



REGIONAL SOLICITATION

BEFORE & AFTER STUDY

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Executive Summary

The executive summary is intended to capture the highlights of this study.

Introduction

Over the years, the Regional Solicitation process has delivered many projects that have contributed significant transportation benefits to the region. This study is intended to assess the impact that the Regional Solicitation has had on the region, determine whether sound investments have been made, and guide future Regional Solicitations to implement a performance-based planning process.

The *Metropolitan Council Before & After Study* included two primary tasks:

- **Peer Review:** Conduct a peer review of Metropolitan Planning Organizations (MPOs) to assess their approaches used for soliciting and selecting projects for federal transportation funds.
- **Before & After Analysis:** Document the regional benefits of recently constructed projects that were awarded Regional Solicitation or Highway Safety Improvement Program (HSIP) funding.

Peer Review

Ten MPOs were contacted to help illustrate examples of how different MPOs distribute their federal transportation funding and to identify best practices. Findings from the peer review are intended to spark conversations about future policy decisions, regarding the Metropolitan Council's Regional Solicitation process. The MPOs selected for the peer review include:

- North Carolina Capital Area Metropolitan Planning Organization (CAMPO): Raleigh, NC
- Denver Regional Council of Governments (DRCOG): Denver, CO
- Metro Portland: Portland, OR
- Metropolitan Transportation Commission (MTC): San Francisco, CA
- Southeast Michigan Council of Governments (SEMCOG): Detroit, MI
- New York Metropolitan Transportation Commission (NYMTC): New York, NY
- North Central Texas Council of Governments (NCTCOG): Dallas, TX
- East-West Gateway Council of Governments (EWG COG): St. Louis, MO
- Baltimore Metropolitan Council (BALTOMETRO): Baltimore, MD
- Puget Sound Regional Council (PSRC): Seattle, WA

Peer Review Findings

Historically, MPOs have used a “call-for-proposals” approach like the Regional Solicitation to solicit projects that are eligible for federal transportation funds. However, findings from the peer review suggest many of the MPOs have modified their federal funding solicitation processes (referred to as the Regional Solicitation in this region) to address priorities identified in their

regional policy plans or long-range transportation plans (referred to as the Transportation Policy Plan, or TPP, in this region). The study has identified three common approaches used by the MPOs in selecting projects for federal transportation funds:

- 1. Long-Range Transportation Approach:** In this approach, a larger emphasis is placed on projects that have been identified in the MPO's long-range transportation plans. In most cases, these plans have gone through an extensive process to determine regional needs based on a number of factors (e.g., congestion, safety, and multimodal goals). The end result is a program of transportation investment priorities that have been vetted through a public engagement and approval process.

The list of priorities in the long-range transportation plan is used to inform the allocation of federal transportation funds. The allocation of funds is typically reviewed by a scoring committee or a formal review committee. In some cases (e.g., NCTCOG), a pot of funding is reserved for smaller projects through a separate solicitation process.

- 2. Geographic Distribution Approach:** Several MPOs use a funding formula that allocates federal transportation funds to sub-regions or priority areas. In general, the sub-regions are responsible for developing a list of priority projects for consideration. The sub-regions are encouraged to work together with the MPO to prioritize the list of projects that best serve their regional needs. It is important to recognize there are potential hurdles at the state and federal level in using a "geographic distribution" approach in the allocation of federal transportation funds. The MPOs that have embraced this approach have typically passed special legislation that directly links investments to priority areas or goals.
- 3. Traditional Approach:** This is a "call for proposals" process similar to the Metropolitan Council's process. Projects that are selected for funding are still closely linked to regional goals and priorities identified in their regional policy plans or long-range transportation plans.

Other items of note discovered as part of the peer review include:

- Nine out of 10 MPOs do not cap the amount of funding that can be requested for a project. The remaining MPO, DRCOG, has set a maximum request amount at \$20 million.
- In general, the MPOs are funding larger-scale projects that provide a greater regional benefit.
- At other MPOs, a greater emphasis has been placed on projects that are linked to regional benefits that improve air quality and economic development initiatives.
- The peer review did not discover any studies being done to report the before & after results of a transportation project that has received federal funds.
- Most MPOs do not have any connected and automated vehicle (CAV) projects funded at this time.

Before & After Analysis

The purpose of this task was to document the regional benefits achieved through projects funded through the Regional Solicitation or Highway Safety Improvement Program (HSIP). This was achieved by using a performance-based approach that evaluates the before & after conditions associated with a built project.

Before & After Condition Findings

Projects chosen for this evaluation were based on available data sets to assess their before & after conditions and came mostly from the 2007, 2009, and 2011 funding cycles. Many of the projects funded as part of the 2014 Regional Solicitation are still being implemented or are too early after their built date to evaluate the after condition.

This executive summary is intended to capture some of key takeaways from this study. The methodology and data sets used to determine the findings below are documented in the final report.

1. Roadway Congestion

The following benefits were observed for the 2007, 2009, and 2011 projects:

- Total delay was reduced for six of the 13 applications with an average overall delay reduction of 55%. The other projects had some delay reduction for specific movements in the intersection or no improvement at all.

2. Roadway Safety

The following benefit was observed:

- For the 2007, 2009, and 2011 projects, 10 of 19 experienced a reduction in overall crashes
- Results from the three 2014 projects were inconclusive.

3. Transit

The following benefit was observed for the 2007, 2009, 2011, and 2014 projects:

- Total new ridership of 1.5 million (14 projects). This does not include new ridership associated with the Green Line or Blue Line (which accounted for 7.4 million between them).

4. Bicycle and Pedestrian Safety

The following benefit was observed for the 2007, 2009, 2011 and 2014 projects:

- Pedestrian and bicycle crashes have been reduced within the vicinity of the built projects.

5. Regional Bicycle Transportation Network (RBTN) Contribution

The following benefit was observed for the 2007, 2009, 2011 and 2014 projects:

- Fifty-five of the approximately 73 miles of bikeway facilities (75%) contribute to the RBTN.
- The Roadway Expansion and Roadway Reconstruction/Modernization application categories have helped build 19 miles of bikeway facilities. Approximately seven of the 19 miles (37%) were part of the RBTN.

6. Pedestrian/Bicycle Connections Achieved

The following benefit was observed for the 2007, 2009, 2011 and 2014 projects:

- Twenty of the 58 pedestrian or bicycle projects (34%) have provided a direct or indirect connection to a major job or activity center.
- Thirty of the 58 projects (52%) provided a direct or indirect connection to areas above the regional average of concentrated race and poverty. This resulted in a total of 33 miles out of 76 miles.
- Seven of the 58 projects (17%) provided a direct or indirect connection to areas of concentrated poverty. This resulted in a total of 9 miles out of 76 miles.
- Seven of the 58 projects (12%) provided a direct or indirect connection to areas of above the regional average of concentrated race. This resulted in a total of 11 miles out of 76 miles.

7. Highway Safety Improvement Program – Safety Benefits

The following benefit was observed for the 2007 and 2009 projects:

- 100% reduction in fatal crashes (five to zero)
- 97% reduction in incapacitating injury crashes (30 down to one)
- 68% reduction in non-incapacitating injury crashes (85 down to 27)
- 69% reduction in possible injury crashes (144 down to 45)

The following benefit was observed for the 2011 projects:

- No fatal crashes observed in before or after analysis.
- 63% reduction in incapacitating injury crashes (three down to one)
- 100% reduction in non-incapacitating injury crashes (six down to zero)
- 83% reduction in possible injury crashes (23 down to four)

8. Highway Safety Improvement Program – Congestion Benefits

The low number of projects did not provide enough information for conclusive results to demonstrate a benefit. In addition, it is important to note that the HSIP solicitation focuses on safety improvements not mobility.

