CMP

Congestion Management Process

Framework for Transportation Performance

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

St. Louis Metropolitan Area

Board Approved
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St. Louis Regional

Congestion Management Process

Framework for Transportation Performance

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Introduction

Background

Congestion both nationally and regionally continues to detrimentally impact the economy, environment, community livability, and the traveler's experience. Congestion now costs the nation over $121 billion annually in terms of the cost of additional fuel and the value of commuters' extra time spent in congestion. It has caused commuters to travel for 5.5 billion additional hours and buy an extra 2.9 billion gallons of fuel. The congestion cost per auto commuter in the St. Louis region totaled an extra $686 annually while the yearly extra delay for the average St. Louis commuter totaled 31 extra hours.[1] However, building additional capacity to accommodate more vehicles has proved to rarely work in combating congestion for the long-term. We have also learned that in today's economic environment, public investment has to find a way to do more with less and maximize transportation investment related to the movement of persons and goods.

Congestion and delays occur when travel times exceed free flow conditions. One form of congestion is defined as *recurring*, which tends to be concentrated into specific time periods, such as *rush hours* and is caused from excessive traffic volumes resulting in reduced speed, and flow rate within the system. The other form of congestion is defined as *non-recurring*, which is caused from unforeseen incidents (road accidents, spills, construction and stalls), which affect traffic flow, travel speed and time delay

The St. Louis Region Congestion Management Process (CMP) is an *objectives-driven and performance based* approach to defining and managing congestion that makes transportation system performance and congestion management a *core* activity, as opposed to an isolated stand-alone process and function. The CMP provides stakeholders and project sponsors with a better understanding of transportation system performance, along with information on the effectiveness of congestion management strategies.

The ability to identify and manage congestion of the region's multimodal system has improved dramatically with the advancement of Intelligent Transportation System (ITS) technology and real time monitoring of travel conditions, such as traffic volume, speed, travel time, and the ability to capture data consistent with the system users needs. The CMP will utilize much of the ITS framework in place in both the Missouri and Illinois region and rely on a variety of mitigation strategies oriented to the travelers' experience.

Federal Requirements

The congestion management requirement introduced in the Inter-modal Surface Transportation Efficiency Act (ISTEA) and continued under the Transportation Equity Act for the 21st Century (TEA-21) was then redefined under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). These requirements were then included in MAP-21, the current transportation legislation.

The new planning requirements for Metropolitan Planning Organizations (MPO) refers to a CMP, which reflects the new goals and outcomes of the law by establishing an integrated, objectives driven, decision making tool that will serve as an integral component of the metropolitan transportation planning process. The planning requirements for statewide and metropolitan planning processes are closely tied to the Clean Air Act Amendments of 1990 (CAAA) through the U.S. Environmental Protection Agency's (EPA) Air Quality Conformity Regulations. (*See Appendix A: 23CFR Part 450 Section 320*)

1 The 2012 Urban Mobility Report, published by the Texas Transportation Institute at Texas A&M University.

As defined under SAFETEA-LU, "the CMP will serve as a systematic approach, collaboratively developed and implemented throughout the metropolitan region, which provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies."[2] The CMP is required to be developed and implemented as an integral part of the metropolitan planning process and includes the following elements:

1. Established methods to monitor and evaluate the performance of all modes of the transportation system; identify causes of congestion; identify, evaluate, and implement alternative actions; and evaluate the effectiveness of mitigation actions.

2. Development of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods.

3. Establishment of a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion; to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented mitigation actions. To the extent possible, data collection programs will be coordinated with existing data sources (including archived operational/ITS data) and coordinated with operations managers in the metropolitan region.

4. Identification and evaluation of the anticipated performance and expected benefits of congestion management strategies to be implemented, including demand management; operational improvements; transit services; ITS implementation, and where necessary, expansion of system capacity.

5. Identification of an implementation schedule for selected strategies, responsibilities for implementation, and possible funding sources.

6. A process for reviewing the effectiveness of implementation strategies.

To aid MPOs in the development of the new CMPs, the Federal Highway Administration's (FHWA) Office of Planning, Environment and Realty, FHWA Office of Operations and the Federal Transit Administration's (FTA) Office of Planning Environment developed *Congestion Management Process: A Guidebook*. The guidebook presents a suggested CMP Process Model built upon eight fundamental actions or activities. The St. Louis Region CMP will include the eight actions, which comprise the following:

- Develop Congestion Management Objectives
- Define System/Network of Interest
- Develop Multimodal Performance Measures
- Institute System Performance Monitoring Plan
- Analyze Congestion Problems and Needs
- Identify/Evaluate Strategies
- Implement Selected Strategies/Manage System
- Monitor Strategy Effectiveness

As an additional resource, staff conducted a comparative analysis of CMPs in regions similar to St. Louis in size, congestion, and long range planning goals.

2 Statewide and Metropolitan Planning Final Rule 23CFR Part 450 Section 320

The Congestion Management Process

The East-West Gateway (EWG) CMP is based on the policy and project interrelationship with the Regional Transportation Plan (RTP) 2040, regional planning process and the Transportation Improvement Program (TIP). The RTP's Ten Planning Principles are integrated and reflect the CMP objectives and accompanied performance measures of the CMP.

Through the established Congestion Management Committee (CMC), the CMP creates a framework for enhanced coordination among stakeholders in the region for transportation network performance data and the actual establishment of regional transportation performance measures. The CMP serves as a dynamic resource in implementing operational management and demand management strategies in the project development process as well as addressing congestion impacts on the regional system. The principal components of the CMP allow for the following activities.

- The CMP utilizes collected data and performance measures from the existing regional ITS architecture to track performance and identify congestion on the regional system. The CMC is the platform for regional coordination of the data collection process, establishment of performance measures, and transportation performance assessment and reporting.

- Utilization of the operational and transportation management strategies used by MoDOT's Gateway Guide program (e.g. motorist assist; public use of real-time traveler information services; and monitoring of flow on the region's transportation network) as ongoing strategies of congestion mitigation.

