increase.
- Proposed improvements fall into the highly effective or medium effective categories.

Low total effectiveness of bicycle safety countermeasures:

- Existing bicycle infrastructure and safety is moderately deficient and existing bicycle use is moderate or low

Data Sources

Functional design reports

MassDOT Registry of Motor Vehicles crash data

1e. Pedestrian Safety: Improves pedestrian safety (up to 5 points)

- +3 High total effectiveness of pedestrian safety countermeasures
- +2 Medium total effectiveness of pedestrian safety countermeasures
- +1 Low total effectiveness of pedestrian safety countermeasures
- +0 Does not implement pedestrian safety countermeasures

If project scores points above, then it is eligible for additional points:

- +2 Improves pedestrian safety at HSIP pedestrian cluster
- +1 Improves pedestrian safety at HSIP cluster

Description

This criterion examines the existing pedestrian safety issues in the project area and assigns points based on whether pedestrian safety countermeasures are included as part of the proposed project and, if so, how effective they are. Additional points are added if the project is located in either a pedestrian HSIP cluster or a vehicle HSIP cluster.

Methodology

Determining this score is dependent on an understanding of the following:

1. **Existing conditions:** An assessment of the existing conditions of pedestrian safety is made by understanding the existing pedestrian facilities and their potential for safety effectiveness; existing pedestrian safety concerns in the project area; and, existing pedestrian use in the project area. Existing sidewalk condition can be defined as follows:
 - Good = The sidewalk meets the criteria for “fair” and is at least five feet in width throughout the project area, and the surface of the sidewalk is even and in good condition.

- Fair = The sidewalk meets basic ADA requirements and is continuous in the project area.
 - Poor = There is no sidewalk or the sidewalk does not meet the “fair” standards.
- Safety effectiveness of existing pedestrian facilities:
 - Potentially highly effective facilities are defined as follows:
 - Project separates pedestrians from vehicular traffic by providing a curb and sidewalk of sufficient pedestrian travel width (at least five feet) on both sides of the roadway.
 - Project separates bicyclists from pedestrians by providing bicycle facilities that are accompanied by a barrier (a sidewalk-level bicycle route separated by trees, planters, green space, benches, light poles, trash bins, etc.) or curb (an on-road bike lane beside a sidewalk with a curb) that prevents bicyclists from traveling in the same zone as pedestrians.
 - Potentially medium effective facilities are defined as follows:
 - Project separates pedestrians from vehicular traffic by providing a curb and sidewalk with sufficient travel width (at least five feet) on both sides of the roadway but fails to separate bicyclists from pedestrians by providing bicycle facilities that are accompanied by a barrier (a sidewalk-level bicycle route separated by trees, planters, green space, benches, light poles, trash bins, etc.) or curb (an on-road bike lane beside a sidewalk with curb) that prevents bicyclists from traveling in the same zone as pedestrians.
 - Potentially low effective facilities are defined as follows:
 - Project does not separate pedestrians from vehicular traffic by providing a curb and sidewalk with sufficient travel width (at least five feet) along both sides of the roadway for the entirety of the project.
- Existing pedestrian safety concerns are determined based on a qualitative description by the project proponent in addition to HSIP data.
 - Existing pedestrian use is determined based on a qualitative description by the project proponent in addition to available data on pedestrian use.

2. **Proposed/anticipated future conditions:** Once existing pedestrian safety conditions are understood, the potential safety effectiveness of the proposed project/future conditions can be assessed by considering the following:
- Desired pedestrian use is determined based on a qualitative description by the project proponent.
 - Proposed pedestrian safety countermeasures are determined based on a qualitative description by the project proponent.

An overall score of the effectiveness of pedestrian safety countermeasures is based on professional judgement considering the existing facilities, safety issues, current use, and desired/anticipated use compared to the proposed pedestrian safety countermeasures planned to be implemented as part of the project. Points are assigned in the following way:

High total effectiveness of pedestrian safety countermeasures:

- There is no existing pedestrian infrastructure and the project will implement improvements that are in the highly effective category.
- Existing pedestrian infrastructure is poor, resulting in very deficient safety conditions.
- Existing pedestrian use is high and it is expected to increase.
- Proposed improvements fall in the highly effective category.

Medium total effectiveness of pedestrian safety countermeasures:

- Existing pedestrian infrastructure and safety is very deficient and existing pedestrian use is moderate and expected to increase.
- Existing pedestrian infrastructure and safety is moderately deficient and existing pedestrian use is high and expected to increase.
- Proposed improvements are in the highly effective or medium effective categories.

Low total effectiveness of pedestrian safety countermeasures:

- Existing pedestrian infrastructure and safety is moderately deficient and existing pedestrian use is moderate or low.

Data Sources

- MassDOT Registry of Motor Vehicle crash data
- Functional design reports

1f. At-grade railroad crossing: Improves safety or removes an at-grade railroad crossing (up to 5 points)

- +5 Removes an at-grade railroad crossing
- +3 Significantly improves safety at an at-grade railroad crossing
- +1 Improves safety at an at-grade railroad crossing
- +0 Does not include a railroad crossing

Description

This criterion assigns points to projects that address safety at at-grade railroad crossings. Railroad grade crossings are some of the most dangerous elements of the surface transportation system. If a proposed project completely removes a grade crossing, it receives the maximum score for this criterion (5 points). If there is no grade crossing in the project area, no points are assigned. Between these extreme cases, safety improvement scores of 1 or 3 points can be granted.

Methodology

The key to assigning a meaningful score is a thorough understanding of the proposed improvements. The functional design report describes the proposed improvements at an approximately 25 percent level of design. When reviewing these reports, it is important to be cognizant of any significant project features which might only be under consideration as options.

Short of complete elimination of an at-grade crossing, work at or near a grade crossing can improve safety in a number of respects. Aspects of possible improvement may include the following:

- Newer, more visible barrier equipment
- Improved sight lines for approaching motor vehicles, bicycles, and pedestrians
- Improved road geometry, especially problematic vertical curves

The safety improvement score will depend upon the deficiencies in the existing grade crossing. Any reconstructed grade crossing will need to meet modern standards, but some of the underlying deficiencies may not be fully corrected because of constraints such as the existing railroad alignment. Some judgement is necessary in these situations to appropriately characterize the degree of improvement.