Regional Solicitation Before & After Study (Full Report)

Background Information

As the region's federally-designated Metropolitan Planning Organization (MPO), the Metropolitan Council works with the Transportation Advisory Board (TAB) in allocating federal transportation funds to address regional transportation needs. Since the early 1990s, these funds have been distributed through a competitive solicitation process. The Council calls this process the Regional Solicitation for Transportation Projects. A foundational value of this process is that it is objective, transparent, data-driven, and performance-based. As part of the qualifying requirements for all applications, projects must prove consistency with regional goals and policies. The prioritizing criteria used today to select projects strongly reflect the goals of Thrive MSP 2040 and the 2040 Transportation Policy Plan (TPP).

Study Purpose

Over the years, the Regional Solicitation process has delivered many projects that have contributed significant transportation benefits to the region. This study is intended to assess the impact that the Regional Solicitation has had on the region, determine whether sound investments have been made, and guide future Regional Solicitations to implement a performance-based planning process.

The study included two primary tasks:

- **Peer Review:** Conduct a peer review of Metropolitan Planning Organizations (MPOs) to assess their approaches used for soliciting and selecting projects for federal transportation funds.
- **Before & After Analysis:** Document the regional benefits of recently constructed projects that were awarded Regional Solicitation or Highway Safety Improvement Program (HSIP) funding.

Planning Process

The planning process happened between July 2018 and May 2019 and was guided by a technical advisory team:

- Katie White, Metropolitan Council
- Steve Peterson, Metropolitan Council
- Joe Barbeau, Metropolitan Council
- Steve Elmer, Metropolitan Council
- Cole Hiniker, Metropolitan Council
- Elaine Koutsoukos, TAB
- Bradley Estochen, MnDOT
- Lars Impola, MnDOT

During this process, Metropolitan Council staff and the consultant team provided updates to the Transportation Advisory Board (TAB), the Technical Advisory Committee (TAC) and the TAC Funding and Programming Committee. These meetings occurred on the following dates:

TAC Funding and Programming

- October 18, 2018
- February 21, 2019
- March 21, 2019
- April 3, 2019

TAC Planning

- May 9, 2019

TAB

- November 21, 2019
- April 17, 2019

Peer Review

A peer review was conducted as part of the study to assess the various approaches used by MPOs for soliciting and selecting projects for federal transportation funds. Findings from this effort are intended to spark conversations about future policy decisions regarding the Metropolitan Council's Regional Solicitation process. The MPOs selected for the peer review are:

- North Carolina Capital Area Metropolitan Planning Organization (CAMPO): Raleigh, NC
- Denver Regional Council of Governments (DRCOG): Denver, CO
- Metro Portland: Portland, OR
- Metropolitan Transportation Commission (MTC): San Francisco, CA
- Southeast Michigan Council of Governments (SEMCOG): Detroit, MI
- New York Metropolitan Transportation Commission (NYMTC): New York, NY
- North Central Texas Council of Governments (NCTCOG): Dallas, TX
- East-West Gateway Council of Governments (EWG COG): St. Louis, MO
- Baltimore Metropolitan Council (BALTOMETRO): Baltimore, MD
- Puget Sound Regional Council (PSRC): Seattle, WA

Research Process

Interviews were conducted in December of 2018. Three MPOs were unable to participate in the interviews. Online research was conducted to supplement the interviews and those who were not able to participate. The interviews and research focused on the following topics and questions:

1. **Funding Process:** What is the process used for allocating federal transportation dollars and selecting projects to inform the Transportation Improvement Plan (TIP)?
2. **Funding Amount:** What is the maximum dollar amount an agency can request?
3. **Project Priorities:** Is the MPO setting any goals to direct funds towards projects that achieve a specific benefit (e.g., congestion, complete streets, transit, freight, mobility or safety) or improvement (e.g., roadway expansion, transit or pedestrian/bicycle facility)?
4. **Geographic Distribution:** Are there any distribution measures (e.g., urban, suburban or rural) being used to ensure funds are being allocated equitably across the region?
5. **Scale of Projects:** Is funding going towards more complex projects that achieve a higher regional benefit?
6. **Social Equity Measures:** What type of equity measures are being used to score projects?
7. **Before & After Results:** Is the MPO conducting any follow-up evaluations to identify the impacts federally funded projects have on the region?
8. **Safety Funds:** How does the MPO handle the solicitation of High Safety Improvement Projects (HSIP)?
9. **Technology:** How does the MPO handle Connected and Automated Vehicle (CAV) projects and other projects utilizing advanced technology? Have CAV projects been funded? Any challenges faced with funding CAV projects?

10. CMP Approach and Methods: Is the MPO's Congestion Management Process (CMP) being used to help inform the selection of projects?

MPO Overview

Each of the selected MPOs play an essential role in allocating federal transportation funds. However, it is important to recognize that each MPO is very different from one another. There are many different mechanisms that influence how an MPO approaches distributing federal funds. Influencing factors can range between their funding formulas, the amount of available funds, regional policies/priorities, or even state legislation that dictates how funds are appropriated. Therefore, the peer review is not intended to document all of these differences. Instead, the peer review captures common themes and approaches for discussion purposes. A brief overview of the MPOs' regional solicitation process is highlighted below.

- **BALTOMETRO (Baltimore, MD):** The selection process is strongly influenced by the state and region's long-range planning documents. The TIP is a translation of recommendations from Maximize2040 and the State Consolidated Transportation Program. Both plans include a list of specific capacity improvements, system preservation projects and operational initiatives.

The TIP is updated on an annual basis in January with approval in July. BALTOMETRO holds an open call for new projects, which lasts about a month and a half. BALTOMETRO works with sponsors to make sure information is accurate and consistent with regional plans. The list of requests is fairly minimal based on the long-range planning process used to identify regional needs in Maximize2040 and the State Consolidate Transportation Program. Annual updates to the TIP help minimize the number of amendments and modifications to the policy plans.

- **CAMPO (Raleigh, NC):** In 2013, the State of North Carolina signed into law House Bill 817: Strategic Transportation Investment. The goal of the law is to invest in projects that bolster the State's economy and better link people to jobs, education, recreation and healthcare. The law includes a new funding allocation method for transportation projects, known as the Strategic Mobility Formula. This formula allocates State funds (revenue) into three tiers (state, regional and divisional). CAMPO is responsible for prioritizing/allocating federal transportation funds under the regional tier.

CAMPO's project prioritization begins with the development of the region's Metropolitan Transportation Plan (MTP), which includes processes for project evaluation, prioritization, and selection for inclusion in the MTP. As such, inclusion in the MTP is a fundamental requirement for projects submitted by the MPO into the Strategic Prioritization Process. The MTP project prioritization process includes both quantitative criteria such as: delay reduction (travel time savings), cost-benefit/payback period calculations, multimodal network impacts, user benefits, safety, and environmental impacts, as well as qualitative

criteria such as inclusion in local transportation plans, local priority, and coordination with regionally significant economic development projects.ⁱ

CAMPO's prioritization is two part:

- The MPO selects which projects from the Metropolitan Transportation Plan (MTP) are submitted into the scoring competition. Currently, CAMPO is permitted to submit 43 new projects for each transportation mode in each prioritization cycle.
 - The MPO assigns local input points, which increases the final project score. In the current prioritization cycle, CAMPO is allotted 2,500 local input points for the Regional Impact category and 2,500 local input points for the Division Needs category.
- **DRCOG (Denver, CO):** DRCOG has initiated a new process for determining what projects should be included in the TIP. This “dual model” process provides an opportunity to fund local priority projects, in addition to regional priority projects.

