Scoring Criteria Guide

Surface Transportation Block Grant Program

2025 Call for Projects

For the St. Louis Region

Guidance Document for STP-S Project Evaluation

EAST-WEST GATEWAY
Council of Governments
Creating Solutions Across Jurisdictional Boundaries

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Overview

The Surface Transportation Block Grant Program (STP-S) was authorized by the current federal transportation law, the Infrastructure Investment and Jobs Act (IIJA), which was signed into law on November 15, 2021. IIJA continues the reforms initiated by the 2012 federal transportation funding act, the Moving Ahead for Progress in the 21st Century (MAP-21) Act. This includes transitioning to a performance-driven, outcome-based program, and establishing performance goals for federal-aid highway programs. Performance-based planning and programming ensures that resources are invested in projects that make progress toward achieving critical outcomes for the St. Louis region.

> **Performance-Based Planning is the use of agency goals and objectives and performance trends to drive development of strategies and priorities in the long-range transportation plan (LRTP) and other performance-based plans and processes. The resulting planning documents become the blueprint for how an agency intends to achieve its desired performance outcomes.**
>
> **Performance-Based Programming establishes clear linkages between investments made and their expected outputs and outcomes. In performance-based programming, the planning strategies included in LRTPs and other performance-based plans translate into project selection criteria. Agencies use the project selection criteria to allocate resources to specific projects and programs with the aim of achieving strategic goals, objectives, and performance targets.**

The East-West Gateway Council of Governments (EWG) Board of Directors adopted *Connected 2050*, the LRTP for the St. Louis region, in June 2023. Projects in the Transportation Improvement Program (TIP) must be consistent with the guiding principles of *Connected 2050*, which are described in **Table 1**. These principles guide transportation system evaluation and decision making, including the competitive selection of projects funded through the STP-S.

Table 1: *Connected 2050* Guiding Principles

Guiding Principles	Description
Well-maintained & Resilient	Ensure that the transportation system is clean, maintained in a state of good repair, and resilient to extreme weather and other disruptions.
Thriving Neighborhoods & Communities / Equitable	Foster safe, healthy, and attractive places where people love to live, work, and play.
Vibrant Downtown & Central Core	Enhance the attractiveness of downtown St. Louis and the central core to strengthen the region.
Choices & Access for All	Improve public transportation, bicycling, walking, and other alternatives to driving alone to help people of all ages, abilities, and population groups access opportunities.
Safe & Secure	Provide safe and secure travel for all people, including pedestrians, bicyclists, transit riders, and motorists.
Seamless, Efficient, & Reliable	Enhance connectivity, manage congestion, and improve travel time reliability to support efficient travel and freight movement.
Economic Vitality	Maximize the region's competitiveness in key industries including freight and support growth in quality jobs.
A Healthy & Sustainable Environment	Ensure clean air and waterways and reduce emissions to support the health and well-being of communities.
Note: the Collaborative, Innovative, and Performance Based guiding principles do not have specific points assigned, but are addressed through the overall planning process.	

EWG has identified seven types of potential projects. These project types are identified below, followed by example activities:

1. **Road Preservation** – road resurfacing, slab replacements, diamond grind, or reconstruction. Routine maintenance is not eligible.
2. **Bridge Preservation** – bridge rehabilitation, replacement, or construction of bridge at low-water crossing.
3. **Traffic Flow** – addition of travel lanes, two-way turn lanes, new roads, new or modified interchanges, intersection improvements (e.g., roundabouts, channelization, turn lanes), Intelligent Transportation Systems (ITS) improvements, or traffic signal optimization.
4. **Safety** – systemic safety improvements (e.g., guardrail or rumble strip installation), sight distance improvements (e.g., vertical or horizontal alignment), signage upgrades, two-way turn lanes, intersection/crossing safety improvements (e.g., turn lanes, roundabouts, channelization, crossing), through lane reduction, railway-highway grade separation, or shoulders. FHWA has compiled a list of proven safety countermeasures: https://safety.fhwa.dot.gov/provencountermeasures/. Project sponsors may also utilize the FHWA Crash Modification Factors Clearinghouse website to identify possible safety countermeasures for roadway projects: http://www.cmfclearinghouse.org/.
   Note: safety infrastructure improvements are permitted on local roads, however federal funds cannot be used for road preservation (i.e., curve modifications would be eligible on a local road, but resurfacing approaches would not be eligible).
5. **Active Transportation** – shared-use paths, on-street bicycle facilities, sidewalks, bicycle and pedestrian bridges and underpasses, or pedestrian/bicyclist safety countermeasures (i.e., FHWA proven safety pedestrian/bicycle countermeasures: https://safety.fhwa.dot.gov/provencountermeasures/ or STEP safety countermeasures: https://safety.fhwa.dot.gov/ped_bike/step/resources/).
6. **Transit:**
   a. **Transit Asset Management & System Upgrades** – revenue replacement vehicles, transit facility/station or bus stop upgrades, or maintenance facility for revenue vehicles. Routine facility maintenance is not eligible.
   b. **Expansion** – vehicle fleet expansion, new transit shelters/stations, or new transfer centers for geographic service expansion.
7. **Freight/Economic Development** – road or bridge projects that improve the flow of freight or promote economic development, railway-highway grade separation, traffic signal optimization, or truck parking facilities.

All application submittals are expected to have one primary project type. The component of the project that is most significant is considered the primary type (i.e., the primary purpose). Many of the projects could fall into multiple project types. For example, if a sponsor is planning on resurfacing a road and adding a bicycle lane, the project is considered multimodal. The project would be evaluated as a road preservation project type and can earn points for providing more transportation choices.

All projects will be scored and ranked based on the primary project type indicated by the project sponsor. Each project type has a maximum of eight criteria, and metrics are used to assign performance points. Certain criteria do not apply to all project types. The criteria are held constant across the project types, however, the measures and metrics vary depending on the project type. In addition, criterion can contain multiple measures and metrics.

Each project type will be evaluated based on how it meets the guiding principles established in *Connected 2050*. **Table 2** on the following page details the performance criteria values for each project type. Each project type can receive a maximum of 100 performance points. The evaluation scheme tables in each project type section that follows in this Guide give details on the criteria, measures, and metrics pertaining to each specific project type. All project types compete against each other for the available STP-S funding. Funding is not set aside in silos by project type.

Table 2: Project Type and Performance Criteria Values

	STP-S Project Type											
	Road Preservation		Bridge Preservation		Traffic Flow	Safety	Active Trans	Transit			Freight / Economic Development	
Guiding Principles	*Within Community*	*Outside Community*	*Within Community*	*Outside Community*				*Asset Management & System Upgrades*	*Expansion - Adding Capacity*	*Expansion - Geographic Expansion*	*Freight*	*Economic Development*
Well-maintained & Resilient	65	72	75	79	5	5	-	45	-	-	5	5
Choices & Access for All	12	5	9	5	10	10	30	24	64	69	10	10
Thriving Neighborhoods & Communities / Equitable	4	4	4	4	4	4	22	8	8	8	4	4
Vibrant Downtown & Central Core	-	-	-	-	-	-	10	1	1	1	-	-
Safe & Secure	8	8	2	2	8	73	35	7	7	7	8	8
Seamless, Efficient, & Reliable	1	1	-	-	50	-	-	5	5	5	12	12
Economic Vitality	9	9	10	10	13	8	-	-	5	-	60	60
A Healthy & Sustainable Environment	1	1	-	-	10	-	3	10	10	10	1	1
Total Performance Points	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Cost	20	20	20	20	20	20	20	20	20	20	20	20
Usage	5	5	5	5	5	5	5	5	5	5	5	5
Total Points Available	**125**	**125**	**125**	**125**	**125**	**125**	**125**	**125**	**125**	**125**	**125**	**125**

Project usage and cost points will be included in the final scoring of each project, which is worth an additional 25 points. Projects can receive up to five points for usage and up to 20 points for cost. Person Miles of Travel (PMT) will be calculated for each project type to determine the facility usage. **Table 3** shows the usage allocation breakdown for Illinois and Missouri.

Table 3: Usage Allocation Breakdown – Illinois and Missouri

Illinois			Missouri	
Usage Ranges – PMT	**Points**		**Usage Ranges – PMT**	**Points**
6,501+	5		15,001+	5
4,001-6,500	4		10,001-15,000	4
2,501-4,000	3		6,001-10,000	3
1,001-2,500	2		4,001-6,000	2
501-1,000	1		1,001-4,000	1
1-500	0		1-1,000	0

The purpose of the cost metric is to spread funding around to more projects. Cost points are assigned based on the amount of federal funds requested compared to the total funds available in Missouri, and the amount of construction/construction engineering (CE) funds requested compared to the adjusted construction/CE funds available in Illinois. The percentage values are grouped into ranges. Within each percentage range, the points assigned to each project are scaled based on the percentage requested. In Missouri, $45 million is available to program. In Illinois, the adjusted construction funds available to program is $12.5 million ($10 million federal). **Table 4** shows the cost allocation breakdown for Illinois and Missouri. **Figure 1 (Illinois)** and **Figure 2 (Missouri)** show a graphic representation of the cost points.

Table 4: Cost Allocation Breakdown – Illinois and Missouri

Illinois	
Adjusted Construction/CE Cost Range*	**Point Range**
$1,250,000 or less ≤ x ≤ 20%	20 ≥ x ≥ 4
x > 20%	0
**The adjusted construction/CE funds available = IDOT STP-S funding mark/0.8*	
Missouri	
Federal Project Cost Range	**Point Range**
$1,350,000 or less ≤ x < 5%	20 ≥ x > 10
5% ≤ x < 10%	10 ≥ x > 5
10% ≤ x ≤ 15%	5 ≥ x ≥ 2.8
x > 15%	0

Figure 1:

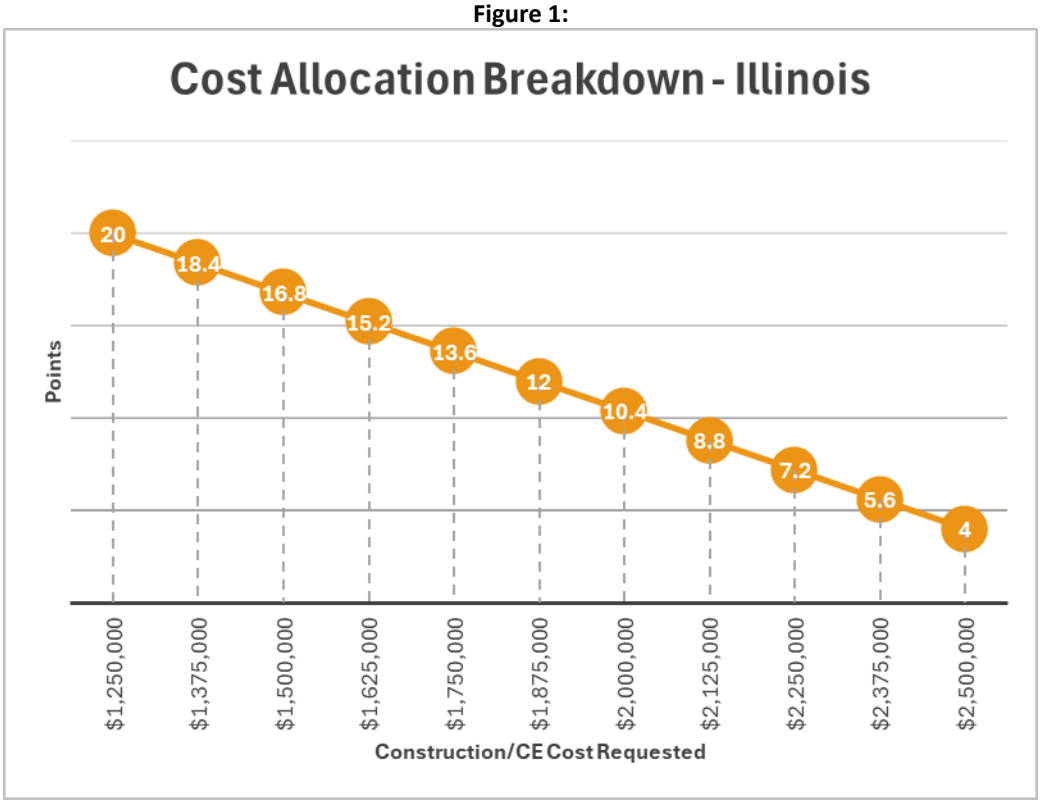
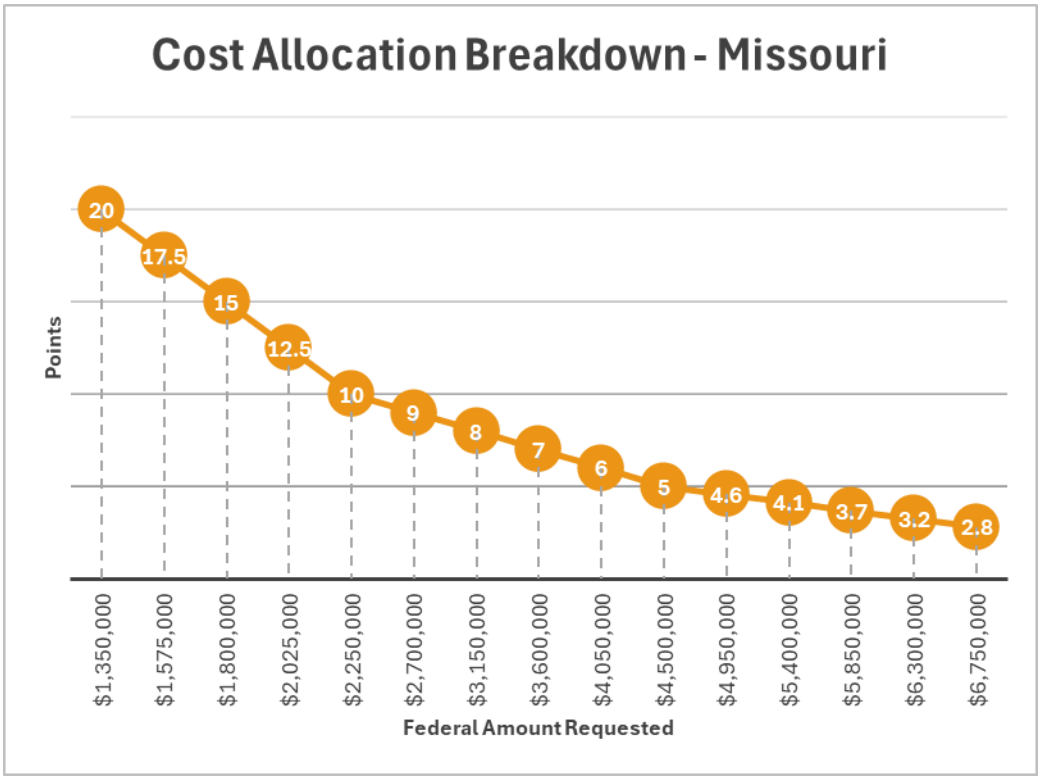


Figure 2:


Cost Allocation Breakdown - Missouri
Points
20
17.5
15
12.5
10
9
8
7
6
5
4.6
4.1
3.7
3.2
2.8
$1,350,000
$1,575,000
$1,800,000
$2,025,000
$2,250,000
$2,700,000
$3,150,000
$3,600,000
$4,050,000
$4,500,000
$4,950,000
$5,400,000
$5,850,000
$6,300,000
$6,750,000
Federal Amount Requested

Road Preservation Project Type

Table 5 outlines the scheme for evaluating road preservation projects. Road preservation projects are assigned to a geographic scale, which is based on the project's population and employment index (PEI). A road preservation project with a PEI of 1.45 or higher (weighted average) is categorized as a 'within community' type project. Road preservation projects with a PEI less than 1.45 are considered an 'outside community' type project. A map of the PEI is included in **Appendix A**. Projects that are 'within community' emphasize safe, multimodal connections and access to community resources. Projects that are 'outside community' emphasize mobility to ensure the region is well connected. The geographic scale enables project evaluation to vary across each scale, with multimodal improvements and regional transportation significance (i.e., functional classification) weighted by level of significance for each scale. A project sponsor can request the project's PEI designation prior to final application submittal and can also request to change the designation. Please see the STP-S Project Development Workbook for more information. Further information on the metrics used to evaluate road projects follows.

Table 5: Road Preservation Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric		Points
Well-maintained & Resilient	Road condition	PASER rating		60
	Significance	Functional classification	Within community:	5
			Outside community:	12
Choices & Access for All	Multimodal accommodation	Elements of other modes being implemented as part of the project	Within community:	12
			Outside community:	5
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas		4
Vibrant Downtown & Central Core	n/a	n/a		n/a
Safe & Secure	Safety countermeasures	High-injury Network		8
Seamless, Efficient, & Reliable	Improved facility efficiency	Management and operations elements		1
Economic Vitality	Access to jobs	Job density		4
	Regional freight significance	1. Commercial vehicle countermeasure		3
		2. Freight proximity		2
A Healthy & Sustainable Environment	Impact to the environment	Environmental infrastructure elements		1

WELL-MAINTAINED & RESILIENT

Projects will be assessed in terms of how they contribute to the preservation of existing infrastructure assets. The first metric evaluates the condition of the pavement. The second metric evaluates the project's significance by looking at the functional classification of the roadway.

Road Condition

Pavement condition will be assessed using the Pavement Surface Evaluation and Rating (PASER) Guide, which is a visual rating system. PASER ratings range from 1-10, with 1 being 'very poor' condition and 10 being 'excellent' condition. Facilities with a PASER rating of 1.5 or less are assigned a lower priority to encourage preventive maintenance prior to this level of deterioration. Examples of the types of improvements typically used on roadways with different pavement ratings, as well as their associated scores, are listed below. This is meant to be illustrative, and not an exhaustive list of improvements eligible for funding.

60 points	PASER 1.6-4.5 – Includes improvements such as mill and overlay, extensive slab replacement, joint rehabilitation, or full-depth pavement repairs.
57 points	PASER 4.6-5.5 – Includes project elements that are primarily focused on preservative treatments and non-structural surface repairs.
53 points	PASER 5.6-7.5 – Includes project elements that are primarily focused on preservative treatments, non-structural surface repairs, routine sealing, and minor patching of pavement to prevent further deterioration.
40 points	PASER 1.5 or less – Includes full reconstruction of the facility, regardless of pavement condition. Reconstruction may be due to deterioration or deficient design.
30 points	PASER 7.6-8.5 – Includes standard roadway maintenance.
Zero points	PASER 8.6-10 – Includes pavement in new or like-new condition with no maintenance required.

Regional Transportation Significance
This measure evaluates how critical the route's location is to the regional network. Scoring is based on the functional classification of the road. A project that is categorized as 'within community' can receive up to five points under this measure. **Note**: Local roads and rural minor collectors are not eligible road projects.