Data Sources

Functional design reports

2 SYSTEM PRESERVATION: MAINTAIN THE TRANSPORTATION SYSTEM

Objectives

- Improve the condition of on- and off-system bridges
- Improve pavement condition on the MassDOT-monitored roadway system
- Maintain and modernize capital assets throughout the system
- Maintain and modernize capital assets throughout the system (surface condition of sidewalks)
- Prioritize projects that support planned response capability to existing or future extreme conditions (sea level rise, flooding, and other natural and security-related man-made hazards)
- Protect freight network elements, such as port facilities, that are vulnerable to climate-change impacts

Criteria and Subcriteria/Scoring (29 possible points)

2a. Roadway Bridge: Improves substandard roadway bridge(s) (up to 3 points)

- +3 Condition is structurally deficient and weight restricted, and improvements are included in the project
- +2 Condition is structurally deficient (no weight restriction) and improvements are included in the project
- +2 Condition is functionally obsolete and weight restricted, and improvements are included in the project
- +1 Condition is functionally obsolete (no weight restriction) and improvements are included in the project
- +1 Condition is weight restricted (not otherwise deficient) and improvements are included in the project
- +0 Project does not improve a substandard bridge or does not include a bridge

Description

This criterion assesses the bridge condition in the project area and assigns points based on the presence of a bridge, the existing condition of the bridge, and planned improvements to the bridge.

Of the 2,866 bridges located within the Boston Region MPO's boundaries, 559 (19 percent) are considered functionally obsolete (the configuration or design does not meet current traffic demands or highway standards) and 154 (5 percent) are considered structurally deficient (one or more structural components—deck,

superstructure, or substructure—is in poor condition or deterioration has reduced the load-carrying capacity of the bridge).²

Methodology

If bridge improvements are planned as part of the proposed project, points are assigned based on the current condition of the bridge. The bridge is identified by the BDEPT and/or BIN identification numbers, which are usually enumerated in the TIP Project Description. The bridge deficiencies are based on the MassDOT Bridge Inventory.

Data Sources

MassDOT Bridge Inventory and Accelerated Bridge Program database

2b. Pavement: Improves substandard pavement (up to 6 points)

- +6 IRI³ rating greater than 320: Current roadway condition is poor and pavement improvements are included in the project
- +4 IRI rating between 191 and 320: Current roadway condition is fair and pavement improvements are included in the project
- +0 IRI rating less than 190: Current roadway condition is good

Description

This criterion assesses current pavement condition and assigns points based on the existing pavement condition and planned improvements to the roadway surface.

Pavement condition is measured using the International Roughness Index (IRI), a rating that reflects the calibrated value in inches of roughness per mile. IRI ratings are classified as follows:

- Good – Rating of 0–190
- Fair – Rating of 191–320
- Poor – Rating above 320

Methodology

If pavement improvements are planned as part of the proposed project, points are assigned based on the current condition of the pavement.

The calculation is based on the IRI within the last five measured years in MassDOT's Roadway Inventory. Pavement condition is not measured annually for all roads. Pavement conditions on Interstate Highways are recorded annually,

² Data as of August 2018.

³ International Roughness Index (IRI)

while numbered routes and/or arterials are measured every three years. Additionally, functional design reports may include IRI values for project segments.

Data Sources

MassDOT Roadway Inventory
Functional design reports

2c. Traffic Signals: Improves substandard traffic signal equipment (up to 6 points)

- +6 Existing signals are in poor condition and improvements are included in the project
- +4 Existing signals are in fair condition and improvements are included in the project
- +0 Does not meet or address criteria

Description

This criterion assesses the existing condition of traffic signal equipment within the proposed project area and assigns points for improvements planned to substandard signal equipment as a part of the project.

Methodology

If traffic signal improvements are planned as part of the proposed project, points are assigned based on the current condition of existing traffic signal equipment and the nature of planned improvements.

Bringing substandard signal equipment up to modern operations is considered an improvement.

Data Sources

Functional design reports

2d. Transit Asset(s): Improves transit asset(s) (up to 3 points)

- +2 Brings transit asset into state of good repair
- +1 Meets an identified-need in an asset management plan
- +0 Does not meet or address criteria

Description

This criterion assigns points based on improvements made to transit assets. Points are assigned for bringing an asset into a state of good repair or for addressing a need identified in an asset management plan.

Methodology

If transit improvements are part of the proposed project, points are assigned based on bringing a transit asset into a state of good repair or addressing an identified need in an asset management plan.

Data Sources

Project proponent
Functional design reports
Municipal planning documents

2e. Sidewalks: Improves substandard sidewalk(s) (up to 3 points)

- +3 Existing sidewalks are in poor condition and sidewalk improvements are included in the project
- +2 Existing sidewalks are in fair condition and sidewalk improvements are included in the project
- +0 Existing sidewalk condition is good

Description

This criterion assesses the existing condition of sidewalks in the area of the proposed project and assigns points for improvements planned to substandard sidewalks.

Methodology

1. Define existing conditions of sidewalk:
 - Good = The sidewalk meets the criteria for “fair,” is at least five feet in width throughout the project area, and the surface of the sidewalk is even and in good condition.
 - Fair = The sidewalk meets basic ADA requirements and is continuous in the project area.
 - Poor = There is no sidewalk or the sidewalk does not meet the “fair” standards.
2. Rate the existing sidewalk condition as good, fair, or poor.
3. Understand proposed sidewalk improvements and assign points based on the existing condition if improvements are included. Improvements considered include, but are not necessarily limited to, the following:
 - Achieving a sidewalk width of five feet or greater
 - Addition of new curbs or replacement of deteriorated curbs
 - Addition of new curb ramps or replacement of deteriorated ramps
 - Addition of pedestrian-detectable tactile warning strips
 - Creation of continuous sidewalks where gaps previously existed

- Creation of sidewalks on both sides of street where one side previously lacked a sidewalk
- Repairing sidewalks to create an even sidewalk surface

Data Sources

Google Maps
 Functional design reports
 Project proponent

2f. Emergency Response: Improves emergency response (up to 2 points)

- +1 Project improves an evacuation route, diversion route, or alternate diversion route
- +1 Project improves an access route to or is in proximity to an emergency support location

Description

This criterion assesses the presence of an emergency response route or emergency support location in the project area and assigns points if the project proposes improvements to an emergency response route or improves access to an emergency support location.