DRCOG has also shifted away from a standard solicitation process. The new dual approach splits available funds into two allocations: a regional share and a sub-regional share (eight regions total). For both shares, a sub-regional forum is responsible for submitting projects, programs or studies for consideration by the DRCOG Board. Each region is required to work together to only submit projects that provide the highest benefit for their area. Projects need to align with the 2040 Fiscally Constrained Regional Transportation Plan (2040 FCRTTP). The 2040 FCRTTP defines transportation facilities and services to be provided based on reasonably expected revenues. The revenues will fund construction of many types of projects, as well as fund operation and maintenance of the transportation system. The system includes roadway, transit, bicycle, and pedestrian facilities, as well as safety, transportation demand management, and other supporting services. The 2040 FCRTTP identifies individual regionally significant (major) roadway capacity and rapid transit projects to be implemented over the next 25 years with reasonably expected revenues.

- **EWG COG (St. Louis, MO):** EWG COG is a bi-state MPO. Projects identified in the TIP for federal transportation funds are prioritized from, and must be consistent with, the EWG COG long-range transportation plan. In general, projects are prioritized at the state level by the DOTs from the two states. The DOTs are viewed as the technical advisors in selecting projects. The EWG COG generally does not select projects. Instead, the EWG COG works with the DOTs to ensure the projects are consistent with the long-range transportation plan. New ideas or projects may be submitted to the DOTs for consideration; however, no formal application process is in place.
- **Metro (Portland, OR):** Metro’s transportation funding process is known as the Regional Flexible Funds Allocation (RFFA). Three sets of policies help shape how Metro decides to allocate regional flexible funds each cycle:

- Conditions attached to each of the federal funding sources
 - Policies in the current Regional Transportation Plan and other key plans like the Regional Active Transportation Plan and the regional Climate Smart Strategy, Metro's climate change action plan.
 - Priorities specific to each flexible funding cycle, set by the Joint Policy Advisory Committee on Transportation and the Metro Council.
- **MTC (San Francisco, CA):** The One Bay Area Grant Program (OBAG) is California's federal transportation program, which aligns with the State's climate laws and the Sustainable Communities Strategy, by targeting funding to Priority Development Areas (PDAs), Priority Conservation Areas (PCAs), and climate initiatives while maintaining commitments to existing transportation priorities.

Before projects are ever identified in the long-range plan or the TIP they have gone through several iterations of review and refinement. Ideas for projects first emerge through planning efforts at the jurisdictional, transit operator, and regional levels. Some of the primary sources for projects are the county congestion management programs, countywide transportation plans, transit operator short-range transit plans or similar transit capital and service planning efforts, and the state highway planning process conducted by Caltrans. These local and sub-regional planning efforts are then merged at a regional level through the long-range transportation plan.

When the project scope, schedule, and budget are developed, the project may then be proposed for funding. Project sponsors (the agencies designated to implement the projects) are responsible for applying for the funds, initiating requests for TIP programming, and carrying their projects to completion. In the Bay Area, the implementing agencies include public transit operators, Caltrans, MTC, the Bay Area Air Quality Management District, the Congestion Management Agencies (CMAs), the nine Bay Area counties, several joint power authorities, and the individual cities within each county.

- **NCTCOG (Dallas, TX):** NCTCOG has moved away from a formal call for projects by solely focusing on priority projects identified in the long-range transportation plan. The list of projects is further prioritized based on urgency. This process has worked well for funding major projects, but has been less effective in funding smaller projects (e.g., intersection improvements) that provide low-cost/high-benefit solutions.

NCTCOG has found that many ideas are submitted informally or identified through local planning initiatives on an ongoing basis. NCTCOG compiles an inventory of smaller projects and works with agencies to determine their readiness and priority for funding. At this time, NCTCOG notifies the region about the vetting process and how input can be provided. This approach has removed the need for a formal call for projects and results in a list of smaller priority projects for funding.

- **NYMTC (New York, NY):** NYMTC maintains three geographically-defined Transportation Coordinating Committees (TCCs): New York City, Long Island and the lower Hudson Valley. The TCCs function as localized planning forums in developing recommended projects for inclusion in the NYMTC TIP. Each TCC is allocated a funding amount and can make amendments/administrative modifications to the TIP.

Project nomination and selection mostly comes at sponsor agency level. NYMTC staff provides overall support for the TCCs activities. NYMTC typically gets involved when helping the TCCs and agencies decide between projects that result in constrained funding scenarios.

The NYMTC planning area lies within multiple air quality nonattainment areas and therefore must coordinate its TIP with USEPA and the New York State Department of Environmental Conservation. The TIP and Plan are also coordinated with the Orange County Transportation Council.

- **PSRC (Seattle, WA):** At the start of each funding cycle, the PSRC's Executive Board adopts a Policy Framework to guide selection of projects that support the region's growth strategy and transportation plan. Regionally significant projects must be explicitly listed in the regional long-range plan before being listed in the TIP and are subject to further review before they can proceed to implementation. Regional significance is currently defined as a major capacity investment on the Metropolitan Transportation System (MTS), and applies to all modes including public transportation projects.

Each project undergoes a comprehensive review by Regional Council staff to ensure it meets certain requirements:

- Projects must be in, or be consistent with, the region's long-range metropolitan transportation plan.
 - Projects must demonstrate that the funds being programmed are secured or there are reasonable expectations to acquire those funds.
 - If an existing or proposed roadway project is using federal funds, the roadway must also be part of the federally classified roadway system.
 - Projects are also evaluated to determine if they are incorporated in the current air quality conformity finding; projects cannot be included in the TIP until this step has been completed. The modeling for air quality conformity of the TIP occurs once a year, during the building of a new TIP or the annual update to the TIP.
- **SEMCOG (Detroit, MI):** SEMCOG has partnered with its member governments to establish Federal-Aid Committees (FAC). There are eight FACs, one for each of SEMCOG's seven member-counties and one for the City of Detroit. Each FAC is responsible for recommending a list of projects for the four-year TIP period based on regional policies, local needs, and funding constraint targets. Once this list of recommended projects is prepared, it is forwarded to SEMCOG for review, with approval from

SEMCOG's Executive Committee. Projects submitted for the TIP are first reviewed for consistency with 2040 RTP project list, the outcomes, and the performance measures.

SEMCOG provides data and other technical information to the FACs. All the committees meet twice a year. SEMCOG would like three meetings a year to align with amendment windows. FACs are generally led by the county road agency; in Detroit by public services.

Peer Review Findings

Common themes and findings discovered as part of the peer review interviews and research are documented below.

1. Funding Process: What is the process used for allocating federal transportation dollars and selecting projects to inform the Transportation Improvement Plan (TIP)?

Historically, MPOs have commonly used a “call-for-proposal” approach to solicit projects that are eligible for federal transportation funds. This approach typically requires an application process that includes a set of quantitative and qualitative questions regarding the proposed project. Projects are selected based on the application's score and ability to achieve regional goals. This process typically occurs every two years and selected projects are adopted into the TIP. This approach mirrors the Metropolitan Council's Regional Solicitation. However, findings suggest many of the MPOs have modified their processes to address priorities identified in their Regional Policy Plans or Long-Range Transportation Plans (LRTP). The study has identified three common approaches used by the MPOs in selecting projects for federal transportation funds. These approaches are defined below.