5 points	Principal arterial.
4 points	Minor arterial.
3 points	Major collector.
1 point	Urban minor collector.
Zero points	Project is on the state system.

'Outside community' projects will be evaluated for regional transportation significance as follows:

12 points	Principal arterial.
10 points	Minor arterial.
7 points	Major collector.
2 points	Urban minor collector.
Zero points	Project is on the state system.

CHOICES & ACCESS FOR ALL

This measure relates to *Connected 2050*'s goal of fostering a multimodal transportation system. Incorporating bicycle and pedestrian facilities in road projects is an efficient and cost-effective way for communities to create multimodal networks. In addition, road projects can provide multiple benefits to public transit, including better mobility for transit vehicles and better access for users of all ages and abilities.

EWG encourages context-sensitive facilities and taking a flexible approach to achieving multimodal transportation networks. Projects that are categorized as 'within community' can score up to 12 points for the following features being included in and newly constructed by the project. Projects that score over the 12 points will be capped at 12 points. 'Outside community' road projects are capped at five points. **Note**: A project does not need to satisfy all improvements listed below to earn points.

Facility Type	
Up to 8 points	New or upgraded 10’ to 14’ shared-use path. 2,000 sq. yards or higher to receive 8 points. A sliding scale from 4 to 8 points will be used to assign points between 1,000 and 2,000 sq. yards. Between 300 and 1,000 sq. yards yields 2 points.*
Up to 6 points	New or upgraded 8 ‘ to < 10’ shared-use path. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 3 to 6 points will be used to assign points between 750 and 1,500 sq. yards. Between 150 and 750 sq. yards yields 1 point.*
Up to 6 points	New or upgraded sidewalks 5’ or greater on both sides of road. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 2 to 6 points will be used to assign points between 500 and 1,500 sq. yards. Between 250 and 500 sq. yards yields 1 point.*
Up to 4 points	New or upgraded sidewalks 5’ or greater on one side of road. 1,000 sq. yards or higher to receive 4 points. A sliding scale from 1 to 4 points will be used to assign points between 250 and 1,000 sq. yards. Below 250 sq. yards yields zero points.*
Up to 3 points	New or reconstructed curb ramps. One curb ramp equals 0.09375 points. 32 curb ramps or more will receive 3 points. **Note**: To receive points, the curb ramps must connect to a non-deficient pedestrian facility (i.e., fair/good condition).*
6 points	Physically protected bike lanes.
4 points	Buffered bike lanes on roads at 40 mph or less; OR 3 **points** for buffered bike lanes on roads at 45 mph.
2 points	Conventional bike lanes on roads at 30 mph or less; OR **1 point** for conventional bike lanes on roads at 35 mph.
4 points	4’ to 8’ paved shoulders on an “outside community” facility.
Land Use	
1 point	Physical improvements to transit system (e.g., benches, 5’ x 8’ ADA landing pads, shelters). Connecting sidewalks must be fair/good condition to receive points.
1 point	New or upgraded bicycle and/or pedestrian connection within ¼ mile of community resource (e.g., bus stop/station, park/trail, full-service grocery store, civic building, library, health center, recreation center).
1 point	New or upgraded bicycle and/or pedestrian facility is within ½ mile of school (grades K-12 and college/university).
Safety	
2 points	The project is included on either the Regional HIN 2 – VRU pedestrian or bicyclist corridors or intersections AND project addresses speed or volume control issues or crossing treatments.
3 points	Speed or volume control solutions to reduce modal conflicts (e.g., road diets, bulb-outs, speed humps, raised refuge islands/medians, reduced curb radii) on high volume/speed roadways; OR **2 points** for solutions on low volume/speed roadways.**
3 points	Crossing treatments at intersections or uncontrolled locations (e.g., leading pedestrian intervals (LPIs), crosswalk visibility enhancements, raised crosswalks and pedestrian refuge islands, Rectangular Rapid Flashing Beacon (RRFB), Pedestrian Hybrid Beacon (PHB), bicycle intersection crossing markings) on high volume/speed roadways; OR **2 points** for treatments on low volume/speed roadways.**
2 points	Safety improvements to at-grade rail crossing.
1 point	Pedestrian-scale lighting along bicycle/pedestrian facility.
1 point	New buffer between roadway and sidewalk on high speed/volume road (4’ or greater).

* Multimodal improvements such as sidewalks, shared-use paths, and curb ramps are scored based on the estimated quantities. It is recognized that these may vary during plan development, as such deviations from the estimated quantities of 20 percent or less would not necessitate a formal scope change request.

**Points assigned based on the application of countermeasure(s) and the speed, volume, and configuration of the roadway. For example: for a four-lane roadway with an AADT exceeding 9,000 at 40 mph, a marked midblock high visibility crosswalk alone is insufficient, and the treatment should occur in conjunction with other substantial safety and crossing improvements.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

This measure is included to account for projects that are located in Equity Emphasis Areas[1]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.
2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area,
- falls in, or partially in, an Equity Emphasis Area, AND
- addresses safety OR pedestrian, bicycle, or transit supportive infrastructure.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**4 points**	**2 points**
High TEP Concentration	**3 points**	**1 point**
Medium TEP Concentration	**2 points**	**1 point**
Low TEP Concentration	**1 point**	**0 points**

SAFE & SECURE

All projects should strive to correct existing safety issues while maximizing safe design for all users. EWG recently completed a comprehensive safety action plan, *Gateway to Safer Roadways* (GTSR)[2], to make progress towards lowering the number of fatal and serious injury crashes. The GTSR plan provides a series of high-injury networks (HINs)[3] that identify roadways with the highest frequencies of fatal and serious injury crashes. For assistance utilizing the HINs, please contact Anna Musial at anna.musial@ewgateway.org.

The GTSR plan lists a series of safety countermeasures on pages 85-105. For more details on the FHWA's proven safety countermeasures, view: https://highways.dot.gov/safety/proven-safety-countermeasures. Project sponsors may also utilize the FHWA Crash Modification Factors Clearinghouse website to identify possible safety countermeasures for roadway projects: http://www.cmfclearinghouse.org/. Examples of other commonly used countermeasures include placing new centerline and/or edge line markings, adding shoulders to roadways, installing speed humps, installing transverse rumble strips as a traffic calming device, and area-wide or corridor-specific traffic calming measures.

[1] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8
[2] GTSR: https://www.ewgateway.org/gtsr/
[3] HIN: https://ewgateway.maps.arcgis.com/apps/mapviewer/index.html?webmap=fb33e16644d74ba0bec2b8734b9a2bf7

To receive points, the project must include a proven safety countermeasure that addresses roadway crashes present within the project limits and be included on the Regional HIN 1 – all modes, corridors OR a County HIN, corridors. Project sponsors must include up to five crash reports or a summary from the police department or respective state department of transportation that clearly shows the type of crashes that are occurring within the project limits (between 2018-2022 only). This is to help determine if the proposed countermeasures address the safety issues present in the project area. Points are assigned as follows.

8 points	Limits included on the Regional HIN 1 – all modes, corridors AND project addresses the safety issue with an appropriate countermeasure.
6 points	Limits included on a County HIN – corridors AND project addresses the safety issue with an appropriate countermeasure.
4 points	Limits not included on an HIN, but preventive countermeasure will be included in project.

Note: if a project falls on both the Regional HIN and a County HIN, the project will receive eight points.

SEAMLESS, EFFICIENT, & RELIABLE

Management and operations (M&O) strategies are defined as integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system. Examples of M&O strategies include: traffic operational improvements, ITS technologies, or other integrated technology component to increase facility efficiency and reliability. This metric evaluates the integration of M&O strategies into roadway projects.

1 point	Project includes M&O strategies.
Zero points	Project does not include M&O strategies.

ECONOMIC VITALITY

This measure relates to *Connected 2050*'s goal of maximizing the region's economic competitiveness in key industries including freight and support quality job growth. The three metrics below will be used to evaluate how the proposed project can ensure access to markets and resources for both people and goods.

Job Density

Access to jobs is an important function of the transportation system. The *OnTheMap* tool is derived from census data and will be used to assess where workers are employed in the region. Employment density will be used as a metric in determining how important improvements to transportation facilities are in the surrounding area.

4 points	High jobs/sq. mile
3 points	Medium-high jobs/sq. mile
2 points	Medium jobs/sq. mile
1 point	Medium-low jobs/sq. mile
Zero points	Low jobs/sq. mile

Commercial Vehicle Countermeasure

Projects that include a commercial vehicle countermeasure that improves freight efficiency, security, or safety will earn points under this metric. Common techniques related to commercial vehicle accommodations include improving shoulder width and pavement structure, intersection design, parking, acceleration/deceleration lanes, truck and car separation, accommodating tonnage requirements, and increasing overpass clearances.

3 points	Project improves freight movement with appropriate commercial vehicle countermeasures.
Zero points	Project does not include commercial vehicle countermeasures.

Freight Proximity

In 2013, EWG completed the St. Louis Regional Freight Study. The study identified key industrial areas that influence the freight industry in the St. Louis region. Industrial site areas are centers of employment and are connected by a series of transportation networks. Projects that improve access to an industrial site area or a freight facility will earn points under this metric. To receive points under this metric, the project must score points under the second metric, commercial vehicle countermeasure.

2 points	Project meets one of the following criteria: • Improves freight access into, out of, or within an industrial site area. • Improves freight access to an intermodal freight facility, serves a major freight generator, logistic center, manufacturing and warehouse industrial land, or navigable waterway or port facility, or other freight intensive industry.

A HEALTHY & SUSTAINABLE ENVIRONMENT

Transportation projects should limit the impacts on the natural environment. Green infrastructure is a design approach to managing stormwater, the urban heat island effect, public health, and air quality. Examples of green infrastructure include bioswales, rain gardens, pervious pavement, green bulb-outs, urban tree canopies, native landscapes, and energy-efficient street lighting. This metric evaluates the integration of green infrastructure into roadway projects. For more information on green infrastructure, view: https://www.epa.gov/green-infrastructure.

1 point	Project includes green infrastructure elements.
Zero points	Project does not include green infrastructure.

Bridge Preservation Project Type

Table 6 outlines the scheme for evaluating bridge preservation projects. Bridge preservation projects are assigned to a geographic scale, which is based on the project's population and employment index (PEI). A bridge preservation project with a PEI of 1.45 or higher (weighted average) is categorized as a 'within community' type project. Bridge preservation projects with a PEI less than 1.45 are considered an 'outside community' type project. A map of the PEI is included in **Appendix A**. Projects that are 'within community' emphasize safe, multimodal connections and access to community resources. Projects that are 'outside community' emphasize mobility to ensure the region is well connected. The geographic scale enables project evaluation to vary across each scale, with multimodal improvements and regional transportation significance (i.e., functional classification) weighted by level of significance for each scale. A project sponsor can request the project's PEI designation prior to final application submittal and can also request to change the designation. Please see the STP-S Project Development Workbook for more information. Further information on the metrics used to evaluate bridge projects follows.

Table 6: Bridge Preservation Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric		Points
Well-maintained & Resilient	Bridge condition	General condition ratings		70
	Significance	Functional classification	Within community:	5
			Outside community:	9
Choices & Access for All	Multimodal accommodation	Elements of other modes being implemented as part of the project	Within community:	9
			Outside community:	5
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas		4
Vibrant Downtown & Central Core	n/a	n/a		n/a
Safe & Secure	Disrupted services	Length of detour		2
Seamless, Efficient, & Reliable	n/a	n/a		n/a
Economic Vitality	Access to jobs	Job density		4
	Regional freight significance	Bridge weight limits		6
A Healthy & Sustainable Environment	n/a	n/a		n/a

WELL-MAINTAINED & RESILIENT

Projects will be assessed in terms of how they contribute to the preservation of existing infrastructure assets. The first metric evaluates the condition of the bridge. The second metric evaluates the project's significance by looking at the functional classification of the roadway.

Bridge Condition

The National Bridge Inventory uses general condition ratings (GCR) to describe the existing bridge or culvert as compared to the as-built condition. The information is used to determine GCRs on a numerical scale that ranges from 0 (failed condition) to 9 (excellent condition). FHWA, through the National Performance Management Measures final rule, identified three bridge condition thresholds: good (7-9), fair (5-6), and poor (0-4). Condition-based performance measures for bridges is based on the National Bridge Inventory condition ratings for four key items:

- Deck
- Superstructure
- Substructure
- Culvert

Projects will be assessed using two different categories: replacement or rehabilitation. To be eligible for replacement or rehabilitation, the project must address the bridge deficiencies. To be eligible for replacement, the lowest rating for one item must be less than or equal to four.

Bridge Replacement:

70 points	Rating of ≤ 3 for at least one of the four key items; OR rating of 4 for at least three of the four key items; OR replacement of low water crossing with a bridge.
68 points	Rating of 4 for at least two of the four key items.
65 points	Rating of 4 for at least one of the four key items.

Bridge Rehabilitation:

70 points	Rating of 5 or 6 for at least three of the four key items.
68 points	Rating of 5 or 6 for at least two of the four key items.
65 points	Rating of 5 or 6 for at least one of the four key items.

Regional Transportation Significance
This measure evaluates how critical the route's location is to the regional network. Scoring is based on the functional classification of the road. A project that is categorized as 'within community' can receive up to five points under this measure.

5 points	Principal or minor arterial.
3 points	Major collector.
2 points	Minor collector.
1 point	Local.
Zero points	Project is on the state system.

'Outside community' projects will be evaluated for regional transportation significance as follows:

9 points	Principal or minor arterial.
7 points	Major collector.
5 points	Minor collector.
4 points	Local.
Zero points	Project is on the state system.

CHOICES & ACCESS FOR ALL

This measure relates to *Connected 2050*'s goal of fostering a multimodal transportation system. The USDOT *Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations* (2010) identifies sections of the United States Code (U.S.C.) that pertain to walking and bicycling: "In any case where a highway bridge deck being replaced or rehabilitated with federal financial participation is located on a highway on which bicycles are permitted to operate at each end of such bridge, and the Secretary determines that the safe accommodation of bicycles can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations" (23 U.S.C. 217(e)). Although this

requirement only mentions bicycles, the USDOT encourages states and local governments to apply this same policy to pedestrian facilities as well.

EWG encourages context-sensitive facilities and taking a flexible approach to achieving multimodal transportation networks. Projects categorized as 'within community' can score up to nine points for the following features being included in and newly constructed by the project. Projects that score over the nine points will be capped at nine points. 'Outside community' road projects are capped at five points. **Note**: A project does not need to satisfy all improvements listed below to earn points.

Facility Type	
8 points	10' to 14' shared-use path; OR **6 points** for 8' to < 10' shared-use path.
6 points	Corrects existing sidewalk deficiencies (deficiencies = poor sidewalk conditions or existing width < 5') or new 5' sidewalks on both sides of road; OR **4 points** if project corrects existing sidewalk deficiencies or new 5' sidewalks on one side of road.
1 point	New or reconstructed curb ramps. **Note**: To receive points, the curb ramps must connect to a non-deficient pedestrian facility.
6 points	Physically protected bike lanes
4 points	Buffered bike lanes on roads at 40 mph or less; OR **3 points** for buffered bike lanes on roads at 45 mph.
2 points	Conventional bike lanes on roads at 30 mph or less; OR **1 point** for conventional bike lanes on roads at 35 mph.
2 points	5' to 8' paved shoulders on a bridge with 2,000 AADT or more.
2 points	4' paved shoulders on a 'within community' bridge with 401 to 1,999 AADT.
Land Use	
1 point	New or upgraded bicycle and/or pedestrian connection within ½ mile of community resource (e.g., bus stop/station, park/trail, full service grocery store, civic building, library, health center, recreation center).*
1 point	New or upgraded bicycle and/or pedestrian connection within ½ mile of school (grades K-12 and college/university).*
Safety	
3 points	Bicycle/pedestrian railing and/or protective screening between roadway and facility.
1 point	Pedestrian-scale lighting along bicycle/pedestrian facility.

*To receive points, the new or upgraded bicycle and/or pedestrian facility must be low-stress and/or have no deficiencies.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

This measure is included to account for projects that are located in Equity Emphasis Areas[4]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.
2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have

[4] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area,
- falls in, or partially in, an Equity Emphasis Area, AND
- addresses safety OR pedestrian, bicycle, or transit supportive infrastructure.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**4 points**	**2 points**
High TEP Concentration	**3 points**	**1 point**
Medium TEP Concentration	**2 points**	**1 point**
Low TEP Concentration	**1 point**	**0 points**

SAFE & SECURE

Timely rehabilitation or replacement of a bridge ensures that there will not be an unexpected closure due to deteriorated structure condition. Besides being an inconvenience to the travelling public, bridge closures have impacts to freight, school buses, and emergency services. The length of the detour due to a bridge closure would become detrimental for those in need of emergency services. **Appendix B** provides instructions how to calculate the detour length.

2 points	Detour greater than 5 miles; OR no emergency access in case of closure.
1 point	Detour between one to 5 miles.
Zero points	Detour less than one mile.

ECONOMIC VITALITY

This measure relates to *Connected 2050*'s goal of maximizing the region's economic competiveness in key industries including freight and support quality job growth. The two metrics below will be used to evaluate how the proposed project can ensure access to markets and resources for both people and goods.

Job Density

Access to jobs is an important function of the transportation system. The *OnTheMap* tool is derived from census data and will be used to assess where workers are employed in the region. Employment density will be used as a metric in determining how important improvements to transportation facilities are in the surrounding area.

4 points	High jobs/sq. mile
3 points	Medium-high jobs/sq. mile
2 points	Medium jobs/sq. mile
1 point	Medium-low jobs/sq. mile
Zero points	Low jobs/sq. mile

Bridge Weight Limits

In 1975, Congress enacted the Bridge Formula to limit the weight-to-length ratio of a vehicle crossing a bridge. Posted weight limits impact the movement of freight as trucks may have to detour to avoid a weight restricted bridge. Projects that rehabilitate or replace a load-limited bridge to improve freight movement will earn points under this metric. Projects will be evaluated based on the geographic scale (i.e., within community or outside community).

'Within community' projects will be evaluated as follows:

6 points	The bridge is closed to traffic; OR the bridge has a posted weight limit of at least 20 tons AND on arterial or collector road.
4 points	The bridge has a posted weight limit between 20.1 and 30 tons AND on arterial or collector road.
3 points	The bridge has a posted weight limit between 30.1 and 40 tons AND on arterial or collector road.
2 points	The bridge has a posted weight limit above 40 tons AND on arterial or collector road; OR the bridge is on a local road AND has a posted weight limit.
Zero points	The bridge does not have a posted weight limit.