Methodology

1. Determine if project is located within a hurricane evacuation zone.
 - If no, project does not receive points for the first criterion.
 - If yes, move on to step 2 below.
2. Determine if project is located along an evacuation route.
 - An evacuation route is defined as a state or local highway, US highway, or limited access highway within a hurricane evacuation zone as mapped on the MEMA Evacuation Zone maps (link below).
 - If project improves one of these routes, the project receives one point.
 - An improvement consists of:
 1. Improving pavement condition
 2. Improving signal equipment
 3. Improving safety for vehicles, bikes, or pedestrians
 4. Decreasing vehicular delay along the roadway
 5. Improving transit travel along the roadway
3. Determine if the project is within one-quarter mile of a police station, fire station, hospital, emergency operations center, or emergency shelter.
 - If no, the project does not receive points for the second criterion.

- If yes, determine if the improvements proposed as part of the project would improve access to the emergency support location. If yes, then the project receives one point.
 - An improvement consists of:
 1. Improving pavement condition
 2. Improving signal equipment
 3. Improving safety for vehicles, bikes, or pedestrians
 4. Decreasing vehicular delay along the roadway
 5. Improving transit travel along the roadway

Data Sources

Functional design report

Project proponent

Boston Region MPO's All-Hazards Planning Application

State or local mapping of evacuation routes and emergency support locations

Massachusetts Emergency Management Agency Evacuation Zones:

<http://www.mass.gov/eopss/agencies/mema/emergencies/hurricanes/hurricane-evacuation-zones.html>

2g. Improves ability to respond to extreme conditions (up to 6 points)

- +2 Addresses flooding problem and/or sea level rise and enables facility to function in such a condition
- +1 Brings facility up to current seismic design standards
- +1 Addresses critical transportation infrastructure
- +1 Protects freight network elements
- +1 Implements hazard mitigation or climate adaptation plans

Description

This criterion assesses the presence of natural hazard zones and assigns points based on making improvements to locations that are vulnerable to natural hazards or for protecting certain critical elements of the transportation system.

Methodology

- Addresses flooding problem and/or sea level rise and enables facility to function in such a condition
 - The project is given two points for this criterion if there is a current flooding problem in the project area (due to either location in a floodplain or sea level rise) and if the project includes improvements to help the facility function better during flood events or under projected sea level rise conditions.

- Brings facility up to current seismic design standards
 - The project is given one point if there are existing seismic concerns and the project improves the seismic design of the facility.
- Addresses critical transportation infrastructure
 - The project is given one point if the project
 - includes improvements to part of a roadway defined as critical transportation infrastructure (a bridge or other infrastructure specified as critical in a hazard mitigation plan), and
 - addresses a flooding problem and/or vulnerability to sea level rise, or
 - brings the facility up to current seismic design standards.
- Protects freight network elements
 - Project is given one point if the project
 - addresses a roadway that is an important part of the freight network, meaning there is a high level of truck traffic (trucks representing more than eight percent of all traffic on the roadway or more than 400 trucks per day use the roadway), and
 - addresses a flooding problem and/or vulnerability to sea level rise, or
 - brings the facility up to current seismic design standards.
- Implements hazard mitigation or climate adaptation plans
 - Project is assigned one point if the project helps to implement part of a hazard mitigation or climate adaptation plan.

Data Sources

Project proponent

Functional design reports

Municipal planning documents

Boston Region MPO's All-Hazards Planning Application

3 CAPACITY MANAGEMENT/MOBILITY: USE EXISTING FACILITY CAPACITY MORE EFFICIENTLY AND INCREASE HEALTHY TRANSPORTATION OPTIONS

Objectives

- Improve reliability of transit
- Implement roadway management and operations strategies, constructing improvements to the bicycle and pedestrian network, and supporting community-based transportation
- Create connected network of bicycle and accessible sidewalk facilities (at both regional and neighborhood scale) by expanding existing facilities and closing gaps
- Increase automobile and bicycle parking capacity and usage at transit stations
- Increase the percentage of population and places of employment within a quarter mile of transit stations and stops
- Increase the percentage of population and employment with access to bicycle facilities
- Improve access to and accessibility of transit and active modes
- Enhance intermodal connections
- Support community-based and private-initiative services and programs to meet last mile, reverse commute and other non-traditional transit/transportation needs, including those of the elderly and persons with disabilities
- Eliminate bottlenecks on the freight network

Criteria and Subcriteria/Scoring (29 possible points)

3a. Transit Vehicle Delay: Reduces transit vehicle delay (up to 4 points)

- +3 5 hours or more of daily transit vehicle delay reduced
- +2 1–5 hours of daily transit vehicle delay reduced
- +1 Less than one hour of daily transit vehicle delay reduced
- +0 Does not reduce transit vehicle delay

If project scores points above, then it is eligible for one additional point:

- +1 Improves one or more key bus route(s)

Description

The goal for this scoring criterion is to determine if a project reduces transit vehicle delay. This measure focuses solely on transit vehicle delay, not transit passenger delay.

Methodology

1. Functional design reports are referenced for the data needed for each project. Data needs to be obtained for the through street on which the project is located, not the intersecting streets.
2. The number of daily transit runs for bus routes or rail lines that traverse through the project location are totaled. The number of transit runs are provided by the MBTA.
3. Current and future vehicle delay is calculated using the Congestion Mitigation and Air Quality analysis spreadsheets. The difference in transit vehicle delay is computed from future build versus no-build conditions using the values for either *AM peak hour delay* or *PM peak hour delay*, whichever is greater.
4. The difference in transit vehicle delay is multiplied by the total number of daily bus runs, which results in the total change in vehicle delay. The final metric is converted to hours of delay.
5. The number of daily hours of delay that the project is projected to eliminate is compared to the thresholds listed above. Projects are scored accordingly.
6. Key bus routes are the 15 busiest MBTA bus routes in the system by passenger volume (Routes 1, 15, 22, 23, 28, 32, 39, 57, 66, 71, 73, 77, 111, 116, and 117). Bonus points are awarded if congestion is reduced on a key bus route.