Please note a MPO may embrace several approaches. For example, a MPO may rely on the “Long-Range Transportation” approach to inform and guide their selection process, while still embracing a “Traditional” approach that allows a municipality to submit new projects for consideration that have not been identified in their long-range transportation plan. This finding demonstrates the varying approaches each MPO has embraced over time. The varying approaches described below are generalized for the purpose of this study.

Long-Range Transportation Approach:

In this approach, a larger emphasis is placed on projects that have been identified in the MPO's long-range transportation plans. In most cases, these plans have gone through an extensive process to determine regional needs based on a number of factors (e.g., congestion, safety, and multimodal goals) and funding scenarios (e.g., fiscally constrained). The end result is a program of transportation investment priorities that have been vetted through a public engagement and approval process.

The list of priorities in the long-range transportation plan is used to inform the allocation of federal transportation funds. The allocation of funds is typically reviewed by a scoring committee or a formal review committee. In some cases (e.g., NCTCOG), a pot of funding is reserved for smaller projects through a separate solicitation process.

This generalized approach is used by the following MPOs:

- North Carolina Capital Area Metropolitan Planning Organization (CAMPO): Raleigh, NC
- Metropolitan Transportation Commission (MTC): San Francisco, CA
- North Central Texas Council of Governments (NCTCOG): Dallas, TX
- East-West Gateway Council of Governments (EWG COG): St. Louis, MO
- Baltimore Metropolitan Council (BALTOMETRO): Baltimore, MD
- Puget Sound Regional Council (PSRC): Seattle, WA

Geographic Distribution Approach:

Several MPOs use a funding formula that allocates federal transportation funds to sub-regions or priority areas. In general, the sub-regions are responsible for developing a list of priority projects for consideration. The sub-regions are encouraged to work together with the MPO to prioritize the list of projects that best serve their regional needs. The MPOs role in this approach varies from being a facilitator, to advisor and/or review committee member. NYMTC relies solely on their sub-regions to identify the projects to be programmed in the TIP; whereas, DRCOG reviews the list of projects being submitted by their sub-regions and makes the final recommendation.

It is important to recognize there are potential hurdles at the state and federal level in using a “geographic distribution” approach in the allocation of federal transportation funds. The MPOs that have embraced this approach have typically passed special legislation that directly links investments to priority areas or goals.

This generalized approach is used by the following MPOs:

- North Carolina Capital Area Metropolitan Planning Organization (CAMPO): Raleigh, NC
- Denver Regional Council of Governments (DRCOG): Denver, CO
- Metropolitan Transportation Commission (MTC): San Francisco, CA
- New York Metropolitan Transportation Commission (NYMTC): New York, NY

Traditional Approach: Metro Portland and BALTOMETRO use a “call for proposals” process similar to the Metropolitan Council’s process. Projects that are selected for funding are still closely linked to regional goals and priorities identified in their regional policy plans or long-range transportation plans.

In 2017, CAMPO transitioned from an application-based approach to a “Geographic Distribution Approach,” citing its change was based on state legislation aimed at redirecting federal transportation funds that achieve a higher economic development benefit, while providing a more transparent process for distributing funds equitably throughout the state.

2. Funding Amount: What is the maximum dollar amount an agency can request?

The peer review concluded nine of the 10 MPOs do not cap the amount of money being requested under various programs (Surface Transportation Block Grant (STBG) Program and the Congestion Mitigation and Air Quality (CMAQ) Program). DRCOG has set a \$20 million maximum request. This approach has allowed MPOs to fund more complex projects that provide a higher benefit for the region. Many of these types of projects have been associated with large scale transit investments or large roadway projects on regional corridors (e.g. interstates or state highways). In most cases, these larger scale projects have been identified as part of the MPO's long-range transportation plan. The projects are recognized as regional priorities and aligned with anticipated funding streams. Examples of larger-scale projects MPOs are working toward include:

- Swift Orange Line Expansion Busses (\$77 million) – Seattle
- Denver BRT (\$115 million) – Denver
- I-270 widening (\$160 million) – Denver
- Bridge Replacement Projects (\$1 billion to \$5.4 billion) – New York

Sponsors of projects like these have completed a substantial amount of work (e.g., planning, engineering and design, and environmental documentation), while securing funds to demonstrate the project is “shovel ready.” In essence, their funding request is the last piece to fulfilling a funding gap. The “shovel ready” criterion mirrors recent federal transportation funding criteria associated with federal programs such as Better Utilizing Investments to Leverage Development (BUILD), the National Highway Freight Program (NHFP), and Infrastructure for Rebuilding America (INFRA).

3. Project Priorities: Is the MPO setting any goals to direct funds towards projects that achieve a specific benefit (e.g., congestion, complete streets, transit, freight, mobility, or safety) or improvement (e.g., roadway expansion, transit or pedestrian/bicycle facility)?

Priorities are directly linked to regional goals, policy plans, and long-range planning efforts. A large emphasis has been placed on air quality, economic development initiatives and affordable housing goals. In turn, transportation projects are being screened to determine their benefit in helping achieve these initiatives. Examples include the MTC model that is targeting funds that help support climate change initiatives as well as affordable housing goals. CAMPO is also targeting funds that link transportation investments with job creation. In some respect, this type of approach is similar to the objective being achieved through the State of Minnesota's Transportation and Economic Development (TED) program.

4. Geographic Distribution: Are there any distribution measures (e.g., urban, suburban or rural) being used to ensure funds are being allocated equitably across the region?

Findings listed in the funding process research (see Question 1) demonstrate the various models being used to allocate funding across sub-regions or priority areas. This approach has been effective (e.g., DRCOG) when trying to ensure an equitable distribution of funds across the region. For example, the MPO may include a boundary that is comprised of urban, suburban and rural settings.

Each setting has their own transportation needs and challenges. In turn, the sub-regions do not need to compete against one another (e.g., urban vs. rural).

This approach has resulted in some challenges for the MPOs. Allocating funds across the region can limit the opportunities to fund larger-scale projects (see Question 2) that provide higher regional benefit. It is also important to recognize there may be legislative hurdles associated in the sub-allocation of federal funds. Further research is needed before pursuing this approach.

5. Scale of Projects: Is funding going towards more complex projects that achieve a higher regional benefit?

In recent years, the MPOs have programmed or are in the process of programming projects that achieve larger regional benefits (see Questions 2 to 4). This approach has influenced some of the funding formulas by directly allocating larger pots of money towards these types of investments, while reserving funds for smaller scale projects at an agency request.

6. Social Equity Measures: What type of equity measures are being used to score projects?

There has been a stronger shift in regional policies that address social equity measures. These shifts are primarily recognized in the MPOs' regional policy plans or long-range transportation plans. Precedent examples include CAMPO and MTC, which have placed a larger emphasis on linking transportation projects with economic development and housing goals. This shift has largely been influenced by state legislation in North Carolina and California, respectively.

Social equity measures are being addressed more directly through the Title VI process and the identification of environmental justice areas in long-range transportation plans and environmental documents.

- **Title VI:** Title VI of the Civil Rights Act of 1964 protects people from discrimination based on race, color, and national origin in programs and activities receiving federal financial assistance. The Federal Transit Administration (FTA) works to ensure nondiscriminatory transportation in support of its mission to enhance the social and economic quality of life for all Americans. The FTA Office of Civil Rights is responsible for monitoring FTA recipients' Title VI programs and ensuring their compliance with Title VI requirements.ⁱⁱ
- **Environmental Justice Areas:** "Executive Order 12898 (EO12898) requires each federal agency to achieve "environmental justice...by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations..."ⁱⁱⁱ

7. Before & After Results: Is the MPO conducting any follow-up evaluations to identify the impacts federally funded projects have on the region?