'Outside community' projects will be evaluated as follows:

6 points	Existing low-water crossing; OR the bridge is closed to traffic; OR the bridge has a posted weight limit of at least 20 tons.
4 points	The bridge has a posted weight limit between 20.1 and 30 tons.
3 points	The bridge has a posted weight limit between 30.1 and 40 tons.
2 points	The bridge has a posted weight limit above 40 tons.
Zero points	The bridge does not have a posted weight limit.

Traffic Flow Project Type

Table 7 outlines the scheme for evaluating traffic flow projects. Further information on the metrics used to evaluate traffic flow projects follows.

Table 7: Traffic Flow Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric		Points
Well-maintained & Resilient	Road or bridge condition	PASER rating or bridge condition ratings		5
	ITS condition	Preserving ITS components		
Choices & Access for All	Multimodal accommodation	Elements of other modes being implemented as part of the project		10
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas		4
Vibrant Downtown & Central Core	n/a	n/a		n/a
Safe & Secure	Safety countermeasures	High-injury Network		8
Seamless, Efficient, & Reliable	Improved mobility and congestion	Road segment:	Reduction in total travel time	50
		Intersection:	Reduction in total vehicle delay	50
Economic Vitality	Access to jobs	Job density		5
	Regional freight significance	1. Commercial vehicle countermeasure		3
		2. Freight proximity		2
		3. Regional transportation significance and connectivity		3
A Healthy & Sustainable Environment	Impact to the environment	1. Environmental infrastructure elements		1
		2. Reduction in VOC & NO_x		9

WELL-MAINTAINED & RESILIENT

Projects will be assessed in terms of how they contribute to the preservation of existing infrastructure assets. The first metric evaluates the condition of the pavement or bridge. Sponsors can score points under preservation if they are improving the condition of the facility. Roadways or bridges with low pavement/sufficiency ratings will receive a higher preservation score. The second metric relates to the replacement of ITS components. If the sponsor receives points in the first metric and the second metric, the highest score will be used.

Road or Bridge Condition

Road - - Pavement condition will be assessed using the Pavement Surface Evaluation and Rating (PASER) Guide, which is a visual rating system. PASER ratings range from 1-10, with 1 being 'very poor' condition and 10 being 'excellent' condition.

5 points	PASER 2.5 or less
4 points	PASER 2.6-3.5
3 points	PASER 3.6-5.5
2 points	PASER 5.6-7.5
1 point	PASER 7.6-8.5
Zero points	PASER 8.6-10

Bridge - - The National Bridge Inventory uses general condition ratings (GCR) to describe the existing bridge or culvert as compared to the as-built condition. The information is used to determine GCRs on a numerical scale that

ranges from 0 (failed condition) to 9 (excellent condition). FHWA, through the National Performance Management Measures final rule, identified three bridge condition thresholds: good (7-9), fair (5-6), and poor (0-4). Condition-based performance measures for bridges is based on the National Bridge Inventory condition ratings for four key items: deck, superstructure, substructure, and culvert.

5 points	Rating of ≤ 3 for at least one of the four key items; OR rating of 4 for at least three of the four key items.
4 points	Rating of 4 for at least two of the four key items.
3 points	Rating of 4 for at least one of the four key items.
2 points	Rating of 5 or 6 for at least one of the four key items.

ITS Components

Project can earn points if existing ITS components will be preserved, repaired, improved, or upgraded (e.g., signals, traffic sensors). To receive points, the ITS components must be within the project limits.

5 points	Existing ITS components are inoperable or require repairs, improvements, or upgrades.

CHOICES & ACCESS FOR ALL

This measure relates to *Connected 2050*'s goal of fostering a multimodal transportation system. Incorporating bicycle and pedestrian facilities in road projects is an efficient and cost-effective way for communities to create multimodal networks. In addition, road projects can provide multiple benefits to public transit, including better mobility for transit vehicles and better access for users of all ages and abilities.

EWG encourages context-sensitive facilities and taking a flexible approach to achieving multimodal transportation networks. Projects can score up to 10 points for the following features being included in and newly constructed by the project. Projects that score over the 10 points will be capped at 10 points. **Note**: A project does not need to satisfy all improvements listed below to earn points.

Facility Type	
Up to 8 points	New or upgraded 10' to 14' shared-use path. 2,000 sq. yards or higher to receive 8 points. A sliding scale from 4 to 8 points will be used to assign points between 1,000 and 2,000 sq. yards. Between 300 and 1,000 sq. yards yields 2 points.*
Up to 6 points	New or upgraded 8 ' to < 10' shared-use path. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 3 to 6 points will be used to assign points between 750 and 1,500 sq. yards. Between 150 and 750 sq. yards yields 1 point.*
Up to 6 points	New or upgraded sidewalks 5' or greater on both sides of road. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 2 to 6 points will be used to assign points between 500 and 1,500 sq. yards. Between 250 and 500 sq. yards yields 1 point.*
Up to 4 points	New or upgraded sidewalks 5' or greater on one side of road. 1,000 sq. yards or higher to receive 4 points. A sliding scale from 1 to 4 points will be used to assign points between 250 and 1,000 sq. yards. Below 250 sq. yards yields zero points.*
Up to 3 points	New or reconstructed curb ramps. One curb ramp equals 0.09375 points. 32 curb ramps or more will receive 3 points. **Note**: To receive points, the curb ramps must connect to a non-deficient pedestrian facility (i.e., fair/good condition).*
6 points	Physically protected bike lanes.
4 points	Buffered bike lanes on roads at 40 mph or less; OR 3 **points** for buffered bike lanes on roads at 45 mph.
2 points	Conventional bike lanes on roads at 30 mph or less; OR **1 point** for conventional bike lanes on roads at 35 mph.
4 points	4' to 8' paved shoulders on an "outside community" facility.

Land Use	
1 point	Physical improvements to transit system (e.g., benches, 5' x 8' ADA landing pads, shelters). Connecting sidewalks must be fair/good condition to receive points.
1 point	New or upgraded bicycle and/or pedestrian connection within ¼ mile of community resource (e.g., bus stop/station, park/trail, full-service grocery store, civic building, library, health center, recreation center).
1 point	New or upgraded bicycle and/or pedestrian facility is within ½ mile of school (grades K-12 and college/university).
Safety	
2 points	The project is included on either the Regional HIN 2 – VRU pedestrian or bicyclist corridors or intersections AND project addresses speed or volume control issues or crossing treatments.
3 points	Speed or volume control solutions to reduce modal conflicts (e.g., road diets, bulb-outs, speed humps, raised refuge islands/medians, reduced curb radii) on high volume/speed roadways; OR **2 points** for solutions on low volume/speed roadways.**
3 points	Crossing treatments at intersections or uncontrolled locations (e.g., leading pedestrian intervals (LPIs), crosswalk visibility enhancements, raised crosswalks and pedestrian refuge islands, Rectangular Rapid Flashing Beacon (RRFB), Pedestrian Hybrid Beacon (PHB), bicycle intersection crossing markings) on high volume/speed roadways; OR **2 points** for treatments on low volume/speed roadways.**
2 points	Safety improvements to at-grade rail crossing.
1 point	Pedestrian-scale lighting along bicycle/pedestrian facility.
1 point	New buffer between roadway and sidewalk on high speed/volume road (4' or greater).

* Multimodal improvements such as sidewalks, shared-use paths, and curb ramps are scored based on the estimated quantities. It is recognized that these may vary during plan development, as such deviations from the estimated quantities of 20 percent or less would not necessitate a formal scope change request.
**Points assigned based on the application of countermeasure(s) and the speed, volume, and configuration of the roadway. For example: for a four-lane roadway with an AADT exceeding 9,000 at 40 mph, a marked midblock high visibility crosswalk alone is insufficient, and the treatment should occur in conjunction with other substantial safety and crossing improvements.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

This measure is included to account for projects that are located in Equity Emphasis Areas[5]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.
2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area,
- falls in, or partially in, an Equity Emphasis Area, AND
- addresses safety OR pedestrian, bicycle, or transit supportive infrastructure.

[5] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**4 points**	**2 points**
High TEP Concentration	**3 points**	**1 point**
Medium TEP Concentration	**2 points**	**1 point**
Low TEP Concentration	**1 point**	**0 points**

SAFE & SECURE

All projects should strive to correct existing safety issues while maximizing safe design for all users. EWG recently completed a comprehensive safety action plan, *Gateway to Safer Roadways* (GTSR)[6], to make progress towards lowering the number of fatal and serious injury crashes. The GTSR plan provides a series of high-injury networks (HINs)[7] that identify roadways with the highest frequencies of fatal and serious injury crashes. For assistance utilizing the HINs, please contact Anna Musial at anna.musial@ewgateway.org.

The GTSR plan lists a series of safety countermeasures on pages 85-105. For more details on the FHWA's proven safety countermeasures, view: https://highways.dot.gov/safety/proven-safety-countermeasures. Project sponsors may also utilize the FHWA Crash Modification Factors Clearinghouse website to identify possible safety countermeasures for roadway projects: http://www.cmfclearinghouse.org/. Examples of other commonly used countermeasures include placing new centerline and/or edge line markings, adding shoulders to roadways, installing speed humps, installing transverse rumble strips as a traffic calming device, and area-wide or corridor-specific traffic calming measures.

To receive points, the project must include a proven safety countermeasure that addresses roadway crashes present within the project limits and be included on the Regional HIN 1 – all modes, corridors or intersections OR a County HIN, corridors. Project sponsors must include up to five crash reports or a summary from the police department or respective state department of transportation that clearly shows the type of crashes that are occurring within the project limits (between 2018-2022 only). This is to help determine if the proposed countermeasures address the safety issues present in the project area. Points are assigned as follows.

8 points	Limits included on the Regional HIN 1 – all modes, corridors or intersections AND project addresses the safety issue with an appropriate countermeasure.
6 points	Limits included on a County HIN – corridors AND project addresses the safety issue with an appropriate countermeasure.
4 points	Limits not included on an HIN, but preventive countermeasure will be included in project.

Note: if a project falls on both the Regional HIN and a County HIN, the project will receive eight points.

[6] GTSR: https://www.ewgateway.org/gtsr/
[7] HIN: https://ewgateway.maps.arcgis.com/apps/mapviewer/index.html?webmap=fb33e16644d74ba0bec2b8734b9a2bf7

SEAMLESS, EFFICIENT, & RELIABLE

Improving congested roadways benefits the movement of people and goods. Projects will be evaluated based on how well they improve travel conditions along a roadway or intersection during peak hour.

Road Segment Projects Only

Total Travel Time

For road segment projects, points are assigned based on the reduction in total travel time in seconds during peak hour. The change in total travel time is derived from the project length, peak hour volume, and speed (before and after improvements).

50 points	150,001+
48 points	100,001-150,000
46 points	50,001-100,000
42 points	25,001-50,000
40 points	15,001-25,000
35 points	5,001-15,000
30 points	≤ 5,500
Zero points	Increase in total travel time

Intersection Projects Only

Total Delay

For intersection projects, points are assigned based on the reduction in total vehicle delay in seconds during peak hour. The change in delay is derived from peak hour volume entering the intersection and delay per vehicle (before and after improvements).

50 points	60,001+
48 points	30,001-60,000
46 points	15,001-30,000
42 points	5,001-15,000
40 points	1,001-5,000
35 points	501-1,000
30 points	≤ 500
Zero points	Increase in total vehicle delay

ECONOMIC VITALITY

This measure relates to *Connected 2050*'s goal of maximizing the region's economic competiveness in key industries including freight and support quality job growth. The four metrics below will be used to evaluate how the proposed project can ensure access to markets and resources for both people and goods.

Job Density

Access to jobs is an important function of the transportation system. The *OnTheMap* tool is derived from census data and will be used to assess where workers are employed in the region. Employment density will be used as a metric in determining how important improvements to transportation facilities are in the surrounding area.

5 points	High jobs/sq. mile
4 points	Medium-high jobs/sq. mile
3 points	Medium jobs/sq. mile
2 points	Medium-low jobs/sq. mile
Zero points	Low jobs/sq. mile

Commercial Vehicle Countermeasure
Projects that include a commercial vehicle countermeasure that improves freight efficiency, security, or safety will earn points under this metric. Common techniques related to commercial vehicle accommodations include improving shoulder width and pavement structure, intersection design, parking, acceleration/deceleration lanes, truck and car separation, accommodating tonnage requirements, and increasing overpass clearances.

3 points	Project improves freight movement with appropriate commercial vehicle countermeasures.
Zero points	Project does not include commercial vehicle countermeasures.

Freight Proximity
In 2013, EWG completed the St. Louis Regional Freight Study. The study identified key industrial areas that influence the freight industry in the St. Louis region. Industrial site areas are centers of employment and are connected by a series of transportation networks. Projects that improve access to an industrial site area or a freight facility will earn points under this metric. To receive points under this metric, the project must score points under the first metric, commercial vehicle countermeasure.

2 points	Project meets one of the following criteria: • Improves freight access into, out of, or within an industrial site area. • Improves freight access to an intermodal freight facility, serves a major freight generator, logistic center, manufacturing and warehouse industrial land, or navigable waterway or port facility, or other freight intensive industry.

Regional Transportation Significance and Connectivity
This measure evaluates how critical the route's location is to the regional network. Scoring is based on network connectivity and the functional classification of the road.

3 points	Project is on Interstate or expressway; OR project is on principal or minor arterial roadway AND is within ½ mile of Interstate interchange. For projects within ½ mile of Interstate interchange, there must be continuity of through lanes from the project to the interchange.
2 points	Principal or minor arterial.

A HEALTHY & SUSTAINABLE ENVIRONMENT

Transportation projects should limit the impacts on the natural environment. The first metric evaluates the incorporation of green infrastructure to reduce environmental impacts. The second metric evaluates the project's impact on air quality benefits.

Environment
Green infrastructure is a design approach to managing stormwater, the urban heat island effect, public health, and air quality. Examples of green infrastructure include bioswales, rain gardens, pervious pavement, green bulb-outs, urban tree canopies, native landscapes, and energy-efficient street lighting. For more information on green infrastructure, view: https://www.epa.gov/green-infrastructure.

1 point	Project includes green infrastructure elements.

Zero points	Project does not include green infrastructure.

Air Quality

A major objective of the transportation planning process is to ensure that the projects in the TIP help to reduce, where possible, and minimize the air quality impacts of transportation projects in accordance with federal, state, and local air quality standards, regulations, and priorities. The St. Louis region is in maintenance of the 2008 eight-hour ozone standard and portions of the region are in marginal non-attainment for the 2015 eight-hour ozone standard.

To measure the project's impact on air quality, an analysis will be performed to determine the emissions reduction of the precursors of ground-level ozone formation (volatile organic compounds and oxides of nitrogen will be averaged).

9 points	0.41+ kg/day
7 points	0.081-0.4 kg/day
5 points	0.031-0.08 kg/day
3 points	0.011-0.03 kg/day
Zero points	0-0.01 kg/day

Safety Project Type

Table 8 outlines the scheme for evaluating safety projects. Further information on the metrics used to evaluate safety projects follows.

Table 8: Safety Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric	Points
Well-maintained & Resilient	Road or bridge condition	PASER rating or bridge condition ratings	5
	ITS condition	Preserving ITS components	
	Safety hardware condition	Preserving safety hardware	
Choices & Access for All	Multimodal accommodation	Elements of other modes being implemented as part of the project	10
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas	4
Vibrant Downtown & Central Core	n/a	n/a	n/a
Safe & Secure	Safety countermeasures and benefit cost	1. High-injury Network	20
		2. Benefit/cost analysis	53
Seamless, Efficient, & Reliable	n/a	n/a	n/a
Economic Vitality	Regional freight significance	1. Commercial vehicle countermeasure	3
		2. Freight proximity	2
		3. Regional transportation significance	3
A Healthy & Sustainable Environment	n/a	n/a	n/a

WELL-MAINTAINED & RESILIENT

Projects will be assessed in terms of how they contribute to the preservation of existing infrastructure assets. The first metric evaluates the condition of the pavement or bridge. Sponsors can score points under preservation if they are improving the condition of the facility. Roadways or bridges with low pavement/sufficiency ratings will receive a higher preservation score. The second metric relates to the replacement of ITS components. The third metric relates to the replacement of safety components. If the sponsor receives points in at least two of the three metrics, the highest score will be used.

Road or Bridge Condition

Road - - Pavement condition will be assessed using the Pavement Surface Evaluation and Rating (PASER) Guide, which is a visual rating system. PASER ratings range from 1-10, with 1 being 'very poor' condition and 10 being 'excellent' condition.

5 points	PASER 2.5 or less
4 points	PASER 2.6-3.5
3 points	PASER 3.6-5.5
2 points	PASER 5.6-7.5
1 point	PASER 7.6-8.5
Zero points	PASER 8.6-10

Bridge - - The National Bridge Inventory uses general condition ratings (GCR) to describe the existing bridge or culvert as compared to the as-built condition. The information is used to determine GCRs on a numerical scale that

ranges from 0 (failed condition) to 9 (excellent condition). FHWA, through the National Performance Management Measures final rule, identified three bridge condition thresholds: good (7-9), fair (5-6), and poor (0-4). Condition-based performance measures for bridges is based on the National Bridge Inventory condition ratings for four key items: deck, superstructure, substructure, and culvert.

5 points	Rating of ≤ 3 for at least one of the four key items; OR rating of 4 for at least three of the four key items.
4 points	Rating of 4 for at least two of the four key items.
3 points	Rating of 4 for at least one of the four key items.
2 points	Rating of 5 or 6 for at least one of the four key items.

ITS Components
Project can earn points if existing ITS components will be preserved, repaired, improved, or upgraded (e.g., signals, traffic sensors). To receive points, the ITS components must be within the project limits.

5 points	Existing ITS components are inoperable or require repairs, improvements, or upgrades.

Safety Hardware
Project can earn points if existing safety hardware will be repaired, improved, or upgraded (e.g., signage, guardrails, crash cushion). To receive points, the safety hardware must be within the project limits.

5 points	Existing safety hardware requires repairs, improvements, or upgrades.

CHOICES & ACCESS FOR ALL

This measure relates to *Connected 2050*'s goal of fostering a multimodal transportation system. Incorporating bicycle and pedestrian facilities in road projects is an efficient and cost-effective way for communities to create multimodal networks. In addition, road projects can provide multiple benefits to public transit, including better mobility for transit vehicles and better access for users of all ages and abilities.

EWG encourages context-sensitive facilities and taking a flexible approach to achieving multimodal transportation networks. Projects can score up to 10 points for the following features being included in and newly constructed by the project. Projects that score over the 10 points will be capped at 10 points. **Note**: A project does not need to satisfy all improvements listed below to earn points.