Examples:

- A reduction of five hours of daily transit vehicle delay results in one less minute of delay for 300 bus trips that operate in a corridor on a typical weekday.
- A reduction of one hour of daily transit vehicle delay results in one less minute of delay for 60 bus trips that operate in a corridor on a typical weekday.
- A reduction of one hour of daily transit vehicle delay results in 12 seconds less of delay for 300 bus trips that operate in a corridor on a typical weekday.

Data Sources

Functional design reports
MBTA bus schedules

3b. Pedestrian Network: Improves pedestrian network and ADA accessibility (up to 5 points)

- +2 Adds new sidewalk(s) (including shared-use paths)
- +2 Improves ADA accessibility⁴
- +1 Closes a gap in the pedestrian network
- +0 Does not improve pedestrian network

Description

This criterion assesses the existing pedestrian network in a project area and assigns points for improvements related to adding sidewalks (expanding the network) or making sidewalks more accessible.

Methodology

1. Projects are given two points if there is no existing sidewalk at locations within the project area and the project proposes to add new sidewalk on one or both sides of the street. Projects are also given two points for adding new shared-use paths. Projects are not given two points for paving an existing shared-use path.
2. Projects are given two points if ADA accessibility improvements are included. Improving ADA accessibility includes adding curb ramps and/or pedestrian-detectable tactile warning strips and/or audio-tactile pedestrian signals and/or widening sidewalks narrower than five feet.
3. Projects are given one point if the project closes a gap in the pedestrian network. A gap in the pedestrian network is defined as a lack of a physical connection between sidewalks; shared-use paths; sidewalks and shared-use paths; shared-use paths and a regional transit station; or a sidewalk and a regional transit station.

Data Sources

Functional design reports

Metropolitan Area Planning Council's Trailmap (<https://trailmap.mapc.org/>)

3c. Bicycle Network: Improves bicycle network (up to 4 points)

- +3 Adds new physically separated bicycle facility (including shared-use paths)
- +2 Adds new buffered bicycle facility
- +1 Adds new standard bicycle facility
- +1 Closes a gap in the bicycle network
- +0 Does not improve bicycle network

⁴Americans with Disabilities Act (ADA)

Description

This criterion assesses the existing bicycle network in the project area and assigns points for improvements related to adding new bicycle facilities (expanding the network) and increasing connections between existing facilities.

Methodology

1. Projects are given three points if a physically separated bicycle facility (including a shared-use path) is added as part of the project. A “physically separated bicycle facility” is defined as a vertical separation (a barrier) between motorists and bicyclists (such as planters, bollards, or curbs) **OR** bicycle facilities at curb/sidewalk level that separate bicyclists from motorists, accompanied by separation between bicyclists and pedestrians (sidewalk buffers such as benches, trees, and light poles combined with different surface textures and colors) **OR** separate paths for bicyclists and pedestrians where trails/paths are constructed.
2. Projects are given two points if a new buffered bicycle facility is added as part of the project. A “buffered bicycle facility” is defined as horizontal separation between motorists and bicyclists (such as a painted buffer zone between a bike lane and vehicle travel lanes) **OR** separation from motorists by creating bicycle facilities at curb/sidewalk level, without a sidewalk buffer to separate bicyclists and pedestrians **OR** shared-use path facilities without separate paths for bicyclists and pedestrians.
3. Projects are assigned one point if a new standard bicycle facility is added as part of the project. A “standard bicycle facility” is defined as a facility that offers no vertical or horizontal separation between motorists and bicyclists, but provides bicyclists with a designated travel zone such as a bike lane on a roadway.
4. Projects are awarded one additional point for closing a gap in the bicycle network. A “gap” is defined as a lack of a physical connection between bicycle facilities or between a bicycle facility and a regional transit station.

Data Sources

Functional design reports

Metropolitan Area Planning Council’s Trailmap (<https://trailmap.mapc.org/>)

3d. Intermodal Connections: Improves intermodal accommodations/connections to transit (up to 6 points)

- +6 Meets or addresses criteria to a high degree
- +4 Meets or addresses criteria to a medium degree
- +2 Meets or addresses criteria to a low degree
- +0 Does not meet or address criteria

Description

This criterion is distinct from the evaluation of benefits associated with expanding or improving an individual mode. Transit services depend upon the ability of users to connect conveniently with other transportation modes including driving, walking, and biking. Improvements that are considered in developing a score for this criterion include the following:

- Creates a new connection between transit and the non-motorized modes (bicycle/pedestrian)
- Improves a transit connection to non-motorized modes
- Achieves ADA compliance
- Expands park-and-ride capacity
- Improves bicycle parking options
- Applies technology to enhance intermodal connections (arrival countdown signs, etc.)

Methodology

The key to assigning a meaningful score is a thorough understanding of the proposed improvements. A project's functional design report describes the proposed improvements at an approximately 25 percent level of design. When reviewing these reports, however, it is important to be cognizant of any significant project features that might only be under consideration as options.

The functional design report may describe a group of improvements, and the total benefit that is expected from the combined improvements needs to be considered.

High degree of improvement:

- The combined improvements are significant and use of the transit stop is high.

Medium degree of improvement:

- The combined improvements are significant but use of the transit stop is moderate.
- The combined improvements are moderate but use of the transit stop is high.

Low degree of improvement:

- Both the combined improvements and level of use of the transit stop are moderate.

Projects that provide negligible improvements or serve an inconsequential number of users may be given no points at all.

