APPENDIX A

Definitions and Acronyms

"A" Minor Arterials - Roadways within the metropolitan area which are more regionally significant than others. These roadways are classified into the following groups:

> **Relievers -** Minor arterials which provide direct relief for metropolitan highway traffic. These roads include the closest routes parallel to the principal arterials within the urban and transitional areas. These roadways are proposed to accommodate medium length trips (less than 8 miles) as well as providing relief to congested principal arterials. Approximately 395 miles have been identified. Improvement focus is on providing additional capacity for through traffic.
>
> **Expanders -** Routes which provide a way to make connections between developing areas outside the interstate ring or beltway. These routes are located circumferentially beyond the area reasonably served by the beltway. These roadways are proposed to serve medium to long suburb to suburb trips. Approximately 190 miles have been identified.
>
> **Connectors -** This subgroup of "A" minor arterials are those roads that would provide good, safe connections among town centers in the urban reserve and rural areas within and near the seven counties. Approximately 300 miles have been identified. Improvement focus is on safety and load-carrying capacity.
>
> **Augmenters -** The fourth group of "A" minor arterials are those roads that augment principal arterials within the interstate ring or beltway or within Freestanding Growth Centers. The principal arterial network in this area is mature. However, the network of principal arterials serving the area is not in all cases sufficient relative to the density of development that network serves. In these situations, these key minor arterials serve many long-range trips. The improvement focus is on providing additional capacity for through traffic.

Applicant - The applicant is the agency, organization, or government submitting the application.

Congestion Management System - A process for developing, evaluating, implementing and monitoring transportation strategies and plans that address existing and future traffic congestion. The individual components of the system will consist of:

1. An inventory and tracking program.
2. A congestion evaluation program.
3. Locally developed congestion standards.
4. Short and long range strategies and actions that address present and future congestion.

Areas in which strategies can be pursued are: ITS, incident management, HOV lanes, ridesharing, transit operations, transit pricing, road pricing, access management, site design, parking management, flextime, and other TDM and TSM strategies.

Construction - Roadway improvements directed toward increasing the capacity of the facility either by the addition of new through lanes or new construction.

Design Capacity- The assumed maximum number of vehicles per lane which pass any given point in an hour on an average day during good operating conditions. For the purposes of responding to criteria in this solicitation packet, the following capacities shall be used:

- metered freeway - 1,950 vehicles per hour;
- unmetered freeway - 1,750 vehicles per hour;

- HOV lane (concurrent) - 1,400 vehicles per hour;
- expressway through lane - 700 vehicles per hour;
- arterial through lane - 600 vehicles per hour;
- left-turn lane - 300 vehicles per hour;
- right-turn lane - 200 vehicles per hour;
- dedicated bike lane or joint use trail - 60 vehicles per hour.

Independent Utility – a project with independent utility is defined in FHWA guidance as one that contains logical termini, is usable on its own and would be a reasonable expenditure even if no additional transportation improvements in the area are made.

Integrated Traffic Management System - The development and application of network wide, data collection and sharing traffic information system. The system can integrate data and control systems from freeways, arterials and city streets in order to provide real-time proactive traffic information and control. Implementation of the system would facilitate congestion management over the entire network across multi-jurisdictional boundaries. The system could provide incident detection, transit and emergency vehicle priority, and advance traveler information.

Intelligent Transportation Systems (ITS) - The development or application of technology (electronics, communications, or information processing) used to improve the efficiency and safety of surface transportation systems. ITS is subdivided into five categories that reflect the major emphasis of application:

Advanced Traffic Management Systems
Advanced Traveler Information Systems
Advanced Public Transportation Systems
Automatic Vehicle Control Systems
Commercial Vehicle Operations

Projects designed to improve surface transportation systems involve integrating electronics, communications and computer and control systems into both vehicles and public roadways. Some operational examples include Highway Advisory Radio, On-line Computer controlled freeway ramp metering and in-vehicle cruise control. Future projects could include real-time traveler information systems for buses, advanced driver information systems, in-vehicle collision warning devices and integrated traffic control systems.

Intermodal Transportation Facility - Any fixed facility designed to expedite the movement of people or goods from one mode of travel to another. For example, transit hubs or park-and-ride lots are intermodal facilities that connect auto drivers and passengers to public transit. A truck/rail terminal where containers are unloaded from railroad flatcars to tractor trailers is an intermodal facility that makes freight movement more efficient.

Major Traffic Generator - A geographic area with concentrated land use development such that a significant amount of trips are generated. "Regional Business Concentrations" as defined and depicted in the Transportation Development Guide Chapter/Policy Plan meet this definition. Other concentrated developments may also be included.

Operational Improvement - A capital improvement for installation of traffic surveillance and control equipment, computerized signal systems, motorist information systems, integrated traffic control systems, incident management programs, and transportation demand and system management facilities, strategies, and programs.

Principal Arterials - The high-speed, high-capacity highways that constitute the regional highway system. About 660 miles in total length, these routes carry the longest trips in the region and provide the highest speeds available during peak traffic periods. They connect the Metropolitan Urban Service Area (MUSA) with urban areas and major cities in Minnesota and

other states. And, within the MUSA, they interconnect the metropolitan centers, regional business concentrations, important transportation terminals, and large institutional facilities.

Project - A group of tasks or methods designed to accomplish a specific purpose. For example a roadway construction project would be defined by the location, cross section and intersection treatment. A TSM project would define the scope, methods, location, and duration of the tasks.

Reconstruction - Roadway improvements that are intended to improve the cross section and grade of sections of the highway system. These projects are intended to include as needed, HOV lane and ramps, metering, addition of turn lanes, channelization, widening of lanes and/or shoulders, improving horizontal and/or vertical sight distances, upgrading pavement to minimize load restrictions, interchanges, bridges, and signals.

Rehabilitation - Roadway improvements intended to correct conditions identified as deficient without major changes to the cross section. These projects should consist of removal and replacement of base and pavement, shouldering and as needed widening and drainage correction.

Routine Maintenance - Roadway maintenance consisting of periodic applications of bituminous overlays, seal treatments, milling, crack routing and filling and base repair. These treatments are intended to help ensure the roadway can be used to the end of its design life. These projects are ineligible for federal funding.

Throughput - The amount of vehicles/persons which can pass a point on a roadway or pass through an intersection over a specified period of time. Can be equated to capacity if considering vehicles alone.

Traffic Analysis Zone - A geographic area of land containing socioeconomic data (population, households, employment, etc.) used primarily in traffic forecasting. The seven-county metropolitan area is divided into 1165 traffic analysis zones.

Traffic Signal Control Systems - For the purposes of this solicitation, the degree of traffic management of an arterial is grouped and defined as follows:

> **Fixed Time -** The traffic signals on an arterial are controlled locally through a time clock system. In general, the progression of a through band (the amount of green time available along an arterial at a given speed) along the arterial in the peak direction is determined by past experience and is not a function of immediate traffic demand.
>
> **Semi-Actuated -** The traffic signals along the arterial are designed to maximize the green time on the major route in the major direction. Timing and through band are based upon historical records. Use of green time on the minor routes is dependent upon real-time demand and maximized based upon total intersection delay.
>
> **Interconnection -** A traffic signal system in which data collected at individual signals is shared with a central processor or controller. Adjustments in traffic signal control can be made based upon incoming data as opposed to historical data.
>
> **Optimization -** The process in which a traffic signal or system is modified to maximize the amount of vehicles passing through the intersection for all approaches or on the major road in the peak direction.
>
> **Real-Time Adaptive Control -** An advanced traffic control system which incorporates current technologies in communications, data analysis, and traffic monitoring to provide real-time traffic control of arterials, corridors or roadway networks.

Transportation Demand Management - Programs and methods to reduce effective demand. In the broadest sense, any activity or facility that reduces person trips would fall within project

classification. The highest priority in the region is given to reducing single-occupant vehicle trips in the peak periods. Techniques that might be utilized are carpooling, vanpooling, telecommuting, transit, alternative work hours, transportation management association, and land development or ordinances that discourage vehicle trips and encourage walk, bike, rideshare and transit trips.

Transportation System Management - Programs and methods to improve the efficiency and effective capacity of the transportation system. Techniques that might be utilized are signalization, metering, HOV ramps and lanes, one-way streets and transit system improvements.

ACRONYMS

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
CAAA	Clean Air Act Amendment (of 1990)
CBD	Central Business District
CMAQ	Congestion Mitigation and Air Quality
CO	Carbon Monoxide
EPA	US Environmental Protection Agency
EQB	Environmental Quality Board
DNR	Department of Natural Resources
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HCADT	Heavy Commercial Average Daily Traffic
HOV	High Occupancy Vehicle
ISTEA	Intermodal Surface Transportation Efficiency Act
MN	Minnesota
MN/DOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MUSA	Metropolitan Urban Service Area
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Protection Act
PA	Principal Arterial
PS&E	Plan Specification and Estimate
SAFETEA-LU	Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users
SIP	State Implementation Plan (for Air Quality)
SOV	Single Occupancy Vehicle
STP	Surface Transportation Program
TAC	Technical Advisory Committee
TAB	Transportation Advisory Board
TAZ	Traffic Analysis Zone
TCM	Transportation Control Measures
TDM	Transportation Demand Management
TE	Transportation Enhancements
TEA-21	Transportation Equity Act for the 21st Century
TIP	Transportation Improvement Program
TPP	Transportation Policy Plan
TSM	Transportation System Management

APPENDIX B

Technical Assistance Contacts

The list below is intended to provide contacts for technical assistance in providing necessary data in order to address various criteria. Before contacting a technical expert listed below, please use existing local sources. Local experts in many cases are the appropriate contact for much of the data needed to respond to criteria. In some instances, it may take five or more workdays to provide requested data. Please request data as soon as possible.

Applicants should contact experts as soon as possible to avoid delays in obtaining data.