Facility Type	
Up to 8 points	New or upgraded 10' to 14' shared-use path. 2,000 sq. yards or higher to receive 8 points. A sliding scale from 4 to 8 points will be used to assign points between 1,000 and 2,000 sq. yards. Between 300 and 1,000 sq. yards yields 2 points.*
Up to 6 points	New or upgraded 8 ' to < 10' shared-use path. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 3 to 6 points will be used to assign points between 750 and 1,500 sq. yards. Between 150 and 750 sq. yards yields 1 point.*
Up to 6 points	New or upgraded sidewalks 5' or greater on both sides of road. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 2 to 6 points will be used to assign points between 500 and 1,500 sq. yards. Between 250 and 500 sq. yards yields 1 point.*
Up to 4 points	New or upgraded sidewalks 5' or greater on one side of road. 1,000 sq. yards or higher to receive 4 points. A sliding scale from 1 to 4 points will be used to assign points between 250 and 1,000 sq. yards. Below 250 sq. yards yields zero points.*
Up to 3 points	New or reconstructed curb ramps. One curb ramp equals 0.09375 points. 32 curb ramps or more will receive 3 points. **Note**: To receive points, the curb ramps must connect to a non-deficient pedestrian facility (i.e., fair/good condition).*
6 points	Physically protected bike lanes.

4 points	Buffered bike lanes on roads at 40 mph or less; OR 3 **points** for buffered bike lanes on roads at 45 mph.
2 points	Conventional bike lanes on roads at 30 mph or less; OR **1 point** for conventional bike lanes on roads at 35 mph.
4 points	4' to 8' paved shoulders on an "outside community" facility.
Land Use	
1 point	Physical improvements to transit system (e.g., benches, 5' x 8' ADA landing pads, shelters). Connecting sidewalks must be fair/good condition to receive points.
1 point	New or upgraded bicycle and/or pedestrian connection within ¼ mile of community resource (e.g., bus stop/station, park/trail, full-service grocery store, civic building, library, health center, recreation center).
1 point	New or upgraded bicycle and/or pedestrian facility is within ½ mile of school (grades K-12 and college/university).
Safety	
2 points	The project is included on either the Regional HIN 2 – VRU pedestrian or bicyclist corridors or intersections AND project addresses speed or volume control issues or crossing treatments.
3 points	Speed or volume control solutions to reduce modal conflicts (e.g., road diets, bulb-outs, speed humps, raised refuge islands/medians, reduced curb radii) on high volume/speed roadways; OR **2 points** for solutions on low volume/speed roadways.**
3 points	Crossing treatments at intersections or uncontrolled locations (e.g., leading pedestrian intervals (LPIs), crosswalk visibility enhancements, raised crosswalks and pedestrian refuge islands, Rectangular Rapid Flashing Beacon (RRFB), Pedestrian Hybrid Beacon (PHB), bicycle intersection crossing markings) on high volume/speed roadways; OR **2 points** for treatments on low volume/speed roadways.**
2 points	Safety improvements to at-grade rail crossing.
1 point	Pedestrian-scale lighting along bicycle/pedestrian facility.
1 point	New buffer between roadway and sidewalk on high speed/volume road (4' or greater).

* Multimodal improvements such as sidewalks, shared-use paths, and curb ramps are scored based on the estimated quantities. It is recognized that these may vary during plan development, as such deviations from the estimated quantities of 20 percent or less would not necessitate a formal scope change request.
**Points assigned based on the application of countermeasure(s) and the speed, volume, and configuration of the roadway. For example: for a four-lane roadway with an AADT exceeding 9,000 at 40 mph, a marked midblock high visibility crosswalk alone is insufficient and the treatment should occur in conjunction with other substantial safety and crossing improvements.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

This measure is included to account for projects that are located in Equity Emphasis Areas[8]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.
2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

[8] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

- does not impose a burden on an Equity Emphasis Area, AND
- falls in, or partially in, an Equity Emphasis Area.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**4 points**	**2 points**
High TEP Concentration	**3 points**	**1 point**
Medium TEP Concentration	**2 points**	**1 point**
Low TEP Concentration	**1 point**	**0 points**

SAFE & SECURE

EWG recently completed a comprehensive safety action plan, *Gateway to Safer Roadways* (GTSR)[9], to make progress towards lowering the number of fatal and serious injury crashes. The GTSR plan provides a series of high-injury networks (HINs)[10] that identify roadways with the highest frequencies of fatal and serious injury crashes. For assistance utilizing the HINs, please contact Anna Musial at anna.musial@ewgateway.org.

The GTSR plan lists a series of safety countermeasures on pages 85-105. A list of FHWA proven safety countermeasures, and the associated Crash Modification Factor (CMF), is provided in **Appendix C**. Project sponsors may also utilize the FHWA Crash Modification Factors Clearinghouse website to identify possible safety countermeasures for roadway projects: http://www.cmfclearinghouse.org/.

To receive points, the project must include a proven safety countermeasure that addresses roadway crashes present within the project limits and be included on the Regional HIN 1 – all modes, corridors or intersections OR a County HIN, corridors. Project sponsors must include up to five crash reports or a summary from the police department or respective state department of transportation that clearly shows the type of crashes that are occurring within the project limits (between 2018-2022 only). This is to help determine if the proposed countermeasures address the safety issues present in the project area. Points are assigned as follows.

20 points	Limits included on the Regional HIN 1 – all modes, corridors or intersections AND project addresses the safety issue with an appropriate countermeasure.
16 points	Limits included on a County HIN – corridors AND project addresses the safety issue with an appropriate countermeasure.
12 points	Limits not included on an HIN, but preventive countermeasure will be included in project.

Note: if a project falls on both the Regional HIN and a County HIN, the project will receive 20 points.

Benefit/Cost Analysis

This metric compares all of the project's benefits associated with a countermeasure to the cost of implementing the countermeasure. Comprehensive costs are used for the benefit/cost analysis.

53 points	Benefit/cost ratio ≥ 7

[9] GTSR: https://www.ewgateway.org/gtsr/

[10] HIN: https://ewgateway.maps.arcgis.com/apps/mapviewer/index.html?webmap=fb33e16644d74ba0bec2b8734b9a2bf7

50 points	Benefit/cost ratio ≥ 5 and < 7
48 points	Benefit/cost ratio ≥ 3 and < 5
46 points	Benefit/cost ratio ≥ 1 and < 3
43 points	Benefit/cost ratio ≥ 0 and < 1 (AND identified in a safety plan/study)*
Zero points	Benefit/cost ratio = 0 (not identified in a safety plan/study)

*To receive 43 points, the location and safety countermeasure must be identified in the GTSR plan, the respective county strategic highway plan, or a safety study that was completed for the specific project location.

ECONOMIC VITALITY

This measure relates to *Connected 2050*'s goal of maximizing the region's economic competitiveness in key industries including freight and support quality job growth. The three metrics below will be used to evaluate how the proposed project safely improves freight movement to freight intensive industries, and how critical the route's location is to the regional transportation network.

Commercial Vehicle Countermeasure

Projects that include a commercial vehicle countermeasure that improves freight efficiency, security, or safety will earn points under this metric. Common techniques related to commercial vehicle accommodations include improving shoulder width and pavement structure, intersection design, parking, acceleration/deceleration lanes, truck and car separation, accommodating tonnage requirements, and increasing overpass clearances.

3 points	Project improves freight movement with appropriate commercial vehicle countermeasures.
Zero points	Project does not include commercial vehicle countermeasures.

Freight Proximity

In 2013, EWG completed the St. Louis Regional Freight Study. The study identified key industrial areas that influence the freight industry in the St. Louis region. Industrial site areas are centers of employment and are connected by a series of transportation networks. Projects that improve access to an industrial site area or a freight facility will earn points under this metric. To receive points under this metric, the project must score points under the first metric, commercial vehicle countermeasure.

2 points	Project meets one of the following criteria: • Improves freight access into, out of, or within an industrial site area. • Improves freight access to an intermodal freight facility, serves a major freight generator, logistic center, manufacturing and warehouse industrial land, or navigable waterway or port facility, or other freight intensive industry.

Regional Transportation Significance

This measure evaluates how critical the route's location is to the regional network. Scoring is based on the functional classification of the road.

3 points	Interstate, expressway, or arterial.
2 points	Collector.
1 point	Local.

Active Transportation Project Type

Table 9 outlines the scheme for evaluating active transportation projects. Further information on the metrics used to evaluate active transportation projects follows.

Table 9: Active Transportation Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric	Points
Well-maintained & Resilient	n/a	n/a	n/a
Choices & Access for All	Improved transit connections and linkages to existing facilities	1. Transit proximity	1
		2. Physical improvements to transit	2
		3. System connectivity	25
		4. Barrier elimination	2
Thriving Neighborhoods & Communities / Equitable	Connecting communities to opportunities	1. Supporting Equity Emphasis Areas	4
		2. Access to schools	6
		3. Access to community resources	5
		4. Access to cultural resources	2
		5. Planning efforts	5
Vibrant Downtown & Central Core	Multimodal needs of residents and access to employment	Population and employment density	10
Safe & Secure	Bicycle & pedestrian level of stress/comfort and safety treatments	1. VRU High-injury Network	2
		2. Pedestrian/bicycle facility type	24
		3. Safety and design improvements	4
		4. Pedestrian-scale lighting	1
		5. Crossing treatments	4
Seamless, Efficient, & Reliable	n/a	n/a	n/a
Economic Vitality	n/a	n/a	n/a
A Healthy & Sustainable Environment	Impact to the environment	Environmental infrastructure elements	3

CHOICES & ACCESS FOR ALL

Active transportation projects should enhance connections between neighborhoods and activity centers through comprehensive bicycle and pedestrian facilities. The four metrics below will be used to evaluate the project's impact on access and connectivity.

Transit Proximity

Bicycling and walking are complementary to transit. The Gateway Bike Plan states, "Targeting the provision of safe and convenient bicycle facilities such as lanes, trails, and bicycle parking can increase the service radius of a transit stop." The Federal Transit Administration (FTA) determined in a 2011 policy statement that all pedestrian improvements located within ½ mile and all bicycle improvements located within 3 miles of a public transportation stop or station shall have a *de facto* physical and functional relationship to public transportation.

1 point	Pedestrian project is located within ½ mile or bicycle project is within 3 miles of a bus stop, transfer center, or station.
Zero points	Project does not satisfy the above.

Physical Improvements to Transit

A walking or bicycling trip can be longer if it involves transit. Bus stops that have access via sidewalks and appropriate street crossing locations ensure personal safety for pedestrians who use transit. In addition, improvements to transit infrastructure can encourage seniors or persons with a disability to utilize public transportation. Physical improvements to a bus stop include: 5' x 8' landing pads, bus shelters, benches, etc. Access improvements to public transportation include: sidewalks to transit facilities, removing obstructions blocking access, enhanced street crossings near bus stop, etc.

2 points	Project includes physical improvements to transit system (i.e., includes transit amenities).
1 point	Project includes new or upgraded sidewalk connection to public transportation only (i.e., does not include transit amenities).
Zero points	Project does not include any transit-related improvements.

System Connectivity

System connectivity is a factor related to linking existing pedestrian or bicycle facilities to complete a network. Sidewalk projects will be evaluated based on its pedestrian connectivity, and bicycle projects will be evaluated based on its bicycle connectivity. If a sponsor proposes both pedestrian and bicycle facilities, the scores for each facility type will be averaged. Both the proposed and connecting segments will be analyzed in the evaluation.

25 points	Constructing a new facility that provides a *high* level of pedestrian/bicycle connectivity (e.g., sidewalk is connected to continuous sidewalks where there are significant opportunities for pedestrians to reach destination(s), bike facility closes a gap between two existing bicycle facilities, project provides a large coverage area for pedestrian/bicycle travel).
23 points	Upgrading an existing facility that provides a *high* level of pedestrian/bicycle connectivity (e.g., sidewalk is connected to continuous sidewalks where there are significant opportunities for pedestrians to reach destination(s), bike facility closes a gap between two existing bicycle facilities, project provides a large coverage area for pedestrian/bicycle travel).
20 points	Constructing a new facility that provides a *medium* level of pedestrian/bicycle connectivity (e.g., project connects on one end to an existing bicycle facility, sidewalk provides some opportunities for pedestrians, but adjacent physical gaps are still present where pedestrian travel is reasonably expected).
18 points	Upgrading an existing facility that provides a *medium* level of pedestrian/bicycle connectivity (e.g., project connects on one end to an existing bicycle facility, sidewalk provides some opportunities for pedestrians, but adjacent physical gaps are still present where pedestrian travel is reasonably expected).
15 points	Constructing a new facility or upgrading an existing facility that provides a *low* level of pedestrian/bicycle connectivity (e.g., no physical connections are established to existing facilities, but existing facility is within a ¼ mile radius).
12 points	Constructing a new facility or upgrading an existing facility that provides *no* pedestrian/bicycle connectivity (e.g., project is isolated with no existing facility within a ¼ mile radius).

Barrier Elimination

Addressing gaps and barriers will improve network convenience and continuity. Physical barriers to walking and biking can be natural or man-made and include railroad corridors, rivers and streams, and freeways or multi-lane highways. The metric evaluates how the project will overcome physical barriers or system gaps. To receive points, the project must provide a connection to an existing facility.

2 points	Removal of a total barrier (i.e., a person physically cannot get to a location by walking or bicycling; there is no other reasonably direct, suitable route alternative within a ¼ mile radius).
1 point	Removal of a minor barrier (i.e., a person must take a less direct route than desirable - - within a ¼ mile radius).
Zero points	Project does not eliminate a barrier to walking and bicycling or no barrier present.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

Active transportation projects should connect communities to opportunities across the region. The five metrics below will be used to evaluate the project's impact on neighborhoods and communities.

Environmental Justice

This measure is included to account for projects that are located in Equity Emphasis Areas[11]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.
2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area, AND
- falls in, or partially in, an Equity Emphasis Area.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**4 points**	**2 points**
High TEP Concentration	**3 points**	**1 point**
Medium TEP Concentration	**2 points**	**1 point**
Low TEP Concentration	**1 point**	**0 points**

Access to Schools

This metric is included to account for projects that provide safe routes to schools (grades K-12 and college/university). Making bicycling and walking to school a safer and more appealing transportation choice encourages a healthy and active lifestyle from an early age.

[11] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

6 points	Project is within ¼ mile a school.
4 points	Project is within ½ mile AND there is contiguous sidewalk from end of project limits to school.
3 points	Project is within ½ mile of a school.
Zero points	Project is not within a ½ mile of a school.

Access to Community Resources
Transportation investments that connect residents to local community resources can have a profound impact on public health. This metric evaluates improved access to community resources. Examples of community resources include: parks, recreational facilities, medical centers, civic buildings, public libraries, grocery stores, etc.

5 points	Project provides direct access (i.e., within ¼ mile) to multiple community resources.
3 points	Project provides direct access (i.e., within ¼ mile) to one community resource.
2 points	Project is within ½ mile of a community resource.
Zero points	Project does not provide access to a community resource.

Access to Cultural Destinations
Promoting modes other than driving, such as biking and walking, to access cultural destinations can be beneficial to communities, especially when vehicle parking is limited. This metric evaluates improved pedestrian and/or bicycle access to a cultural destination (i.e., tourism destination, heritage/historic site, natural area, historic "Main Street").

2 points	Project provides direct access (i.e., within ¼ mile) to a cultural destination.
Zero points	Project does not provide access to a cultural destination.

Planning
This metric is included to identify and add significance to roadway segments or trail corridors that are identified in a locally adopted plan or has undergone a comprehensive planning process.

5 points	Project is cited as a priority in an adopted plan, and plan was developed and adopted within five years of application deadline.
4 points	Project is cited as a priority in an adopted plan, and plan was developed and adopted more than five years prior to the application deadline.
3 points	Project is consistent with planning document.
2 points	The municipality has a Complete Streets ordinance or policy.
Zero points	Project is not consistent or not mentioned in a locally adopted plan, or is a stand-alone, isolated idea.

FOSTER A VIBRANT DOWNTOWN & CENTRAL CORE

Projects will be evaluated on how well they are served by pedestrian- and bicycle-supportive densities. A map of the population and employment index (PEI) is included in **Appendix A**.

10 points	Average PEI 4+
9 points	Average PEI 3-3.9
7 points	Average PEI 2-2.9

6 points	Average PEI 1-1.9
4 points	Average PEI < 1

SAFE & SECURE

Per the 2010 USDOT *Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations*, every transportation agency has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. The USDOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities and utilize universal design characteristics when appropriate.

The five metrics below will be used to evaluate the project's multimodal safety elements.

High-injury Network

EWG recently completed a comprehensive safety action plan, *Gateway to Safer Roadways* (GTSR), to make progress towards lowing the number of fatal and serious injury crashes. The plan provides a Vulnerable Road User (VRU) high-injury network (HIN)[12] that identifies roadways with the highest frequencies of fatal and serious injury bicycle and/or pedestrian crashes. For assistance utilizing the HINs, please contact Anna Musial at anna.musial@ewgateway.org. Points are assigned as follows.

2 points	The project is included on either the Regional HIN 2 – VRU pedestrian or bicyclist corridors or intersections AND project addresses the safety issue with FHWA proven safety countermeasure(s) or STEP "Spectacular Seven" countermeasure(s).
Zero points	Project does not satisfy the above.

Pedestrian/Bicycle Facility Type

Walkways and designated bike lanes are both FHWA proven safety countermeasures and are effective in reducing pedestrian and bicyclist fatalities and serious injuries. Active transportation projects can include pedestrian facilities, bicycle facilities, or both. If a sponsor proposes both pedestrian and bicycle facilities, the scores for each facility type will be averaged.

Pedestrian facilities with a high-level of comfort will earn points under this metric.

24 points	New or upgraded sidewalk on a high speed/volume corridor (i.e., arterial or major collector) that provides a *high* pedestrian comfort level. For example, sidewalk on both sides of road with appropriate pedestrian pathway width (e.g., 5' or greater, depending on street context) AND pathway buffer width (e.g., 4' or greater).
22 points	New or upgraded sidewalk on a low speed/volume corridor (i.e., minor collector or local) that provides a *high* pedestrian comfort level. For example, sidewalk on both sides of road with appropriate pedestrian pathway width (e.g., 5' to 8', depending on street context).
20 points	New or upgraded sidewalk on a low speed/volume corridor (i.e., minor collector or local) that provides a *medium* pedestrian comfort level. For example, sidewalk on one side of road with appropriate pedestrian pathway width (e.g., 5' to 8', depending on street context).
18 points	New or upgraded sidewalk on a high speed/volume corridor (i.e., arterial or major collector) that provides a *medium* pedestrian comfort level. For example, sidewalk on both sides of road with appropriate pedestrian pathway width (e.g., 5' to 8', depending on street context).