High

- Adds or extends transit service
- Increases transit frequency
- Improves ADA accessibility to transit, removes barriers, or makes transit station accessible
- Adds new auto spaces at transit lots at capacity
- Improves connection (bike, pedestrian, transit) to rapid transit
- Creates a new connection (bike, pedestrian, or transit) to rapid transit or high-frequency bus service

Medium

- Improves connection (bike, pedestrian, or transit) to high-frequency bus
- Creates a new connection (bike, pedestrian, or transit) to high-frequency bus or infrequent bus service
- Adds new bike spaces at transit lots at capacity

Low

- Implements new technology
- Improves connection (bike, pedestrian, or transit) to infrequent bus service
- Adds new bike spaces at transit lots at capacity

Data Sources

Functional design reports

National Transit Database

3e. Truck Movement: Improves truck movement (up to 4 points)

- +3 Meets or addresses criteria to a high degree
- +2 Meets or addresses criteria to a medium degree
- +1 Meets or addresses criteria to a low degree
- +0 Does not meet or address criteria

If project scores points above, then it is eligible for one additional point:

- +1 Addresses MPO-identified bottleneck location

Description

Extensive parts of the road system date from a time when the average truck size was smaller, as were the maximum allowable size and weight. The early limited-access highways built during the 1950s were designed for a lighter and smaller fleet of “heavy vehicles.” Decades of operating experience has also informed current roadway designs, and more generous turning radii, ramp shoulders, subsurface depth, and overpass clearances are required for new construction to better accommodate the number and size of heavy vehicles using the road system today. The arterial roadway subsystem is also subject to the requirements of the modern truck fleet.

For these reasons, any reconstruction of an older roadway to modern standards can be awarded points for improving truck movements. If the existing conditions are very deficient, the benefit can be high. If the existing conditions are relatively adequate, the expected benefit is lower.

Methodology

The key to assigning a meaningful score is a thorough understanding of the proposed improvements. The functional design report describes the proposed improvements at an approximately 25 percent level of design. When reviewing these reports, however, it is important to be cognizant of any significant project features that might only be under consideration as options.

By reviewing the information in a project’s functional design report and specialized data developed by the MPO staff, it is possible to estimate the level of improvement for truck movement.

High degree of improvement:

- Existing conditions are very deficient
- Truck traffic is relatively high (more than eight percent of traffic or more than 400 vehicles per day)

Medium degree of improvement:

- Existing conditions are moderately deficient and truck volumes are high
- Existing conditions are very deficient and truck volumes are moderate

Low degree of improvement

- Existing conditions are moderately deficient and truck volumes are moderate

Projects that reconstruct a given roadway to only slightly higher standards than were originally present or serve an inconsequential number of trucks might be given no points at all.

MPO-identified bottleneck locations are identified independently of the TIP process, and the extra point is applied automatically.

Data Sources

Functional design report

Land use patterns from town records or Google Earth

3f. Reduces vehicle congestion (up to 6 points)

- +6 400 hours or more of daily vehicle delay reduced
- +4 100–400 hours of daily vehicle delay reduced
- +2 Less than 100 hours of daily vehicle delay reduced
- +0 Does not meet or address criteria

Description

This criterion assesses vehicle delay for intersections within the proposed project boundaries based on the estimated reduction in intersection delay that is projected to be achieved by the project.

MPO staff compiles data on vehicle delay from intersection analyses within the project's functional design report and then assigns points based on the scale above. Delay is calculated exclusively from intersection delay. Functional design reports analyze future conditions to see if intersection delay increases or decreases.

Examples:

- A reduction of 400 hours of daily vehicle delay results in one less minute of delay for each of 24,000 vehicles that travel the corridor on a typical weekday.
- A reduction of 100 hours of daily vehicle delay results in 15 seconds less delay for each of 24,000 vehicles that travel the corridor on a typical weekday.

Methodology

1. Functional design reports are analyzed for each project. Data needs to be obtained for the through street, not the intersecting streets.
2. Traffic counts are obtained from the functional design reports to show traffic volumes.

3. Current and future vehicle delay is provided by the functional design report. The difference in vehicle delay is computed by comparing future build versus no-build conditions.
4. The difference in vehicle delay is multiplied by the annual average daily traffic (AADT), which results in the total change in vehicle delay. The final metric is converted to hours of vehicle delay.
5. The number of daily hours of vehicle delay that the project will eliminate is compared to the thresholds listed above. Projects are scored accordingly.

Data Sources

Functional design reports

4 CLEAN AIR/CLEAN COMMUNITIES: CREATE AN ENVIRONMENTALLY FRIENDLY TRANSPORTATION SYSTEM

Objectives

- Reduce GHGs generated in the Boston Region by all transportation modes as outlined in the Global Warming Solutions Act
- Reduce other transportation-related pollutants
- Minimize negative environmental impacts of the transportation system, when possible
- Support land use policies consistent with smart and healthy growth

Criteria and Subcriteria/Scoring (16 possible points)

4a. Reduces CO₂⁵ (up to 5 points)

- +5 1,000 or more annual tons of CO₂ reduced
- +4 500–999 annual tons of CO₂ reduced
- +3 250–499 annual tons of CO₂ reduced
- +2 100–249 annual tons of CO₂ reduced
- +1 Less than 100 annual tons of CO₂ reduced
- 0 No impact
- 1 Less than 100 annual tons of CO₂ increased
- 2 100–249 annual tons of CO₂ increased
- 3 250–499 annual tons of CO₂ increased
- 4 500–999 annual tons of CO₂ increased
- 5 1,000 or more annual tons of CO₂ increased

Description

This criterion assigns points for reducing the emissions of CO₂.

Methodology

MPO staff compiles data on CO₂ impact for each project under consideration, and then assigns points based on the scale above.

Examples:

- 1,000 tons of CO₂ = burning 100,000 gallons of gasoline (2.1 million vehicle-miles traveled)

⁵Carbon dioxide (CO₂)

- 100 tons of CO₂ = burning 10,000 gallons of gasoline (214,000 vehicle-miles traveled)

Data Sources

Congestion Mitigation and Air Quality spreadsheets are used to calculate potential CO₂ reductions for the following types of projects:

- Alternative fuel vehicles
- Anti-idling projects
- Bicycle and pedestrian facility
- Bike sharing
- Bus replacement
- Complete Streets
- Induced travel
- Intersection and traffic flow improvements
- New bus or shuttle service
- Park-and-ride lot
- Speed reduction
- Transit signal priority

The inputs into the above projects are outlined in each of the Congestion Mitigation and Air Quality spreadsheets and also described in Appendix C of the TIP. In addition, air quality emission factors are input to these analyses. The factors are established using EPA's MOVES model.