- Inclusion of regionally based performance measures that evaluate functional integrity of the system and include multimodal accessibility, system users' experience and relationship to congestion.

- Projects that add significant single occupant vehicle (SOV) capacity must go through the CMP. They will require an evaluation of appropriate operational management and demand management strategies from the Congestion Mitigation Toolbox to address congestion related impacts before they can be added to the TIP.

- A monthly Mobility Report published by MoDOT's Gateway Guide analyzes the monthly operational performance of the CMP monitored network. It will continue as part of the regional CMP, and a more comprehensive report will be published periodically.

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Regional CMP Network

The St. Louis Regional CMP applies to the eight-county MPO boundary including the geographic area contained in the Regional ITS Architecture boundary. The eight county area includes the Missouri counties of Franklin, Jefferson, St. Louis, St. Charles and the city of St. Louis, and the Illinois counties of Madison, Monroe and St. Clair.

The current CMP boundary is consistent with the area of application defined in the previously adopted Congestion Management System (CMS) and encompasses the ITS boundary. The CMP network is comprised of the following network of facilities and is depicted in the CMP Area of Application maps. (Figures 1 and 2)

- Interstate Highways and Regional Freeway and Expressway System
- Regional Principal Arterial System
- All Mississippi and Missouri River bridges and approaches on the above identified routes
- MetroLink light rail transit line and principal bus arterial routes

The regional ITS system targets roadways with the highest volumes and levels of congestion in the region. The existing MoDOT, IDOT and local jurisdictions ITS systems will form the basis of the initial CMP monitoring efforts. Additional necessary monitoring needs will be addressed through the CMC in coordination with the local jurisdictions once the CMP is implemented in the region.

