



PlanWorks Case Study

Regional Transportation Plan and Transportation Improvement Program Project Selection East West Gateway Council of Governments



This case study is an excellent example of using a performance-based planning and programming approach in developing the long range transportation plan and connecting decisions with project selection. Although the East West Gateway Council of Governments did not use PlanWorks, the PlanWorks Performance Measures Application will be very useful in helping other agencies collaborating for a similar purpose.

Executive Summary

The East-West Gateway Council of Governments (EWG) is the MPO representing the St. Louis region, spanning parts of two states: Illinois and Missouri. In 2015, EWG adopted Connected 2045, the current long-range transportation plan (LRTP) for the region, which began the implementation of a PMF (PMF) to meet the requirements of Moving Ahead for Progress in the Twenty-First Century (MAP-21). As applied to the long range transportation planning and programming processes, the PMF helps ensure planning efforts and investments are made based on their ability to meet established goals and criteria. This provides greater transparency and accountability to stakeholders and constituents, while also working to align regional efforts with State and Federal transportation system priorities.

A number of trends influenced the development of Connected 2045, some of which were unique to the region while others were common nationwide. Through an innovative public engagement process, EWG gathered input from the community and stakeholders to address these opportunities and challenges in the region's LRTP. The agency also convened a technical panel to assist in the development of performance measures for Connected 2045. These measures were tied to a set of regional goals developed for Regional Transportation Plan 2040 (RTP 2040), the previous iteration of the LRTP. The feedback received through the public engagement process and the technical panel meetings conducted for Connected 2045 informed plan development through all its successive phases, while the establishment of performance measures provided a basis for annual tracking of system-level performance and project funding prioritization through a future investment element and Transportation Improvement Program (TIP).

Project Snapshot

- Following MAP-21 guidance, EWG used a performance management framework (PMF) to connect long range planning decisions to investments:
- EWG convened regional experts and community leaders to develop the PMF using a set of 10 Guiding Principles.
- The PMF links each of the Guiding Principles to a set of system-level measures which are then linked to project level measures.
- Project level performance measures were used to score and prioritize projects in the investment element of the LRTP.

PlanWorks is a web resource that supports collaborative decision-making in transportation planning and project development. PlanWorks is built around key decision points in long-range planning, programming, corridor planning, and environmental review. PlanWorks suggests when and how to engage cross-disciplinary partners and stakeholder groups.

Agency's Challenge

Once home to lively streets accommodating a variety of transportation modes, the city of St. Louis lost a significant number of its residents to surrounding suburbs in the 20th century, lured in part by the convenience of personally-owned automobiles. As subsequent transportation investments in the region were allocated to highway expansion, travel options and economic opportunity declined for residents remaining in the urban core. Today, the area's economy remains anemic in part because of struggles to find qualified labor, despite certain regional advantages like low cost of doing business. Lack of job accessibility by low-income residents of the area has been identified as a contributing factor. Likewise, some have cited lack of transportation options as a factor in the region's struggle to retain young talent despite the area's quality higher education options. Further, growth of the region's elderly and disabled populations is projected to outpace growth of these populations in the nation as a whole. Quality of access for these individuals, some of whom are unable to operate a car on their own, pose an additional concern. Addressing this multitude of accessibility issues is seen as important for the social and economic health of the St. Louis region.

Funding shortfalls are an additional concern. As national Highway Trust Fund revenues have declined in recent decades, and gas tax revenues for Missouri and Illinois have followed similar trends, maintaining an acceptable state of good repair for the region's extensive network of roads and bridges will become a serious challenge. As traditional means of transportation funding like gas tax revenues diminish, and needs continue to grow, policy makers in the St. Louis region are grappling with these funding shortfalls and beginning to consider alternative revenue streams such as fees or tolls in order to ensure the continued good order of its transportation system.