SUBJECT	NAME	ORGANIZATION	PHONE
GENERAL	Kevin Roggenbuck James Andrew Carl Ohrn	Transportation Advisory Board Metropolitan Council Metropolitan Council	(651) 602-1728 (651) 602-1721 (651) 602-1719
TRAFFIC VOLUMES Freeways State Roads Heavy Commercial 2030 Projections	 Jose Fischer Megan Forbes Tom Nelson Mark Filipi	 MN/DOT MN/DOT MN/DOT Metropolitan Council	 (651) 234-7040 (651) 366-3883 (651) 366-3868 (651) 602-1725
CRASHES	Ryan Coddington	MN/DOT	(651) 234-7841
FREEWAY MANAGEMENT	Terry Haukom	MN/DOT	(651) 234-7980
TRUNK HIGHWAY TRAFFIC SIGNALS Existing Signals Signal Improvements	 Kevin Schwartz Michael Gerbenski	 MN/DOT MN/DOT	 (651) 234-7840 (651) 234-7816
STATE-AID STANDARDS	Colleen VanWagner	MN/DOT	(651) 234-7779
BIKEWAY/WALKWAY STANDARDS	Tim Mitchell	MN/DOT	(651) 366-4162
DEMOGRAPHICS by TAZ	Robert Paddock	Metropolitan Council	(651) 602-1340
TRANSIT RIDERSHIP	Elaine Koutsoukos	Metropolitan Council	(651) 602-1717

APPENDIX C

Metropolitan District Typical Schedule for Projects Processed Through State Aid

Note: For estimating purposes only. Time will vary due to district staffing, workload, complexity, funding availability, etc.

A.1. ENVIRONMENTAL DOCUMENTATION: Assumes one return to agency for clarification, additional information or revision.

____ weeks for agency preparation.
2 to 4 weeks for District State Aid review.
2 to 4 weeks for Central Office State Aid review.

____ weeks for agency revision.
1 to 2 weeks for District State Aid review and signature
2 to 4 weeks for Central Office State Aid review and signature.
3 to 5 weeks for FHWA approval.

Total A.1 = _____ Weeks

A2. OPPORTUNITY FOR PUBLIC HEARING: Not necessary for project memorandum.

30 days minimum to advertise for public hearing.
_____ weeks to hold public hearing.

Total A2 = _____ Weeks

A3. FINAL ENVIRONMENTAL ASSESSMENT: Only necessary for Environmental Assessment.

_____ weeks to prepare Final Environmental Assessment.
1 to 2 weeks for District State Aid review and signature.
2 to 4 weeks for Central Office State Aid review and signature.
3 to 5 weeks for FHWA Finding Of No Significant Impact (FONSI).

Total A3 = _____ Weeks

A4. STUDY REPORT: Required for Environmental Assessment Only. Assumes one return to agency for clarification, additional information, or revision.

_____ weeks for agency preparation.
2 to 4 weeks for District State Aid review.
2 to 4 weeks for Central Office State Aid review.

_____ weeks for agency revision.
1 to 2 weeks for District State Aid review and signature.
2 to 4 weeks for Central Office State Aid review and approval.

Total A4 = _____ Weeks

Total A = _____ Weeks

B. PLAN REVIEW AND RIGHT-OF-WAY ACQUISITION: Assumes one return to agency for clarification, additional information, or revision.

NOTE: Right-of-way acquisition and MN/DOT right-of-way engineer review of local process may happen concurrently and may take longer than plan review. Letting does not begin until a Right-Of-Way Certificate is received and, therefore, may decide earliest letting date.

ACQUISITION IS ESTIMATED AT _____ WEEKS.

_____ weeks for Preliminary Bridge Plan preparation if necessary.
2 to 4 weeks for Bridge Office preliminary review if necessary.
_____ weeks Roadway/etc. and Final Bridge Plan preparation.
2 to 4 weeks for District State Aid and Bridge Office review.
_____ weeks for agency revision.
2 to 3 weeks for District State Aid and Bridge Office review and signature.

TOTAL B = _____ WEEKS

C. LETTING: Assumes Disadvantaged Business Enterprise (DBE) goal is required and local funds match.

1 week for DBE goal decision.
2 weeks for project funding ********Obligation******** by FHWA.
1 week to advertise in local papers and Construction Bulletin.
3.5 weeks to advertise for bid and bid opening.
1 to 2 weeks to certify DBE participation (about 50 percent of projects).
1 to 3 weeks for recommendation of award.
0.5 weeks to prepare contract and bond and send to contractor.
1 week for contractor to respond.
2 weeks for contract approval.

TOTAL C = _____ WEEKS

TOTAL TIME UNTIL CONSTRUCTION = _____ WEEKS

APPENDIX D

Adopted 10-20-04

Criteria for meeting Sunset Date requirement for all TAB-selected projects:

Construction Projects through the FHWA Process

- Environmental document approved
- Right of way certificate approved or condemnation proceedings have been formally initiated
- District State Aid Engineer approval of plans
- Engineer's estimate
- Special provision information
- Utility relocation certificate
- Permit applications submitted
- Letting date can be set within 90 days

Construction Projects through the FTA Process

- Environmental document completed; reviewed by Metro State Aid for completeness
- Satisfactory review by Metro State Aid that project plans are complete and reflect the project that was selected
- Letting date can be set within 90 days
- FTA notification that grant approval imminent

Right of Way Only Projects through FHWA Process

- Environmental document approved
- OIM/SALT authorization to proceed

Right of Way Only Projects through FTA Process

- Environmental document completed; reviewed by Metro State Aid for completeness
- Appraisals over $250,000 approved by FTA; under $250,000 reviewed by MnDOT Metro State Aid/Right of Way Section
- FTA notifies that grant approval is imminent
- OIM transfers funds
- Offers made/condemnation initiated if offers refused

Program Project

- Grant application submitted to FTA; includes workplan
- Notification from FTA that grant approval is imminent
- Work will begin within 90 days after grant approval
- Agreement executed between MnDOT and proposer once funds are transferred

APPENDIX E

"A" Minor Reliever (B.1.), Expander (B.1.), Connector (B.1.), Augmenter (B.1.) and Principal Arterial (B.1.) - Expected Number of Crashes Reduced

A calculation will be made of the total number of crashes over three years, the expected percent reduction in crashes, and the total number of crashes reduced expected from the project. This information will also be used in calculating the cost per crash reduced criterion ("A" Minor Reliever C.1., Expander C.1., Connector C.1., Augmenter C.1., and Principal Arterial C.1.)

Submittal Requirements:

Submittals May Use Mn/DOT TIS Data Only (provided by Mn/DOT)

- Years 2007 - 2009
- If an individual crash is not on the TIS, it cannot be included in the analysis or the submittal unless the agency provides acceptable proof of the existence of the crash. Acceptable proof is a copy of the police or citizen accident report. If no report was written, the crash may not be included. If the crash had no injuries and the minimum dollar amount was not met ("N" in the "$min" box), the crash can not be included.
- If crash is on TIS, but in the wrong location, then the agency should contact Ryan Coddington, (651) 234-7841 at Mn/DOT to have it changed.
- Any agency that disputes the results of their crash data requests may contact Mn/DOT to reconcile the differences.

Crash Diagrams Required

- Whether a stand alone intersection, or an intersection within a corridor, an intersection crash diagram must be included.
- Applicants must provide the summary list of crashes identified by TIS number.

Crash Reduction Factor

Proposers may use one of following crash reduction options for utilizing appropriate factors for crash reduction based on the strategies:

- Mn/DOT "% Change in Crashes table" and Metro District Roundabout Crash Reduction Factors
- FHWA Desktop Reference for Crash Reduction Factors
- FHWA Crash Modification Factors Clearinghouse
- Local Experience (should be rare)
  - If using local experience, proposer must provide before- and after-documentation from local experience with a similar type of project (i.e., comparing "apples to apples")
  - The proposer acknowledges that the review committee may reject local experience based on insufficient data.

For consistency of submitted projects, if the improvement is specifically listed in the Mn/DOT " % Change in Crashes Table" or is a Roundabout project, that data listed below should be used. For other cases, the proposal should reference the FHWA Desktop Reference for Crash Reduction Factors or the FHWA Crash Modification Factors Clearinghouse which can be found at the following websites:

http://www.transportation.org/sites/safetymanagement/docs/Desktop%20Reference%20Complete.pdf

http://www.cmfclearinghouse.org

In the FHWA desktop reference, there are a number of CRFs to choose from for each countermeasure. The project proposer must use a CRF in **bold** if available.

For all applications, the applicant is required to write a brief logical explanation on why they chose to use what they did for a CRF.

Methodology

The applicant must obtain data on crashes for the existing section scheduled for improvement from Mn/DOT's TIS system for the three years of 2007 through 2009. Calculate the total number of crashes over the three-year period.

If multiple crash reduction strategies/improvements are proposed within the project, multiple crash reduction factors may be used.

If a project includes improvements to a section of road, and to intersections within that section, multiple crash reductions factors may be used. Crashes directly related to the individual improvement should be used for that improvement only. For example, if a particular intersection is going to be changed (new signal, modify to ¾ intersection, new turn lanes, etc.) crashes related to that intersection can be used with that crash reduction factor only, and not for the overall crash reduction if a second crash reduction factor is used for the longer segment of road.

APPLICANTS MUST SHOW/EXPLAIN THEIR WORK

Contact Ryan Coddington at Mn/DOT, 651-234-7841 or ryan.coddington@state.mn.us with any questions.

Roundabout Crash Reduction Factors:

Rural Environment

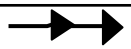
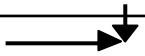
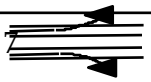
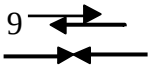
Converted From	Converted To	Crash Reduction Factor	
		Injury Crashes Only *(Apply to Injury crashes. **NO** application for Property Damage crashes.)*	**All Crashes** *(Apply to Injury **AND** Property Damage crashes)*
Stop Controlled	Single Lane	-80%	-65%
Stop Controlled	Multi-Lane	-70%	-55%

Urban Environment

Converted From	Converted To	Crash Reduction Factor	
		Injury Crashes Only *(Apply to Injury crashes. **NO** application for Property Damage crashes.)*	**All Crashes** *(Apply to Injury **AND** Property Damage crashes)*
Stop Controlled	Single Lane	-80%	-65%
Stop Controlled	Multi-Lane	-70%	-55%
Signalized	Single Lane	-70%	-40%
Signalized	Multi-Lane	-65%	-35%

NOTE: At this time there is a limited number of studies that break down Crash Reduction Factors (CRF) to Urban/Rural, type of roundabout and previous conditions. The factors in the above tables were determined using the available studies and engineering judgment. The current data available will be expanded as more studies are completed and published. The Mn/DOT Metro District roundabout CRF's will be updated and adjusted as new information is made available. The "Stop Controlled" in the tables above is referring to a 2-way stop condition. In tables above, you may only use one CRF column or the other, not both for the same project.