The peer review did not discover any studies being done to report the before & after results of transportation projects that have received federal funds. However, projects that have received CMAQ funding are required to report their outcomes. For example, States submit annual reports of

their CMAQ obligations each March. The annual reports should reflect all of the projects for which CMAQ funds were either obligated or de-obligated. The FHWA uses these yearly submissions to maintain an active database of CMAQ investments, trends within the program, and other anecdotal information focusing on the program's performance. The annual reports are submitted through the CMAQ Tracking System and the project database is available through the CMAQ Public Access System.^{iv}

The MPOs noted some reporting is being done indirectly through their performance measure requirements.

8. Safety Funds: How does the MPO handle the solicitation of High Safety Improvement Projects (HSIP)?

The Highway Safety Improvement Program (HSIP) is a core federal-aid program meant to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned roads and roads on tribal land. The HSIP is legislated under Section 148 of Title 23, *United States Code* (23 U.S.C. 148) and regulated under Part 924 of Title 23, Code of Federal Regulations (23 CFR Part 924).^v

The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance. The HSIP program is typically implemented through a state's department of transportation. The peer review did not discover any of the MPOs playing an active role in the HSIP process. However, it is important to recognize that other MPOs outside of this peer review have played a role in the HSIP process by helping set criteria and selecting projects (e.g., Northwest Indiana Regional Planning Commission and the Bismarck-Mandan, ND, MPO). In these instances, the implementation and administration of the HSIP program is within the control of the DOT to maintain consistency in the federal reporting process.

MPOs also play an active role in helping establish HSIP performance measures and targets.

9. Technology: How does the MPO handle connected and automated vehicle (CAV) projects? Have CAV projects been funded? Any challenges faced with funding CAV projects?

The peer review discovered that most MPOs do not have any CAV projects within their current TIP. Though, many of the MPOs have indicated that they are currently in the process of drafting their next LRTP, which will include content and clarity regarding the future of CAV within their region. The peer review suggests the MPOs are currently tackling this topic and more information in their planning efforts will be released in the next year or two. Other items to note include:

- SEMCOG (Detroit, MI) has started to include dedicated short-range communication devices within new traffic signal devices funded in the TIP.
- SEMCOG (Detroit, MI) is currently putting together a taskforce to develop policy and actions for CAV.

- NCTCOG (Dallas, TX) has the Automated Vehicle funding program. This program is in place to advance automated vehicle testing, infrastructure, and deployment in the region. Current projects include the Texas Automated Vehicle Proving Ground in Arlington, Automated Vehicle Infrastructure (511DFW Data Portal), and Multi-purpose "Mover" prototyping.

10. CMP Approach and Methods: Is the MPO's Congestion Management Process (CMP) being used to help inform the selection of projects?

MTC demonstrated the strong connection between the CMP and its regional solicitation process. One of the primary sources to identify priority projects evolved from the county congestion management programs. In general, MPOs are using the CMP as a resource to identify priority projects, while informing their long-range planning initiatives. The CMP also plays an important role in helping identify eligible projects under the Congestion Mitigation and Air Quality Improvement Program (CMAQ).

Before & After Study

The purpose of this effort was to document the regional benefits achieved through the Regional Solicitation and the Highway Safety Improvement Program (HSIP). This was achieved by using a performance-based approach that evaluates the before & after conditions associated with a built project.

Projects chosen for this evaluation were based on available data sets to assess their before & after conditions and came mostly from the 2007, 2009, and 2011 funding cycles. Many of the projects funded as part of the 2014 Regional Solicitation are still being implemented or are too early after their built date to evaluate the after condition.

Performance Measures

The Regional Solicitation process allocates federal funds for projects in local communities to address their regional transportation needs. Since the early 1990s, these funds have been distributed through a competitive solicitation process with a foundational value that the process be objective, transparent, data-driven, and performance based. The performance measures used to evaluate the before & after were selected to help align the Regional Solicitation prioritization criteria with new federal performance targets. Overall, the selected measures will help identify a project's direct or indirect benefit in achieving the region's performance targets and transportation goals.

Performance Measure #1: Roadway Congestion

Performance Measure Objective:

- Determine if congestion benefits due to the project have been achieved by evaluating the peak-hour intersection delays or speed data under no build and build conditions.

Number of Projects Evaluated:

- A total of 16 built roadway projects were evaluated from the 2007, 2009, 2011 and 2014 Regional Solicitation funding cycles. Three of these were from the 2014 Regional Solicitation funding cycle.

Methodology Notes:

- 2007, 2009 and 2011 project applications:
- The congestion reduction measure for the 2007, 2009 and 2011 project applications required a calculation based on the one-way peak hour volume divided by capacity (number of lanes), resulting in a V/C ratio.
- The congestion benefits were determined by conducting a no-build (without improvement) and build (with improvement) condition Synchro analysis.

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- Local government agencies were contacted to determine what current intersection volumes were available.
- If not available, new turning movement counts were collected.
- 2014 project applications:
- Due to the build and inspection dates of the 2014 roadway projects, it was too early to evaluate intersection volumes with a no build & after condition Synchro analysis.
- A before & after speed analysis was conducted using StreetLight LBS and GPS data.
- One month of speed data taken before & after project construction was utilized for the analysis. Data from the years 2015 to 2018 was used for the analysis.
- The StreetLight LBS data has more data points that are gathered less frequently, which makes the data set less precise than the GPS data, which has fewer data points that are collected more frequently. Using the LBS data requires more averaging and interpolation since it is collected less frequently.

2007, 2009 and 2011 Findings:

- The analysis results for the 13 roadway projects are as follows:
- Total delay for the intersections was reduced for six applications with an average overall delay reduction of 55%.
- Total delay for the intersections remained the same for seven applications, although some had improvements by approach.
- The total delay reduction for the intersections are reported as a percent reduction versus the actual reduction in delay. The reason for this is that the reduction in delay is identified as a value of seconds per vehicle entering the intersection. A majority of the reductions in delay are small in value but the percent reduction can be much higher. For instance, a reduction in the delay per vehicle from 30 seconds to 15 seconds is 15 seconds but a 50% decrease.

2014 Findings:

- The analysis results for the three roadway projects are as follows:
- All three projects experienced a reduction in speeds during the a.m. and p.m. peak hours based on the StreetLight LBS data. The average speed reduction was four miles per hour.
- All three projects experienced an increase in speeds during the a.m. and p.m. peak hours based on the StreetLight GPS data. The average speed increase was two miles per hour.
- The low number of projects did not provide enough information for conclusive results to demonstrate a benefit.

Recommendations:

- The 2014 Regional Solicitation funding cycle included a new methodology for the congestion measure that required the applicant to analyze the worst-case intersection within the project limits using current peak hour intersection volumes. The intersection operations analysis should be conducted using Synchro, with and without the project improvement. The congestion measure should be evaluated for the 2014 project applications in the future as more time has elapsed since the projects were built.
- Further discussion is needed to determine whether the congestion measure is expanded to include a before & after speed analysis using the StreetLight data. The project application could require the before speed data at a particular location, to be evaluated at a later date for after build conditions.

Performance Measure #2: Roadway Safety

Performance Measure Objective:

- Determine if roadway safety benefits due to the project have been achieved by evaluating crash data.