Connected 2045 Planning Process

Within this challenging context, EWG initiated the development of Connected 2045 with strong public participation in a variety of ways. This level of input was followed by the development of performance measures and investment scoring criteria that linked public and stakeholder priorities to quantifiable

outcomes. The region's needs were addressed through a variety of policy strategies and investment scenarios. Finally, the preferred scenario was analyzed to ensure regional air quality conformity. Each of these steps are explored in further detail in the following sections.

Visioning and Goal Setting

On the occasion of the 250th anniversary of the founding of St. Louis, EWG partnered with the Missouri History Museum to host four speaker events addressing the region's contemporary transportation challenges and opportunities and showing how St. Louis' transportation past could inform its future decision making. The speaker series served to educate the public about the role of the MPO, as well as gather input on regional transportation planning priorities. At these events, the public was invited to join panel discussions that included community leaders, freight and logistics practitioners, and a variety of other regional stakeholders and subject matter experts. At each of these four events, attendees were invited to contribute their opinions on a range of topics via keypad polling devices. Questions asked through the interactive polling methods concerned challenges facing the region, potential solutions, and funding options. Responses from the speaker series and an online survey contributed to the weighting of factors in the project evaluation process.

Two themes emerged from this unique and well-attended public engagement program. First, participants expressed a strong desire for the region to prioritize its limited transportation resources to ensure the preservation and maintenance of the existing transportation system. Second, with regards to system expansion, participants wished to see investments in transit and other transportation projects that provided an alternative to single-occupancy automobile travel. These responses generally aligned with EWG's Ten Guiding Principles (Figure 1), which had been adopted during the development of RTP 2040, the region's previous long range transportation plan. These Guiding Principles were developed from discussions with a broad range of citizens and regional leaders, and established a set of policy-focused strategies for the region. They were the result of a lengthy regional vision process and since they had been developed recently for the 2040 plan, still held true to the values

Decision Guide Connections

The process followed by EWG can be connected to several key decisions:

- LRP-2. Public engagement through visioning informed the LRTP goals.
- LRP-3. Development of project- and system-level performance measures that track outcomes.
- LRP-4. Public input and analysis of regional transportation deficiencies.
- LRP-5. Projects were classified as Investment Priorities or Illustrative Projects, to establish fiscal constraint.
- LRP-6. Strategies created to meet the region's high-level policy aims; which are tied to performance measures and trends.
- LRP-7. 50 projects were considered in developing the LRTP's investment element.
- LRP-9. Coordinated baseline emissions estimates ensured consistency with the conformity analysis.
- PRO-4. Local projects competing for TIP funding were prioritized based on their support of the Guiding Principle and Plan priorities.

of the region. The public engagement during the four speaker events affirmed this use of the Guiding Principles as pillars of the Connected 2045 Plan.

In addition to the series of four speaker events, EWG convened a group of regional experts and community leaders to form a Connected 2045 technical stakeholder group. The goals of the stakeholder group meetings were to educate and engage stakeholders about the long-range planning process, inform stakeholders about the changes in Federal law as it pertained to performance-based planning and programming, solicit feedback on weighing project evaluation criteria, and eventually, review draft project lists. The group represented a diverse array of perspectives, from economic development practitioners, to bicyclists and senior citizens. The technical group was asked to contribute to the development of the PMF using the 10 Guiding Principles adopted during

the development of RTP 2040. The Guiding Principles functioned as key goals in Connected 2045, and served as the basis for the development of the PMF, while challenging the region to connect transportation issues to the broader society. Public and stakeholder input received during the public forums, from technical stakeholder group meetings, and codified in the Guiding Principles informed Connected 2045 in every subsequent phase of its development.

Developing Performance Measures and Scoring Criteria

Connected 2045's PMF includes two types of performance measures. These two performance measure types are tied to each of the 10 Guiding Principles (Figure 1), including (1) system performance measures, which are tracked and annually updated by EWG to ensure that transportation system investments are aligned with the region's goals, and (2) project performance measures, which are used to score and prioritize the transportation projects outlined in the Connected 2045 transportation investment plan. These two sets of performance measures were selected with stakeholder input based on their ability to meet the following criteria:

- Does the measure represent a key concern?
- Is the measure clear and understandable?
- Are data available for the measure?
- Can the measure be forecasted?
- Is the measure something EWG can influence with its investments?
- Is the measure tied to desired outcomes?