[12] HIN: https://ewgateway.maps.arcgis.com/apps/mapviewer/index.html?webmap=fb33e16644d74ba0bec2b8734b9a2bf7

16 points	New or upgraded sidewalk on a high speed/volume corridor (i.e., arterial or major collector) that provides a *medium-low* pedestrian comfort level. For example, sidewalk on one side of road with appropriate pedestrian pathway width (e.g., 5' to 8', depending on street context) AND pathway buffer width (e.g., 4' or greater).
14 points	New or upgraded sidewalk on a high speed/volume corridor (i.e., arterial or major collector) that provides a *low* pedestrian comfort level. For example, sidewalk on one side of road (or intermittent sidewalk on both sides) with appropriate pedestrian pathway width (e.g., 5' wide).
Zero points	Project does not satisfy the above.

Bicycle facilities with a low-level of stress will earn points under this metric.

24 points	Physically protected bike lanes or 10' to 14' shared-use path (min); OR **20 points** for 8' to < 10' shared-use path.
18 points	Buffered bike lanes on roads at 40 mph or less; OR **14 points** for buffered bike lanes on roads at 45 mph.
16 points	Bicycle boulevard incorporating directional markings and wayfinding signage on roads at 25 mph or less.
12 points	Conventional bike lanes on roads at 30 mph or less; OR **6 points** for conventional bike lanes on roads at 35 mph.
Zero points	Project does not satisfy the above; OR project proposes a high-stress bicycle facility (zero points will be included in facility type average).

Safety and Design Improvements

Safety and design improvements can improve stress levels for bicyclists and comfort levels for pedestrians. Examples of safety and design improvements include: at-grade rail crossing improvements, road diets, bulb-outs, speed humps, raised refuge islands/medians, sidewalk/roadway buffer on roads at 35 mph and over, reduced curb radii, etc. Projects can earn up to four points for incorporating safety countermeasures. Points assigned based on the application of countermeasure(s) and the speed, volume, and configuration of the roadway. For example: one bulb-out alone along a corridor may provide minimal safety whereas providing multiple bulb-outs in combination with other traffic calming strategies may provide optimal safety conditions for people walking and/or biking.

Note: Walkways and designated bike lanes are also FHWA proven safety countermeasures and are evaluated in the Pedestrian/Bicycle Facility Type measure above.

4 points	High speed/volume corridor (e.g., arterial or major collector) and project incorporates safety measures to reduce modal conflicts.
2 points	Low speed/volume corridor (e.g., minor collector or local) and project incorporates safety measures to reduce modal conflicts.
Zero points	Project does not incorporate safety measures.

Pedestrian-Scale Lighting

Pedestrian-scale lighting can increase comfort, security, and safety. Projects can earn one point for including pedestrian-scale lighting. **Note**: Overhead cobra-head lamps provide baseline standards for lighting the sidewalk, but this type of lighting does not enhance pedestrian safety.

1 point	Project includes pedestrian-scale lighting along pedestrian/bicycle facility or at crosswalk.
Zero points	Project does not include pedestrian-scale lighting.

Crossing Treatments
Design for intersections should reduce conflict between pedestrians/bicyclists and vehicles by heightening the level of visibility and indicating a clear right-of-way. Examples of crossing treatments include: leading pedestrian intervals (LPIs), crosswalk visibility enhancements, raised crosswalks and pedestrian refuge islands, Rectangular Rapid Flash Beacon (RRFB), Pedestrian Hybrid Beacon (PHB), bicycle intersection crossing markings, etc. Projects can earn up to four points for incorporating crossing treatments. Points are assigned depending on the application of countermeasure(s) and the speed, volume, and configuration of the roadway. For example: for a four-lane roadway with an AADT exceeding 9,000 at 40 mph, a marked midblock high visibility crosswalk alone is insufficient, and the treatment should occur in conjunction with other substantial crossing improvements.

Note: Enhanced brick crosswalks can be more attractive than continental crosswalks, however their visibility is less than that of continental crosswalks, textured surfaces can be difficult for wheelchairs, and the cost of maintenance must also be considered.

4 points	High speed/volume corridor (e.g., arterial or major collector) and project incorporates crossing treatments at intersections or uncontrolled locations.
2 points	Low speed/volume corridor (e.g., minor collector or local) and project incorporates crossing treatments at intersections or uncontrolled locations.
Zero points	No crossing treatments where warranted.

A HEALTHY & SUSTAINABLE ENVIRONMENT

Transportation projects should limit the impacts on the natural environment. Green infrastructure is a design approach to managing stormwater, the urban heat island effect, public health, and air quality. Examples of green infrastructure include bioswales, rain gardens, pervious pavement, green bulb-outs, urban tree canopies, native landscapes, and energy-efficient street lighting. For more information on green infrastructure, view: https://www.epa.gov/green-infrastructure.

3 points	Project includes multiple green infrastructure elements.
1 point	Project includes one green infrastructure element.
Zero points	Project does not include green infrastructure.

Transit Project Type – Asset Management and System Upgrades

Table 10 outlines the scheme for evaluating transit asset management and system upgrades projects. Transit asset management and system upgrades projects are classified as either vehicle replacements or system upgrades, which can include transit station/stop upgrades, transit maintenance facilities, etc. Further information on the metrics used to evaluate transit asset management and system upgrades projects follows.

Table 10: Transit Asset Management & System Upgrades Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric		Points
Well-maintained & Resilient	State of good repair	Vehicle replacements:	Average mileage of replacement vehicles	45
		System upgrades:	1. Asset condition	20
			2. Transit system connections	25
Choices & Access for All	Impact to service levels	Increase, expansion, or continuation of service		20
	First- and last-mile trip impacts	Multimodal options		4
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas		8
Vibrant Downtown & Central Core	Multimodal needs of residents and access to employment	Access improvements in central core		1
Safe & Secure	Improved safety	Safety and/or security elements at facilities or on transit vehicles		7
Seamless, Efficient, & Reliable	Service and customer improvements	ITS elements or other service enhancing technologies		5
Economic Vitality	n/a	n/a		n/a
A Healthy & Sustainable Environment	Impact to the environment	Zero- or low-emission bus replacements or environmental infrastructure elements		10

WELL-MAINTAINED & RESILIENT

Maintaining transit assets and upgrading the system can help maintain and attract ridership and improve regional mobility. Transit asset management and system upgrades projects will be evaluated under this criterion depending on the type of project submitted: vehicle replacements or system upgrades. Vehicle replacements will be evaluated based on the average mileage of vehicles to be replaced. System upgrades will be evaluated by two metrics: the asset condition and the average weekday MetroLink boardings or average weekday boardings on bus route(s) directly connected to the project.

Vehicle Replacement Projects Only

Average Mileage of Replacement Vehicles

This metric relates to the maintenance of the transit system. Preventive maintenance can extend the lifespan of buses. The average mileage of the vehicles to be replaced is the metric used to evaluate preservation of the system. Vehicles and facilities must meet or exceed their useful life by the fiscal year federal funds are programmed.

Light-duty vehicles:

45 points	Average mileage of vehicles to be replaced is 250,001+.
40 points	Average mileage of vehicles to be replaced is 150,001-250,000.
35 points	Average mileage of vehicles to be replaced is ≤ 150,000.

Medium size, light-duty transit buses:

45 points	Average mileage of vehicles to be replaced is 300,001+.
40 points	Average mileage of vehicles to be replaced is 200,001-300,000.
35 points	Average mileage of vehicles to be replaced is ≤ 200,000.

Medium-duty transit buses:

45 points	Average mileage of vehicles to be replaced is 350,001+.
40 points	Average mileage of vehicles to be replaced is 250,001-350,000.
35 points	Average mileage of vehicles to be replaced is ≤ 250,000.

Small, heavy-duty transit buses, 30':

45 points	Average mileage of vehicles to be replaced is 500,001+.
40 points	Average mileage of vehicles to be replaced is 400,001-500,000.
35 points	Average mileage of vehicles to be replaced is ≤ 400,000.

Large, heavy-duty transit buses and articulated buses, 35'-40' or larger:

45 points	Average mileage of vehicles to be replaced is 650,001+.
40 points	Average mileage of vehicles to be replaced is 550,001-650,000.
35 points	Average mileage of vehicles to be replaced is ≤ 550,000.

System Upgrades Projects Only

Asset Condition

FTA uses the Transit Economic Requirements Model (TERM) 5-point scale to evaluate asset condition and transit agencies must use this scale to report asset condition to the National Transit Database. Projects that demonstrate a greater need will receive more points.

20 points	Asset has a condition rating of 2.9 or below (poor/marginal) on the FTA TERM scale; OR infrastructure has a performance restriction.
15 points	Asset has a condition rating of 3.0-3.9 (adequate) on the FTA TERM scale.
10 points	Asset has a condition rating of 4.0+ (good/excellent) on the FTA TERM scale; OR project includes bus stop enhancement only.

Transit System Connections

Projects will be prioritized based on the average weekday MetroLink boardings or average weekday boardings on the bus route(s) directly connected to the project. Projects affecting a larger number of passenger trips will have a greater impact than projects affecting fewer passenger trips.

25 points	≥ 20,000 average weekday boardings.
23 points	10,000-19,999 average weekday boardings.
20 points	5,000-9,999 average weekday boardings.
18 points	3,000-4,999 average weekday boardings.

15 points	1,000-2,999 average weekday boardings.
10 points	500-999 average weekday boardings.
5 points	≤ 499 average weekday boardings.

To calculate the number of boardings, use the following:

- Bus stops: use the ratio of average weekday boardings of the line to the number of stops on the line multiplied by the number of stops impacted. If passenger counts are available for individual stops, use the sum of the average weekday boardings for each stop impacted.
- MetroLink station: use the sum of the average weekday boardings for each station impacted.
- Transfer centers / transit maintenance facility / infrastructure (e.g., tunnels, bridges): use the average weekday ridership of route(s) directly connected to project.
- Park and ride lots: use the number of passengers boarding at the park and ride lot.

CHOICES & ACCESS FOR ALL

Impact to Service Levels

Ensuring a good state of repair of transit assets and system upgrades has a direct impact on maintaining the existing transit ridership base. Transit ridership is a reflection of vehicle condition, scheduling and operations, and access. Projects that will significantly increase service levels will receive more points than projects that only maintain service. Sponsors must demonstrate that failure to replace or upgrade will negatively impact service levels by documenting inadequate asset availability and the related delays on the route.

20 points	Project provides a 10% or higher increase in service levels along route.
17 points	Project provides at least a 5% but less than 10% increase in service levels along route.
13 points	Project is necessary to preserve the viability of existing service.
Zero points	Failure to replace or upgrade asset(s) will not cause any decreases in service levels.

First- and Last-Mile Trip Options

A goal of *Connected 2050* is to create viable alternatives to private automobile travel. Biking and walking provide critical first- and last-mile connections to transit. Project sponsors will be required to provide information on any bicycle or pedestrian elements that are included as part of the total project and how they improve multimodal access. Examples of multimodal elements include bike racks on buses or at facilities, bicycle/pedestrian access to facilities, passenger wayfinding, and stop/station design.

4 points	Project includes multimodal infrastructure.
2 points	Project includes multimodal equipment only.
Zero points	Project does not include any multimodal elements or equipment.

THRIVING NEIGHBORHOODS & COMMUNITIES

This measure is included to account for projects that are located in Equity Emphasis Areas[13]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool

[13] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area,
- directly serves a TEP group or falls in, or partially in, an Equity Emphasis Area, AND
- addresses safety OR pedestrian, bicycle, or transit supportive infrastructure.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**8 points**	**4 points**
High TEP Concentration	**8 points**	**4 points**
Medium TEP Concentration	**8 points**	**0 points**
Low TEP Concentration	**4 points**	**0 points**

VIBRANT DOWNTOWN & CENTRAL CORE

Improving access to and mobility within the central core is a goal of *Connected 2050*. Project sponsors will be required to provide information on how the transit project improves access to the central core.

1 point	Project improves access to or mobility within the central core.
Zero points	Project does not serve the central core.

SAFE & SECURE

This criterion relates to *Connected 2050*'s goal of creating a safer transportation system. This metric evaluates the impact the project will have on safety and security.

7 points	Project is a safety critical transit project; OR project incorporates safety technology (e.g., object detection or collision warning systems) to reduce transit vehicle crashes.
5 points	Safety and/or security measures at facility, station, and/or stop (lighting, cameras, emergency call stations, etc.).
3 points	Measures to provide safe services on vehicles for passengers (interior/exterior cameras, audio equipment, low-floor/kneeling buses, extendable ramps, wheelchair securement, etc.).
Zero points	Project does not include safety measures.

SEAMLESS, EFFICIENT, & RELIABLE

Deployment of ITS technologies can improve the operation and service of a transit network. This metric evaluates the integration of ITS technologies. Projects that include both operation and service enhancing ITS technologies will receive five points.

5 points	Projects incorporates the use of ITS to enhance operations AND passenger information/ experience.
3 points	Project incorporates the use of ITS to enhance operations (automated vehicle technology, transit signal priority, etc.).
2 points	Project incorporates the use of ITS to enhance passenger information/experience (onboard voice and digital announcements of next stop information, real time bus arrival information, etc.).
Zero points	Project does not include ITS enhancing technologies to enhance operations or passenger information/experience.

A HEALTHY & SUSTAINABLE ENVIRONMENT

Transportation projects should limit the impacts on the natural environment. The project's air quality benefits or the integration of green infrastructure will be evaluated. Replacing diesel buses with zero- or low-emission buses has a positive benefit on air quality. Incorporating green infrastructure into transit street design also provides positive benefits to the natural environment. Examples of green infrastructure include bioswales, rain gardens, pervious pavement, and green bulb-outs. A maximum of ten points are available under this criterion.

10 points	Project replaces bus with zero-emission bus (e.g., electric).
7 points	Project replaces bus with low-emission bus (e.g., hybrid, CNG, LNG).
5 points	Project incorporates green infrastructure at facilities.
4 points	Project replaces older diesel bus with a new diesel bus.
Zero points	Project does not provide air quality benefits.

Transit Project Type – Transit Expansion

Table 11 outlines the scheme for evaluating transit expansion projects. Transit expansion projects are classified as either an adding capacity project or a geographic expansion project. Further information on the metrics used to evaluate transit expansion projects follows.

Table 11: Transit Expansion Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric		Points
Well-maintained & Resilient	n/a	n/a		n/a
Choices & Access for All	Project impact to system	Adding capacity:	Ridership	60
		Geographic expansion:	1. Population and employment density	30
			2. Transit service frequency	35
	First- and last-mile trip impacts	Multimodal options		4
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas		8
Vibrant Downtown & Central Core	Multimodal needs of residents and access to employment	Access improvements in central core		1
Safe & Secure	Improved safety	Safety and/or security elements at facilities or on transit vehicles		7
Seamless, Efficient, & Reliable	Service and customer improvements	ITS elements or other service enhancing technologies		5
Economic Vitality	Access to jobs	Adding capacity:	Job density	5
		Geographic expansion:	n/a	n/a
A Healthy & Sustainable Environment	Impact to the environment	Zero- or low-emission bus replacements or environmental infrastructure elements		10

CHOICES & ACCESS FOR ALL

Transit expansions can help reduce congestion and improve regional mobility by improving reliability and access for more people to more locations. Transit expansion projects will be evaluated under this criterion depending on the type of project submitted: adding capacity or geographic expansion. Projects that add capacity to the existing system will be evaluated based on the percent increase in ridership. Projects that propose to expand the service area will be evaluated by two metrics: the area served in terms of population and employment and the service frequency proposed.

Adding Capacity Projects Only

Ridership

Improving frequency can help to increase annual transit boardings system-wide. It has been documented that an increase in frequency corresponds to increases in ridership. Projects that propose to add capacity to the system will be evaluated by the extent to which it is likely to result in increased transit ridership.

60 points	Project provides 10% or higher increase in ridership along route.
55 points	Project provides 8 to < 10% increase in ridership along route.
50 points	Project provides 6 to < 8% increase in ridership along route.
40 points	Project provides 4 to < 6% increase in ridership along route.
30 points	Project provides 2 to < 4% increase in ridership along route.
Zero points	Project provides less than 2% increase in ridership along route.

Geographic Expansion Projects Only

Population and Employment Density

Implementing transit expansion projects where existing land uses best support the project's success is the key metric under this criterion. EWG developed a population and employment index (PEI) to evaluate potential ridership. Expansion projects that are located in supportive residential and employment densities will score higher. Points are assigned based on the average score of a buffer of 0.5 miles of a non-express bus route and a buffer of 1 mile of an express bus stop. A map of the PEI is included in **Appendix A**.

30 points	Average PEI 4+
28 points	Average PEI 3-3.9
25 points	Average PEI 2-2.9
20 points	Average PEI 1-1.9
15 points	Average PEI < 1

Transit Service Frequency

In addition to evaluating the PEI, geographic expansion projects will also be evaluated by the frequency of the service for peak (6-9 am and 3-6 pm), off-peak, and weekend periods.

35 points	8+/hour weekday peak, 5+/hour weekday off-peak, 2+/hour weekend
33 points	6+/hour weekday peak, 3+/hour weekday off-peak, 2+/hour weekend
30 points	4+/hour weekday peak, 2+/hour weekday off-peak, 1/hour weekend
20 points	2+/hour weekday peak, 1+/hour weekday off-peak, 1/hour weekend
10 points	Weekday service only

Adding Capacity and Geographic Expansion Projects

First- and Last-Mile Trip Options

A goal of *Connected 20*50 is to create viable alternatives to private automobile travel. Biking and walking provide critical first- and last-mile connections to transit. Project sponsors will be required to provide information on any bicycle or pedestrian elements that are included as part of the total project and how they improve multimodal access. Examples of multimodal elements include bike racks on buses or at facilities, bicycle/pedestrian access to facilities, and stop/station design.

4 points	Project includes multimodal infrastructure.
2 points	Project includes multimodal equipment only.
Zero points	Project does not include any multimodal elements or equipment.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

This measure is included to account for projects that are located in Equity Emphasis Areas[14]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool

[14] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area,
- directly serves a TEP group or falls in, or partially in, an Equity Emphasis Area, AND
- addresses safety OR pedestrian, bicycle, or transit supportive infrastructure.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**8 points**	**4 points**
High TEP Concentration	**8 points**	**4 points**
Medium TEP Concentration	**8 points**	**0 points**
Low TEP Concentration	**4 points**	**0 points**

VIBRANT DOWNTOWN & CENTRAL CORE

Improving access to and mobility within the central core is a goal of *Connected 2050*. Project sponsors will be required to provide information on how the transit project improves access to the central core.