Number of Projects Evaluated:

- A total of 18 built roadway projects were evaluated from the 2007, 2009, and 2011 Regional Solicitation funding cycles. This section does not include projects from HSIP solicitations, which are discussed in Performance Measures 7 and 8. Projects from the 2014 Regional Solicitation funding cycle were not evaluated due to build dates and lack of crash data. Interchange projects were not analyzed due to the difficulty in comparing the after condition with an interchange.

Methodology Notes:

- Reviewed the crash reduction analysis and before conditions submitted in the roadway project applications.
- Used Minnesota Crash Mapping Analysis Tool (MnCMAT) data to assess after crash conditions. Based on the confirmed build dates for the projects, the available crash data was not consistent and ranged from one to three years of data.

2007, 2009 and 2011 Findings:

- The crash reduction measure for the 2007, 2009 and 2011 project applications required a calculation to determine the number of total crashes reduced due to improvements on the roadway project. In addition, the MnDOT crash listing and diagram is required. However, a specific methodology is not required.

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- Upon review of the project applications, there was variation in the methodology used to calculate the crash reduction. The analyses included total crash reduction, a more detailed approach with injury and property damage crashes identified, and the highest level of detail with specific crash types identified. In addition, the source of the crash reduction factors varied as the applicants had the flexibility to use a solid resource of their choice.
- The crash analysis results for the 18 roadway projects are as follows:
- Note the reduced reliability of these results due to discrepancies in the crash data provided.
- Four projects met or exceeded the total crash reduction benefit (percentage) identified in the project application.
- Fourteen projects did not meet the total crash reduction benefit (percentage) identified in the project application.
 - Although not the full percentage, six projects did experience a reduction in overall crashes. However, of these six projects, one project saw an increase in injury type crashes and one project saw an increase in property damage type crashes.
 - Eight projects saw an increase in total crashes. Crash type was not determined as there was a lack of consistency in the detail of the before crash data in the applications.
- Note: The results focus on the number of crashes (increase/decrease), but does not take into account crash rates or the change in daily volumes.

Recommendations:

- The safety measure included in the roadway project applications for the 2014 Regional Solicitation was significantly changed to provide clear direction for all applicants. It uses the HSIP benefit/cost worksheet; states that all crash types and severities need to be identified in the worksheet, including bicycle and pedestrian crashes; and provides a specific FHWA resource for crash modification factors. These modifications addressed the variation in methodology stated in the findings and provide a fair basis for all applicants.
- The safety measure should continue to be evaluated over time as additional years of crash data become available to evaluate projects including and after the 2014 Regional Solicitation funding cycle.

Performance Measure #3: Transit

Performance Measure Objective:

- Determine if transit ridership projections have been achieved.

Number of Projects Evaluated:

- A total of 26 transit projects have been funded and programmed through the 2007, 2009, 2011 and 2014 Regional Solicitation funding cycles. Funded projects were implemented by various transit providers (Metro Transit, SouthWest Transit, Minnesota Valley Transit Authority and Maple Grove Transit).
- After investigating the status of the 26 awarded applications, it was determined that 10 of the projects had either not yet been implemented, had an uncertain implementation date, or had funds reallocated. Detailed evaluation proceeded with the remaining 16 awarded projects and maintained representation from all four transit agencies. Nine (60%) of the 16 applications were from one provider and the remaining seven were from three providers and one city.

Methodology Notes:

- Some projects could not be reviewed, because it could not be determined when or if the project had been implemented.
- The analysis considered the following data sets for the 2007, 2009 and 2011 CMAQ applications:
 - Existing routes: current average boardings per trip
 - New routes: projected average boardings per trip
 - Estimate of ridership at park and ride facility
- The analysis considered the following data sets for the 2014 Transit Expansion and Transit Modernization applications:
 - New annual riders
 - Service type
 - Park and ride express routes (Minneapolis and St. Paul only): 2020 forecast park and ride demand estimation model – ridership estimate (3rd year)
 - Transitway projects: forecast data – ridership estimate (3rd year)
 - Urban and suburban local/express routes: Peer routes to develop ridership estimate (most recent annual ridership available)
 - Existing transit routes: annual riders
- Each transit provider was contacted for actual new ridership data and their methodology used for tracking the data.
- Actual new ridership is defined as total ridership after implementation (total ridership after implementation – original ridership) equals new riders.
- New riders is then compared to projected ridership from the grant application.
- Eight of the 16 projects had original ridership prior to the project and the other eight did not have original ridership (a base of zero was then used).

- The Actual New Ridership methodology, documented by the providers, consistently used route ridership per trip based on data submitted to the Metropolitan Council on a quarterly service since service began. This methodology is consistent with how Projected New Ridership was calculated in the applications. In some cases, estimates were used when the actual numbers have not yet been reported, such as October 2018 - January 2019. The study found that there were nuances that had to be worked with, such as restructuring of routes from those listed in the grant and how to address any impact to ridership or service initiation (to calculate the third year in service).
- Metropolitan Council staff helped identify alternative methodologies if a transit agency was not comfortable sharing Automated Passenger Counting data. This applied to park-and-ride projects. A suggestion was proposed to the transit providers to base actual ridership on third year observed park-and-ride vehicle counts. There were comments that observed park-and-ride vehicle counts miss ridership from carpool, kiss and ride, walk-up, etc. It was suggested that if this methodology is applied to consider a multiplier to account for those riders. In terms of this study, for two park-and-ride projects, the observed park-and-ride vehicle counts (no multiplier) were applied since ridership counts by route and trip were not provided. The remaining park-and-ride projects applied ridership counts by route and trip (data provided by provider).

Findings:

- Seven of the 16 projects were a park-and-ride or station and the other nine were bus purchase/operations and technology.
- As mentioned above, the performance measure identified to evaluate the before & after conditions associated with the built project was Projected New Ridership (from application) compared to Total Ridership after Implementation (third year of operation).

Ridership totals (2007, 2009, 2011 and 2014):

- Projected new ridership: 5.6 million (28% increase)
- Total new ridership: 8.9 million (44% increase)

The Green and Blue Line LRT projects played a significant role with 7.4 million out of the 8.9 million total new ridership as a result from these projects. The remaining 14 projects resulted in a total new ridership of 1.5 million.

- All but two of the 16 projects resulted in positive transit ridership returns.
- Four of the 16 projects outperformed their projected new ridership projections (three transitways and one park-and-ride), and 12 projects did not meet their projected expectations.
- The projects resulted in new riders, but the application did not provide accurate predictions.

Recommendations:

- For consistency, the application should provide a consistent methodology on how to calculate projected new ridership.
- Existing ridership by route, projected ridership by route, etc.
- Clearly define data required, and the methodology, for calculating actual new ridership.
- Which routes were in place prior to the project; how did these routes change, if at all; change, what new routes were introduced; and ridership for current routes (third year)?
- Improve tracking of project implementation.
- Determine the “why” when there is a wide range between projected and actual numbers.

Performance Measure #4: Bicycle & Pedestrian Safety

Performance Measure Objective:

- Determine if pedestrian and bicycle safety benefits have been achieved by evaluating crash data.

Number of Projects Evaluated:

- A total of 44 pedestrian and bicycle projects have been funded and programmed through the 2007, 2009, 2011, and 2014 Regional Solicitation funding cycles. Thirty-four of those projects have been built and were evaluated as part of this performance measure.

Methodology Notes:

- Utilized MnCMAT data provided by MnDOT for the years 2007 through 2017.
- The reduction was determined by calculating the average number of crashes that occurred before & after the project was built. This methodology had different results for each project. For example, a project built in 2009 would have only considered two years of before data and eight years of after data.
- The methodology is qualitative in nature. The recommendations provide suggestions for different approaches to produce stronger quantitative results.