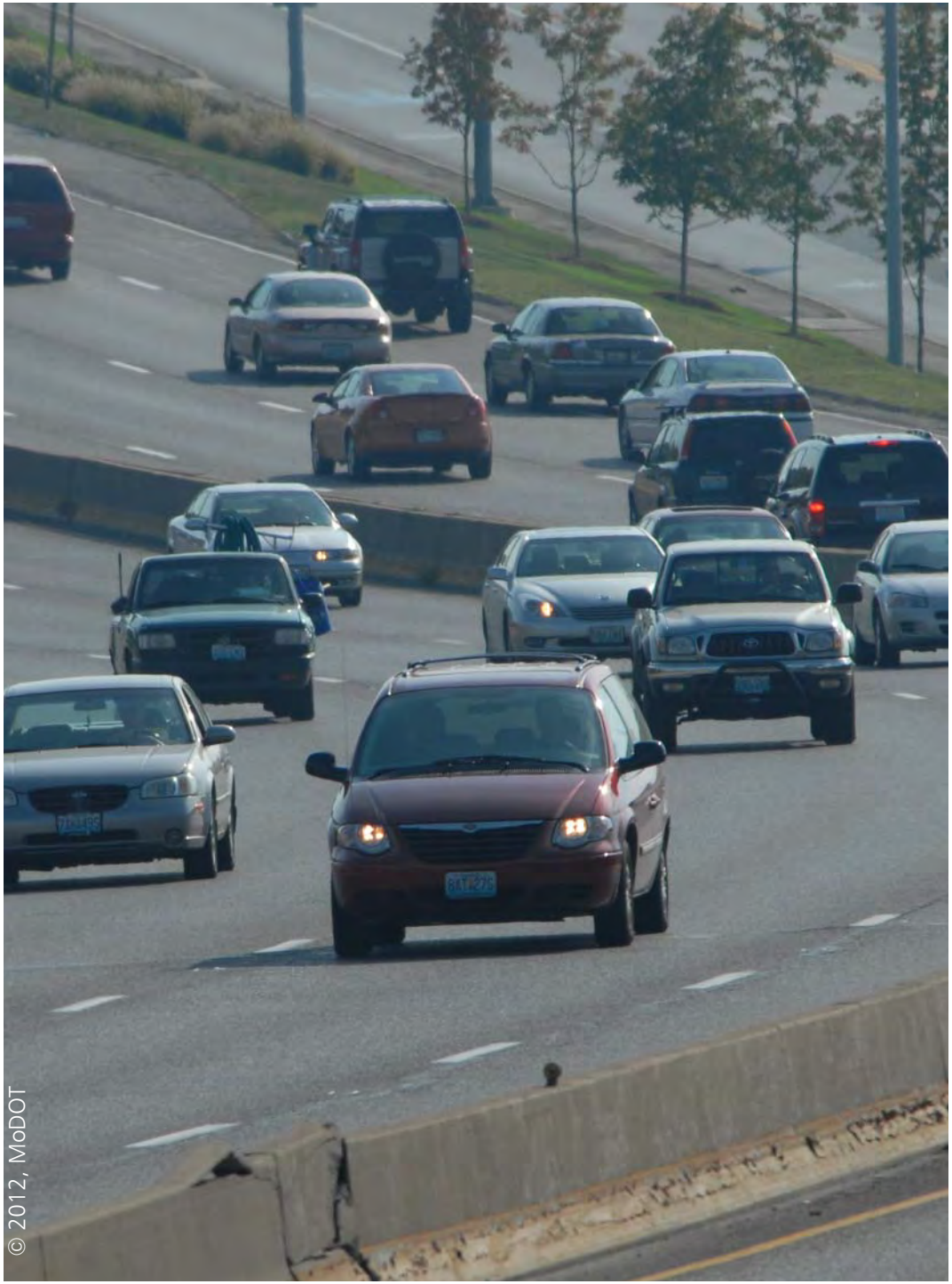


Figure 1: CMP Regional Highway Network

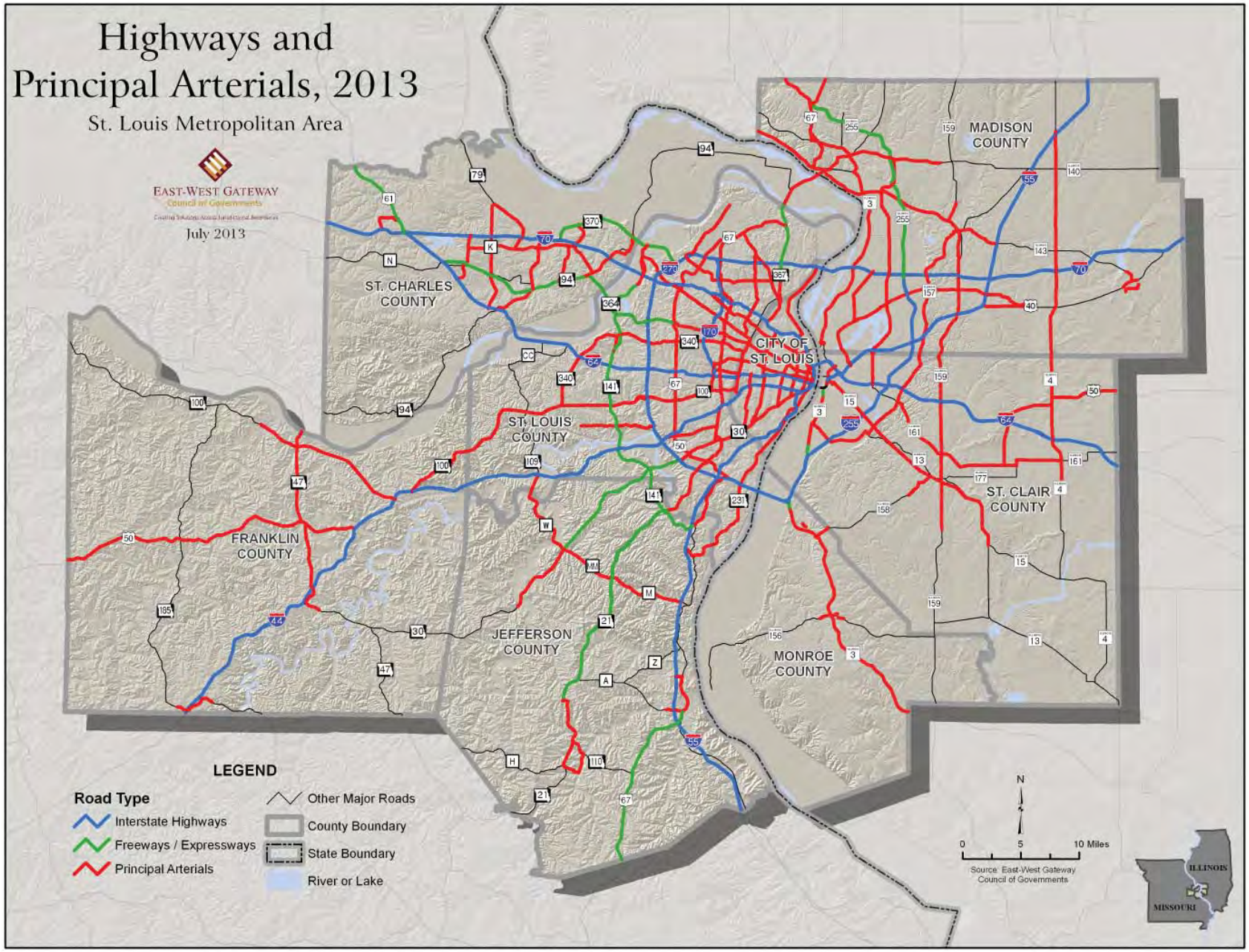
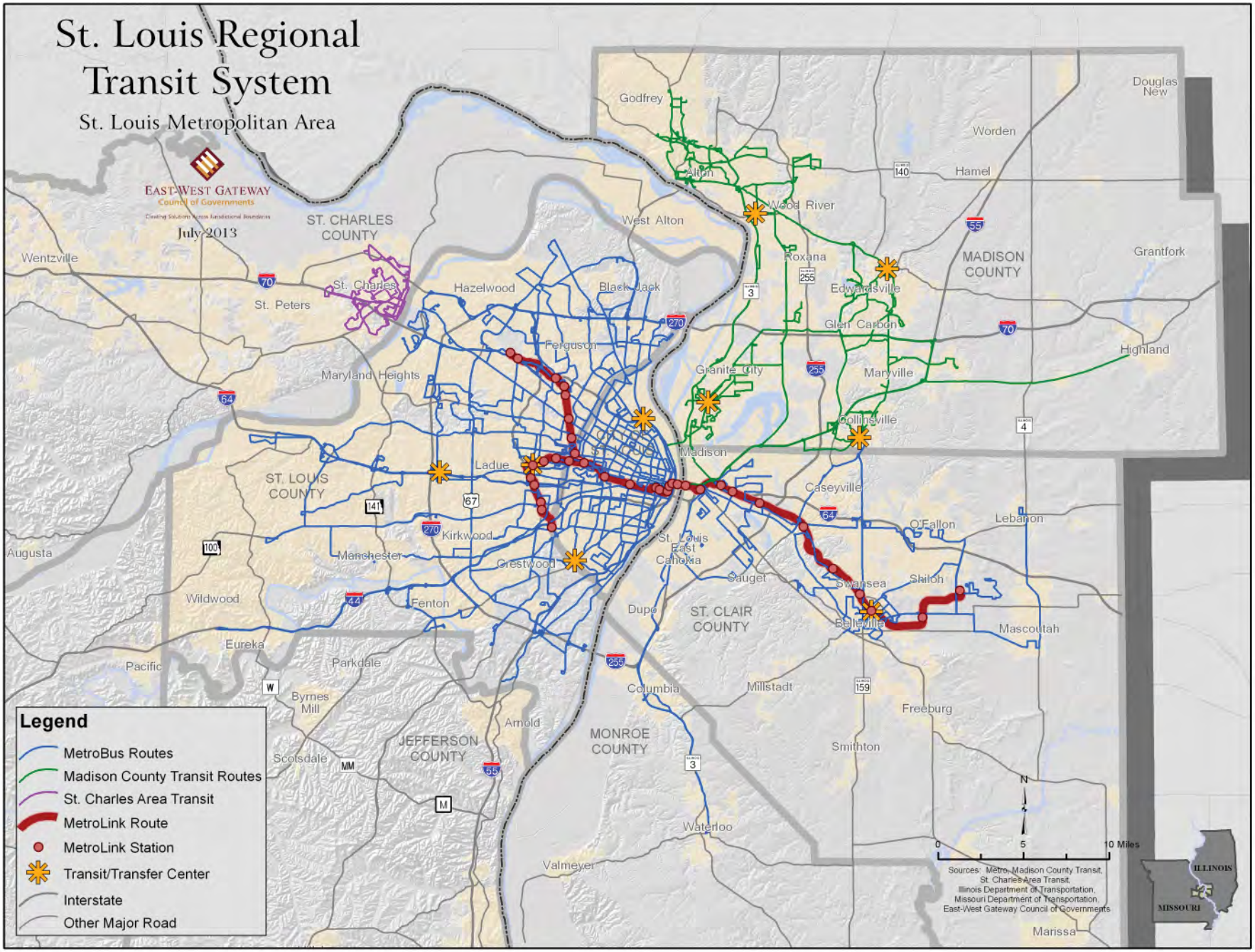