4b. Reduces other transportation-related emissions (VOC, NO_x, CO) ⁶ (up to 5 points)

- +5 2,000 or more total annual kilograms of VOC, NO_x, CO reduced
- +4 1,000–1999 total annual kilograms of VOC, NO_x, CO reduced
- +3 500–999 total annual kilograms of VOC, NO_x, CO reduced
- +2 250–499 total annual kilograms of VOC, NO_x, CO reduced
- +1 Less than 250 total annual kilograms of VOC, NO_x, CO reduced
- 0 No impact
- 1 Less than 250 total annual kilograms of VOC, NO_x, CO increased
- 2 250–499 total annual kilograms of VOC, NO_x, CO increased
- 3 500–999 total annual kilograms of VOC, NO_x, CO increased
- 4 1,000–1999 total annual kilograms of VOC, NO_x, CO increased
- 5 2,000 or more total annual kilograms of VOC, NO_x, CO increased

⁶ Volatile organic compounds (VOC)
Nitrogen oxides (NO_x)
Carbon monoxide (CO)

Description

This criterion assigns points for reducing emissions of other transportation-related pollutants.

Methodology

The evaluation for the other transportation-related emissions uses the same information as described above on CO₂ reductions. The same air quality spreadsheets calculate all pollutants.

Data Sources

See above.

4c. Addresses environmental impacts (up to 4 points)

- +1 Addresses water quality through stormwater best management practices that improve existing conditions
- +1 Addresses cultural resources/open space
- +1 Addresses wetlands/resource areas
- +1 Addresses wildlife preservation/protected habitats
- +0 Does not meet or address criteria

Description

This criterion assigns points to a project that improves the existing conditions of any of the following resources:

- Water quality
- Cultural resources/open space
- Wetlands/resource areas
- Wildlife preservation/protected habitats

Methodology

Points are assigned to projects that go above and beyond permitting requirements and proactively enhance or improve these natural and cultural resources.

A point is assigned for addressing water quality if a project meets any of these criteria:

- Implements stormwater best management practices that are projected to result in improved water quality either by exceeding Massachusetts Department of Environmental Protection (MassDEP) stormwater standards or total maximum daily load (TMDL) requirements

- Improves drainage in a way that is projected to result in improved water quality either by exceeding MassDEP stormwater standards or TMDL requirements
- Reduces impervious cover in a way that is projected to result in improved water quality either by exceeding MassDEP stormwater standards or TMDL requirements

A point is assigned for addressing cultural resources/open space if a project meets any of these criteria:

- Specifically avoids impacts to cultural resources and/or open space by selecting a design alternative that avoids these resources
- Implements stormwater best management practices or drainage improvements that improve water quality in an area where poor water quality was negatively impacting a cultural resource area or open space (improvements must exceed MassDEP stormwater standards or TMDL requirements)

A point is assigned for addressing wetlands/resource areas if a project meets any of these criteria:

- Specifically avoids impacts to wetlands/resource areas by selecting a design alternative that avoids these resources
- Implements stormwater best management practices or drainage improvements that improve water quality in an area where poor water quality was negatively impacting a wetland resource area (improvements must exceed MassDEP stormwater standards or TMDL requirements)

A point is assigned for addressing wildlife preservation/protected habitats if a project meets any of these criteria:

- Specifically avoids impacts to wildlife preservation/protected habitats by selecting a design alternative that avoids these resources
- Implements stormwater best management practices or drainage improvements that improve water quality in an area where poor water quality was negatively impacting a wildlife preservation/protected habitat area (improvements must exceed MassDEP stormwater standards or TMDL requirements)

Data Sources

Functional design reports

Project proponent

4d. Is in an Executive Office of Energy and Environmental Affairs (EOEEA)-certified "Green Community" (up to 2 points)

+2 Project is located in a "Green Community"

+0 Project is not located in a "Green Community"

Description

This criterion assigns points if the proposed project is located in an EOEEA-certified "Green Community."

Methodology

Points are assigned by looking at the map of EOEEA-certified "Green Communities" and assessing the status of the municipality(ies) in which the project is located.

Data Sources

<http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/>

5 TRANSPORTATION EQUITY: PROVIDE COMPARABLE ACCESS AND SERVICE QUALITY AMONG COMMUNITIES, REGARDLESS OF INCOME LEVEL OR MINORITY POPULATION

Objectives

- Target investments to areas that benefit a high percentage of low income and minority populations
- Minimize any burdens associated with MPO-funded projects in low income and minority areas
- Break down barriers to participation in MPO decision making

Criteria and Subcriteria/Scoring (12 possible points)

5a. Serves Title VII/non-discrimination populations (up to 12 points)

- +2 Serves minority (high concentration) population (>2,000 people)
- +1 Serves minority (low concentration) population (\leq 2,000 people)

- +2 Serves low-income (high concentration) population (>2,000 households)
- +1 Serves low-income (low concentration) population (\leq 2,000 households)

- +2 Serves limited English proficiency (high concentration) population (>1,000 people)
- +1 Serves limited English proficiency (low concentration) population (\leq 1,000 people)

- +2 Serves elderly (high concentration) population (>2,000 people)
- +1 Serves elderly (low concentration) population (\leq 2,000 people)

- +2 Serves zero-vehicle households (high concentration) population (>1,000 households)
- +1 Serves zero-vehicle households (low concentration) population (\leq 1,000 households)

- +2 Serves persons with disabilities (high concentration) population (>1,000 people)
- +1 Serves persons with disabilities (low concentration) population (\leq 1,000 people)

- +0 Does not serve Title VI or non-discrimination populations
- 10 Creates a burden for Title VI/non-discrimination populations

Description

This criterion assesses whether a project serves—by virtue of it being located nearby—each of the six Title VI/non-discrimination populations. The criterion rewards those projects that serve the most people within these populations.