% Change in Crashes (from Mn/DOT Before & After Studies)
All numbers indicate percentages

Diagram	*New Signal + Channel*	*T-Int. Turn Lane & Bypass Lane*	*+ Int. Turn Lane & Bypass Lane*	*Signal Rebuild*
1 	0 -15	-15 -20	-15 -15	-20 -30
2 	+60 +10	0 -30	+35 -10	-50 -30
3 	-40 -5	-35 -30	-35 -35	-25 -20
5 	-55 -60	-25 -55	-15 -45	-30 -30
4, 7 	-30 0	0 -40	-25 -25	-35 -50
8, 9 	65 -50	+35 -15	-15 0	-45 -60
Total Crashes	-25 -30	-20 -25	-20 -25	-25 -30
Number of Studies	70	40	45	105

Box Legend: Top Factor – Use for fatal and injury crashes (A, B, C).
Bottom Factor – Use For Property Damage Crashes.

Before & After studies based on 3 calendar years prior to construction and 3 calendar years after construction completion.

Definitions:

- New Signal, plus channelization – Permanently installed signals at a new location with added lanes (turn or bypass) and/or medians (painted or concrete).
- T-intersection turn and bypass lane – Addition of right turn and/or bypass lanes to a three-legged intersection.
- Cross-street intersection turn and bypass lanes – Addition of right turn and/or bypass lanes at a four-legged intersection.
- Signal Rebuild – Signal revision plus a change of signal location and other components at an intersection. Installation of additional heads to intersection signals (i.e., turn arrows).

APPENDIX F

"A" Minor Reliever (B.3.) and Expander (B.3.) - Increase in peak hour average speed.

The applicant must estimate the current speed of through-traffic on the "A" minor arterial with existing management features (median barriers, signal spacing, channelization, signal coordination, etc.) and the increased speed after implementation of the proposed project. Calculations must reflect traffic conditions in the peak direction during the peak period of travel.

Speed is calculated simply as "distance divided by time". Travel time on any roadway is a combination of the time it takes to travel a given distance at a given speed plus any delays encountered along the way. The methodology to estimate average peak period speed is derived from Chapter 9, Urban Streets, of the Highway Capacity Manual (1994). Follow these basic steps to estimate arterial speed in the existing condition and after implementation of the project:

- Estimate project length, in miles. Applicants should try to define the project length using signalized or stop-controlled intersections where vehicle delay will be calculated in the table below, or any other intersecting minor street or driveway where midblock delay is assumed.
- Estimate the free-flow travel time, in minutes, along the project length based on the posted speed limit using the following equation:

free-flow travel time (minutes) = [project length (miles)/speed (mph)] * 60

- Estimate the volume/capacity ratio of the traffic lane(s) on the "A" minor arterial approach at each signalized and stop-controlled intersection in the peak direction and peak period of travel along the project length.
- Estimate average vehicle delay for "A" minor arterial through movements at all signalized and stop-controlled intersections using the table below and express the sum in minutes.

Average Vehicle Delay at Stop-Controlled and Signalized Intersections	
approach volume/capacity	average vehicle delay
< 0.8	30 seconds
0.8 to 0.9	50 seconds
> 0.9	75 seconds

- Estimate average vehicle delay for "A" minor arterial through movements at all roundabout intersections using the table below and express the sum in minutes.

Average Vehicle Delay at Roundabouts	
approach volume/capacity	average vehicle delay
< 0.8	25 seconds
0.8 to 0.9	40 seconds
> 0.9	55 seconds

- In some cases, there may be midblock delays caused by pedestrian crossings, bus stops, turning movements to and from minor streets and driveways, or due to on-street parking. Assume 10 seconds of delay for each example and express the sum in minutes.
- Estimate the arterial speed of through-traffic on the "A" minor arterial over the entire project length using the following equation:

$$\text{ARTERIAL SPEED (mph)} = \frac{\text{project length (miles)}}{\text{free-flow travel time + intersection delay + midblock delay}} * 60$$

Reminder: When computing the arterial speed, the free-flow travel time, intersection delay and midblock delay in the denominator of the equation must be expressed in minutes.

- If the proposed project will improve traffic progression through signal coordination in the "after" condition, the average vehicle delay derived from the table on the previous page should be factored by 0.77 to show a further reduction in intersection delay. This factor should be applied only to independently timed signals that will be coordinated with other signalized intersections.

Sample calculation.

Existing two lane, undivided arterial, 4.0 miles in length, with four pre-timed signalized intersections and four more intersections with stop sign control on the minor approaches. The posted speed limit is 40 mph. Two of the four signalized intersections have a volume capacity ratio < 0.80, one is between 0.80 and 0.90, and one is > 0.90. Midblock delays due to left turns at the minor intersections and driveways add 60 seconds to the travel time.

free-flow travel time (minutes) = (4.0 / 40) * 60 = 6.00 minutes

intersection delay = 30 + 30 + 50 + 75 = 185 seconds or 3.08 minutes

midblock delay = 40 seconds or 0.80 minute

$$\text{ARTERIAL SPEED} = \frac{4.0}{6.00 + 3.08 + 0.80} * 60 = \frac{4.0}{9.88} * 60 = 0.40 * 60 = 24.0 \text{ mph}$$

Proposed improvements include construction of left turn lanes at the four existing signalized intersections, implementation of a coordinated signal timing plan and channelization for the entire length of the arterial. The posted speed limit will be raised to 45 mph. The project will increase free-flow travel speed and reduce intersection delay.

free-flow travel time (minutes) = (4.0 / 45) * 60 = 5.33 minutes

intersection delay = (30 + 30 + 30 + 30) * 0.77 = 92.4 seconds or 1.54 minutes

midblock delay = 40 seconds or 0.80 minute

$$\text{ARTERIAL SPEED} = \frac{4.0}{5.33 + 1.54 + 0.80} * 60 = \frac{4.0}{7.67} * 60 = 0.52 * 60 = 31.2 \text{ mph}$$

contact person: James Andrew, Met Council, 602-1721

Appendix G: Location Suitability and Demand Estimation

The criteria for Section A.1., copied below, require the use of the 2030 Park and Ride Plan Chapters 3 and 5 and Appendices A and B. All chapters of this plan can be found on the Metropolitan Council website at http://www.metrocouncil.org/planning/transportation/ParknRide/ParknRidePlan.htm.

A. Location Suitability & Market Area Demand 0-200 points

1. For all projects involving a park-and-ride facility construction (new or expanded), transit vehicle purchase, or transit operations, the applicant must complete the following:

a. Using Table 3.3 or Table 3.4, in Chapter 3 or the 2030 Park and Ride Plan describe which travel corridor(s) will be served by the project and the unmet need in the travel corridor(s) for Years 2020, and 2030.

RESPONSE:

b. Using Chapter 3 (Sections 3.1 through 3.9), state whether or not the location that the park-and-ride will be constructed or expanded or that the bus or rail vehicles will be used falls within any of the programmed or planned site location areas.

RESPONSE:

<u>If the project involves the construction of a new or expanded facility, the applicant must complete the following:</u>

c. Using Section 5.3 of Chapter 5 of the 2030 Park and Ride Plan and Appendix A (TAZ map) and B (TAZ park and demand model), demonstrate the benefit for the 3rd or final year (if less than 3) of the grant need for the new location and/or proposed size of the facility.

RESPONSE:

d. Using the Site Selection and Design Criteria listed in Section 5.4 of Chapter 5 of the 2030 Park and Ride Plan or a comparable site evaluation checklist, complete a site suitability evaluation of the project site.

RESPONSE:

<u>If the project involves the purchase of transit vehicles, the applicant must complete one of the following:</u>

e. For fleet expansion for existing routes: Current average boardings per trip on the routes that the vehicle would operate and an analysis of the additional transit market in the area to be served.

RESPONSE:

f. For fleet expansion for new routes: An analysis of projected average boardings per trip based on the boardings of similar routes, surveys of potential customers in the geographic area to be served, an analysis of transit markets in the area to be served such as the park and ride demand estimation methodology above, or other supporting data.

RESPONSE:

Scoring will be based on siting of proposed park and ride lots compared to target areas identified in Chapter 3 of the 2030 Park and Ride Plan, suitability of the site according to the site location criteria in Chapter 5 (Section 5.4), and evaluation of the project's proposed size compared to demand/unmet need identified in Tables 3.3 and 3.4 and Section 5.3.

2. Other transit facility projects (such as stations or transit centers) must demonstrate basis for need including an estimate of ridership at the facility and location suitability. Methodology and supporting documentation, including accepted transitway studies, must be provided. Scoring will be based on appropriateness of siting comparable to the park and ride facility approach.

RESPONSE:

VEHICLE EMISSIONS REDUCTION WORKSHEET (APPENDIX G)

New or Expanded Transit Service, Vehicles or Capital

Year 3 (or final year if less than 3) Estimated Daily Ridership						passenger trips	
Distance from Terminal to Terminal						miles	
Year 3 (or final year if less than 3) Estimated Daily Transit Vehicle Trips						vehicle trips	
SOV (AUTO) EMISSIONS REDUCED							
Average Weekday AM Peak SOV Travel Speed:					mph		
		YEAR THREE (or final year if less than 3)					
	Emissions Factor (grams/mile)*	**Daily SOV VMT (miles)**	**Emissions (kg/day)**				
CO Emissions		0	0.0				
NO_x Emissions		0	0.0				
VOC Emissions		0	0.0				
Total Emissions			**0.0**				
BUS EMISSIONS GENERATED							
Average Weekday AM Peak Bus Travel Speed:					mph		
		YEAR THREE (or final year if less than 3)					
	Emissions Factor (grams/mile)*	**Daily Bus VMT (miles)**	**Emissions (kg/day)**				
CO Emissions		0	0.0				
NO_x Emissions		0	0.0				
VOC Emissions		0	0.0				
Total Emissions			**0.0**				
DIESEL PASSENGER/COMMUTER RAIL EMISSIONS GENERATED							
		YEAR THREE (or final year if less than 3)					
	Emissions Factor (grams/mile)	**Daily Rail Miles**	**Emissions (kg/day)**				
CO Emissions	266	0	0.0				
NO_x Emissions	76	0	0.0				
VOC Emissions	9	0	0.0				
Total Emissions			**0.0**				
NET PROJECT EMISSION REDUCTIONS							
	Auto SOV Emission Reductions (kg/day)	**Bus Emissions Generated (kg/day)**	**Bus Emissions Generated (kg/day)**	**Net Emission Reductions (kg/day)**			
YEAR THREE (or final year if less than 3)	0.0	0.0	0.0	**0.0**			

APPENDIX H

"A" Minor Reliever (B.4.), Expander (B.4.), Augmenter (B.4.), and Principal Arterial (B.4.) - Improved AM and PM volume/capacity ratios.

The applicant must obtain current peak hour volumes and use the vehicle capacities in Appendix A to calculate the AM and PM peak hour volume/capacity ratios in the peak direction at the most congested location in the project area. Existing volumes should be used in both the current and post-improvement AM and PM peak hour conditions. The improvement in the volume/capacity ratio could be due to an increase in vehicular capacity or a reduction in vehicle trips due to the project.