1 point	Project improves access to or mobility within the central core.
Zero points	Project does not serve the central core.

SAFE & SECURE

This criterion relates to *Connected 2050*'s goal of creating a safer transportation system. This metric evaluates the impact the project will have on safety and security.

7 points	Project incorporates safety technology (e.g., object detection or collision warning systems) to reduce transit vehicle crashes.
5 points	Safety and/or security measures at facility, station, and/or stop (lighting, cameras, emergency call stations, etc.).
3 points	Measures to provide safe services on vehicles for passengers (interior/exterior cameras, audio equipment, low-floor/kneeling buses, extendable ramps, wheelchair securement, etc.).
Zero points	Project does not include safety measures.

SEAMLESS, EFFICIENT, & RELIABLE

Deployment of ITS technologies can improve the operation and service of a transit network. This metric evaluates the integration of ITS technologies. Projects that include both operation and service enhancing ITS technologies will receive five points.

5 points	Projects incorporates the use of ITS to enhance operations AND passenger information/ experience.
3 points	Project incorporates the use of ITS to enhance operations (automated vehicle technology, transit signal priority, etc.).
2 points	Project incorporates the use of ITS to enhance passenger information/experience (onboard voice and digital announcements of next stop information, real time bus arrival information, etc.).
Zero points	Project does not include ITS enhancing technologies to enhance operations or passenger information/experience.

ECONOMIC VITALITY – *ADDING CAPACITY ONLY*

Access to jobs is an important function of the transportation system. The *OnTheMap* tool is derived from census data and will be used to assess where workers are employed in the region. Employment density will be used as a metric in determining how important transit improvements are in the surrounding area.

5 points	High jobs/sq. mile
4 points	Medium-high jobs/sq. mile
3 points	Medium jobs/sq. mile
2 points	Medium-low jobs/sq. mile
Zero points	Low jobs/sq. mile

A HEALTHY & SUSTAINABLE ENVIRONMENT

Transportation projects should limit the impacts on the natural environment. The project's air quality benefits or the integration of green infrastructure will be evaluated. Zero- or low-emission buses have a positive benefit on air quality. Incorporating green infrastructure into transit street design also provides positive benefits to the natural environment. Examples of green infrastructure include bioswales, rain gardens, pervious pavement, and green bulb-outs. A maximum of ten points are available under this criterion.

10 points	Project incorporates zero-emission bus (e.g., electric).
7 points	Project incorporates low-emission bus (e.g., hybrid, CNG, LNG).
5 points	Project incorporates green infrastructure at facilities.
Zero points	Project does not provide air quality benefits.

Freight/Economic Development Project Type

Table 12 outlines the scheme for evaluating freight/economic development projects. Projects are classified as either those that improve the flow of freight or those that promote economic development. Further information on the metrics used to evaluate freight/economic development projects follows.

Table 12: Freight/Economic Development Project Type Evaluation Scheme

Guiding Principles (Criteria)	Measure	Metric		Points
Well-maintained & Resilient	Road or bridge condition	PASER rating or bridge condition ratings		5
	ITS condition	Preserving ITS components		
Choices & Access for All	Multimodal accommodation	Elements of other modes being implemented as part of the project		10
Thriving Neighborhoods & Communities / Equitable	Addressing social equity	Supporting Equity Emphasis Areas		4
Vibrant Downtown & Central Core	n/a	n/a		n/a
Safe & Secure	Safety countermeasures	High-injury Network		8
Seamless, Efficient, & Reliable	Travel time reliability	1. Planning Time Index and Travel Time Index (avg) or volume/capacity		10 (avg)
		2. Strategy		
		3. Regional transportation significance		2
Economic Vitality	Access to jobs	Freight:	n/a	n/a
		Economic development:	1. Average income of industry supported	30
			2. Number of jobs created	20
			3. Cost per job created	10
	Intermodal significance	Freight:	1. Project located within an industrial site area	25
			2. Provides connection to intermodal facility and commercial vehicle countermeasure	35
		Economic development:	n/a	n/a
A Healthy & Sustainable Environment	Impact to the environment	Environmental infrastructure elements		1

WELL-MAINTAINED & RESILIENT

In order to preserve and maintain the existing transportation system, projects will be assessed in terms of how they contribute to the preservation of existing infrastructure assets. The first metric evaluates the condition of the pavement or bridge. Sponsors can score points under preservation if they are improving the condition of the facility. Roadways or bridges with low pavement/sufficiency ratings will receive a higher preservation score. The second metric relates to the replacement of ITS components. If the sponsor receives points in the first metric and the second metric, the highest score will be used.

Road or Bridge Condition (5 points)

Road - - Pavement condition will be assessed using the Pavement Surface Evaluation and Rating (PASER) Guide, which is a visual rating system. PASER ratings range from 1-10, with 1 being 'very poor' condition and 10 being 'excellent' condition.

5 points	PASER 2.5 or less
4 points	PASER 2.6-3.5
3 points	PASER 3.6-5.5
2 points	PASER 5.6-7.5
1 point	PASER 7.6-8.5
Zero points	PASER 8.6-10

Bridge - - The National Bridge Inventory uses general condition ratings (GCR) to describe the existing bridge or culvert as compared to the as-built condition. The information is used to determine GCRs on a numerical scale that ranges from 0 (failed condition) to 9 (excellent condition). FHWA, through the National Performance Management Measures final rule, identified three bridge condition thresholds: good (7-9), fair (5-6), and poor (0-4). Condition-based performance measures for bridges is based on the National Bridge Inventory condition ratings for four key items: deck, superstructure, substructure, and culvert.

5 points	Rating of ≤ 3 for at least one of the four key items; OR rating of 4 for at least three of the four key items.
4 points	Rating of 4 for at least two of the four key items.
3 points	Rating of 4 for at least one of the four key items.
2 points	Rating of 5 or 6 for at least one of the four key items.

ITS Components (5 points)
Project can earn points if existing ITS components will be preserved, repaired, improved, or upgraded (e.g., signals, traffic sensors). To receive points, the ITS components must be within the project limits.

5 points	Existing ITS components are inoperable or require repairs, improvements, or upgrades.

CHOICES & ACCESS FOR ALL

This measure relates to *Connected 2050*'s goal of fostering a multimodal transportation system. Incorporating bicycle and pedestrian facilities in road projects is an efficient and cost-effective way for communities to create multimodal networks. In addition, road projects can provide multiple benefits to public transit, including better mobility for transit vehicles and better access for users of all ages and abilities.

EWG encourages context-sensitive facilities and taking a flexible approach to achieving multimodal transportation networks. Projects can score up to 10 points for the following features being included in and newly constructed by the project. Projects that score over the 10 points will be capped at 10 points. **Note**: A project does not need to satisfy all improvements listed below to earn points.

Facility Type	
Up to 8 points	New or upgraded 10' to 14' shared-use path. 2,000 sq. yards or higher to receive 8 points. A sliding scale from 4 to 8 points will be used to assign points between 1,000 and 2,000 sq. yards. Between 300 and 1,000 sq. yards yields 2 points.*
Up to 6 points	New or upgraded 8 ' to < 10' shared-use path. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 3 to 6 points will be used to assign points between 750 and 1,500 sq. yards. Between 150 and 750 sq. yards yields 1 point.*
Up to 6 points	New or upgraded sidewalks 5' or greater on both sides of road. 1,500 sq. yards or higher to receive 6 points. A sliding scale from 2 to 6 points will be used to assign points between 500 and 1,500 sq. yards. Between 250 and 500 sq. yards yields 1 point.*

Up to 4 points	New or upgraded sidewalks 5' or greater on one side of road. 1,000 sq. yards or higher to receive 4 points. A sliding scale from 1 to 4 points will be used to assign points between 250 and 1,000 sq. yards. Below 250 sq. yards yields zero points.*
Up to 3 points	New or reconstructed curb ramps. One curb ramp equals 0.09375 points. 32 curb ramps or more will receive 3 points. **Note**: To receive points, the curb ramps must connect to a non-deficient pedestrian facility (i.e., fair/good condition).*
6 points	Physically protected bike lanes.
4 points	Buffered bike lanes on roads at 40 mph or less; OR 3 **points** for buffered bike lanes on roads at 45 mph.
2 points	Conventional bike lanes on roads at 30 mph or less; OR **1 point** for conventional bike lanes on roads at 35 mph.
4 points	4' to 8' paved shoulders on an "outside community" facility.
Land Use	
1 point	Physical improvements to transit system (e.g., benches, 5' x 8' ADA landing pads, shelters). Connecting sidewalks must be fair/good condition to receive points.
1 point	New or upgraded bicycle and/or pedestrian connection within ¼ mile of community resource (e.g., bus stop/station, park/trail, full-service grocery store, civic building, library, health center, recreation center).
1 point	New or upgraded bicycle and/or pedestrian facility is within ½ mile of school (grades K-12 and college/university).
Safety	
2 points	The project is included on either the Regional HIN 2 – VRU pedestrian or bicyclist corridors or intersections AND project addresses speed or volume control issues or crossing treatments.
3 points	speed or volume control solutions to reduce modal conflicts (e.g., road diets, bulb-outs, speed humps, raised refuge islands/medians, reduced curb radii) on high volume/speed roadways; OR **2 points** for solutions on low volume/speed roadways.**
3 points	Crossing treatments at intersections or uncontrolled locations (e.g., leading pedestrian intervals (LPIs), crosswalk visibility enhancements, raised crosswalks and pedestrian refuge islands, Rectangular Rapid Flashing Beacon (RRFB), Pedestrian Hybrid Beacon (PHB), bicycle intersection crossing markings) on high volume/speed roadways; OR **2 points** for treatments on low volume/speed roadways.**
2 points	Safety improvements to at-grade rail crossing.
1 point	Pedestrian-scale lighting along bicycle/pedestrian facility.
1 point	New buffer between roadway and sidewalk on high speed/volume road (4' or greater).

* Multimodal improvements such as sidewalks, shared-use paths, and curb ramps are scored based on the estimated quantities. It is recognized that these may vary during plan development, as such deviations from the estimated quantities of 20 percent or less would not necessitate a formal scope change request.
**Points assigned based on the application of countermeasure(s) and the speed, volume, and configuration of the roadway. For example: for a four-lane roadway with an AADT exceeding 9,000 at 40 mph, a marked midblock high visibility crosswalk alone is insufficient, and the treatment should occur in conjunction with other substantial safety and crossing improvements.

THRIVING NEIGHBORHOODS & COMMUNITIES / EQUITABLE

This measure is included to account for projects that are located in Equity Emphasis Areas[15]. Equity Emphasis Areas are defined at the census tract geography and meet one of the following conditions:

1. The communities are identified as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST). This tool helps identify communities that are included in the Justice40 Initiative which seeks to deliver 40% of the overall benefits of federal investments to disadvantaged communities. The tool highlights indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

[15] Equity Emphasis Areas: https://ewgateway.maps.arcgis.com/apps/instant/compare/index.html?appid=32d0adc81d7642ffbf6fa831f0e161f8

2. The communities are identified as having a low, medium, high, or very high composite score for Transportation Equity Population (TEP) concentration based on demographic information. TEPs include minority persons, persons in poverty, seniors (aged 65 and older), individuals with Limited English Proficiency (LEP), persons with disabilities, and zero-vehicle households. These populations, that have traditionally been underserved, are identified to ensure safe access to community resources and meaningful choices in transportation.

Projects receive points if the project:

- does not impose a burden on an Equity Emphasis Area,
- falls in, or partially in, an Equity Emphasis Area, AND
- addresses safety OR pedestrian, bicycle, or transit supportive infrastructure.

Points are assigned as follows.

	Disadvantaged Community (CEJST)	Not Disadvantaged Community (CEJST)
Very High TEP Concentration	**4 points**	**2 points**
High TEP Concentration	**3 points**	**1 point**
Medium TEP Concentration	**2 points**	**1 point**
Low TEP Concentration	**1 point**	**0 points**

SAFE & SECURE

All projects should strive to correct existing safety issues while maximizing safe design for all users. EWG recently completed a comprehensive safety action plan, *Gateway to Safer Roadways* (GTSR)[16], to make progress towards lowering the number of fatal and serious injury crashes. The GTSR plan provides a series of high-injury networks (HINs)[17] that identify roadways with the highest frequencies of fatal and serious injury crashes. For assistance utilizing the HINs, please contact Anna Musial at anna.musial@ewgateway.org.

The GTSR plan lists a series of safety countermeasures on pages 85-105. For more details on the FHWA's proven safety countermeasures, view: https://highways.dot.gov/safety/proven-safety-countermeasures. Project sponsors may also utilize the FHWA Crash Modification Factors Clearinghouse website to identify possible safety countermeasures for roadway projects: http://www.cmfclearinghouse.org/. Examples of other commonly used countermeasures include placing new centerline and/or edge line markings, adding shoulders to roadways, installing speed humps, installing transverse rumble strips as a traffic calming device, and area-wide or corridor-specific traffic calming measures.

To receive points, the project must include a proven safety countermeasure that addresses roadway crashes present within the project limits and be included on the Regional HIN 1 – all modes, corridors or intersections OR a County HIN, corridors. Project sponsors must include up to five crash reports or a summary from the police department or respective state department of transportation that clearly shows the type of crashes that are occurring within the project limits (between 2018-2022 only). This is to help determine if the proposed countermeasures address the safety issues present in the project area. Points are assigned as follows.

8 points	Limits included on the Regional HIN 1 – all modes, corridors or intersections AND project addresses the safety issue with an appropriate countermeasure.

[16] GTSR: https://www.ewgateway.org/gtsr/
[17] HIN: https://ewgateway.maps.arcgis.com/apps/mapviewer/index.html?webmap=fb33e16644d74ba0bec2b8734b9a2bf7

6 points	Limits included on a County HIN – corridors AND project addresses the safety issue with an appropriate countermeasure.
4 points	Limits not included on an HIN, but preventive countermeasure will be included in project.

Note: if a project falls on both the Regional HIN and a County HIN, the project will receive eight points.

SEAMLESS, EFFICIENT, & RELIABLE

Improving congested roadways benefits the movement of people and goods. Projects will be evaluated based on how well they improve travel conditions and how critical the route's location is to the regional transportation network. The first metric (travel time reliability) relates to the existing non-recurring congestion on the project corridor. The second metric (strategy) relates to the strategy used to mitigate congestion. The scores of these two metrics will be averaged to determine the points under this criterion. The third metric is based on the functional classification of the road.

Travel Time Reliability

Non-recurring congestion will be assessed using the Planning Time Index (PTI) and the Travel Time Index (TTI), or the volume to capacity (V/C) ratio. The PTI and TTI are derived from HERE data from the Regional Integrated Transportation Information System (RITIS). The PTI and TTI will only be calculated on roadways for which probe data is available. The points assigned for the PTI and the TTI will be averaged to determine the travel time reliability score. Roads with lower functional classifications will be evaluated based on the V/C ratios established in EWG's travel demand model.

Probe data is available in RITIS for project length:

Planning Time Index		Travel Time Index	
10 points	PTI 2.5+	**10 points**	TTI 2+
8 points	PTI 2.1-2.49	**8 points**	TTI 1.75-1.99
6 points	PTI 1.7-2.09	**6 points**	TTI 1.5-1.74
4 points	PTI 1.35-1.69	**4 points**	TTI 1.25-1.49
2 points	PTI 1.1-1.34	**2 points**	TTI 1-1.24
Zero points	PTI 1.09 or less	**Zero points**	TTI 0.9 or less

Probe data is not available in RITIS for project length:

Volume/Capacity Ratio	
10 points	V/C 1.1+
8 points	V/C 0.96-1.0
6 points	V/C 0.85-0.95
4 points	V/C 0.7-0.84
Zero points	V/C 0.69 or less

Strategy

A higher PTI and TTI or V/C ratio is indicative of higher levels of congestion. The Strategic Highway Research Program (SHRP 2) has identified strategies that have a direct relationship to travel time reliability. The strategies can be used to mitigate the presence of congestion. The strategies fall into four levels, and each strategy has a

proven effect on delay reduction. Projects that incorporate Level 1 or Level 2 strategies will score more points. The strategies are provided in **Appendix D**.

10 points	Level 1 strategy (delay reduction up to 50%); OR Level 2 strategy (delay reduction up to 20%).
6 points	Level 3 strategy (delay reduction up to 10%).
4 points	Level 4 strategy (other improvements such as safety and capacity).
Zero points	Level 5 strategy; OR no strategy.

Regional Transportation Significance
This measure evaluates how critical the route's location is to the regional network. Scoring is based on the functional classification of the road.

2 points	Interstate, expressway, or arterial.
1 point	Collector.
Zero points	Local.

ECONOMIC VITALITY

Economic Development Projects Only

A goal of *Connected 2050* is to support the growth of jobs that allow residents to save and return money to the economy. Transportation connectivity is a major contributing factor to the performance and competitiveness of industries. This measure is included to account for how well the project supports the development of high-quality industries within the region through improved transportation access. The first metric evaluates the relationship between the average income of the industry being supported to the average income of all industries. The second metric evaluates the number of full-time jobs created. The third metric evaluates the cost per job created.

Average Income of Industry Supported
To be an eligible project type, the project must provide a direct transportation linkage to a development site. The development site may include the redevelopment of underutilized properties or industrial sites, business expansion, or planned industrial development. A direct transportation linkage is defined as an eligible publicly owned and maintained transportation facility from the entrance of the development site to a public road. The average income by industry for the EWG region is provided in **Appendix E**.

30 points	Project provides a direct transportation linkage to a business development with an average industry income that is greater than the average income of all industries.
25 points	Project provides a direct transportation linkage to a business development with an average industry income that is the same as the average income of all industries.
20 points	Project provides a direct transportation linkage to a business development with an average industry income that is ¾ of the average income of all industries.
15 points	Project provides a direct transportation linkage to a business development with an average industry income that is ½ of the average income of all industries.
10 points	Project provides a direct transportation linkage to a business development with an average industry income that is ¼ of the average income of all industries.

Number of Full-Time Jobs Created
Projects that provide a direct transportation linkage to a greater number of jobs will earn more points under this metric.

20 points	Project supports the creation of 250 or more full-time direct jobs.
15 points	Project supports the creation of 100-249 full-time direct jobs.
10 points	Project supports the creation of 50-99 full-time direct jobs.
5 points	Project supports the creation of 20-49 full-time direct jobs.
Zero points	Project supports the creation of 19 or less full-time direct jobs.

Cost per Job Created
The number of full-time direct jobs will be used to determine a ratio of estimated jobs by project cost. The average income of the development industry type will be multiplied by the number of full-time direct jobs created and then divided by the project cost. The average income by industry for the EWG region is provided in **Appendix E**.