EWG developed system level performance measures (PMs) to conduct annual assessments of the transportation system in accordance with the 10 Guiding Principles. Connected 2045 also seeks to highlight synergies between each of the Guiding Principles. For example, the region's goal to "Strengthen Intermodal Connections" also furthers its goal to "Support Quality Job Development", since enhanced efficiency of freight movements within the region will lead to better movement of people/goods and increased economic activity, thus resulting in creation of quality jobs. Additionally, the public engagement of the speaker series was a valuable tool











EWG's 10 Guiding Principles		System Measures	Project Scoring Measures
	Preserve and Maintain the Existing System Ensure the transportation system remains in a state of good repair.	• Bridge Condition* • Pavement Condition*	Project Addresses Preservation Deficiency
	Support Public Transportation Invest in public transportation to spur economic development, protect the environment and improve quality of life.	• Transit Ridership** • Transit Access**	Project Strengthens Transit System
	Support Neighborhoods & Communities Connect communities to opportunities and resources across the region.	• Housing + Transportation Cost**	Project Increases Access to Regional Resources
	Foster a Vibrant Downtown & Central Core Improve access to and mobility within the central core by all modes to increase the attractiveness of St. Louis and strengthen the regional economy.	• Population and Employment in the Central Core	Project Serves Downtown and/or the Central Core
	Provide More Transportation Choices Create viable alternatives to automobile travel by providing bicycle and pedestrian facilities.	• Mode Split** • Vehicle miles traveled per capita**	Project Includes Bike/ Pedestrian Element
	Promote Safety and Security Provide a safe and secure transportation system for all users.	• Number/Rate of Fatalities* • Number/Rate of Serious Injuries*	Project Improves User Safety
	Support a Diverse Economy with a Reliable System Reduce congestion and improve travel time reliability to support the diverse economic sectors of the region.	• Annual Hours of Delay* • Planning Time Index*	Project Improves System Reliability
	Support Quality Job Development Support the growth of wealth producing jobs that allow residents to save and return money to the economy.	• Access to Quality Jobs	Project Increases Access to Quality Job Clusters
	Strengthen Intermodal Connections Support freight movement and connections that are critical to the efficient flow of both people and goods.	• Annual Hours of Truck Delay* • Truck Congestion Cost* • Freight Tonnage	Project Supports Regional Freight Assets
	Protect Air Quality and Environmental Assets Encourage investments that recognize the linkages between the social, economic, and natural fabric of the region.	• Criteria Pollutant Emissions* • Conservation & Environmental Significance Score	Project Improves Air Quality/Protects the Natural Environment

Figure 1: The 10 Guiding Principles and associated performance measures adopted in Connected 2045

in weighing the relative importance of performance measures against one another. Notably, many of these performance measures are shared with the St. Louis area's OneSTL plan for sustainable development, encouraging interagency coordination to achieve these high-level regional goals.

Analysis of these system level indicators provide decision makers a data-driven basis for priority setting, annual evaluation of LRTP effectiveness, and revisions needed to ensure LRTP success. By tracking these measures over time, EWG can ensure that transportation system investments are helping the region achieve its stated goals. Determining the importance of performance measures based on the results of public engagement efforts shows EWG's commitment to upholding regional values when assessing investments. EWG also used the technical stakeholder group's input to develop project level scoring criteria that were used to evaluate the list of projects in later phases of the planning process based on their adherence to the Guiding Principles and the public and stakeholder priorities. In developing both sets of measures included in the Framework, EWG

relied on multiple rounds of stakeholder input, and the incorporation of national performance management best practices, particularly those recommended by the Federal Highway Administration.