The project applicant must calculate the volume/capacity ratio in the peak direction at the most congested location within the project area following these steps:

- Collect current AM and PM peak hour volumes from existing data sources or by conducting traffic counts.
- Using the capacity figures in Appendix A, estimate the existing capacity of the congested location.
- Calculate the existing volume/capacity ratio in both the AM and PM peak hour.
- Revise the vehicle capacity of the roadway segment or the vehicle demand, as appropriate to the project, and calculate the volume/capacity ratios after implementation of the project.

Sample calculation.

Existing two lane arterial.

- AM peak hour volume = 550
- Vehicle capacity = 600
- AM volume/capacity ratio = 550/600 = 0.92

Proposed improvement: add left turn lanes at the major intersections and shifting of a transit route to serve the project area. The decrease in AM peak hour volume (20) reflects the expected number of new transit riders in the project area.

- AM peak hour volume = 550 - 20 = 530
- Vehicle capacity = 600 + 300
- Vehicle capacity = 900
- AM volume/capacity ratio = 530/900 = 0.59

PROJECT BENEFIT = 0.92 - 0.59 = 0.33 (AM peak)

contact person: James Andrew, Metropolitan Council, (651) 602-1721

APPENDIX I

"A" Minor Reliever (C.2.), Expander (C.3.), Augmenter (C.3.), and Principal Arterial (C.3.) - Increase in hourly person throughput.

The applicant must calculate the increase in hourly person throughput in the AM peak hour, in the peak direction of travel, at the most congested location in the project area using the following equation:

Hourly Person Throughput = (vehicle capacity of the roadway segment * AM peak hour vehicle occupancy) + AM peak hour bus ridership.

- Compute the existing vehicle capacity of the roadway segment (the approach to the intersection in the peak direction of travel) using the design capacity figures in Appendix A.
- Factor in the appropriate AM peak hour vehicle occupancy rate (See Appendix T).
- Add in the current AM peak hour bus ridership. This information can be obtained from Metro Transit or other appropriate service provider. The Metropolitan Council can provide contact person(s).
- Calculate the existing hourly person throughput.
- Revise the vehicle capacity, AM peak hour vehicle occupancy and AM peak hour bus ridership for the proposed project, as appropriate, and calculate the hourly person throughput after implementation of the project.

Sample calculation.

Existing two lane arterial.

- Vehicle capacity = 600
- AM peak hour vehicle occupancy = 1.12
- AM peak hour bus ridership = 100
- Hourly person throughput = (600 * 1.12) + 100
- Hourly person throughput = 772

Proposed improvement: add a left turn lane at the major intersections and construct a bus shelter that will slightly increase transit ridership.

- Vehicle capacity = 600 + 300
- AM peak hour vehicle occupancy = 1.12
- AM peak hour bus ridership = 100 + 10 = 110
- Vehicle capacity = 900
- Hourly person throughput = (900 * 1.12) + 110
- Hourly person throughput = 1118

HOURLY THROUGHPUT INCREASE = 1118 – 772 = 346

contact person: James Andrew, Metropolitan Council, (651) 602-1721

APPENDIX J

Metro Intermodal/Freight Terminals

The list of major intermodal freight facilities begins on the following page. Contact James Andrew at the Metropolitan Council, 651-602-1721 or james.andrew@metc.state.mn.us with questions.

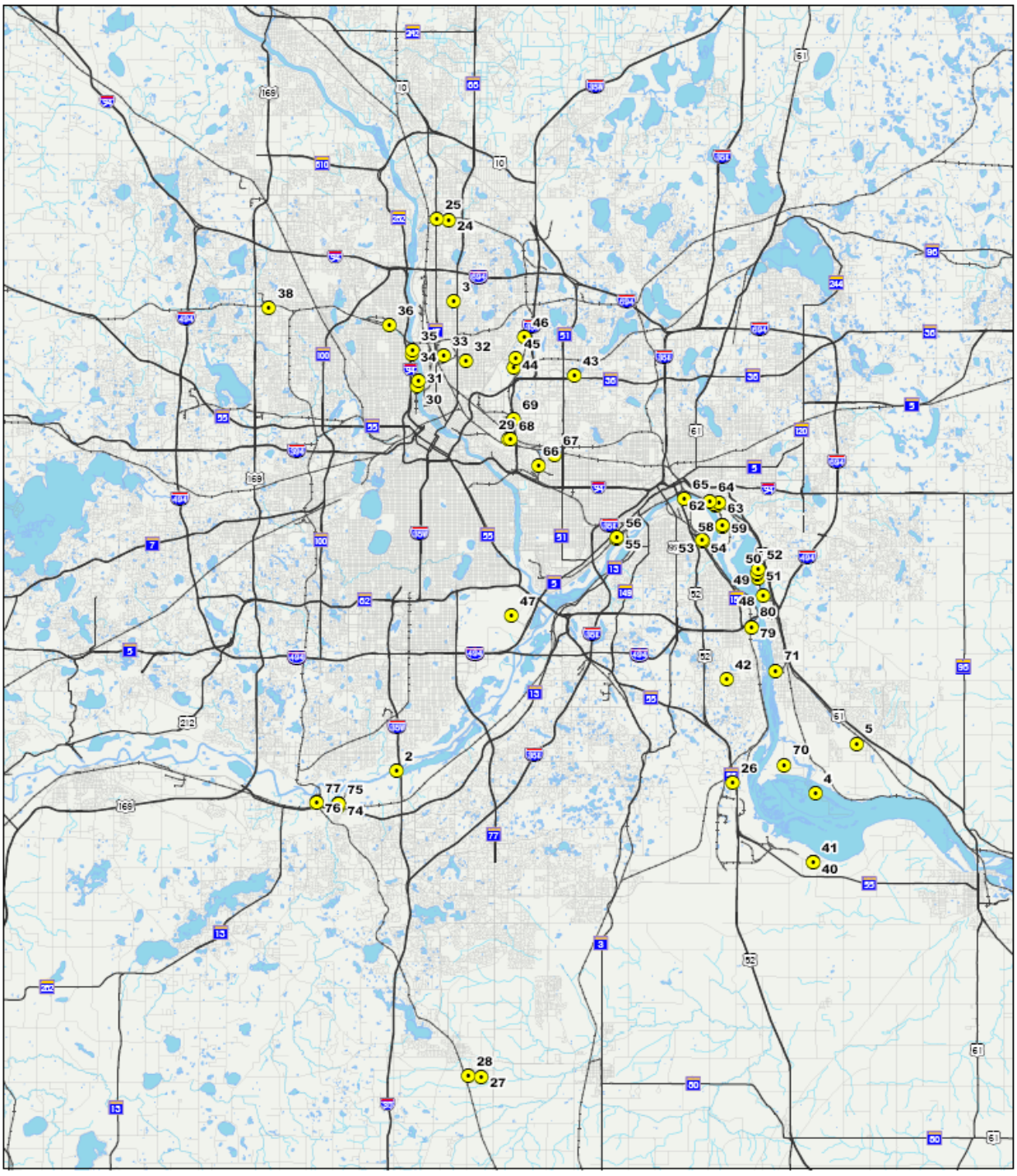
Major Intermodal Freight Facilities in the Metro Area