Findings:

- The number of pedestrian and bicycle crashes have been reduced within a half-mile buffer of the built projects:
- Reduction of 93 pedestrian and bicycle crashes.
- Reduction of 68 bicycle crashes.
- Reduction of 25 pedestrian crashes.

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- Built projects have resulted in a reduction of fatalities. This has resulted in an annual reduction of one fatality.
- The number of pedestrian and bicycle crashes have been reduced within a quarter-mile buffer of the built projects:
- Reduction of 18 pedestrian and bicycle crashes.
- Reduction of 17 bicycle crashes.
- Reduction of one pedestrian crash.
- Built projects have resulted in a reduction of fatalities. This has resulted in an annual reduction of one fatality.
- In general, the findings suggest the projects have helped support a safer pedestrian and bicycle environment.

Recommendations:

- The measure should continue to be evaluated over time as additional years of crash data become available. Built projects should be evaluated with at least five years of before data and five years of after data.
- The measure should be expanded to look at the type of improvements and crashes associated with a project. A safety analysis at key locations will also help determine the type of safety benefits being achieved through various improvements.

Performance Measure #5: RBTN Contribution

Performance Measure Objective:

- Tabulate the number of bikeway miles funded and programmed and their contribution to the Regional Bicycle Transportation Network (RBTN).

Number of Projects Evaluated:

- The following number of projects were included as part of the performance measure:
- Twenty-six bikeway projects that were programmed or built as part of the 2007, 2009, 2011, and 2014 Regional Solicitation funding cycles.
- Twenty-three bikeway projects that were programmed or built as part of the 2016 and 2018 Regional Solicitation funding cycles.
- Eighteen roadway expansion or reconstruction projects with bikeway facilities that were programmed or built as part of the 2007, 2009, 2011, and 2014 Regional Solicitation funding cycles.

Methodology Notes:

- Programmed projects dating back to the 2007 Regional Solicitation funding cycle were mapped in GIS. The locations were determined by the application and Transportation Improvement Program (TIP) description.
- Each project was coded in GIS to determine if its location was part of a RBTN Alignment or RBTN Corridor. A project's contribution to the RBTN was only considered if the project was funded after 2014, when the RBTN was established; therefore, older projects (built before 2014) would not be consistent with the regional guiding principles used in determining the RBTN Corridors.
- Safe Routes to School (SRTS) and Pedestrian Facilities projects were excluded from this analysis.

Findings:

- Approximately 73 miles of bikeway facilities have been built or programmed, contributing 55 miles to the RBTN (see Figure 1).
- The roadway expansion and reconstruction funding categories have helped build 19 miles of bikeway facilities. Approximately seven miles are part of the RBTN.
- The projects noted above have contributed 62 bikeway miles to the RBTN network or 4.23% of the overall RBTN (1,453 miles):
 - Tier 1 Bikeway Alignment approximately 27.5 miles
 - Tier 2 Bikeway Alignment approximately 20.2 miles
 - Tier 1 Bikeway Corridor (projects built after 2014) approximately 8.3 miles
 - Tier 2 Bikeway Corridors (projects built after 2014) approximately 6.1 miles

Recommendations:

- Roadway projects have provided contributions to the RBTN but should not be viewed as a major contributor in developing the RBTN network.
- Regional data sets should be expanded to determine the type of facilities (bicycle or pedestrian) that exist today. This type of data will provide a more accurate picture of gaps in the RBTN.

Performance Measure #6: Pedestrian/Bicycle Connections Achieved

Performance Measure Objective:

- Document the number of desirable destinations (e.g., jobs, homes, recreation, shopping, etc.) connected/linked by built or programmed pedestrian or bikeway projects.

Number of Projects Evaluated:

- A total of 58 projects were evaluated:
- Twenty-six bikeway projects that were programmed or built as part of the 2007, 2009, 2011, and 2014 Regional Solicitation funding cycles.
- Twenty-three bikeway projects that were programmed or built as part of the 2016 and 2018 Regional Solicitation funding cycles.
- Three pedestrian projects that were programmed or built as part of the 2007, 2009, 2011, and 2014 Regional Solicitation funding cycles.
- Six Safe Routes to School (SRTS) projects that were programmed or built as part of the 2007, 2009, 2011, and 2014 Regional Solicitation funding cycles.

Methodology Notes:

- Each project was mapped and analyzed in GIS. The following data sets were used to determine the findings:

- **Job and Activity Centers:** Data was obtained through the Metropolitan Council. The job and activity centers describe contiguous areas where there are at least 1,000 jobs and the employment density is at least 10 jobs per net acre. The data also includes some regionally significant manufacturing and distribution centers that have at least 1,000 jobs but densities less than 10 jobs per acre.

One-hundred and seven (107) centers are defined. Nearly two-thirds of all jobs in the seven-county Twin Cities metropolitan area are located within the job and activity centers. The job and activity centers are classified into six scaled categories based on total employment or special recognition, and five industry types (Major, Professional, Industrial, Activity, and Diversified) based on predominant industry.

In general, job and activity center boundaries follow U.S. Census block boundaries.

- **Job Concentration Centers:** Data was obtained through the Metropolitan Council. Job density displays the most accurately located employment density within the metropolitan area of Minneapolis and St. Paul, Minnesota. Job density is based on employer locations and counts from the Minnesota Department of Employment and Economic Development's (DEED's) Quarterly Census of Employment and Wages (QCEW), which only includes jobs that are covered by the Unemployment Insurance Program (about 90 to 95% of all jobs). Some self-employment jobs might be excluded.

The QCEW data was converted to a smoothly tapered surface of employment values. The resulting data surface provides the best representation of job density in the metropolitan area.

- **Areas of Concentrated Poverty:** Data was obtained through the Metropolitan Council. The Metropolitan Council defines Areas of Concentrated Poverty (ACPs) as census tracts where 40% or more of the residents have family or individual incomes that are less

than 185% of the federal poverty threshold. In 2017, 185% of the federal poverty threshold was \$46,424 for a family of four or \$23,103 for an individual living alone. Some census tracts that meet this poverty threshold have a large share of college or graduate students. These areas are excluded from the Met Council's defined Areas of Concentrated Poverty census tracts.

To identify areas where people of color experience the most exposure to concentrated poverty, the Council further differentiates Areas of Concentrated Poverty where 50% or more of the residents are people of color (ACP50s).

Note that the Metropolitan Council's Areas of Concentrated Poverty are different from the U.S Department of Housing and Urban Development's Racially / Ethnically Concentrated Areas of Poverty.

Findings:

- Twenty of the 58 projects (35%) provided a direct or indirect connection to a major job or activity center. This resulted in a total of 23.5 miles out of 76 miles (see Figure 2):
 - Activity: six projects – 5.9 miles
 - Diversified: two projects – 1.6 miles
 - Industrial: two projects – 4.0 miles
 - Major: four projects – 4.9 miles
 - Professional: six projects – 7.0 miles
- Eighteen of the 58 projects (31%) provided a direct or indirect connection to a job concentration center. This resulted in a total of 20.5 miles out of 76 miles (see Figure 3):
 - 3,000 to 5,999 jobs: seven projects (8.0 miles)
 - 6,000 to 9,999 jobs: six projects (6.0 miles)
 - 10,000 to 39,999 jobs: three projects (3.5 miles)
 - 40,000 to 160,000 jobs: two projects (2.9 miles)
- Thirty of the 58 projects (52%) provided a direct or indirect connection to areas above the regional average of concentrated race and poverty. This resulted in a total of 33 miles out of 76 miles (see Figure 4).
- Seven of the 58 projects (17%) provided a direct or indirect connection to areas of concentrated poverty. This resulted in a total of 9 miles out of 76 miles (see Figure 4).
- Seven of the 58 projects (12%) provided a direct or indirect connection to areas of above the regional average of concentrated race. This resulted in a total of 11 miles out of 76 miles (see Figure 4).