Methodology

1. In GIS, map the location of each proposed TIP project. Create a one-half mile buffer around the geographic extent of each project.
2. If necessary, update the respective universes and population/households for each transportation equity demographic group in the region. The six population groups evaluated are listed in the table below. Calculate the regional thresholds for each population group (see the table below for definitions of the thresholds).
3. Identify the portion of each census block that falls within each project's buffer.
4. Aggregate block populations/households at the block group or tract level, depending on the demographic characteristic (see table). Then, for each demographic group, join the resulting tables to tables from the American Community Survey (ACS) that have block group or tract population totals. In the ACS tables, divide the demographic population/household by the universe. Multiply this percent by the universe within each block that is in the buffer area. This is the population in the project area that belongs to each demographic group.
5. Divide the result from step four by the total households/population within the project area.
6. Compare the results from step 5 to the regional threshold from step 2; if they exceed the regional threshold, assign the project the number of points based on the concentration of the population within the half-mile buffer of the project.
7. To determine whether the project creates burdens, read each functional design report and project descriptions. If it appears to impose burdens to any of the populations, assign -10 points.

**Table 3
Data Sources**

	Minority	Low-income	Limited English Proficiency	Elderly	Disability	Zero Vehicle Households
Data Source	Decennial census	American Community Survey	American Community Survey	Decennial census	American Community Survey	American Community Survey
Current Data Year	2010 Decennial Census	2010-14 ACS	2010-14 ACS	2010 Decennial Census	2010-14 ACS	2010-14 ACS
Current Threshold	27.8%	32.2%	10.4%	6.7%	10.0%	15.9%
Threshold Definition	Regional average	Percent of households that make 60% of regional median household income	Regional average	Regional average	Regional average	Regional average
Next MPO Threshold Update	2020 Decennial Census	2020-24 ACS	2020-24 ACS	2020 Decennial Census	2020-24 ACS	2020-24 ACS
Universe	Population	Households	Population 5 years and older	Population	Non-institutionalized population	Households
Geography	Blocks	Tracts	Tracts	Blocks	Block groups	Tracts
Definition	Black/ African American, Asian, Hispanic/ Latino of any race; American Indian or Alaskan Native; and/or Native Hawaiian or Other Pacific Islander	Annual household income is less than or equal to 60% of the regional median household income (60% of \$76,040 is \$45,624)	Person aged 5+ who speaks English well, not well, or not at all	Person aged 75 or older	Non-institutionalized person who has a physical and/or mental disability	Household without a car

6 ECONOMIC VITALITY: ENSURE OUR TRANSPORTATION NETWORK PROVIDES A STRONG FOUNDATION FOR ECONOMIC VITALITY

Objectives

- Prioritize transportation investments that serve targeted development sites
- Prioritize transportation investments that support development consistent with the compact growth strategies of MetroFuture
- Minimize the burden of housing and transportation costs for residents in the region

Criteria and Subcriteria/Scoring (18 possible points)

6a. Serves targeted development site (up to 6 points)

- +2 Provides new transit access to or within the site
- +1 Improves existing transit access to or within the site
- +1 Provides for bicycle access to or within the site
- +1 Provides for pedestrian access to or within the site
- +1 Provides for improved road access to or within the site
- +0 Does not serve a targeted development site

Description

A project is eligible to score points in this category if it is near a district or area that has been targeted for future development or redevelopment. Targeted development sites include Regionally Significant Priority Development Areas, 40R, 43D, 43E, and GDI districts, MBTA key bus routes, and existing or proposed subway, trolley, commuter rail, or ferry stations. For most targeted development sites, TIP projects are considered to serve those sites if they are within a quarter mile. Projects are considered to serve subway, trolley, commuter rail, or ferry stations if they are within a half mile. If the project is eligible to score points in this criterion due to proximity to targeted development sites, the project details must then be reviewed to determine the appropriate score.

More information about targeted development sites and programs are as follows:

- 43D Priority Development Site: The Chapter 43D Program offers communities expedited permitting to promote targeted economic and housing development. Sites approved under the program are guaranteed local permitting decisions on priority development sites within 180 days. (Source: Executive Office of Housing and Economic Development)
- 43E Priority Development Site: The Chapter 43E Program promotes the expedited permitting of commercial, industrial, residential and mixed-use

projects on sites with dual designation as a Priority Development Site and Growth District. Sites approved under the program are guaranteed state permitting decisions on priority development sites within 180 days.

(Source: Executive Office of Housing and Economic Development)

- 40R Smart Growth Zoning Overlay District: The program encourages communities to zone for compact residential and mixed-use development in “smart growth” locations by offering financial incentives and control over design. (Source: Department of Housing and Community Development)
- Regionally Significant Priority Development Area: A site or district that has been identified by the local municipality as an eligible and desirable site for housing and/or economic development, and which has been identified as a regionally significant site by the Metropolitan Area Planning Council (MAPC) through a subregional screening process that considers development potential, accessibility, environmental impacts, equity, and other factors.
- Growth District Initiative: This initiative by the Executive Office of Housing and Economic Development focuses on expediting commercial and residential development at appropriate locations for significant new growth. (Source: Executive Office of Housing and Economic Development)
- Eligible MBTA Transit Station Area: Areas within a half mile of existing or proposed subway, trolley, commuter rail, or ferry service, with the exception of “undeveloped” station areas as defined by the Metropolitan Area Planning Council (www.mapc.org/TOD); or areas within a quarter mile of an MBTA Key Bus Route.

Methodology

First, MAPC staff contact the Executive Office of Housing and Economic Development to be sure they have the most up-to-date GIS data layers and request a line feature class of the prospective TIP projects to be evaluated from CTPS. Next, the area of concentrated development data layers and the project data layer are imported into one ArcGIS map document. MAPC then runs a script tool that determines the location of the projects in relation to the targeted development sites and areas of concentrated development. Below is the specific output that is generated for each project:

ACD_score: Areas of Concentrated Development score

RPDA: Project area is within a quarter mile of a Regional Priority Development Area (1 = yes)

FortyR: Project area is within a quarter mile of a 40R district

Forty3D: Project area is within a quarter mile of a 43D district

Forty3E: Project area is within a quarter mile of a 43E district

GDI: Project area is within a quarter mile of a Growth District Initiative area
Stations: Project intersects a half-mile buffer of a station area
Bus: Project intersects a quarter-mile buffer of a key bus route
Transit_Access: Project meets either station area or key bus route criteria
TargDev: Project meets any Targeted Development criteria
New: Project was not evaluated in previous year
DevSite_chg: Change in the Targeted Development score
AOCD_chg: Change in the Area of Concentrated Development score

If the project receives a “1” in TargDev, it is eligible for scoring points under this criteria. Receiving a “1” means that the TIP project is within the defined distances (either a quarter or half mile buffer) of a targeted development site. The specific points assigned to a project under this criterion, is dependent on the specific aspects of the project and what the project description includes.