ID	NAME	ADDRESS	CITY	COUNTY	COMMODITIES	ROADWAY	RAIL
3	Murphy Warehouse	4700 Main St NE	Columbia Heights	Anoka	Packaged General Commodities	MN 47, 49th Ave NE, Main St NE	BNSF
24	Murphy Warehouse	7033 Central Ave NE	Fridley	Anoka	Newsprint, Printing Paper, Paperboard	MN 65, Central Ave NE	MNNR/CP
25	Commercial Transload of Minnesota	7151 University Ave NE	Fridley	Anoka	Steel, Pipe, Structural	I-694, MN 47	MNNR/CP
2	U.S. Salt	1020 Black Dog Rd W	Burnsville	Dakota	Salt	I-35W, Black Dog Rd W	None
26	Ferrellgas	10605 Courthouse Blvd	Inver Grove Heights	Dakota	Propane	US 52	None
27	General Transport Inc - Transload	21790 Hamburg Ave	Lakeville	Dakota	Plastics	I-35, 210th St W, 215th St W, Highview Ave	CP
28	Progressive Rail, Inc. - Transload/Warehousing	21778 Highview Ave	Lakeville	Dakota	Bulk & Packaged Lumber, Food, Ag, Steel, Chem	I-35, 210th St W, 215th St W, Highview Ave	CP, PGR
40	CF Industries Pine Bend Ammonia Terminal Dock	13040 Pine Bend Tr	Rosemount	Dakota	Anahydrous Ammonia & Urea, Ammonium Nitrate Solution	TH 55, Pine Bend Tr	BNSF, UP, CP
41	CF Industries Pine Bend Warehouse	5300 Pine Bend Tr	Rosemount	Dakota	Dry Bulk Fertilizer	TH 55, Pine Bend Tr	UP, CP
42	Flint Hills Resources Pine Bend Refinery	12555 Clark Rd	Rosemount	Dakota	Petroleum Products, Asphalt	TH 52/TH 55	UP
79	Dakota Bulk Terminal	925 Hardman Ave S	South Saint Paul	Dakota	Grain, Feed, Bulk Commodities	I-494, Hardman Ave; TH 56, Richmond St.	UP
80	Holcim (US), Inc.	925 Hardman Ave S	South Saint Paul	Dakota	Bulk Cement	I-494, Hardman Ave; TH 56, Richmond St.	UP
29	Triple Crown Services	525 Kasota Ave SE	Minneapolis	Hennepin	Bi-Modal (RailRunner)	MN 280, Kasota Ave SE	UP
30	Aggregate Industries - Yard D	65 26th Ave N	Minneapolis	Hennepin	Sand, Aggregate, Crushed Stone	I-94, W Broadway Ave, 2nd St N, 26th Ave N	None
31	American Iron & Steel	2800 Pacific St	Minneapolis	Hennepin	Recycled Metals	I-94, W Broadway Ave, 2nd St N, 26th Ave N	CP
32	Distribution Centers of Minnesota Inc	600 30th Ave NE	Minneapolis	Hennepin	Newsprint, Printing Paper, Paperboard	MN 47, 30th Ave NE	CP
33	CP Shoreham Yard	615 30th Ave NE	Minneapolis	Hennepin	COFC/TOFC	MN 47, 30th Ave NE	CP
34	River Services, Inc.	3750 Washington Ave N	Minneapolis	Hennepin	Grain, Fertilizer, Salt, Coal, Aggregate, Steel, Twine, Pipe	I-94, N Dowling Ave, Port Terminal Rd	CP, TC&W
35	Holcim (US), Inc.	3939 1st St N	Minneapolis	Hennepin	Cement	I-94, N Dowling Ave, Port Terminal Rd	CP
36	Mid American Distribution Centers	4607 Humboldt Ave N	Minneapolis	Hennepin	Lumber	I-94, 49th Ave N, Humboldt Ave N	CP
38	World Transload & Logistics	5101 Boone Ave N	New Hope	Hennepin	Steel, Pipe, Structural	US 169, 49th Ave N, Boone Ave N	CP
43	Twin City Reload - Transload	2517 County Rd B W	Roseville	Ramsey	Lumber	MN 280, County Rd B W	MNNR
44	Triangle Warehouse Inc.	2500 Walnut St	Roseville	Ramsey	Newsprint, Printing Paper, Paperboard	I- 35W, CR C W, Walnut St	CP
45	Magellan Pipeline Co	2451 County Rd C W	Roseville	Ramsey	Oil Products	I-35W, County Rd C W	None
46	Citi-Cargo & Storage	3060 Long Lake Rd	Roseville	Ramsey	Packaged General Commodities	I-35W, County Rd D W, Long Lake Rd	MNNR
47	MSP INTERNATIONAL	4300 Glumack Dr	Saint Paul	Ramsey	Air Cargo	MN 77, Longfellow Ave S, Cargo Rd	None
48	Peavey Red Rock Elevator	1061 Red Rock Road	Saint Paul	Ramsey	Grain, Fertilizer, Coal, Feed, Phosphate, Steel	I-494, TH 10, Maxwell Ave, Red Rock Rd	CP
49	AMG Resources Dock	1303 Red Rock Rd	Saint Paul	Ramsey	Steel, Scrap	I-494, TH 10, Maxwell Ave, Red Rock Rd	CP
50	Barton Enterprises Dock	1359 Red Rock Rd	Saint Paul	Ramsey	Asphalt, Petroleum Products	I-494, TH 10, Maxwell Ave, Red Rock Rd	CP
51	LaFarge North America - Red Rock Terminal	1363 Red Rock Rd	Saint Paul	Ramsey	Cement	I-494, TH 10, Maxwell Ave, Red Rock Rd	CP
52	Hawkins Inc. Terminal #3	1425 Red Rock Rd	Saint Paul	Ramsey	Liquid Caustic Soda	I-494, TH 10, Maxwell Ave, Red Rock Rd	CP
53	Alter River Terminal	751 Barge Channel Rd	Saint Paul	Ramsey	Fertilizer, Salt, Scrap Metal, Steel, Ore, Grain, Twine	TH 56, Barge Channel Rd	UP
54	Hawkins Inc. Terminal #2	701 Barge Channel Rd	Saint Paul	Ramsey	Liquid Caustic Soda, Liquid Caustic Potash	TH 56, Barge Channel Rd	UP
55	Archer Daniels Midland Saint Paul Elevator D	575 Drake St	Saint Paul	Ramsey	Grain, Feed, Bulk Commodities	Shepard Rd, Randolph Ave, Drake St	UP
56	UP Auto Reload	560 Drake St	Saint Paul	Ramsey	Auto Reload(GM[used]), Mazda,Volkswagen	Shepard Rd, Randolph Ave, Drake St	UP
57	Weshwy Terminal Co. #2	2225 Childs Rd	Saint Paul	Ramsey	Molasses, Vegetable Oil	I-94, TH 10, Warner Rd, Childs Rd	UP
58	Weshwy Terminal Co. #1	2175 Childs Rd	Saint Paul	Ramsey	Molasses, Vegetable Oil, Porpylene Glycol, Caustic Soda, Asphalt	I-94, TH 10, Warner Rd, Childs Rd	UP
59	LaFarge North America	2145 Childs Rd	Saint Paul	Ramsey	Cement	I-94, TH 10, Warner Rd, Childs Rd	UP
60	Aggregate Industries - Yard A	1177 Childs Rd	Saint Paul	Ramsey	Sand, Aggregate, Crushed Stone	I-94, TH 10, Warner Rd, Childs Rd	UP
61	Hawkins Inc. Terminal #1	1125 Childs Rd	Saint Paul	Ramsey	Liquid Caustic Soda	I-94, TH 10, Warner Rd, Childs Rd	UP
62	Great Western Dock & Terminal	1031 Childs Rd	Saint Paul	Ramsey	Steel Products, Coal, Salt Coke, Slag Fertilizer, Pig Iron	I-94, TH 10, Warner Rd, Childs Rd	UP
63	BNSF Saint Paul Auto Reload	90 Fish Hatchery Rd	Saint Paul	Ramsey	Auto Reload (Honda, Nissan, Toyota, et al)	I-94, TH 10, Warner Rd, Fish Hatchery Rd	BNSF
64	CHS, Inc. - Terminal #2	935 Childs Rd	Saint Paul	Ramsey	Grain	I-94, TH 10, Warner Rd, Childs Rd	UP
65	Agriliance	50 Chester St	Saint Paul	Ramsey	Bulk Fertilizer and Phosphate	TH 52, Pilot Blvd E, Chester St	UP
66	Plastic Express	730 Transfer Rd	Saint Paul	Ramsey	Plastics	I-94, Vandalia St, University Ave W, Transfer Rd	MNNR
67	BNSF Midway Yard	1701 Pierce Butler Rte	Saint Paul	Ramsey	COFC/TOFC	MN 51, Pierce Butler Rte	BNSF
68	Ex-Jay Motor Transports Inc. - Transload	2576 Kasota Ave	Saint Paul	Ramsey	Plastics	MN 280, Kasota Ave SE	MNNR
69	Trallwood Warehouse	2520 Como Ave	Saint Paul	Ramsey	Packaged General Commodities	MN 280, Como Ave	MNNR
72	CHS Inc - Savage Elevator	6200 W Highway 13	Savage	Scott	Grain	TH 13	UP
73	Mosaic Bulk Unloading Dock	12120 Lynn Ave S	Savage	Scott	Fertilizer, Salt	TH 13	UP
74	Port Cargill - Grain Dock	12101 Lynn Ave S	Savage	Scott	Grain	TH 13	UP
75	Port Cargill - West Elevator	12100 Dakota Ave	Savage	Scott	Grain	TH 13	UP
76	Port Bunge	12100 Yosemite Ave S	Savage	Scott	Grain	TH 13	UP, CP, TC&W
77	Superior Minerals Co.	12051 Yosemite Ave S	Savage	Scott	Aggregate	TH 13	UP, CP
4	Aggregate Industries - Nelson Plant	11250 Grey Cloud Trail S	Cottage Grove	Washington	Aggregate	US 10, Grey Cloud Island Rd	None
5	Auto Warehousing Co. - Auto Reload	9250 Ideal Ave. S	Cottage Grove	Washington	Auto Reload (Ford, GM, Chrysler, Mercedes)	US 61, Jamaica Ave S, 95th St S, Ideal Ave. S	CP
70	Aggregate Industries - Larson Plant	10120 Grey Cloud Island Dr S	Saint Paul Park	Washington	Crushed Limestone	US 10, Grey Cloud Island Rd	None
71	Marathon Ashland	300 3rd Ave W	Saint Paul Park	Washington	Asphalt, Petroleum, Light Oils	I-494, TH 10, 5th Ave, 7th Ave, 3rd Ave E	CP

App. J: Map – Major Intermodal Freight Facilities in Metro Area

Map is also available to download at
http://www.metrocouncil.org/planning/transportation/regsolicit.htm

Major Intermodal Freight Facilities in the Twin Cities Metro Area



Minnesota Department of Transportation
Office of Freight and Commercial Vehicle Operations
27 March 2007

Miles
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APPENDIX K

Project Implementation Schedule

Please check those that apply and fill in anticipated completion dates

1) Project Scope
- ☐ Stake Holders have been identified
- ☐ Meetings or contacts with Stake Holders have occurred

2) Layout or Preliminary Plan
- ☐ Identified Alternates
- ☐ Selected Alternates
- ☐ Layout or Preliminary Plan started
- ☐ Layout or Preliminary Plan completed

Anticipated date or date of completion: _____

3) Environmental Documentation

☐ EIS ☐ EA ☐ PM

Document Status
- ☐ Document not started
- ☐ Document in progress; environmental impacts identified
- ☐ Document submitted to State Aid for review (date submitted: _____)
- ☐ Document approved (need copy of signed cover sheet)

Anticipated date or date of completion/approval: _____

4) R/W
- ☐ No R/W required
- ☐ R/W required, parcels not identified
- ☐ R/W required, parcels identified
- ☐ R/W has been acquired

Anticipated date or date of acquisition _____

5) Railroad Involvement
- ☐ No railroad involvement on project
- ☐ Railroad R/W Agreement required; negotiations not begun
- ☐ Railroad R/W Agreement required; negotiations have begun
- ☐ Railroad R/W Agreement is complete

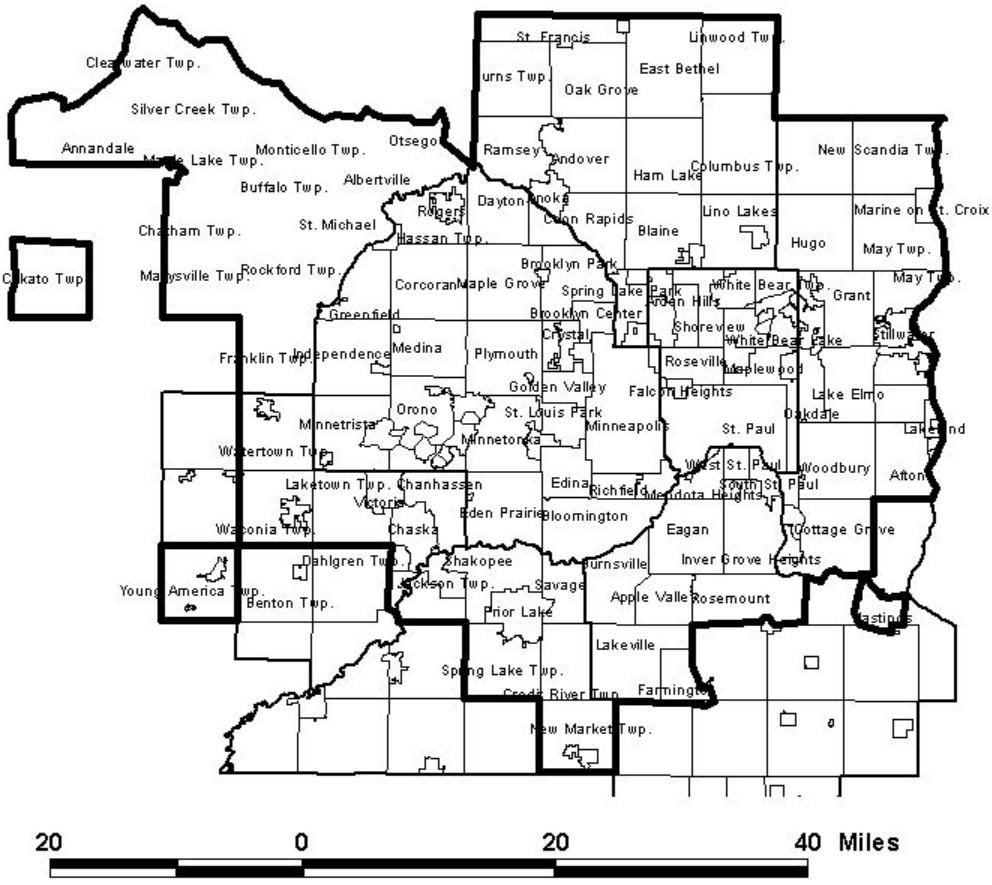
6) Construction Documents/Plan
- ☐ Construction plans have not been started
- ☐ Construction plans in progress