Recommendations:

- At a minimum, the Metropolitan Council should encourage agencies at all levels of government to collect pedestrian and bicycle counts along major pedestrian and bicycle corridors (e.g., RBTN). Historical pedestrian and bicycle counts will provide a stronger baseline of information for evaluating the utilization of a corridor and their connection to destinations.

Performance Measure #7: HSIP Safety Benefits

Performance Measure Objective:

- Determine if roadway and intersection safety benefits have been achieved by evaluating crash data.

Number of Projects Evaluated:

- A total of 27 built HSIP projects have been evaluated from the 2007, 2009 and 2011 HSIP solicitation as part of this performance measure based on their completeness/built date.

Methodology Notes:

- Reviewed the HSIP B/C worksheet and before conditions submitted in the application.
- Utilized MnCMAT data to assess after crash conditions. Based on the confirmed build dates for the projects, the available crash data was not consistent and ranged from one to three years of data.
- For the 2007 applications, crash data for the years 2002-2005 was used for the before analysis and crash data for the years 2014-2016 was used for the after analysis. For the 2009 applications, crash data for the years 2005-2007 was used for the before analysis and crash data for the years 2015-2017 was used for the after analysis.
- For the 2011 applications, crash data for the years 2007-2009 was used for the before analysis and crash data for the year 2017 was used for the “after” analysis. The 2011 applications were likely constructed in the years 2015 or 2016. A three-year average was taken for the before crash analysis to provide a comparison with the after crash analysis.

2007 and 2009 Findings:

- After reviewing the B/C worksheets, it was determined applicants are approaching the worksheet differently from one another. For example, some applicants are only reporting specific types of crashes in the spreadsheet to then use only one or two crash reduction factors (highest values) associated with an improvement. This creates difficulty in determining the total crash benefit if all crashes are not reported in the before condition. Approximately 10% of the applications may not have been fully filled out with all reported crashes. In addition, they are not considering a comprehensive analysis of the type of crashes that may occur after the project is

built (e.g., applicants are using right-angle crash reduction factors to demonstrate the benefits of a roundabout, without considering the number of sideswipes that may increase).

- The analysis results for the 20 projects are as follows:
 - Note the reduced reliability of these results are due to discrepancies in how the B/C worksheets were completed.
 - Twelve projects met or exceeded the specific crash type reduction benefit identified on the B/C worksheet.
 - Seven projects did not meet the specific crash type reduction benefit identified on the B/C worksheet, but these projects did experience a reduction in total crashes.
 - One project saw a slight increase (15% with 13 before crashes and 15 after crashes) in total crashes. However, this project did see a 25% reduction in injury type crashes.
- Overall the following severity was observed for the project applications included in the analysis:
 - 100% reduction in fatal crashes (five to 0).
 - 97% reduction in A injury crashes (30 down to one).
 - 68% reduction in B injury crashes (85 down to 27).
 - 69% reduction in C injury crashes (144 down to 45).

2011 Findings:

- Similar to the 2007 and 2009 findings, it was determined applicants may be approaching the B/C worksheet differently from one another. This creates difficulty in determining the total crash benefit if all crashes are not reported in the before condition. Over 40% of the applications may not have been fully filled out with all reported crashes.
- The analysis results for the seven projects are as follows:
 - Note the reduced reliability of these results are due to discrepancies in how the B/C worksheets were completed.
 - Five projects met or exceeded the specific crash type reduction benefit identified on the B/C worksheet.
 - One project did not meet the specific crash type reduction benefit identified on the B/C worksheet, but this project did experience a 10% reduction in overall crashes and 57% reduction in injury type crashes.
 - One project saw a 300% increase (one up to three) in total crashes. This project also experienced a 200% increase in rear end crashes (one up to two).
- Overall the following severity was observed for the project applications included in the analysis:
 - No fatal crashes observed in before or after analysis.
 - 63% reduction in A injury crashes (three down to one).
 - 100% reduction in B injury crashes (six down to zero).

- 83% reduction in C injury crashes (23 down to four).

Recommendations:

- Additional training or directions on how to fill out the HSIP form should be provided for the next solicitation.
- Further evaluation of the FHWA Crash Modification Factors should be conducted to determine if other resources are available. At a minimum, MnDOT staff should reduce the number of reduction factors being used for consistency.

Performance Measure #8: HSIP Congestion Benefits

Performance Measure Objective:

- Determine if congestion benefits due to the project have been achieved by evaluating the speed data under no build and build conditions

Number of Projects Evaluated:

- A total of 10 HSIP projects have been funded and programmed through the 2011 HSIP solicitation. Three of the HSIP projects were evaluated as part of this performance measure.

Methodology Notes:

- A before & after speed analysis was conducted using StreetLight GPS data.
- The analysis used data from 2014 to obtain before speeds and data from 2018 to obtain after speeds for the projects.

Findings:

- The analysis results for the three roadway projects are as follows:
 - One of the projects experienced a reduction in speeds during the p.m. peak hour. The average speed reduction was one mile per hour.
 - Two of the projects experienced an increase in speeds during the p.m. peak hour. The average speed increase ranged from two to six miles per hour.
- The low number of projects did not provide enough information for conclusive results to demonstrate a benefit. In addition, it is important to note that the HSIP solicitation focuses on safety improvements not mobility.

Recommendations:

- HSIP projects are selected for funding to address a safety problem. Most of the funded projects are focused on the safety at specific intersections. For example, the installation of overhead

signal indications at nine intersections may not result in an increase of speeds during the peak hours as the data considers the slowing down and stopping at closely spaced intersections. Therefore, the HSIP application should continue to focus on safety benefits and this measure should not be evaluated for after speed conditions.

Conclusions and Recommendations

Findings from the before & after study documented a variety of benefits associated with projects that have received federal transportation funds. These benefits come mostly from the 2007, 2009, and 2011 funding cycles. Many of the projects funded as part of the 2014 Regional Solicitation are still being implemented or are too early after their built date to evaluate the after condition. In that respect, the Metropolitan Council should monitor these projects (and future solicitations) over time to determine their before & after conditions. In addition to this recommendation, the Metropolitan Council should consider future phases of the study:

- **Tracking and Monitoring:** Tracking and monitoring a project's before & after condition should be repeatable. To achieve this objective, the Metropolitan Council should develop a tool or database that can be easily maintained and updated over time. Sound data sets are key to making these tools dependable and repeatable.
- **Celebrate Your Successes:** The Metropolitan Council should promote the successes of the Regional Solicitation program and its benefits to the people of the region. This can be achieved through various marketing and educational materials.
- **Learn from Others:** The peer review generated a lot of interest from TAC and TAB members on how other MPOs approach their regional solicitation process. The peer review should be expanded to dig deeper in various interest areas.

ⁱ http://files.www.campanc.us/funding/transportation-improvement-program/CAMPO_SPOT_Methodology.pdf

ⁱⁱ <https://www.transit.dot.gov/title6>

ⁱⁱⁱ <http://www.dchcmo.org/involvement/ej.asp>

^{iv} https://www.fhwa.dot.gov/environment/air_quality/cmaq/reporting/

^v <https://safety.fhwa.dot.gov/hsip/>