April 3, 2019

Regional Solicitation Before-and-After Study

Technical Advisory Committee

METROPOLITAN COUNCIL

Today’s Talking Points

- Study Team
- Study Purpose & Process
- Peer Review
- Study Results
  - Methodology
  - Findings
- Discussion

METROPOLITAN COUNCIL

Consultant Team

SRF Consulting Group, Inc. and Hoisington Koegler Group, Inc.

Marie Cote, PE | Project Principal/Manager | SRF

Lance Bernard | Deputy Project Manager | HKGi

METROPOLITAN COUNCIL

Study Purpose

The purpose of this study is to document the benefits achieved through the Regional Solicitation program and Highway Safety Improvement Program (HSIP). This will be achieved by using a performance-based approach that evaluates the “before-and-after” conditions associated with a built project.

METROPOLITAN COUNCIL

Study Process

- Determine the “before-and-after” conditions for built projects that have received funds dating back to 2007:
  - 45 Roadway Projects
  - 25 Transit Projects
  - 40 Ped/Bike Projects
  - 30 HSIP Projects
- Document the cumulative benefits
- Use a performance-based approach to document the benefits
- Evaluate other MPOs (Peer Review)

METROPOLITAN COUNCIL

MPO Peer Review

METROPOLITAN COUNCIL

Peer Review

Findings from this effort are intended to spark conversations about future policy decisions regarding the Regional Solicitation.

METROPOLITAN COUNCIL

Peer Review

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

METROPOLITAN COUNCIL

Peer Review

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. **Geographical 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?

METROPOLITAN COUNCIL

Peer Review

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 Highway Safety Improvement Program (HSIP) projects?

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?

METROPOLITAN COUNCIL

Peer Review – Key Findings

- **Long-Range Transportation Plan Approach**: A larger emphasis is being placed on projects that have been identified in the MPO's LRTP. 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, equity and multimodal goals). The end result is a short-term program of transportation investment priorities.

- **Geographical 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.

- **Traditional Approach**: METRO (Portland, OR) and BALTOMETRO (Baltimore, MD) use a similar regional solicitation process as the Metropolitan Council, which includes a "call-for-proposals" through an application process. Projects that are selected for funding are still closely linked to regional goals and priorities identified in their regional policy plans or LRTP.

METROPOLITAN COUNCIL

Peer Review – Key Findings

9 out of the 10 MPOs do not cap the amount of money being requested.

MPOs are programming/funding larger scaled projects that achieve a larger regional benefit.

METROPOLITAN COUNCIL

Peer Review – Items of Note

- A large emphasis has been placed on air quality, economic development initiatives and affordable housing goals.
- The peer review did not discover any studies being done to report the “before-and-after” results of a transportation project that has received federal funds.
- MPOs play an active role in helping establish HSIP performance measures and targets, but do not manage the program.
- Most MPOs do not have any CAV projects within their current TIP.
- CAV scoring criteria have not been established.

METROPOLITAN COUNCIL

Before-and-After Study (Methodology and Findings)

METROPOLITAN COUNCIL

Findings will help address the study objectives:

- Review existing and proposed conditions at the time of the application submittal and compare post construction conditions to determine if the region received the level of benefits identified in the project application.
- Identify if there are specific types of projects that resulted in the highest level of safety or delay benefits per dollar invested.
- Determine if there are any scoring measure modifications or lessons learned for future solicitations.
- Identify how the Regional Solicitation and HSIP prioritization criteria can better align with new federal performance targets.

METROPOLITAN COUNCIL

Roadway Performance Measures

Performance Measure #1: Roadway Congestion

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

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Congestion Methodology

- 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 in this evaluation were determined by conducting a Synchro analysis for no build (without improvement) and build (with improvement) conditions using current peak hour volumes.

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Congestion Findings

- 2007, 2009 and 2011 Findings (13 Projects):
  - Total delay for the intersections was reduced for 6 applications with an overall average delay reduction of 55 percent.
  - Total delay for the intersections remained the same for 7 applications, although some had reductions by approach.