Anticipated date or date of completion: _____
- ☐ Construction plans completed/approved

7) Letting

Anticipated Letting Date: _____

Appendix M
Twin Cities Carbon Monoxide Maintenance Area



Based on Federal Register Notice November 6, 1991

APPENDIX N

CMAQ (B.1.) - Increase in hourly person throughput.

The applicant must calculate the percentage increase in hourly person throughput in the AM peak hour, in the peak direction of travel, at the most congested location in the project benefit area using the following equation:

Section A (For CMAQ System Management Projects Only)

Existing Hourly Person Throughput = (Hourly Vehicle Capacity of the Roadway Segment multiplied AM Peak Hour Vehicle Occupancy) + AM Peak Hour Transit Ridership

Projected New Hourly Person Throughput = (Hourly Vehicle Capacity of the Roadway Segment multiplied Projected New AM Peak Hour Vehicle Occupancy)

Hourly Person Throughput Improvement = (New Hourly Person Throughput – Existing Hourly Person Throughput) divided by (Existing Hourly Person Throughput) multiplied by 100

• Compute the existing vehicle capacity of the roadway segment (the approach to the intersection in the peak direction of travel) using the design capacity figures described in Appendix A.
• Factor in the appropriate AM peak hour vehicle occupancy rate (See Appendix T).
• Calculate the existing hourly person throughput.
• Revise the vehicle capacity and AM peak hour vehicle occupancy for the proposed project, as appropriate, and calculate the hourly person throughput after implementation of the project.

Sample calculation

Roadway type: Four-lane expressway (2 lanes in each direction)

• Roadway vehicle capacity (700 vehicles per lane per hour multiplied by 2) = 1400
• AM peak hour vehicle occupancy = 1.12
• Existing hourly person throughput = (1400 * 1.12)
• Existing hourly person throughput = 1668

Proposed improvement: Funding for a transportation management organization that is expected to increase carpooling and transit ridership along the expressway.

• Vehicle capacity = 1400
• AM peak hour vehicle occupancy = 1.15
• Projected new hourly person throughput = (1400 * 1.15)
• Projected new hourly person throughput = 1810

Hourly person throughput improvement = ((1810 - 1668) / (1668)) * 100 = 8.5%

Section B (For CMAQ Transit Expansion Projects Only)

Hourly Person Throughput Improvement = ((Projected New AM Peak Hour Transit Ridership divided by (Hourly Vehicle Capacity of the Roadway Segment multiplied AM Peak Hour Vehicle Occupancy)) multiplied by 100

• Identify the most congested corridor segment along the route: Use Appendix O, AM Peak, to determine most congested freeway segment. Use the most congested freeway segment location for calculations unless there is an arterial expressway along the route with more hours of congestion than the freeway.
• Determine Roadway Type (including metered/unmetered), number of lanes, and any concurrent HOV lanes.
• Calculate Roadway Vehicle Capacity using Roadway Type and Design Capacities from Appendix A.
• Using Appendix T, determine the AM Peak Hour Vehicle Cccupancy of the most congested segment (take an average of the three years).
• Calculate Hourly Person Throughput Improvement

Sample calculation

Proposed improvement: New 500-space park-and-ride facility, located South of the I-35 E/W split, with bus routes to Minneapolis.

Most congested segment: Either I-35W Crosstown commons area (TH 62) or I-35W intersection with TH 13; both have > 2 hrs congestion. This example chose most congested segment as: I-35W intersection with TH 13.

Roadway Type/Information: The most congested segment has TWO roadway types, metered freeway with 2 lanes and HOV lane concurrent with 1 lane.

• Roadway vehicle capacity:
(metered freeway 1950 vehicles per lane per hour multiplied by 2 lanes) = 3900
(HOV concurrent 1400 vehicles per lane per hour multiplied by 1 lane) = 1400
+_____
Total = 5300
• AM peak hour vehicle occupancy = 1.11
• New AM peak hour bus ridership = 375
• Hourly person throughput improvement = (375) divided by (5300 * 1.11) multiplied by (100)
• Hourly person throughput improvement= 6.4 %

Location	Roadway Type	Design Capacity (App. A) (veh/hr/lane)	# lanes	Roadway **Capacity** (veh/hr)	AM peak hr veh **Occupancy** (App. T)	New AM peak hr bus **Ridership**	Hourly Person Throughput Improvement
I-35W & TH 13, S. Metro	metered freeway	1,950	2	3900			
	HOV lane (concurrent)	1,400	1	1400			
	TOTAL			5300	1.11	375	6.4%