Identifying Transportation Needs and Financial Constraints

Given the context for transportation planning and funding in the St. Louis region, the primary message EWG heard from the public and stakeholder groups was the need to prioritize limited resources on the preservation and maintenance of the region's existing transportation infrastructure. Additionally, these participants expressed a strong desire to invest in transit and other projects that would provide a viable alternative to single-occupancy automobile travel, helping to address some of the region's accessibility issues.

Considering the funding uncertainties at the Federal and State levels, EWG took a conservative approach when forecasting future revenue to establish the fiscal constraint. This constraint delineates the region's financial capacity to maintain, operate, and enhance

its transportation system over the LRTP horizon, with a focus on the State highway and regional transit systems. Using these constraints, EWG classified projects that could be funded within anticipated revenues as Investment Priorities, while those projects that could not be funded were classified as Illustrative Projects, indicating they would be considered for funding if additional revenues became available.

For the financial capacity analysis, both Missouri DOT (MoDOT) and Bi-State Development Agency (BSD) provided baseline financial forecasts that EWG adapted for use in Connected 2045, while revenues for Illinois DOT (IDOT) were taken from the agency's 2014 fiscal year program. For this effort, BSD was both a stakeholder and planning partner; they provide projects to be included in Connected 2045 as well as background information to assist in project evaluation, such as financial forecasts. In establishing the fiscal constraint, federal revenues were assumed to increase modestly and capital costs were assumed to increase by three percent annually. Based on these assumptions, regional transportation funding available from IDOT, BSD and MoDOT programs were forecast in excess of \$31 billion through 2045.

Linking Performance-Based Planning and Programming

EWG is currently taking great efforts to ensure their long range planning and programming efforts are consistent with both the Federal MAP-21 performance requirements and the Guiding Principles adopted during the visioning stage of earlier planning efforts. Through the annual Transportation Improvement Program (TIP), selection of local projects competing for Federal funds are made according to an evaluation of their ability to support the Guiding Principles and LRTP priorities.

While the Transportation Alternatives Program and Congestion Mitigation and Air Quality funds both have separate application scoring criteria from projects funded by the sub-allocated Surface Transportation Block Grant program (STBG), all program evaluation criteria support the goals of Connected 2045. For STBG-funded projects, EWG developed seven different application types (road, bridge, transit, freight/economic development, active transportation, traffic flow, and safety). Each of those project

categories are assigned points based on applicable Guiding Principles and weighted according to priorities selected by EWG staff and the technical stakeholder group, with the goal that the best projects regardless of category should be prioritized. For example, road and bridge infrastructure projects considered for TIP inclusion were ranked not just by their ability to support the Preserve and Maintain the Existing System Principle, but by their ability to support other Guiding Principles such as public transit, safety, providing more transportation choices, reducing congestion and strengthening intermodal connections.

For each of the different application types, applicable Guiding Principles are assigned a point value. When combined, these values represent the total possible points for each application type. In the case of road infrastructure projects, for example, the Preserve and Maintain the Existing System Principle was assigned the majority of points, with the other Principles splitting the remainder of points based on the extent that they supported the priorities selected for each. Potential projects in the road infrastructure category were evaluated for their ability to support the Preserve and Maintain the Existing System Principle according to rating criteria given in the Pavement Surface Evaluation and Rating (PASER) Manual. Additional points were then given based on road projects' abilities to support the other Guiding Principles, each of which assigns a score based on ranking criteria widely employed by transportation practitioners. Project usage and cost points are also included in the final scoring of each project.

Method for Rating Investment Effectiveness in Program Prioritization

Specifically, EWG evaluates investments submitted for STBG funding based on the applicability and performance of a project's priority areas or application types (e.g., safety) relative to the performance measures associated with the Guiding Principles and framework outlined in Connected 2045 (projects submitted for Transportation Alternatives Program funding and Congestion Mitigation and Air Quality Improvement Program funding use alternate scoring methods). Investment effectiveness ratings for projects submitted for STBG funding are influenced by the following:

- Ability of a project to support relevant Guiding Principles.
- Project cost as a ratio of federal funds requested to federal funds available.
- Utilization of the facility being improved in person miles travelled (PMT).