10 points	8.1+
8 points	6.1-8
6 points	4.1-6
4 points	2.1-4
Zero points	0-2

Freight Projects Only
The St. Louis region is well positioned to capture some of the expected growth in nationwide freight movement for all modes, given the region's central location, access to rivers, low traffic congestion, and lack of tolling. Future growth will depend on coordinating public and private freight decision making and investments, ensuring reliable truck travel times, strengthening multi-modal connections to key industrial site areas, and ensuring the region's workforce can access freight employment opportunities. This measure addresses freight mobility as well as local freight planning initiatives. The first metric relates to the project's location within an industrial site area and the significance of each site. The second metric evaluates if the project will improve the movement of freight to a freight facility by incorporating a commercial vehicle countermeasure.

Industrial Site Area
In 2013, EWG completed the St. Louis Regional Freight Study. The study identified 22 key industrial site areas that influence the freight industry in the St. Louis region. Industrial site areas are centers of employment and are connected by a series of transportation networks. Each industrial site area falls into one of three tiers: mega, major, or intermediate. The methodology used to tier industrial site areas is based on core metrics related to total industrial space, employment, train counts, truck counts, and crashes. To receive points under this metric, the project must be located within an industrial site area.

25 points	Mega freight center.
20 points	Major freight center.
15 points	Intermediate freight center.

Intermodal Connections and Commercial Vehicle Countermeasure

To receive points, the project must include a commercial vehicle countermeasure that improves freight movement. Examples of common techniques related to commercial vehicle accommodations include improving shoulder width and pavement structure, intersection design, parking, acceleration or deceleration lanes, truck and car separation, accommodating tonnage requirements, and increasing overpass clearances.

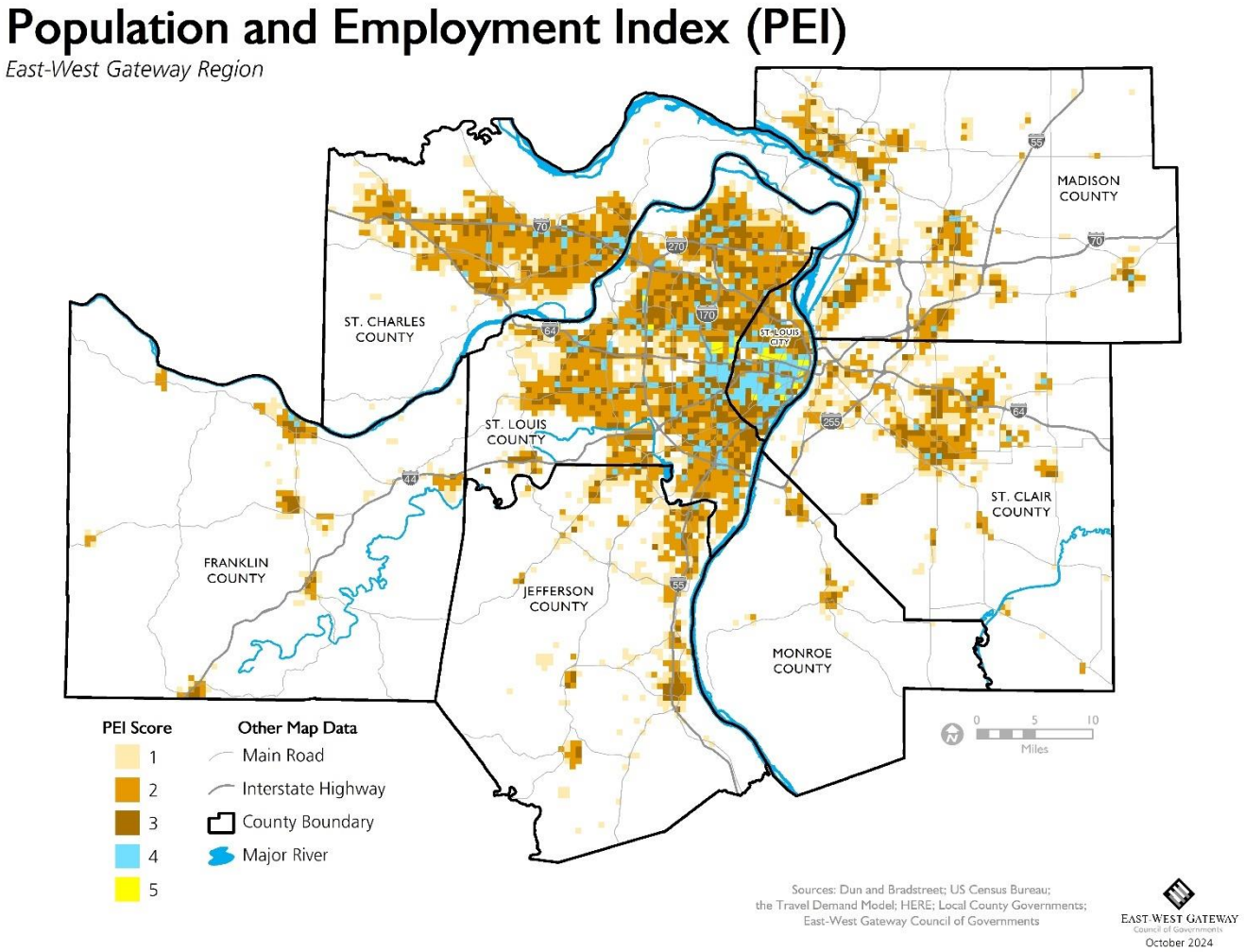
35 points	Project improves the movement of freight to an intermodal freight facility, major freight generator, logistic center, manufacturing and warehouse industrial facility, navigable waterway or port facility, or other freight intensive industry.

A HEALTHY & SUSTAINABLE ENVIRONMENT

Transportation projects should limit the impacts on the natural environment. Green infrastructure is a design approach to managing stormwater, the urban heat island effect, public health, and air quality. Examples of green infrastructure include bioswales, rain gardens, pervious pavement, green bulb-outs, urban tree canopies, native landscapes, and energy-efficient street lighting. For more information on green infrastructure, view: https://www.epa.gov/green-infrastructure.

1 point	Project includes green infrastructure elements.
Zero points	Project does not include green infrastructure.

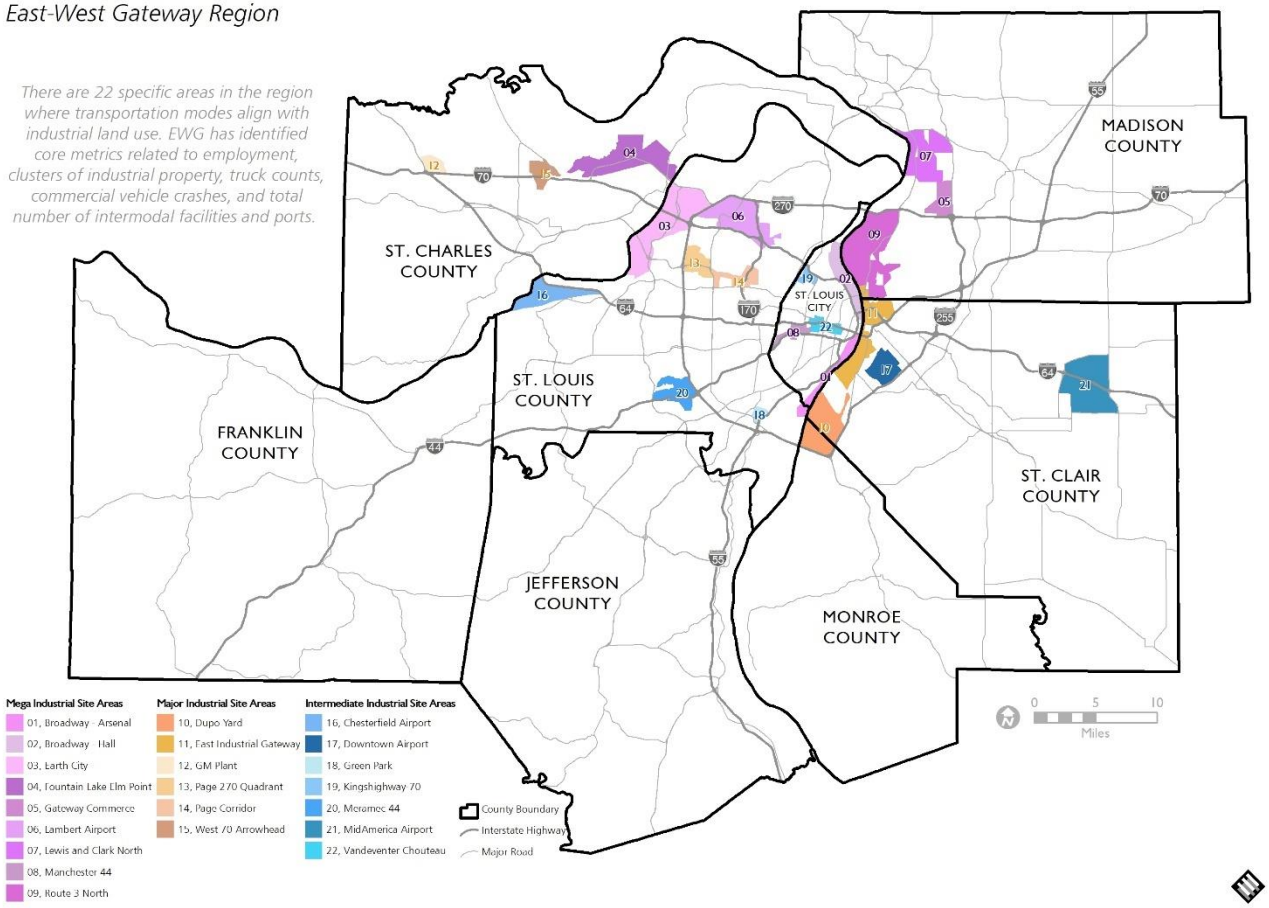
Appendix A: Maps



Industrial Site Areas

East-West Gateway Region

There are 22 specific areas in the region where transportation modes align with industrial land use. EWG has identified core metrics related to employment, clusters of industrial property, truck counts, commercial vehicle crashes, and total number of intermodal facilities and ports.



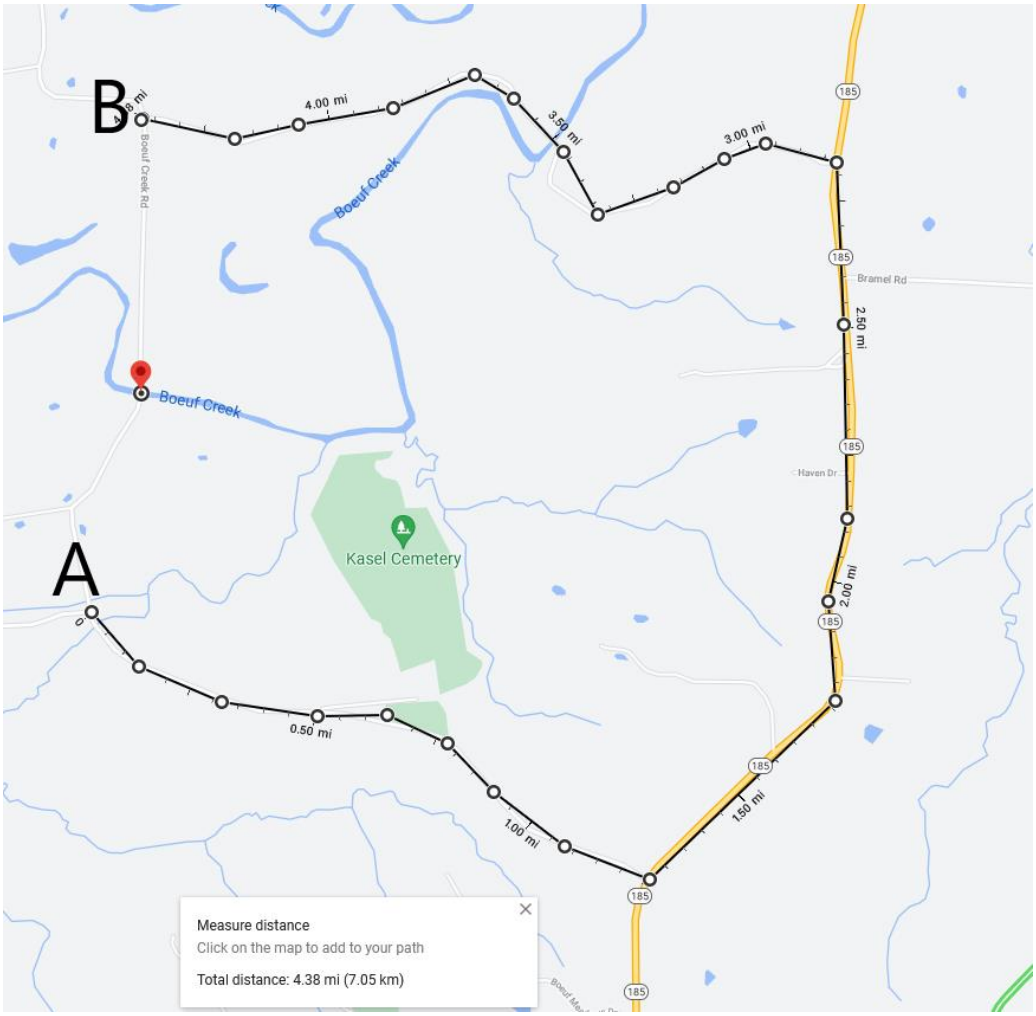
Source: East-West Gateway Council of Governments

EAST-WEST GATEWAY
Council of Governments
October 2024

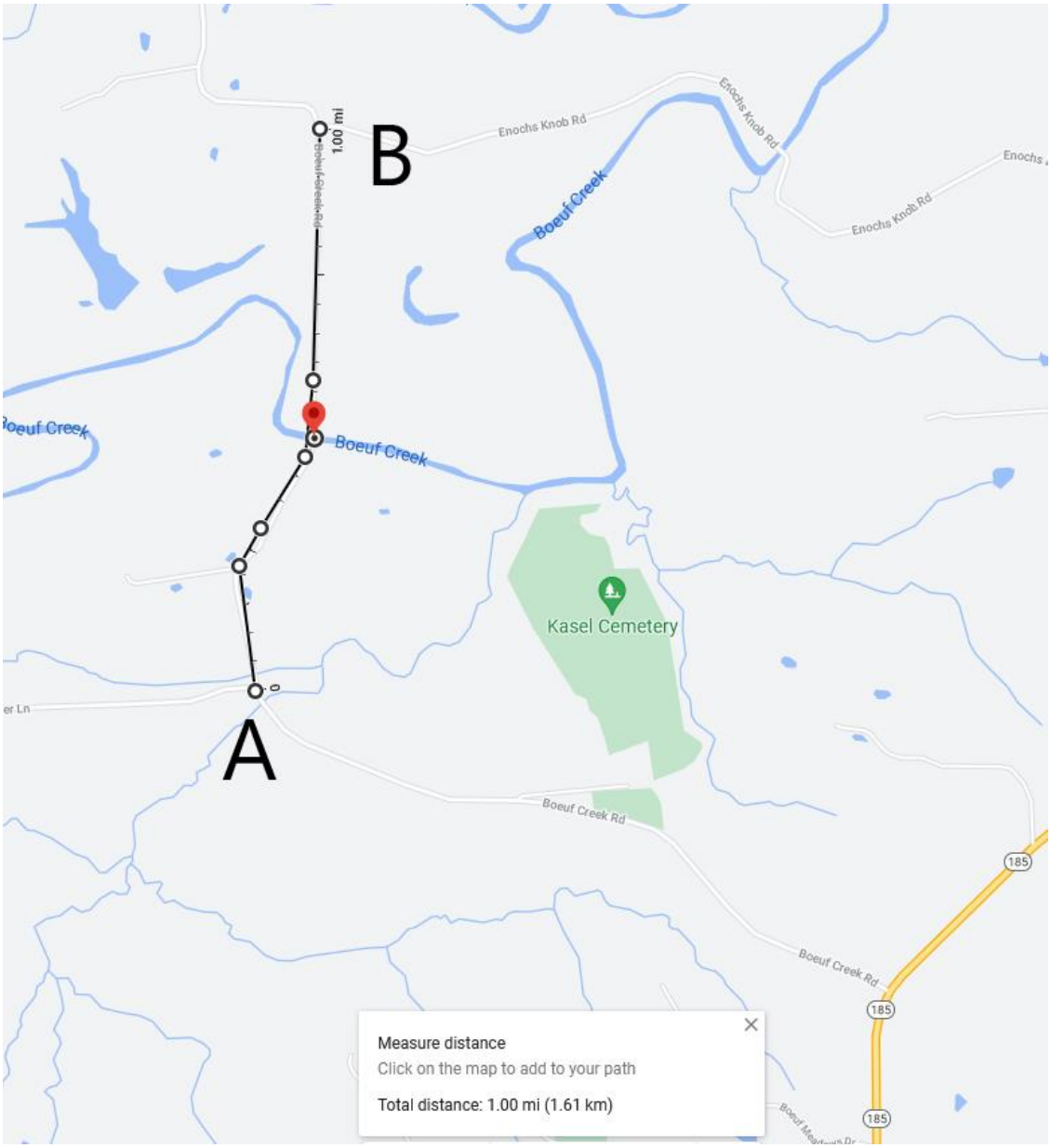
Appendix B: Bridge Detour Length Calculation

Detour length must be calculated in the following manner:

1. Begin measuring detour distance at the nearest intersection to one side of the bridge (point A).
2. Continue the measurement around the shortest possible detour route (exclude gravel roads and roads with posted bridges).
3. End measurement at the nearest intersection to the bridge on the opposite side from which the measurement started (point B). Point A to point B around detour = 4.38 miles.



4. Make a separate measurement of the distance between the starting and ending intersections (points A and B) on a route crossing the bridge. This measurement shows the distance a person would have traveled if they were able to cross the bridge. Point A to point B across bridge = 1.00 miles.



5. Subtract the distance measured in step 4 from the detour route distance measured in steps 1-2. This will give the out of distance travel, which is the additional length that a person would travel because of a detour. Calculation – Out of distance travel = length around – across bridge = 4.38 miles – 1.00 miles = 3.38 miles.
6. Include a drawing or map showing these distances in the application.