Contact person: James Andrew, Metropolitan Council, 651-602-1721

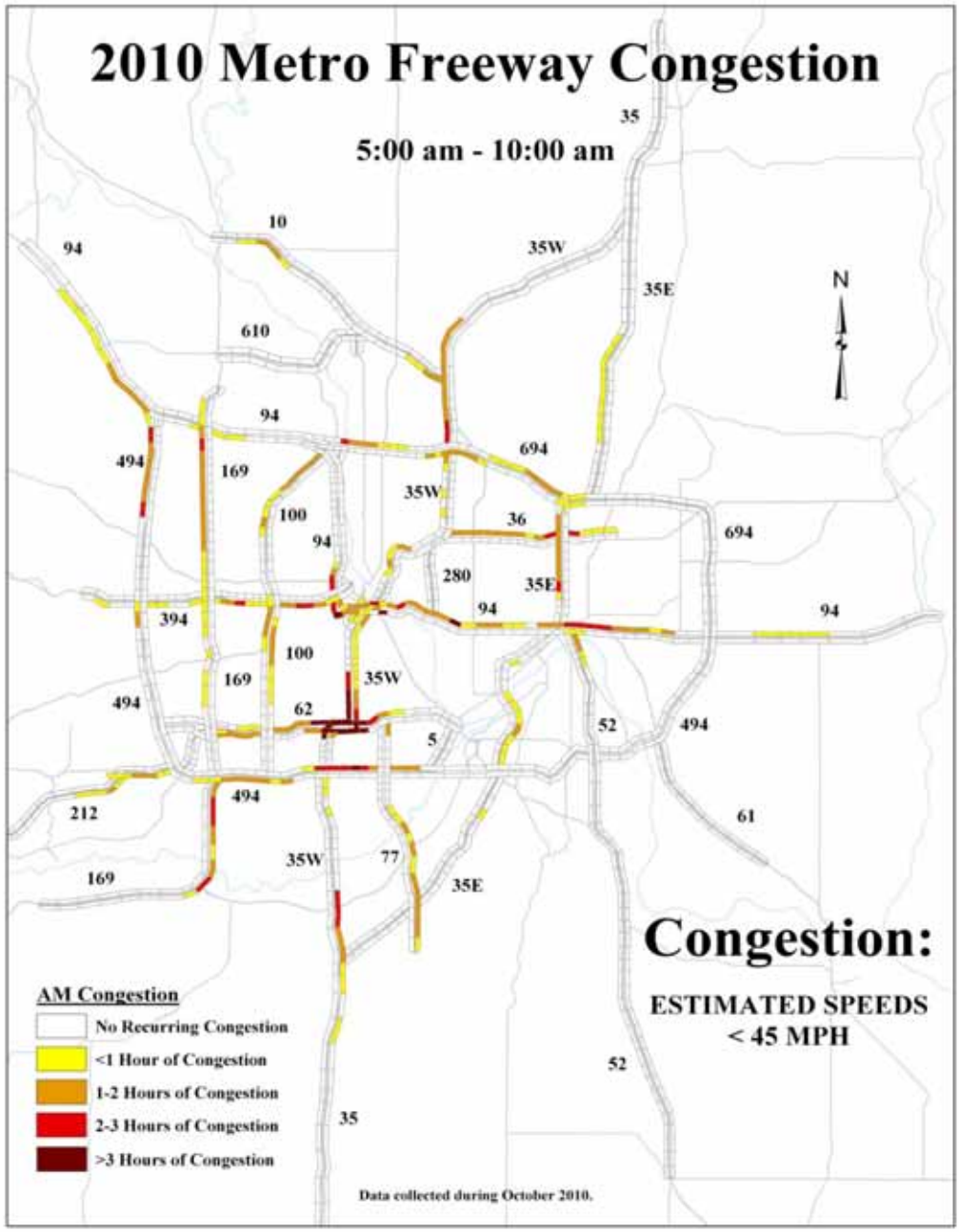
APPENDIX O

CMAQ (B.2.) – Location of AM and PM Peak Period Congestion

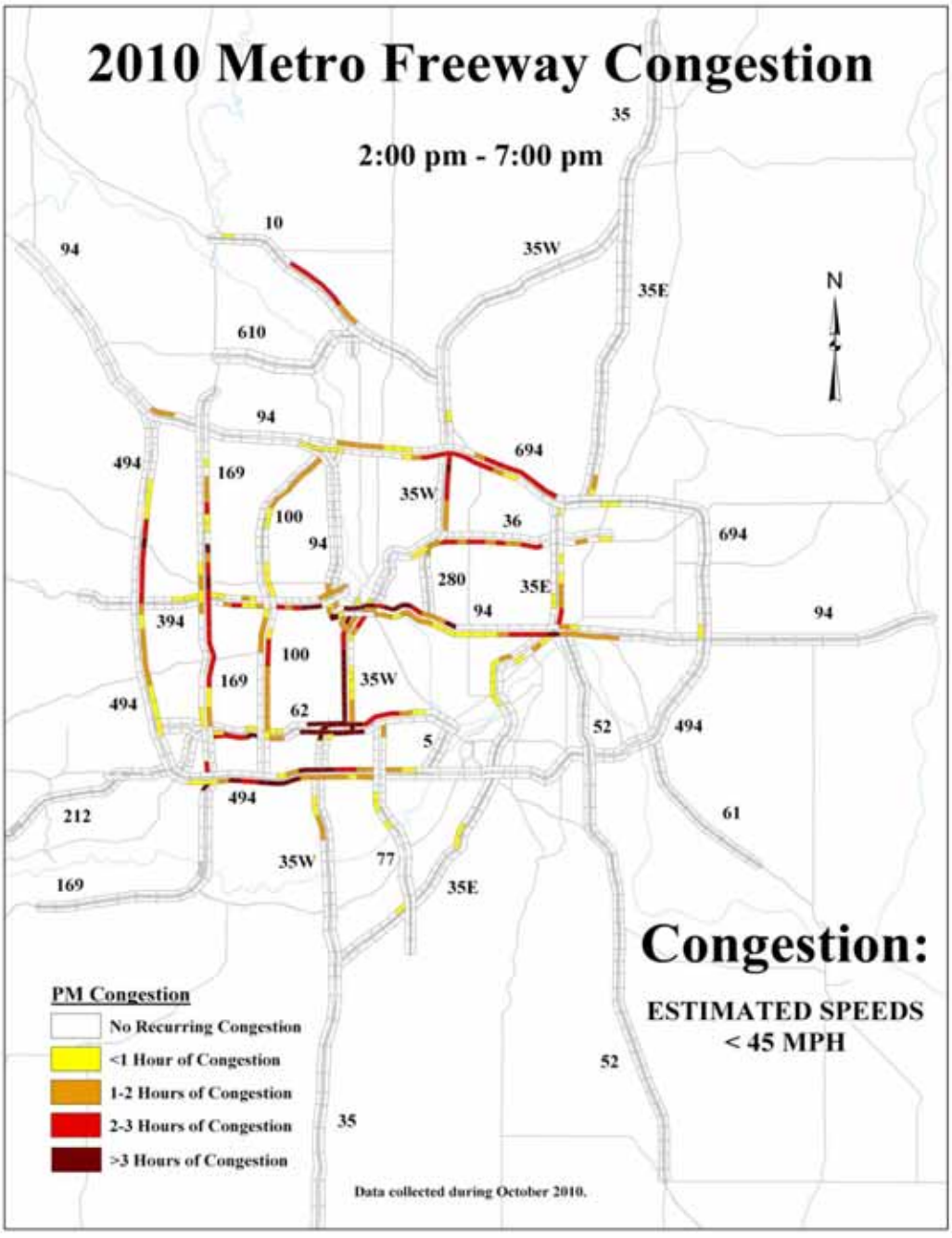
Applicants should illustrate that the project will reduce congestion in a congested corridor, using the following two congested arterial maps or the 2010 Congestion Report (http://www.dot.state.mn.us/congestionreport/CongestionReport2010.pdf). If you have an electronic copy of this document and the pdf maps are not shown on the next two pages, or for color copies of the maps, contact James Andrew (651-602-1721 or james.andrew@metc.state.mn.us) at the Metropolitan Council. If the applicable corridor is not listed, and there is a congestion problem, see the criteria in the main document for an explanation of how to illustrate congestion reduction.

Map: AM Peak Period Congestion

Congestion Report available at
http://www.metrocouncil.org/planning/transportation/regsolicit.htm



Map: PM Peak Period Congestion
Congestion Report available at
http://www.metrocouncil.org/planning/transportation/regsolicit.htm



Appendix P: Net Operating Cost Worksheet
New or Expanded Transit Service

For applicants who use a contracted service provider

1a)	Cost per Platform Hour *All operational and contract costs including driver labor, fuel, administration and other related costs divided by the number of platform hours operated.*	
1b)	Name of Provider:	
2)	Proposed Platform Hours *(From "Service Description Summary" section)*	
3)	Gross Operating Cost *(Line 1 times Line 2)*	$0
4)	Estimated Fare Box Revenue *(Based on Projected Ridership)*	
5)	Net Operating Cost *(Line 3 minus Line 4)*	$0

For applicants who provide service directly

1)	Total Agency 2007 Transit Operating Budget, less any non-transportation costs, allocations, or accruals *(Costs must be comparable whether contracted or direct service provider)*	
2)	Agency Budget minus Maintenance, Fuel, and Parts Costs: *(Maintenance includes mechanics, tools, and other mechanics-related costs)*	
3)	Agency Budget for Maintenance, Fuel, and Parts: *(Line Two plus Line 3 should equal Line One)*	$0
4)	2007 Annual Projected Vehicle Platform Hours:	
5)	2007 Annual Projected Vehicle Platform Miles:	
6)	Fixed Cost per Platform Hour *(Line 2 divided by Line 4)*	#DIV/0!
7)	Variable Cost per Platform Mile *(Line 3 divided by Line 5)*	#DIV/0!
8)	Proposed Platform Hours *(From "Service Description Summary" section)*	
9)	Total Cost for Proposed Platform Hours *(Line 6 multiplied by Line 8)*	#DIV/0!
10)	Multiply Line 7 by the Number of Service Miles Proposed	
11)	Gross Operating Cost *(Line 9 plus Line 10)*	#DIV/0!
12)	Estimated Fare Box Revenue *(Based on Projected Ridership)*	
13)	Net Operating Cost *(Line 11 minus Line 12)*	#DIV/0!

For agencies with a mix of directly provided and contracted services

If the vehicles in this proposal will be assigned to a contractor, use the contracted service section of this form. If the vehicles will be used in direct service, complete that section of the form, using only the portion of your budget and service hours that are used in direct service.

Appendix P2: Project Summary Worksheet (New or Expanded Transit Service)

Number of Service Years

		Year 3 or Final Year (if less than 3)	Total
Peak Period Vehicles			
Platform Hours			
Additional Daily Platform Hours			
2007 Platform Hour Rate*			
Daily Cost		$0.00	
Annual Platform Hours			
Annual Cost		$0.00	
Platform Miles			
Additional Daily Platform Miles			
2007 Platform Mile Rate*			
Daily Cost		$0.00	
Annual Platform Miles			
Annual Cost		$0.00	
Total Annual Operating Cost		$0	$0
Average Daily Ridership			
Average Daily Fare			
Daily Revenue		$0	
Annual Ridership			
Total Annual Revenue		$0	$0
Net Operating Cost		$0.00	
Net Operation Cost per Passenger		#DIV/0!	
Passenger per Platform Hour		#DIV/0!	
	Fund Percent		
Annual Federal Share (CMAQ)	80%	$0	$0
Annual Local Share (Matching)	20%	$0	$0
Total Annual Project Cost	100%	$0	$0

Costs are expressed in 2007 dollars (NOT factored for inflation).
See Appendix P for rate per hour and per mile calculation.

APPENDIX Q

Technical Advisory Committee and Transportation Advisory Board Membership

Technical Advisory Committee	
Name	**Representing**
Allen Lovejoy, Chair Mike Klassen	City of St. Paul
Jon Olson	Anoka County
Kate Garwood (alt.)	Anoka County
Lyndon Robjent	Carver County
Brian Sorenson Mark Krebsbach (alt.)	Dakota County
Tom Johnson James Grube (alt.)	Hennepin County
Tim Mayasich, Co-Chair Joe Lux (alt.)	Ramsey County
Lisa Freese Craig Jenson (alt)	Scott County
Wayne Sandberg Ted Schoenecker(alt.)	Washington County
Karl Keel	Assoc. of Metro Munic.
Carolyn Braun	Assoc. of Metro Munic.
Chuck Ahl	Assoc. of Metro Munic.
Richard McCoy	Assoc. of Metro Munic.
Bob Moberg	Assoc. of Metro Munic.
Jennifer Levitt	Assoc. of Metro Munic.
Kimberly Lindquist	Assoc. of Metro Munic.
John Powell	Assoc. of Metro Munic.
Jenifer Loritz Karen Berkholtz	City of Minneapolis
Pat Bursaw Brian Isaacson (alt)	Mn/DOT
Susan Moe	Federal Hwy. Admin.
Beverley Miller	MN Valley Transit Auth.
Innocent Eyoh	Minnesota Pollution Control Agency
Robert Vorphal	Metropolitan Airports Commission
Adam Harrington	Metropolitan Council (Metro Transit)
John Kari	Metropolitan Counci (Community Development)
Carl Ohrn Connie Kozlak (alt.)	Metropolitan Council (Transportation)
Kevin Roggenbuck	Transportation Advisory Board
Ann Braden	TAC Secretary

Transportation Advisory Board	
Name	**Representing**
William Hargis	Chair
Dennis Berg	Anoka County
Tom Workman	Carver County
Paul Krause	Dakota County
Mark Stenglein	Hennepin County
Tony Bennett	Ramsey County
Jon Ulrich	Scott County
Myra Peterson	Washington County
William Hargis	Assoc. of Metro Munic.
Judy Johnson	Assoc. of Metro Munic.
Russ Stark	Assoc. of Metro Munic.
Robert Lilligren	Assoc. of Metro Munic.
Wendy Wulff	Assoc. of Metro Munic.
Dan Gustafson	Assoc. of Metro Munic.
Julia Whalen	Assoc. of Metro Munic.
Bethany Tjornhom	Assoc. of Metro Munic.
Jim Hovland	Assoc. of Metro Munic.
Dick Swanson	Assoc. of Metro Munic.
Steven Schulte	District A
Bill Guidera	District B
James Meyers	District C
Chuck Haik	District D
Bart Ward	District E
Donn Wiski (Chair)	District F
Jill Smith	District G
Ken Johnson	District H
Peggy Leppik	Metropolitan Council
Scott McBride	Mn/DOT
David Thornton	Minnesota Pollution Control Agency
Sherry Stenerson	Metropolitan Airports Commission
Glenn Olson	Transit
Richard Mussell	Transit
Ron Have	Freight Movement
David Gepner	Non-Motorized
Kevin Roggenbuck	Transportation Advisory Board
LuAnne Major	TAB Secretary

APPENDIX R

Qualifying Criteria Review and Challenge Procedures

Recorded below are the procedures the TAC have adopted for review and challenge of qualifying criteria.

- The cover letter transmitting the solicitation package emphasizes the need to carefully address the qualifying criteria. The letter notes staff is available to answer questions about the qualifying criteria and emphasizes that projects will be disqualified if they do not meet the qualifying criteria.