Figure 2: St. Louis Regional Transit Network



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Regional CMP Goals and Objectives


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RTP Planning Principles

The RTP 2040 is built upon a framework of Ten Regional Planning Principles that guide the long-range plan. (*See Appendix B: RTP 2040 Planning Principles*) The ten principles are:

- Preserve and Maintain the Existing Transportation System Network
- Support Public Transportation
- Support Neighborhood and Communities Throughout the Region
- Foster a Vibrant Downtown
- Provide More Transportation Choices
- Promote Safety and Security
- Support a Diverse Economy Throughout the Region
- Support Quality Job Development
- Strengthen Intermodal Connections
- Link Transportation Planning to Housing, Environment and Education

The RTP sets the planning vision and goals for the region, and the CMP draws on this vision to develop regional congestion management objectives. RTP 2040 includes a vision and strategies for addressing regional congestion in the context of the ten principles, but does not contain explicit congestion management goals. Development of the next RTP for the St. Louis region will include specific goals that guide how the region will address congestion.

CMP Goals

The congestion management goals established for CMP in the St. Louis region consist of the following:

1. Reduce Congestion on the Regional Transportation System
2. Improve Transportation System Reliability
3. Increase Multimodal Transportation Access and Use on the Regional Transportation System.

The objectives of the St. Louis Regional CMP support the regional goals and serve as a foundation for assessing congestion in the region, and for developing solutions that meet the region's needs.

CMP Objectives

Goal: Reduce Congestion on the Regional Transportation System:

Objective #1: Reduce travel times on interstate and freeway corridors during peak hours

Objective #2: Identify and mitigate transportation system bottlenecks

Objective #3: Maintain optimal travel times on arterial corridors

Goal: Improve Transportation System Reliability:

Objective #1: Reduce incident response and clearance times

Objective #2: Maintain acceptable transit system bus and MetroLink on-time performance

Goal: Increase Multimodal Transportation Access and Use on the Regional Transportation System:

Objective #1: Increase transit system passenger trips

Objective #2: Increase miles of multimodal trails

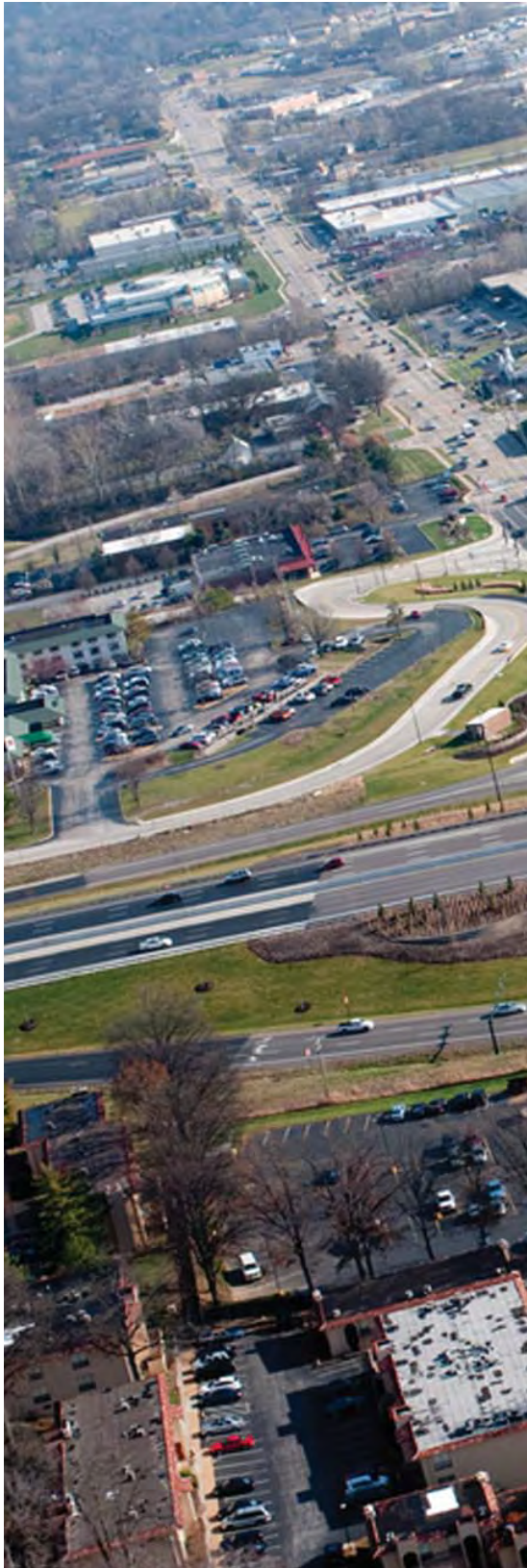
It is understood that the objectives with established performance targets are preferred. However, these targets should also be agreed upon by stakeholders and be realistically achievable. In order to meet these criteria, a regional dialogue and consensus needs to occur. For that reason, a CMP Policy and Program Objective has been included to specify that performance targets for CMP objectives be established within a year of CMP implementation.