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Congestion Methodology

- 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 Synchro analysis for no build and build conditions.
  - A before-and-after speed analysis was conducted using StreetLight GPS data.

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Congestion Findings

- 2014 Findings (Three Projects)
  - All three projects experienced an increase in speeds during the a.m. and p.m. peak hours. 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.**

METROPOLITAN COUNCIL

Roadway Congestion – Items of Note

The 2014 application 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 volumes, with and without the project improvement. This provides a solid base condition that can be used to evaluate post construction conditions.

METROPOLITAN COUNCIL

Roadway Performance Measures

Performance Measure #2: Roadway Safety

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

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Safety Methodology

- Review the crash reduction analysis and before conditions submitted in the roadway project applications.
- Utilized Minnesota Crash Mapping Analysis Tool (MnCMAT) data to assess after crash conditions.

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Safety Findings

- There was variation in the datasets used to calculate the crash reduction. Data provision included:
    - Total crash reduction
    - A more detailed approach with injury and property-damage crashes identified
    - Detailed analysis separating specific crash types.
- The source of the crash reduction factors varied as the applicant had the flexibility to use a published resource of their choice.

METROPOLITAN COUNCIL

Roadway Performance Measures

Roadway Safety Findings

- 2007, 2009 and 2011 Findings (18 Projects):
  - 10 projects experienced a reduction in overall crashes.
  - 8 projects saw an increase in total crashes.

Roadway Safety – Items of Note

The 2014 application included a new methodology for the safety measure that required the applicant to utilize the HSIP application B/C worksheet. This provides clear direction with a specific FHWA resource for crash modification factors that can be used to evaluate post construction conditions.

METROPOLITAN COUNCIL

Transit Performance Measures

Performance Measure #3: Transit

- Determine if transit ridership projections have been achieved.

Transit Performance Measures

Transit Ridership Methodology

- 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.

METROPOLITAN COUNCIL

Transit Performance Measures

Transit Ridership Findings (16 projects)

- Ridership totals:
  - Projected New Ridership: 5.6 million (28 percent increase)
  - Total New Ridership: 8.9 million (44 percent 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.

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Performance Measure #4: Bicycle & Pedestrian Safety

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

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Bike/Ped Safety Methodology

- Utilized MnCMAT data provided by MnDOT for the years 2007 through 2017.

- The annual reduction was determined by calculating the average number of crashes that occurred before and after the project was built.

- The methodology is qualitative in nature

Bicycle/Pedestrian Performance Measures

Bike/Ped Safety Findings (34 projects)

- The number of pedestrian and bicycle crashes have been reduced within a half-mile buffer of the built projects:
  - Annual reduction of 93 pedestrian and bicycle crashes.
  - Built projects have 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:
  - Annual reduction of 18 pedestrian and bicycle crashes.
  - Built projects have resulted in an annual reduction of one fatality.

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Performance Measure #5: RBTN Contribution

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

The RBTN has only been a consideration in the scoring since 2014.

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Bike/Ped RBTN Methodology

- Each project was coded in GIS to determine if its location was part of a RBTN Alignment or Corridor.
- Evaluated roadway (reconstruction and expansion) projects to determine if any helped play a role in developing bikeway facilities.

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Bike/Ped RBTN Findings (67 projects)

- Approximately 73 miles of bikeway facilities have been built or programmed. 55 miles have contributed to the RBTN.
- The roadway expansion and reconstruction projects have helped build 19 miles of bikeway facilities. Approximately 7 miles were part of the RBTN.
- The projects noted above have contributed 62 bikeway miles to the RBTN network or 4.23 percent of the overall RBTN (existing and planned - 1,453 miles).

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Performance Measure #6: Pedestrian/Bicycle Connections Achieved

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

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Ped/Bike Connection Methodology

- Each project was coded in GIS to determine its location relative to various activity centers and population groups.