- The instructions state that a project qualified in a past solicitation does not necessarily qualify now due to changes in the criteria or changes to the Council plans or procedures.

- Staff reviews the responses to the qualifying criteria for all applications received and identifies any responses that may not meet the qualifying criteria.

- Staff will try to determine if errors were made in applications which the applicant should be allowed to correct (such as miscalculating the 20% local match), but it is the applicant's responsibility to correctly complete the application.

- The scoring sub-committee chairs from the past solicitation will work with staff to develop recommendations on project qualification. The problems and concerns identified by staff would be reviewed with the scoring sub-committee chair from the past solicitation.

- Staff will prepare a report to the Funding and Programming Committee on qualifying criteria recommendations. For any application that may not meet the qualifying criteria the following will be provided to the committee at least one week before the committee meeting: the appropriate parts of the application, the staff analysis, if any, and the staff recommendations. This report will also be made available to the affected project applicants.

- Project applicants are invited to attend the Funding and Programming Committee meeting and defend their applications.

- The Funding and Programming Committee will make the final determination on qualifications. No appeal beyond this committee shall occur.

APPENDIX S

Process and Procedures to Review Challenges to Criteria Scores for the 2009 Solicitation

Recorded below is the process to handle challenges to criteria scores adopted by the Technical Advisory Committee (TAC). Section I is the generic schedule the process follows. The schedule starts at the time the scoring subcommittees present scores to the Funding and Programming Committee (F&PC). Section II records the process to review challenges to scores and Section III records some procedures that must be followed. The specific dates are recorded in the schedule in the main body of the solicitation package (beginning on p. 2).

I. Schedule Relative to Challenging Criteria Scores

1. F&PC approves project scores submitted by scoring sub-committees and staff makes them available on the Council web site within three working days.

2. All applicants are notified via electronic mail that scores are available on the web site. Their scores will be faxed or mailed if requested.

3. Applicants are reminded that they can request further review of the individual criteria scores given to their project. The notification to the applicants describes the process to request re-scoring of a criterion. Staff receives a lot of phone calls and emails at this point in the process from applicants asking why their project received X amount of points. Staff uses the scorers' methodology reports to answer their questions.

4. Applicants will have approximately two weeks to submit a written request to the TAB Coordinator to challenge one or more criteria scores. This request may be by facsimile, postal mail, electronic mail, or hand delivered. (The material to be submitted is described below)

5. Staff reviews project score challenges. (Process described in Section II.)

6. Funding and Programming Committee and the applicants are mailed copies of the letter challenging the scores and staff review of the challenge and recommendations at least one week before the committee meeting

7. The F&PC holds a meeting open to the public and the applicants. No testimony will be allowed. F&PC votes on each challenge. The result of score reviews are reported to TAC.

8. The TAC reports the results of the score reviews to TAB Programming Committee.

II. Staff Process to Review Score Challenges.

1. The letter from the applicant must specify the criteria score being challenged and why the applicant thinks the score is incorrect.

2. Staff reviews the reasons given to suspect the criteria scores.
   A. Staff discusses the score and evaluation with Chair of subcommittee and/or individual scorer.
      - Review methodology of scoring.
      - Review the answers given to criteria questions. Does answer conform to directions provided? Is answer clear?
   B. Staff checks to make sure math is correct for calculating the score.

C. Staff compares score to similar projects
D. Staff records conclusion/recommendation and reasons. This is sent to F&PC and project sponsor at least one week prior to F&PC meeting, which is open to the public.

3. Staff presents analysis and recommendation to F&PC.
   A. Staff notes if the change in score will change the order and/or priority of projects.
   B. Staff makes change and ranking of projects.
   C. No testimony is allowed by project sponsor. Questions may be asked by F&PC Chair.

III. Procedures

1. No new material will be accepted as part of the score challenge unless requested by staff.

2. No one may challenge the score of projects they do not officially represent.

3. If a problem is discovered in the solicitation package or scoring methodology the F&PC will work to correct it prior to the next solicitation.

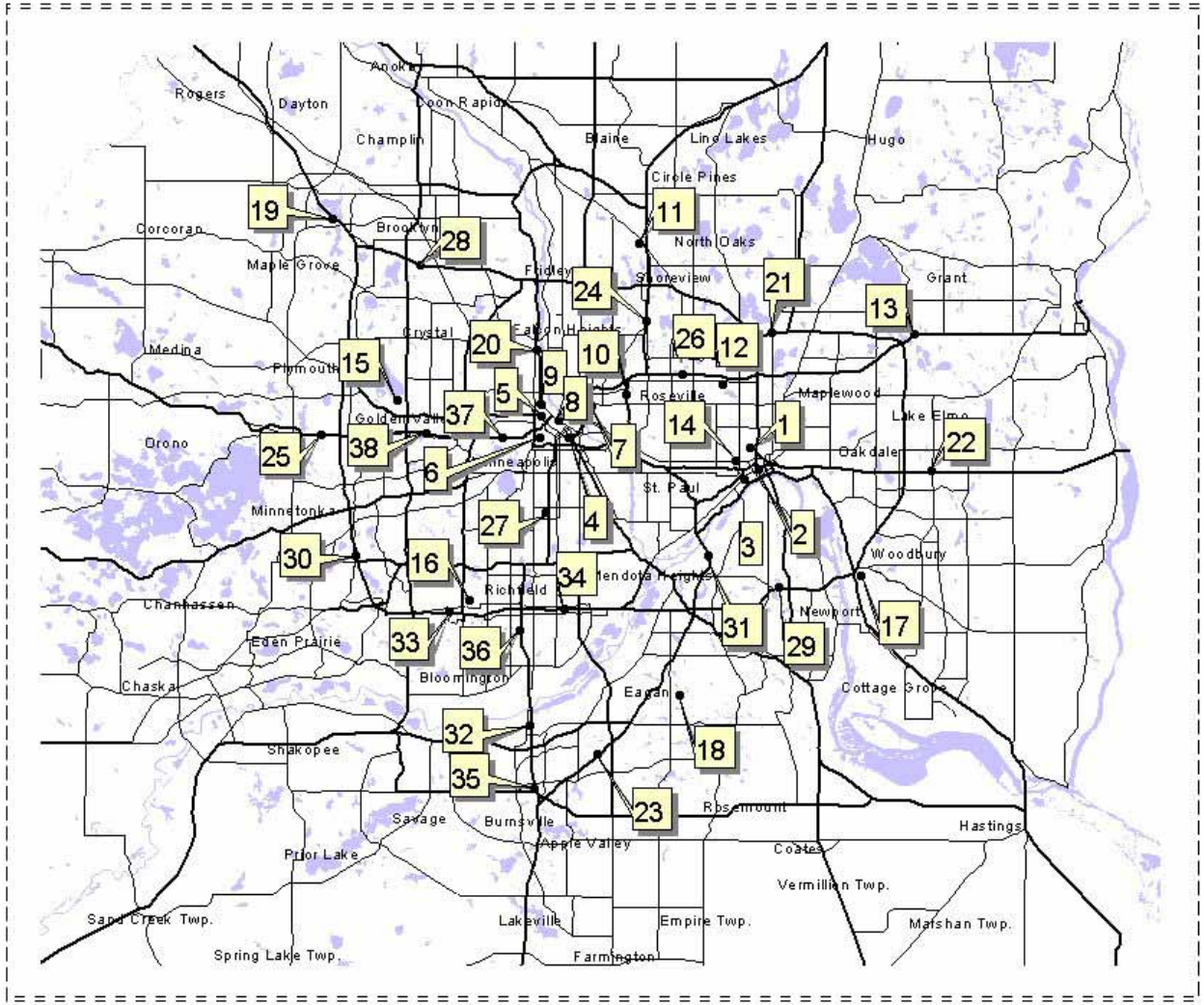
APPENDIX T

AM Metro Area Peak Hour Vehicle Occupancy Rates (for Appendix I and Appendix N)

The calculations for Increase in Hourly Throughput (App. I for roadway projects and App. N for CMAQ projects) require the applicant to factor the appropriate AM peak hour vehicle occupancy rate. Instructions in previous solicitation packages for making these calculations referenced the attached site location data (attached is Appendix C from the 2001 Regional Solicitation). Updated rates are still not available. Applicants should again use the data on the following pages for making these calculations using the most appropriate site location given the location of the project, under the assumption that vehicle occupancy rates remain relatively flat over time. If, however, the applicant or another entity known to the applicant has conducted a more recent study on the applicable section of roadway and collected AM vehicle occupancy rates, those rates may be used as long as the applicant documents the source of the data. (Map and Table appear on the pages below.)

Contact: James Andrew, Metropolitan Council, 651-602-1721, or james.andrew@metc.state.mn.us.

Appendix C
1997 Vehicle Occupancy Summary: Twin Cities Metropolitan Area



AM Metro Area Peak Hour Vehicle Occupancy Rates

Site Number (correspond to map on previous page)	1995 Rate (7:15 - 8:15 AM)	1996 Rate (7:15 - 8:15 AM)	1997 Rate (7:00 - 8:00 AM)
1	1.15	1.17	1.12
2	1.23	1.26	1.22
3	1.09	1.09	1.08
4	1.16	1.14	1.15
5	1.21	1.33	1.35
6	1.18	1.15	1.15
7	1.19	1.17	1.20
8	1.14	1.15	1.17
9	1.16	1.17	1.16
10	1.07	1.08	1.08
11	1.05	1.09	1.10
12	1.16	1.14	1.15
13	1.05	1.05	1.08
14	1.14	1.18	1.12
15	1.07	1.07	1.07
16	1.05	1.06	1.05
17	1.11	1.12	1.10
18	1.04	1.10	1.08
19	1.09	1.09	1.07
20	1.10	1.10	1.10
21	1.10	1.10	1.07
22	1.08	1.09	1.07
23	1.06	1.08	1.06
24	1.08	1.07	1.09
25	1.11	1.12	1.13
26	1.03	1.07	1.06
27	1.10	1.14	1.12
28	1.09	1.10	1.09
29	1.11	1.07	1.05
30	1.07	1.06	1.07
31	1.09	1.07	1.08
32	1.03	1.16	1.14
33	1.10	1.08	1.08
34	1.06	1.06	1.06
35	1.13	1.12	1.10
36	1.13	1.13	*
37	1.24	1.23	1.27
38	1.17	1.19	1.22
Average Rate	1.11	1.12	1.12

* site 36 data not collected in 1997.

Source: MN/DOT Vehicle Occupancy Summary: Twin Cities Metropolitan Area, July, 1998