Each of the Ten Regional Planning Principles in the RTP has a number of associated strategies. One of the factors considered in the selection of the CMP Objectives is to what extent they align with and support the RTP strategies. Each of the objectives supports, either directly or indirectly, multiple strategies. These objectives also align with established data sources for the majority of the initial CMP monitoring system, and, as a result, the associated performance measures will have a readily available source of measurable data.

The CMP also provides procedural objectives related to the policy and program actions of the CMP that identify the procedural steps that the CMC will take.

CMP Policy and Program Objectives

- Establish regional performance targets for CMP objectives within one year of CMP implementation
- Utilize the Congestion Management Committee (CMC) as the regional stakeholder forum for ideas and solutions addressing congestion related issues on the regional transportation system
- Foster regional coordination of arterial operations
- Coordinate data collection and regional data sharing to support the CMP
- Inform EWG, local jurisdictions and transportation agencies in the region of CMP performance measuring results
- Improve public awareness of regional traveler information services available through the region's ITS Program
- Ensure proper consideration of appropriate congestion mitigation strategies in the project development and implementation process



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CMP Performance Measures

Identifying Regional Congestion

In addressing vehicular mobility, congestion results when traffic demand approaches or exceeds the available capacity of the roadway, or when the level of transportation system performance is no longer acceptable due to traffic interference. The level of demand can vary significantly depending on the season, the day of the week, and the time of day. The capacity of the roadway system, which is usually thought of as constant, can change because of weather, work zones, traffic incidents, or other non-recurring events. Examination of congestion in the St. Louis region has shown that it is principally the result of seven factors.

- *Capacity constraints*—The maximum amount of traffic capable of being handled by a given highway/roadway section. Capacity is determined by the functional integrity, LOS, and volume over capacity (V/C) of the roadway.

- *Traffic Incidents*—Events that disrupt the normal flow of traffic, usually by physical impedance in the travel lanes. Events such as vehicular crashes, breakdowns, and debris in travel lanes are the most common form of incidents.

- *Work Zones*—Construction activities on the roadway that result in physical changes to the highway environment. These changes may include a reduction in the number or width of travel lanes, lane "shifts," lane diversions, reduction, or elimination of shoulders, and even temporary roadway closures.

- *Weather*—Environmental conditions that can lead to changes in driver behavior and affect traffic flow, such as slower traveling speeds and greater spacing of vehicles.

- *Traffic Control Devices*—Intermittent disruption of traffic flow by control devices such as railroad grade crossings and poorly timed signals also contributes to congestion and travel time variability.

- *Special Events*—Special cases of demand fluctuations whereby traffic flow in the vicinity of the event will be radically different from "typical" patterns. Special events occasionally cause "surges" in traffic demand that overwhelm the system.

- *Fluctuations in Normal Traffic*—Day-to-day variability in demand leads to some days with higher traffic volumes than others. Varying demand volumes superimposed on a system with fixed capacity also results in variable (i.e., unreliable) travel times.

The Transportation Research Board (TRB) has consistently defined two primary types of congestion: 1) *recurring congestion*, which tends to be concentrated into short time periods, such as "rush hours" and is caused from excessive traffic volumes resulting in reduced speed and flow rate within the transportation network system; and 2) *non-recurring congestion*, which occurs when the roadway's carrying capacity is temporarily disrupted due to unforeseen incidents (road accidents, spills, and stalls) which affect driver behavior to a considerable extent.

Recurring Congestion

Recurring is the typical day-to-day congestion that people and businesses anticipate in scheduling daily activities. Although recurring congestion increases trip times and delay compared to travel in non-congested periods, the impacts are predictable. Nationwide congestion studies have demonstrated that congestion imposes real costs, but those costs, being predictable, become part of the equation that people use in making choices about where they live and work, that businesses evaluate in making location decisions, and that shippers and receivers rely on to schedule freight movements. Recurring congestion results when physical capacity is simply not adequate to accommodate demand during peak periods. When too many vehicles compete along all segments of a facility, corridor or system-wide "congestion" will inevitably result.

Non-recurring Congestion

Much of the reason for non-recurring congestion is that when the flow of traffic is impeded, or stopped, delay increases exponentially as the number of vehicles and occupants back up along the route. Initially, being an unexpected event, no opportunity for route or schedule adjustment occurs before the "traffic jam," which invariably disrupts the flow of traffic.

The effects of non-recurring congestion also impact alternate routes by forcing unanticipated traffic volumes onto lesser-used facilities, increasing the congestion on the alternate routes. These effects will continue for extended time periods, and on additional routes, following an incident or event as travelers seek alternate routes with less delay. Non-recurring congestion may be a result of periodic natural events, accidents, unexpected maintenance or repair, or other unforeseen events.

The following synopsis that summarizes the impacts of non-recurring incidents, and capacity deficient congestion is derived from MoDOT's study of traffic flow impacts.

- One minute of lane blockage is equal to 5 minutes of traffic congestion
- During peak hours, one minute of lane blockage can cause 20 minutes of traffic congestion.
- A vehicle on the shoulder of the road reduces the capacity of the closest lane by 20 percent.

The preferred mitigation approaches for non-recurring congestion includes incident management strategies, freeway management systems, and advanced traffic management strategies, using technical, communications, and organizational strategies such as those contained in Intelligent Transportation Systems (ITS).