Appendix C: Safety Countermeasures

Countermeasure Category	Countermeasure	CMF	Crash Type	Crash Severity	CMF Clearing-house ID
Crosscutting – Lighting https://highways.dot.gov/safety/proven-safety-countermeasures/lighting					
Crosscutting – Lighting	Provide Intersection Illumination	0.58	Nighttime, Vehicle/Pedestrian	Serious Injury (A), Minor Injury (B), Possible Injury (C)	436
Crosscutting – Lighting	Provide Intersection Illumination	0.62	Nighttime	Serious Injury (A), Minor Injury (B), Possible Injury (C)	433
Crosscutting – Lighting	Provide Highway Lighting	0.72	Nighttime	Serious Injury (A), Minor Injury (B), Possible Injury (C)	192
Crosscutting – Lighting	RURAL – Provide Intersection Illumination	0.67	Angle	All	2376
Crosscutting – Pavement Friction Management https://highways.dot.gov/safety/proven-safety-countermeasures/pavement-friction-management					
Crosscutting – Pavement Friction Management	Install High Friction Surface Treatment – Ramps	0.365	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	10342
Crosscutting – Pavement Friction Management	Install High Friction Surface Treatment – Curves	0.515	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	10333
Crosscutting – Pavement Friction Management	Improve Pavement Friction – Increase Skid Resistance	0.799	All – wet – road crashes	All	2259
Intersections – Backplates with Retroreflective Borders https://highways.dot.gov/safety/proven-safety-countermeasures/backplates-retroreflective-borders					
Intersections – Backplates with Retroreflective Borders	Add 3” Yellow Retroreflective Sheeting to Signal Backplates	0.85	All	All	1410
Intersections – Corridor Access Management https://highways.dot.gov/safety/proven-safety-countermeasures/corridor-access-management					
Intersections – Corridor Access Management	Reduce Driveways From 10-24 to Less Than 10 per Mile	0.75	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	179
Intersections – Corridor Access Management	Reduce Driveways From 26-48 to 10-24 per Mile	0.69	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	178

Countermeasure Category	Countermeasure	CMF	Crash Type	Crash Severity	CMF Clearing-house ID
Intersections – Dedicated Left- and Right-Turn Lanes at Intersections https://highways.dot.gov/safety/proven-safety-countermeasures/dedicated-left-and-right-turn-lanes-intersections					
Intersections – Dedicated Left- and Right-Turn Lanes at Intersections	Provide a Left-Turn Lane on One Major-Road Approach	0.72	All	All	260
Intersections – Dedicated Left- and Right-Turn Lanes at Intersections	Provide a Left-Turn Lane on Both Major-Road Approaches	0.52	All	All	268
Intersections – Dedicated Left- and Right-Turn Lanes at Intersections	Provide a Right-Turn Lane on One Major-Road Approach	0.86	All	All	285
Intersections – Dedicated Left- and Right-Turn Lanes at Intersections	Provide a Right-Turn Lane on Both Major-Road Approaches	0.74	All	All	289
Intersections – Dedicated Left- and Right-Turn Lanes at Intersections	Improve Left-Turn Lane Offset to Create Positive Offset	0.644	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	6096
Intersections – Reduced Left- Turn Conflict Intersections https://highways.dot.gov/safety/proven-safety-countermeasures/reduced-left-turn-conflict-intersections					
Intersections – Reduced Left- Turn Conflict Intersections	Install J-Turn Intersection	0.463	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	5556
Intersections – Reduced Left- Turn Conflict Intersections	Convert a Conventional Signalized Intersection to a Signalized Superstreet (Also Known as a Restricted Crossing U-Turn Intersection or a J-Turn Intersection)	0.78	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	9985
Intersections – Reduced Left- Turn Conflict Intersections	Convert a Conventional Unsignalized Intersection to an Unsignalized Superstreet (Also Known as a Restricted Crossing U-Turn Intersection or a J-Turn Intersection)	0.37	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	4884
Intersections – Reduced Left- Turn Conflict Intersections	Convert Intersection to Median U-Turn (MUT) Intersection	0.7029	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	10867

Countermeasure Category	Countermeasure	CMF	Crash Type	Crash Severity	CMF Clearing-house ID
Intersections – Roundabouts https://highways.dot.gov/safety/proven-safety-countermeasures/roundabouts					
Intersections – Roundabouts	Conversion of Stop-Controlled Intersection Into Single-Lane Roundabout	0.18	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	211
Intersections – Roundabouts	Convert Signalized Intersection to Modern Roundabout	0.22	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	226
Intersections – Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections https://highways.dot.gov/safety/proven-safety-countermeasures/systemic-application-multiple-low-cost-countermeasures-stop					
Intersections – Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Implement Systemic Signing and Marking Improvements at Stop Controlled Intersections – Max 4 Lanes	0.899	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	8867
Intersections – Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Implement Systemic Signing and Marking Improvements at Stop Controlled Intersections – Max 4 Lanes	0.853	Nighttime	All	8870
Intersections – Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	RURAL - Implement Systemic Signing and Marking Improvements at Stop Controlled Intersections – Max 4 Lanes	0.734	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	8874
Intersections – Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Implement Systemic Signing and Marking Improvements at Stop Controlled Intersections – Max 2 Lanes	0.814	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	8893
Intersections – Yellow Change Intervals https://highways.dot.gov/safety/proven-safety-countermeasures/yellow-change-intervals					
Intersections – Yellow Change Intervals	Modify Change Plus Clearance Interval to ITE 1985 Proposed Recommended Practice	0.92	All	All	380
Intersections – Yellow Change Intervals	Modify Change Plus Clearance Interval to ITE 1985 Proposed Recommended Practice	0.88	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	384

Countermeasure Category	Countermeasure	CMF	Crash Type	Crash Severity	CMF Clearing-house ID
Roadway Departure – Enhanced Delineation for Horizontal Curves https://highways.dot.gov/safety/proven-safety-countermeasures/enhanced-delineation-horizontal-curves					
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install Chevron Signs on Horizontal Curves	0.75	Nighttime, Non-Intersection	All	2439
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install New Fluorescent Curve Signs or Upgrade Existing Curve Signs to Fluorescent Sheeting	0.82	Non-Intersection	All	2431
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install New Fluorescent Curve Signs or Upgrade Existing Curve Signs to Fluorescent Sheeting	0.82	Head On, Non-Intersection, Run Off Road, Sideswipe	All	2432
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install Chevron Signs on Horizontal Curves	0.84	Non-Intersection	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	2438
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install Oversized Chevron Signs	0.852	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	8978
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install Sequential Dynamic Chevrons	0.4	Non-Intersection	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	10362
Roadway Departure – Enhanced Delineation for Horizontal Curves	Rural – Install In-Lane Warning Pavement Markings	0.652	All	All	10312
Roadway Departure – Enhanced Delineation for Horizontal Curves	Install In-Lane Warning Pavement Markings	0.616	All	All	9167
Roadway Departure – Longitudinal Rumble Strips and Stripes on Two-Lane Roads https://highways.dot.gov/safety/proven-safety-countermeasures/longitudinal-rumble-strips-and-stripes-two-lane-roads					
Roadway Departure – Longitudinal Rumble Strips and Stripes on Two-Lane Roads	RURAL – Install Centerline Rumble Strips	0.56	Head On, Sideswipe	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	3358
Roadway Departure – Longitudinal Rumble Strips and Stripes on Two-Lane Roads	URBAN – Install Centerline Rumble Strips	0.36	Head On, Sideswipe	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	3356
Roadway Departure – Longitudinal Rumble Strips and Stripes on Two-Lane Roads	RURAL – Install Shoulder Rumble Strips	0.87	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	3425
Roadway Departure – Longitudinal Rumble Strips and Stripes on Two-Lane Roads	RURAL – Install Shoulder Rumble Strips With an Offset of 9” to 20” Relative to the Edgeline	0.49	Run Off Road	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	3648

Countermeasure Category	Countermeasure	CMF	Crash Type	Crash Severity	CMF Clearing-house ID
Roadway Departure – Median Barriers https://highways.dot.gov/safety/proven-safety-countermeasures/median-barriers					
Intersections – Median Barriers	Install Median Barrier	0.03	Cross Median	All	7040
Roadway Departure – Roadside Design Improvements at Curves https://highways.dot.gov/safety/proven-safety-countermeasures/roadside-design-improvements-curves					
Roadway Departure – Roadside Design Improvements at Curves	Flatten Sideslope from 1V:3H to 1V:4H	0.92	Single Vehicle	Not Specified	4627
Roadway Departure – Roadside Design Improvements at Curves	Flatten Sideslope from 1V:4H to 1V:6H	0.88	Single Vehicle	Not Specified	4632
Roadway Departure – Roadside Design Improvements at Curves	Increase Distance to Roadside Features From 3.3’ to 16.7’	0.78	All	All	35
Roadway Departure – Roadside Design Improvements at Curves	Increase Distance to Roadside Features From 16.7’ to 30’	0.56	All	All	36
Roadway Departure – SafetyEdge^{SM} https://highways.dot.gov/safety/proven-safety-countermeasures/safetyedgesm					
Roadway Departure – SafetyEdge^{SM}	Install Safety Edge Treatment	0.892	All	Fatal (K), Serious Injury (A), Minor Injury (B)	9205
Roadway Departure – SafetyEdge^{SM}	Install Safety Edge Treatment	0.79	Run Off Road	All	9211
Roadway Departure – SafetyEdge^{SM}	Install Safety Edge Treatment	0.813	Head On	All	9217
Roadway Departure – Wider Edge Lines https://highways.dot.gov/safety/proven-safety-countermeasures/wider-edge-lines					
Roadway Departure – Wider Edge Lines	Install Wider Edge Lines (4” to 6”)	0.635	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	4737
Speed Management – Speed Safety Cameras https://highways.dot.gov/safety/proven-safety-countermeasures/speed-safety-cameras					
Speed Management – Speed Safety Cameras	Install Automated Section Speed Enforcement System	0.632	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	7718
Speed Management – Speed Safety Cameras	Implement Automated Speed Enforcement Cameras	0.46	All	All	2915
Speed Management – Speed Safety Cameras	Implement Automated Speed Enforcement Cameras	0.52	All	Serious Injury (A), Minor Injury (B), Possible Injury (C)	2921

Countermeasure Category	Countermeasure	CMF	Crash Type	Crash Severity	CMF Clearing-house ID
Speed Management – Speed Safety Cameras	Implement Mobile Automated Speed Enforcement System	0.799	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	7582
Speed Management – Variable Speed Limits https://highways.dot.gov/safety/proven-safety-countermeasures/variable-speed-limits					
Speed Management – Variable Speed Limits	Install Variable Speed Limit (VSL)	0.66	All	All	11002
Speed Management – Variable Speed Limits	Install Variable Speed Limit (VSL)	0.35	Rear End	All	11005
Speed Management – Variable Speed Limits	Install Variable Speed Limit (VSL)	0.49	All	Fatal (K), Serious Injury (A), Minor Injury (B), Possible Injury (C)	11003
Commonly Used Countermeasures					
Delineation	Place Centerline Markings	0.99	All	Serious Injury (A), Minor Injury (B)	87
Delineation	Place Standard Edge Line Marking (4” to 6”)	0.97	All	Serious Injury (A), Minor Injury (B)	83
Delineation	Place Edge Line and Centerline Markings	0.76	All	Serious Injury (A), Minor Injury (B)	101
Roadway	Converting Four-Lane Roadways to Three-Lane Roadways With Center Turn Lane (Road Diet)	0.812	All	All	5554
Roadway	Converting Four-Lane Roadways to Three-Lane Roadways With Center Turn Lane (Road Diet)	0.53	All	All	2841
Shoulder Treatments	Pave a 3’ to 4’ Sod Shoulder	0.81	All	All	18
Speed Management	Install Speed Humps	0.6	All	Serious Injury (A), Minor Injury (B)	132
Speed Management	Install Transverse Rumble Strips as Traffic Calming Device	0.66	All	All	138
Speed Management	Area-Wide or Corridor-Specific Traffic Calming	0.89	All	Serious Injury (A), Minor Injury (B)	586

Appendix D: Congestion Strategies

Level 1 Strategies: Delay Reduction of Up to 50%						
Category	**Strategy**	**Treatment**	**Application to Sources of Congestion**	**Key Quantitative Benefit**	**Overall Cost Range[a]**	**Effectiveness–Cost Rank**
Information collection and dissemination	Pre-trip information	National Traffic and Road Closure Information	Weather, work zones	Reduces delays (early and late arrivals) by 50%	Low–medium	1-B
Incident and special event management	Pre-event assistance	Service patrols	Traffic incidents	Can reduce incident response by 19% to 77% and incident clearance time by 8 min	High	1-E
	Post-event assistance	On-scene incident management (incident responder relationship, high-visibility garments, clear buffer zones, incident screens)	Traffic Incidents	Traffic incident management programs have reported reductions in incident duration from 15% to 65%	Low	1-A
		Work zone management	Work zones	Reduces work zone–related delays by 50% to 55%	Variable (depends on addition of infrastructure)	1-D
Infrastructure improvements and demand optimization	Signal timing, ITS	TMC	Traffic-control devices, special events, weather, work zones, traffic incidents	Reduces delay by 10% to 50%	High	1-E
		Traffic adaptive signal control, advanced signal systems	Traffic-control devices	Adaptive signal control systems have been shown to reduce peak period travel times by 6% to 53%	Medium–high	1-C
	Congestion pricing	Electronic toll collection (ETC)	Physical bottlenecks	Electronic toll collection (ETC) reduces delay by 50% for manual-cash customers and by 55% for automatic-coin-machine customers, and increases speed by 57% in the express lanes	High	1-E

Source: Evaluating Alternative Operations Strategies to Improve Travel Time Reliability SHRP2

Level 2 Strategies: Delay Reduction of Up to 20%						
Category	**Strategy**	**Treatment**	**Application to Sources of Congestion**	**Key Quantitative Benefit**	**Overall Cost Range[a]**	**Effectiveness–Cost Rank**
Information collection and dissemination	Surveillance and detection	Remote verification (CCTV)	Traffic-control devices, special events, weather, traffic incidents	5% reduction in travel times in nonrecurring congestion; overall 18% reduction in travel times	Medium	2-C
	Real-time information	Pretrip information by 511, websites, subscription alerts, radio	Traffic-control devices, special events, weather, work zones, traffic incidents	Potential reduction in travel time from 5% to 20%	Variable	2-E
		Road weather information systems	Weather	Reduces delays by up to 12%	Low–medium	2-B
	Roadside messages	Travel time message signs for travelers (DMS, VMS)	All	Improves trip-time reliability, with delay reductions ranging from 1% to 22%	High	2-F
Infrastructure improvements and demand optimization	Geometric design treatments	Bottleneck removal (weaving, alignment)	Physical bottlenecks	Reduces travel time by 5% to 15%.	Medium–high	2-D
	Signal timing, ITS	Signal retiming, optimization	Traffic-control devices	Reduction in travel time and delay of 5% to 20% when traffic-signal retiming was used	Low	2-A
		Advanced transportation automation systems, signal priority, and AVL	Traffic-control devices	Reduces transit delays by 12% to 21%	Low–medium	2-B
	Traffic demand metering	Ramp metering, ramp closure	All	An increase of mainline peak-period flows from 2% to 14% because of on-ramp metering, according to a study of ramp meters in North America	Low–medium	2-B
	Congestion pricing	Cordon pricing (areawide)	Physical bottle-necks, fluctuation in normal traffic, special events	A decrease in inner city traffic by about 20% from congestion pricing in London	Low–medium	2-B
	Lane treatments	Managed lanes: HOV, HOT, and TOT lanes	Physical bottle-necks, fluctuation in normal traffic, traffic incidents	Reduces travel times up to 16%	Medium–high	2-D

Source: Evaluating Alternative Operations Strategies to Improve Travel Time Reliability SHRP2

Level 3 Strategies: Delay Reduction of Up to 10%						
Category	**Strategy**	**Treatment**	**Application to Sources of Congestion**	**Key Quantitative Benefit**	**Overall Cost Range[a]**	**Effectiveness–Cost Rank**
Information collection and dissemination	Pretrip information	Planned special events management	Special events	Reduces delay caused by special events	Low–medium	3-B
	Real-time information	Freight shipper congestion information, commercial vehicle operations	Traffic-control devices, special events, weather, work zones, traffic incidents	Reduces freight travel time by up to 10% and screening time by up to 50%	Low	3-A
Vehicle technologies	Driver-assistance products	Electronic stability control; obstacle detection systems; lane-departure warning systems; road-departure warning systems	Traffic incidents	Reduces accidents involving vehicles by up to 50%; reduces travel times by 4% to 10%	Low	3-A
Infrastructure improvements and demand optimization	Signal timing, ITS	Traffic-signal pre- emption at grade crossings	Traffic-control devices	Reduces delays by up to 8% at grade crossings, according to simulation models	Medium	3-C

Source: Evaluating Alternative Operations Strategies to Improve Travel Time Reliability SHRP2

Level 4 Strategies: Other Improvements						
Category	**Strategy**	**Treatment**	**Application to Sources of Congestion**	**Key Quantitative Benefit**	**Overall Cost Range[a]**	**Effectiveness–Cost Rank**
Information collection and dissemination	Surveillance and detection	Driver qualification	Traffic incidents	Reduces non-recurring congestion by reducing accidents	Low	4-A
		Automated enforcement	Traffic incidents, bottlenecks	Reduces travel time and improves safety	Variable (high if done by agencies, low if by contractors)	4-D
	Probe vehicles and point detection	GPS, video detection, microwave radar, Bluetooth MAC Readers	Traffic-control devices	No direct benefit to reducing congestion	Low	4-A
Infrastructure improvements and demand optimization	Geometric design treatments	Geometric improvements (interchange, ramp, intersections, narrow lanes, temporary shoulder use)	Physical bottlenecks, traffic incidents	An increase in overall capacity by 7% to 22% from geometric improvements	Medium	4-C
	Variable speed limits	Variable speed limits	Physical bottlenecks, special events	Increases through- put by 3% to 5%	Low–medium	4-B

Source: Evaluating Alternative Operations Strategies to Improve Travel Time Reliability SHRP2

Appendix E: Average Income by Industry for the EWG Region

Industry	Average Pay (2023)
Agriculture, forestry, fishing and hunting	$50,745
Mining, quarrying, and oil and gas extraction	$144,983
Utilities	$113,114
Construction	$79,754
Manufacturing	$86,755
Wholesale trade	$87,429
Retail trade	$38,832
Transportation and warehousing	$56,318
Information	$121,514
Finance and insurance	$106,574
Real estate and rental and leasing	$61,991
Professional, scientific, and technical services	$99,494
Management of companies and enterprises	$138,153
Administrative, support, waste management, and remediation services	$59,539
Educational services	$53,268
Health care and social assistance	$63,144
Arts, entertainment, and recreation	$40,523
Accommodation and food services	$25,011
Other services, except public administration	$44,175
Public administration	$60,432
EWG Average	**$76,587**

Sources: Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), East-West Gateway Council of Governments