METROPOLITAN COUNCIL

Bicycle/Pedestrian Performance Measures

Ped/Bike Connection Findings (58 projects – 76 miles)

- Direct and indirect connections have been made to the following areas:
  - Major job or activity centers (20 projects - 23 miles)
  - Areas above the regional average of concentrated race or poverty (20 projects - 25 miles)
  - Areas of concentrated poverty (15 projects – 19 miles)
  - Areas of concentrated poverty greater than 50 percent residents of color (10 projects – 13 miles)

METROPOLITAN COUNCIL

HSIP Performance Measures

Performance Measure #7: HSIP Safety Benefits

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

METROPOLITAN COUNCIL

HSIP Performance Measures

HSIP Safety Methodology

- Review the HSIP B/C worksheet and “before” conditions submitted in the application.
- Utilize MnCMAT data for “after” conditions.
- The 2007 and 2009 “after” conditions were based on three years of crash data, whereas the 2011 “after” conditions were based on one year of crash data.
  - Therefore, the 2007 and 2009 findings were reported separately from the 2011 findings.

METROPOLITAN COUNCIL

HSIP Performance Measures

HSIP Safety Findings

- 2007 and 2009 Findings (20 projects)
  - 12 projects met or exceeded the specific crash type reduction benefit identified in the application.
  - 7 projects did not meet the specific crash type reduction benefit identified in the application, but experienced a reduction in total crashes.
  - 1 project saw a slight increase in total crashes, but experienced a reduction in injury type crashes.

METROPOLITAN COUNCIL

HSIP Performance Measures

HSIP Safety Findings

- 2007 and 2009 Findings (20 projects)
- **With these investments, crash severity has been reduced.**
  - 100 percent reduction in fatal crashes (five to 0)
  - 97 percent reduction in A injury crashes (30 down to one)
  - 68 percent reduction in B injury crashes (85 down to 27)
  - 69 percent reduction in C injury crashes (144 down to 45)

METROPOLITAN COUNCIL

HSIP Performance Measures

HSIP Safety Findings

- 2011 Findings (seven projects)
  - 5 projects met or exceeded the specific crash type reduction benefit identified in the application.
  - 1 project did not meet the specific crash type reduction benefit identified in the application, but experienced a reduction in total crashes.
  - 1 project saw an increase in total crashes from one to three crashes.

METROPOLITAN COUNCIL

HSIP Performance Measures

HSIP Safety Findings

- 2011 Findings (seven projects)
- **With these investments, crash severity has been reduced.**
  - No fatal crashes observed in before or after analysis
  - 63 percent reduction in A injury crashes (three down to one)
  - 100 percent reduction in B injury crashes (six down to 0)
  - 83 percent reduction in C injury crashes (23 down to four)

METROPOLITAN COUNCIL

Summary of Findings

- Roadways
  - With the Regional Solicitation investments, roadway delays have been constant or reduced.
  - Scoring measures for safety and delays improved following 2014 Reg Sol Redesign.
- Transit
  - Projects have exceeded Annual New Ridership forecasts
- Pedestrian/Bicycle
  - Safety benefits have been achieved
  - Projects have played a large role in contributing to the RBTN
  - Funding has been directed towards job/activity centers, and areas of concentrated poverty/race
- HSIP
  - With the HSIP investments, crash severity benefits have been achieved

METROPOLITAN COUNCIL

Recommendations

- Share the “Good News” (e.g., safety benefits, RBTN, and transit ridership).
- Monitor 2014 Regional Solicitation projects to determine their benefits.
- Discuss the Peer Review findings and if any new approaches to the Regional Solicitation funding cycle should be considered.
- Discuss minor modifications or better guidance for the Regional Solicitation and/or HSIP applications.
- Address data needs/gaps:
  - StreetLight Data
  - RBTN Network
  - Pedestrian/Bicycle Volumes
  - Construction/Built Dates

METROPOLITAN COUNCIL

Discussion

METROPOLITAN COUNCIL