Defining Congestion in the St. Louis Region

Interstate Highway and Freeway congestion is measured using a "speed index," defined as:

This measure tracks the average speed during the morning and evening peaks on various freeway sections. The Speed Index is calculated according to the following equation:

SPEED INDEX = AVERAGE SPEED/FREE FLOW SPEED

Average speeds are taken from sensor data. The free flow speed is variable and is equal to the highest hourly average speed for any hour in that data set. The Speed Index measure is used to define congested conditions on area freeways according to this scale:

HIGH MOBILITY: *Speed Index of 0.90+*

MEDIUM MOBILITY: *Speed Index of 0.80 to 0.90*

LOW MOBILITY: *Speed Index of <0.80 (Unacceptable Congestion)*

Locations that are consistently in the "Low Mobility" category warrant close monitoring, and analysis of the causes of congestion and possible countermeasures.

For arterial highways there is no region wide definition of congestion at the present time, and methods of managing arterial congestion vary.

For example, St. Louis County defines arterial congestion as:

- Motorists stopped on critical signalized intersection approaches wait (as an average) more than 1 signal cycle for more than 10 percent of the signal cycles during the AM, mid-day, or PM weekday peak hours; or
- Motorists stopped on critical signalized intersection approaches wait (as an average) more than two signal cycles for more than 2 percent of the signal cycles during the AM, mid-day, or PM weekday peak hours, or
- New traffic signal(s) as needed and meets MUTCD warrants

When these thresholds are exceeded, analysis of congestion mitigation strategies is warranted.

MoDOT, on the other hand, does not have a defined threshold for congestion on arterial highways. They manage congestion by means of a systematic program to analyze the operation of each coordinated arterial traffic signal system every five years, and optimizing the operation of the system for current conditions. This ensures that each system is periodically adjusted to account for changes in traffic volumes and operating conditions. In addition, they monitor the operation of the major arterial corridors by means of a monthly review to track trends of improving or degrading operations.

There are, however, some indicators that identify arterial congestion warranting investigation of cause of congestion and potential countermeasures. Some examples of these indicators are:

- Bottleneck at an intersection or interchange on a traffic signal coordinated arterial corridor that is more severe than generally experienced on that corridor
- Freeway interchange with an arterial highway that experiences recurring traffic backups onto the through lanes of the freeway
- The top tier of congested arterial routes

The CMC has discussed the need for a common performance measure and congestion thresholds to apply regionally for arterial highways. The consensus among CMC representatives is that it is needed, but that it should be determined through a regional discussion and consensus. This will be addressed by the CMC as a priority upon regional adoption of the CMP.

Performance Measures

The CMP planning activities involved a comprehensive review of a variety of performance measures for all modes within the regional transportation network. Findings from the comparative analysis of data collection activities of other CMPs nationwide, pointed to an emphasis on multimodal measures oriented toward the user/traveler's experience. Although some regions still included traditional measures for congestion such as V/C, it was evident that MPOs similar to the St. Louis region were moving more toward time based and ITS information related measures and solutions.

The following is a general description of measures derived from speed and delay data that evaluate recurring and nonrecurring forms of congestion.

Incident Duration

The FHWA Incident Timeline (Figure 3) is used to measure incident response:

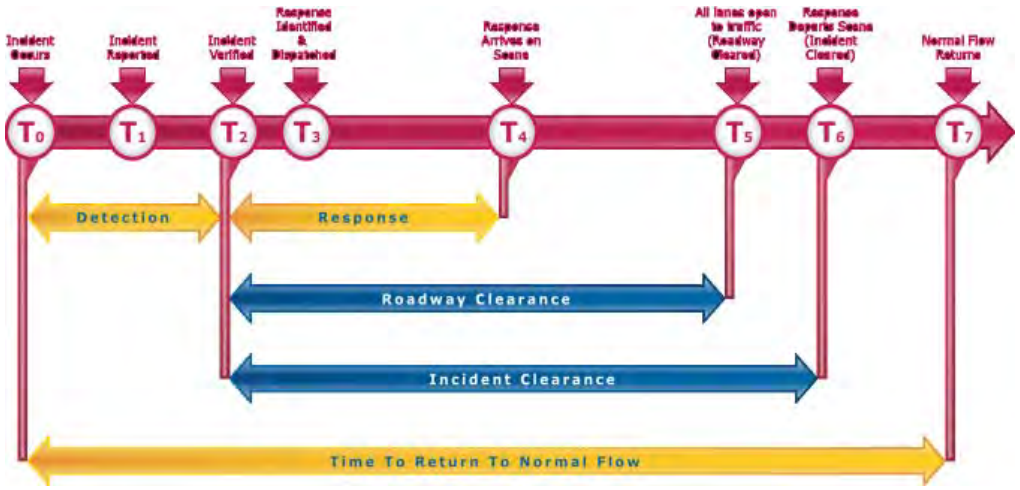
Average Time for Backup to Clear = T6 – T5

Average Time to Clear Incident from Lanes = T5 – T2

Travel Time

The length of time it takes to get from point-to-point may be perceived by the traveling public to be the most significant factor in evaluating congestion. Travel time can be compared to a base year, and data can be collected by time of day to distinguish peak from off-peak hours.

Figure 3: FHWA Incident Timeline



Average Speed

Average speed can be displayed both in numerical form and with congestion scans, and can be derived from travel time data. Average speed helps identify congestion by time of day and location. Average speed can also be displayed in indexed form by comparing it with the posted speed of a road.

Delay

Delay is the difference between travel time and acceptable or free-flow travel time. It can be derived from average speed on expressways and arterials. Both delay per vehicle and total vehicle delay are most often used together as data sources. Total vehicle delay is calculated by multiplying the delay per vehicle by the volume of vehicles. Volume is based on recent traffic count information and the travel time model.