Data Sources

Department of Housing and Community Development/Executive Office of Housing and Economic Development (43D and 43E sites, 40R districts, and Growth District Initiative areas)

MAPC (Regionally Significant Priority Development Areas and MBTA station areas)

6b. Provides for development consistent with the compact growth strategies of MetroFuture (up to 5 points)

- +2 Mostly serves an existing area of concentrated development
- +1 Partly serves an existing area of concentrated development
- +1 Supports local zoning or other regulations that are supportive of smart growth development
- +2 Complements other local financial or regulatory support that fosters economic revitalization in a manner consistent with smart growth development principles
- +0 Does not provide any of the above measures

Description

A spatial analysis from the MAPC Data Services department determines whether a TIP project is considered to “partly” or “mostly” serve an area of concentrated development, based on how much that project area overlaps a qualifying area.

Existing areas of concentrated development are defined based on the combined 2010 population and 2011 employment, per acre, measured at the scale of 250 meter grid cells. Thresholds for concentrated development are higher in urban community types:

- Inner Core: 16.6 persons per acre (50 percent of developed grid cells within this community type)
- Regional Urban Centers: 9.8 persons per acre (30 percent of developed grid cells)
- Maturing Suburbs: 6.8 persons per acre (20 percent of developed grid cells)
- Developing Suburbs: 3.5 persons per acre (20 percent of developed grid cells)

For purposes of this evaluation, “mostly serves” is defined as more than 50 percent of the quarter-mile buffer around the project area is in grid cells that meet the criteria for the community type and the project improves access to or within those areas of concentrated development.

For the purposes of evaluation, “local zoning or other regulations supportive of smart growth” can include the following:

- Form-based codes
- Official design guidelines for new development/redevelopment
- Official local plan for pedestrian/bike/handicap access, the recommendations of which are reflected in the proposal

For a project to receive credit because a municipality provides financial or regulatory support for targeted development, the proposed project will improve access to or within a commercial district served by a Main Street organization, local business association, business improvement district, or comparable, geographically targeted organization (i.e., not a city/town-wide chamber of commerce).

Methodology

1) For Area of Concentrated Development:

The same methodology described above for targeted development sites is applicable for calculating whether or not a project serves an area of concentrated development. The field “ACD_score” noted above will yield a score between zero and two, which indicates the following:

- 0: Project does not serve an area of concentrated development
- 1: Project partly serves an area of concentrated development
- 2: Project mostly serves an area of concentrated development

2) For Local Zoning and Financial or Regulatory Support:

MAPC researches any local zoning changes or policies enacted within the past year that promote economic development and support smart growth within the same geography as the project being evaluated. Qualifying zoning changes and policies include the creation of a downtown business district, other zoning that promotes mixed-use development, and the adoption of a Complete Streets policy.

A project may be eligible for points in this category if the municipality implements local financial or regulatory measures that support economic revitalization that are consistent with smart growth principles, including having a Main Streets organization, business improvement district, or a local business association within the same geography as the project in question. Citywide efforts are not included in this criterion.

Data Source

Area of Concentrated Development:
MAPC

Local Efforts & Financial or Regulatory Support:

- City/town website provides information on zoning, BIDs, Main Streets organizations, and other local business associations that may qualify for this criterion.
- Complete Streets information available here:
<https://masscompletestreets.com/Map/>

6c. Provides multimodal access to an activity center (up to 4 points)

- +1 Provides transit access (within a quarter mile) to an activity center
- +1 Provides pedestrian access to an activity center
- +1 Provides bicycle access to an activity center
- +1 Provides truck access to an activity center
- +0 Does not provide multimodal access

Description

Transportation system investments that improve access to locations with strong or expanding economic activity can support sustainable economic growth. For this criterion, points are awarded for improved transit, pedestrian, and bicycle access to activity centers, reflecting the importance of non-auto modes for sustainability. Points are not awarded for improved auto access, *per se*. However, all activity centers depend to varying degrees on practical truck access, and roadway improvements that meaningfully improve the ability of trucks to serve an activity center also receive a point.

Methodology

The key to assigning a meaningful score is a thorough understanding of the proposed improvements. The functional design report describes the proposed improvements at an approximately 25 percent level of design. When reviewing these reports, however, it is important to be cognizant of any significant project features that might only be under consideration as options.

New or improved transit access might include the following:

- A new transit station
- A new entrance to an existing station
- A new bus route or bus stop

New or improved pedestrian access might include the following:

- A new or reconstructed sidewalk
- A new or better-located crosswalk
- A new or improved multi-use path

New or improved bicycle access might include the following:

- A new bicycle lane
- A new or improved multi-use path

Improved truck access might include the following:

- Reconstruction of an access road to higher standards
- Striped parking spaces for driver rest or delivery staging

Projects that provide only negligible improvement are given no points at all.

Data Sources

Functional design reports

6d. Leverages other investments (non-TIP funding) (up to 3 points)

+3 Meets or addresses criteria to a high degree (more than 30 percent of the project cost)

+2 Meets or addresses criteria to a medium degree (10-30 percent of the project cost)

+1 Meets or addresses criteria to a low degree (less than 10 percent of the project cost)

+0 Does not meet or address criteria

Description

Projects are assigned points if funds are contributed by other public or private entities.

Methodology

Eligible investments consist of federal, state, local, or private sources, such as federal earmarks, state MassWorks grants, local funding (excluding design), and private contributions.

Data Sources

Project proponents