Investment effectiveness ratings are determined by a three-part scoring method, as presented below:

1. Part 1 (Project Points) - Each project is evaluated to determine its effectiveness in each of the priority areas based on information given by the applicant. Projects can score up to 100 points based on their support of applicable guiding principles; up to 20 points based on an evaluation of cost; and up to 5 points based on usage.
2. Part 2 (Priority Area Weighting) - A weighting scheme was developed with input from the technical stakeholder group and EWG staff to reflect the relative importance of the above factors in each of the priority areas (e.g., in the road infrastructure application example given above, the Preserve and Maintain the Existing System principle was given greater weight while other factors that were less relevant to this application type received a lesser weight or no weight at all if they had no relevancy).
3. Part 3 (Priority Area Score) - This number is the sum of each of the weighted priority area scores with a total of 125 points possible for each project.

Notably, TIP funding is not siloed by application type and there is no predetermined amount of funding allotted to one type over another. Therefore, this investment effectiveness rating method plays a key role in determining the mix of STBG-funded application types and projects that are advanced to the TIP. However, because EWG's planning jurisdiction includes both Illinois and Missouri, some additional considerations are used to determine which projects move forward for funding. For example, all counties in the bi-state area within EWG's planning jurisdiction are guaranteed funding for at least one project. However, because EWG has more Federal funding allotted for Missouri, Illinois municipalities within EWG's jurisdiction

are limited to one funded project each (the same limits do not apply to Missouri municipalities within EWG's jurisdiction).


Policy Strategies and Investment Scenarios

EWG used public and stakeholder input to create policy strategies for each of the 10 Guiding Principles. Connected 2045's PMF ties these high-level policy aims to data-driven performance measures and links them to other relevant data such as historic trend lines and maps in order to guide decision making.

50 BSD and State DOT projects costing more than \$9 billion were considered in developing the investment plan. Many of these were preferred alternatives selected in corridor and other planning studies. Additionally, EWG identified 11 corridors that warranted further study to develop projects that address existing or anticipated transportation needs. The project level performance measures were used to score and prioritize the transportation projects included in Connected 2045's Transportation Investment Plan. Each project in the investment plan is listed with icons representing three guiding principles on which it scored highly in the evaluation process (Figure 2). This simplified demonstration of project alignment with guiding principles easily visualizes which guiding principles are most supported for all projects. Following a technical evaluation of these projects using the ratings of effectiveness, EWG applied the fiscal constraint and selected 28 priority projects for the investment plan, costing close to \$4 billion. These projects were allocated to one of three implementation periods that divided the LRTP thirty-year horizon into three ten-year segments spanning 2016 – 2045. All highly-ranked projects selected for inclusion in Connected 2045's Transportation Investment Plan also scored well using the scoring process described above.

Regional Air Quality Conformity

Under EPA guidelines for ozone and fine particulate matter standards, both tied to mobile source emissions, the eight-county St. Louis region was designated a non-attainment area in prior evaluations of the area's air quality, indicating a need for improvements and a requirement that EWG meet stricter reporting standards. To ensure consistency with regional emissions analysis in its air quality reporting requirements, EWG