CMP Performance Measure Criteria

The criteria used to select CMP performance measures included:

- The availability of data from existing stakeholder sources (e.g. IDOT, MoDOT, St. Louis County, the city of St. Louis, etc.).
- Measures consistent with the principles of RTP 2040 and CMP Goals and Objectives
- Measures that focus on the transportation network users' experience with respect to time delay and speed of travel for all modes
- Measures consistent with operations and management emphasis in project sustainability
- The applicability of those measures in quantifying system performance
- The inclusion of qualitative measures reflecting the traveler's experience

CMP Regional Performance Measures

The following performance measures have been selected for CMP implementation. The performance indicators accurately measure performance from the users' perspective and reflect the RTP Planning Principles and the CMP objectives for regional performance. The transportation performance data will come primarily from the existing Regional ITS infrastructure for the region's interstates and identified arterials, along with Metro and Madison County Transit for transit operations.
(*See Appendix C: Performance Measure Methodology*).

Regional Freeway Network

Speed Index

Ratio of average freeway speed in congested conditions to average free flow speed—used to identify level of congestion on freeways

Average Speed

Used to track the month to month performance of freeway corridors.

Incident Response and Clearance Time

Used as a measure of system reliability. The quicker incidents are cleared, the less the congestion caused

Principal Arterials:

Travel Time Index
Ratio of actual travel time to travel time at free flow conditions – used as a measure of congestion on arterial routes

V/C Ratio
Ratio of the actual volume to theoretical maximum capacity of a roadway. Used as a measure of congestion

LOS
A measure of congestion that can be applied to freeways, arterials and intersections

Multimodal Measures:

Transit Passenger Trips
Measure of the level of access to transit

Transit On-Time Performance
Measure of transit system reliability

Miles of multimodal trails
Measure of access to non-motorized travel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Monitor System Performance

Current Regional Transportation System Data Collection

As an important step in the CMP process, staff introduced a survey to CMP based jurisdictions and stakeholders to determine what transportation data collection methods and actual data are being used in the region. The comprehensive list of data collection techniques that was developed for the survey instrument is representative of mobility measures for vehicle-roadway, bicycle-pedestrian, and transit

The measures were assembled in a tabular survey format (See *Appendix D: EWGCOG Operations Survey Instrument*), which was distributed to CMC members. Specifically, jurisdictions and operators were asked to indicate whether or not they collect data representative of the performance measure, verifying: *yes/no, frequency, type of data output, and data usage*. If relevant, they described in detail how the data is collected, assessed and utilized in their respective planning and programming process.

The results demonstrated that principal jurisdictions involved in operations and data collection included IDOT, MoDOT, city of St. Louis, St. Louis County, Metro, and Madison County Transit District. Data that involved the traveler's experience focused on measures such as time-delay, travel speeds and bottleneck issues. Because of recent budget constraints, the city of St. Louis and St. Louis County are no longer publishing annual reports covering Average Daily Traffic (ADT) on principal arterials and at major intersections. The Transportation Management Center (TMC) located at the IDOT District office in Collinsville has also experienced significant cutbacks in funding and personnel. Therefore MoDOT, through Gateway Guide and the ITS infrastructure, is the primary data collection entity in the region with respect to roadways. Metro has an active data collection program in place collecting and reporting ridership and trip-based data on a quarterly basis.

Through its Gateway Guide ITS system, MoDOT has a continuous stream of real-time data coming into its TMC. The entire designated CMP monitoring system of freeways and arterials under MoDOT's jurisdiction is included in this data collection system. On freeways, sensors provide information on vehicle speed, travel time, volume and occupancy. On the arterials, automated systems of sensors provide speed, volume and travel times. MoDOT also tracks the number of incidents and the time to respond and clear them from the roadway.

All this data is stored and can be used to analyze the state of congestion on the system. Currently, recovering this data in a usable format is somewhat tedious and time consuming. MoDOT currently has an effort underway to develop a data-mining tool that will make this data easily and quickly exportable into spreadsheets, which should be completed by the end of 2013. Once it is completed, the time it takes to extract data will be greatly decreased, and the ability of MoDOT and others to acquire specific data for analysis purposes will be much less time consuming.

The EWG conducts comprehensive household travel survey and transit on-board surveys to gather information regarding the local travel patterns. This data is used to support the regional travel demand model EWG maintains, and improves the accuracy of travel forecasts for all travel modes in the St. Louis region. Information about these is given below:

Household Travel Survey: The Household Travel Survey for the St. Louis Region entailed the collection of activity and travel information for all household members during a specific 24-hour period. In addition to providing basic demographic information about each household and its members, the survey documents specific characteristics of travel activities and trips made, including number, purpose, time of day, mode and questions specific to mode usage. This is an extensive region wide survey, requiring significant time, and effort. This survey was last conducted in 2002. Typically for fairly stable areas these surveys are repeated every 15 years, depending on the financial constraints.

On-board Transit Surveys: This survey coverage includes all fixed transit routes of the transit agencies (Metro, St Clair County Transit District, and Madison County Transit District) and focuses on typical weekday travel. For Metro, both the Metro Bus and MetroLink (rail) are covered.

The Metro On-Board Survey is designed to provide insight into the transit passenger's travel. These surveys provide information about the origin and destination points, trip purpose, trip patterns, frequency of use, fare media, and passenger demographics. In order to meet FTA guidelines, EWG conducts on-board surveys about every 10 years. A survey is currently under way in 2013 to update the model.

Metro conducts surveys to measure customer satisfaction and to get information about travel behavior. These surveys are conducted periodically, depending on the fiscal constraints and the data needs of the agency. Onboard travel surveys are typically done every two years. Customers are asked about their current trip characteristics and demographics. This is conducted both on the Metro Bus and MetroLink. For the customer satisfaction survey, the focus is on the service side. The respondents are asked questions about the quality of the service provided by Metro.

In addition to the surveys, Metro also collects other transit data. This includes ridership by line for bus and rail, on-time performance, fare box recovery and other data. Currently Metro is working toward the implementation of Smart Cards. When this is fully implemented, additional and more detailed transit data will be available.

Current Regional Monitoring Activities

Monitoring of the regional transportation system takes place primarily through the regional ITS system. MoDOT's Gateway Guide program and Transportation Management Center (TMC) form the core of the regional ITS system, and regional partners with complementary systems working cooperatively together make up the system as a whole. The program provides real-time traffic information to motorists and emergency services, thereby allowing motorists to make an informed decision on the best route to travel and help emergency services identify, locate and remove roadway incidents more quickly.