Period: 2016-2025					
Project/Corridor	Description	County	Location	Cost (YOE)	Principles
Preservation/Operations	Maintenance/rehabilitation/operational improvements	Multicounty	Regionwide	\$2,337	
Transit Operations	Maintain existing transit system	Multicounty	St. Louis/St. Louis City/St. Clair	\$4,370	
IL 3 (Partial)	Relocate, construct 4-lane roadway	St. Clair/Madison	Cahokia to Venice	\$255	
I-270	Replace bridge	Madison	Mississippi River Bridge	\$215	
I-44	Rehabilitate pavement and bridges; improve interchanges	St. Louis City	I-55 to River Des Peres	\$185	
I-64	Replace bridge	St. Louis City	Vandeventer bridge	\$39	
I-64	Revise interchange	St. Louis City	Grand/Market interchange	\$20	
I-270	Improve interstate and interchange	St. Louis	From east of McDonnell Blvd. to west of Hanley/Graham Rd.	\$85	
I-270 (Partial)	Improve interstate, interchanges, and outer roads	St. Louis	from east of Old Halls Ferry to west of Hanley/Graham	\$263	
I-70 (Partial)	Rehabilitate pavement, improve interchanges, add lanes	St. Charles	MO 94 to MO 370	\$30	
I-44 (Partial)	Replace bridges	St. Louis	Geyer to MO 141	\$60	
David Hoekel Parkway Phases 1 and 2	Construct new road	St. Charles	Peine Rd. to MO P; Interstate Dr. to Meyer Rd.	\$54	

Figure 2. Projects in the Connected 2045 Transportation Investment Plan are linked to the Guiding Principles

coordinated the baseline emissions estimates with the Missouri and Illinois state environmental agencies.

Based on EWG’s conformity analysis for ozone and fine particulates conducted for the projects and programs included in Connected 2045, the EPA issued a finding of conformity, indicating requirements of the Clean Air Act Amendments of 1990 and related regulations were satisfied. This finding is documented in a companion report to Connected 2045.

Adoption of the Region’s TIP

EWG conducts air quality conformity analyses prior to developing the draft TIP to ensure projects considered for funding were within emissions budgets established for both Illinois and Missouri areas of their planning jurisdiction (the region was a nonattainment area for the 2008 eight-hour ozone standard and fine particulate matter at the time the air quality conformity analysis was conducted in 2017). EWG submits the fiscally constrained TIP to their board of directors and makes it publicly available for comment. After this review, the TIP is then submitted to the board for final approval.

Stakeholder Collaboration

EWG’s public forums held at the Missouri History Museum helped generate excitement for Connected 2045 and provided an opportunity for EWG to connect with the community and stakeholders early in the planning process. The technical stakeholder group played an instrumental role in the development of the Connected 2045 PMF, the Guiding Principles, and public priorities established during the visioning element of the LRTP process. Many of these performance measures are shared with the St. Louis area’s OneSTL plan for sustainable development, encouraging interagency coordination to achieve these high-level regional goals. The technical stakeholder group continues to play an important role in the development of the TIP prioritization methodology that will connect planning priorities to the St. Louis region’s transportation outcomes.

Key Outcomes

EWG’s innovative approach to public and stakeholder involvement in the creation of the Guiding Principles, system measures, and project level measures ensured that the Connected 2045 transportation PMF was

transparent, accountable and reflective of regional values. A multi-event speaker series proved successful for reaching the public, who affirmed continued use of recently developed Guiding Principles to develop the framework. Forming a technical stakeholder group strengthened connections with and between key partners and provided an opportunity to educate and inform them on federal process changes in addition to building support for regional projects. Additionally, these efforts aligned the Connected 2045 investment priorities with State and Federal transportation system goals, and the requirements of MAP-21. Further, EWG's efforts to link planning and programming phases, establishes objective and quantifiable measures for funding prioritization and grounds this prioritization in the region's 10 Guiding Principles.

For more information

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Resources

- **Connected 2045: Long-Range Transportation Plan for the St. Louis Region** http://www.ewgateway.org/wp-content/uploads/2017/07/Connected_2045_1.pdf
- **Transportation Improvement Program: Fiscal Years 2018 – 2021** http://www.ewgateway.org/wp-content/uploads/2017/11/1_FY2018-2021-TIP-Approved.pdf
- **Transportation Improvement Program: Fiscal Years 2019 – 2022 (pending US DOT approval)** <https://www.ewgateway.org/library-post/fy-2019-2022-transportation-improvement-program-tip/>