The existing regional traffic management centers are representative of the principal ITS architecture framework that has been established and implemented with great success in the St Louis region by MoDOT, IDOT, the city of St. Louis, St. Louis County and St. Peters. On the Missouri side of the region, the MoDOT TMC is the management center of the Gateway Guide system, which serves as a one-stop shop for addressing travel needs and choices. Among its ongoing activities, the TMC serves to monitor the roadways, respond to congestion and incidents and deliver information to travelers via a number of means, including web sites, dynamic message signs and media outlets. IDOT also operates a TMC from their district office in Collinsville. However, budget constraints have limited much of the data collection abilities and reporting. IDOT is planning to begin an ITS study for the Illinois side of the region in the spring of 2013. Staff and IDOT have already reached an understanding for coordinating the study with the CMP. Currently, the TMC primary functions include identifying real-time traffic obstacles and incidents, and coordinating with MoDOT/Gateway Guide in responding with incident response teams to manage incidents that impact the Mississippi River crossings.

St. Louis County is also equipped with ITS capabilities at their Traffic Operations Building (TOB). They concentrate efforts on monitoring real time incidents and traffic flow operations on principal arterials. They have a central traffic signal control system that allows them to monitor traffic signal operations and make signal timing and coordination changes remotely.

The city of St. Louis operates a TMC, but budget constraints have limited its use and reliance on transportation network data. They also have a central traffic signal control system to assist with management of their traffic signal system.

St. Charles County, along with several cities in the county, is in the process of installing a county- wide ITS system to monitor and manage the local major arterial roads. The system will have some data collection abilities and will be located in and controlled from MoDOT's TMC. The system's purpose is to work cooperatively with MoDOT's ITS system to manage St. Charles County traffic as a cohesive network on both MoDOT's and the local road system.

This system was named "Gateway Green Light," after a regional arterial management structure previously developed for the region, but not implemented, using EWG funding.

Monitoring Plan

As described previously, there are significant data collection and monitoring activities already under way in the region. MoDOT currently monitors its congested network through their Gateway Guide system. Their monitoring and data collection efforts will continue and be included as part of the CMP process.

As with MoDOT, Metro currently closely monitors the performance of their transit system. Their data collection and monitoring efforts will also continue and be included as part of the CMP process.

IDOT monitors its congested network through its ITS system. However, although they have vehicle detection and real-time video capabilities, they do not have a system to capture and archive data from their system. Other local jurisdictions actively monitor their systems with observation and data collection when needed, but do not collect data on a regular schedule.

Once the CMP is approved and implementation begins, one of the initial tasks will be for the CMC to work with regional partners to improve monitoring and data collection activities where necessary.

How Gateway Guide Works

- Traffic sensors provide information on traffic speed and volume on the regional highway network.
- Closed circuit cameras provide live video of area highways to pinpoint incidents.
- Dynamic Message Signs inform motorists of highway travel times, approaching incidents, lane blockages and closures, and child abduction alerts.
- MODOT's TMC shares traffic information data and live video with local media outlets for broadcast.
- The www.gatewayguide.com web site provides highway traffic speeds, incident information, work zone information and live traffic camera images. GatewayGuide.com is a full-service, real-time information web site that provides up-to-date information on traffic flow, crashes and active construction. Drivers can directly see how incident and work zones are impacting traffic. The website provides real-time slow frame rate video from interstate video monitoring Pan-Tilt-Zoom (PTZ) cameras. The web site also updates the average traffic speeds on the sensor laden network every 30 seconds.
- Motorist Assist and Emergency Response crews patrol St. Louis metro area interstates in search of lane obstructions caused by disabled vehicles, debris and accidents.
- *55 cellular calls are routed to the Missouri Highway Patrol for immediate response to incidents.
- TMC direct emergency services tie-in for immediate response to incidents.
- Direct media tie-in to traffic information for broadcast to motoring public.
- Sharing information with transit centers regarding traffic flow, weather, and incidents.
- A Central Traffic Signal Control System located in MoDOT's TMC moves arterial traffic in a more efficient and coordinated manner.
- TMC operators use advanced software to observe and manage traffic on the region's roadways.

6

Analyze Congestion Problems and Needs

Existing Regional Analysis Efforts

MoDOT publishes a monthly *St. Louis Regional Mobility Report* that is an analysis of the monthly mobility performance of the MoDOT's regional transportation system. The report uses data acquired through MoDOT's Gateway Guide ITS system to develop a snapshot of the congestion occurring on regional freeways, along with a more detailed analysis of the freeways experiencing the more severe levels of congestion. Travel time data on the signalized arterial corridors is analyzed to measure their performance. In addition, the number and duration of incidents on the freeways are captured in the report.

The components of the report are:

- Work Zone Summary
- Event Management
- Freeway Systems Management
- Arterial Management

Work Zone Summary

The summary assesses the impacts of work zones on mobility. Major and moderate impact work zones are documented. Work zone related crashes and their impact to mobility are also documented. Finally, year-to-date history of these categories is documented in graphic form. This information is used to make decisions on changes to work zone operations to improve related mobility.

Event Management

Event management tracks the number and location of incidents on Interstates, along with incident duration and clearance time. The incidents are categorized into major, moderate and minor incidents based on the duration of related lane closures. The details and mitigation actions of each "Major Impact Traffic Incident" are described in the Mobility Report. The locations and numbers of incidents and crashes are displayed graphically in the report as shown in Figure 4.

The event management information is used to document where non-recurring mobility impacts are highest, and to focus attention on factors that may be causing the higher number of incidents at a location. The detailed descriptions of major incidents are used to assess how well the incidents were managed and what, if anything, could have been done better. Lessons learned are used to improve how future traffic incidents will be managed to reduce the impact to mobility.

Figure 4: Incident Map

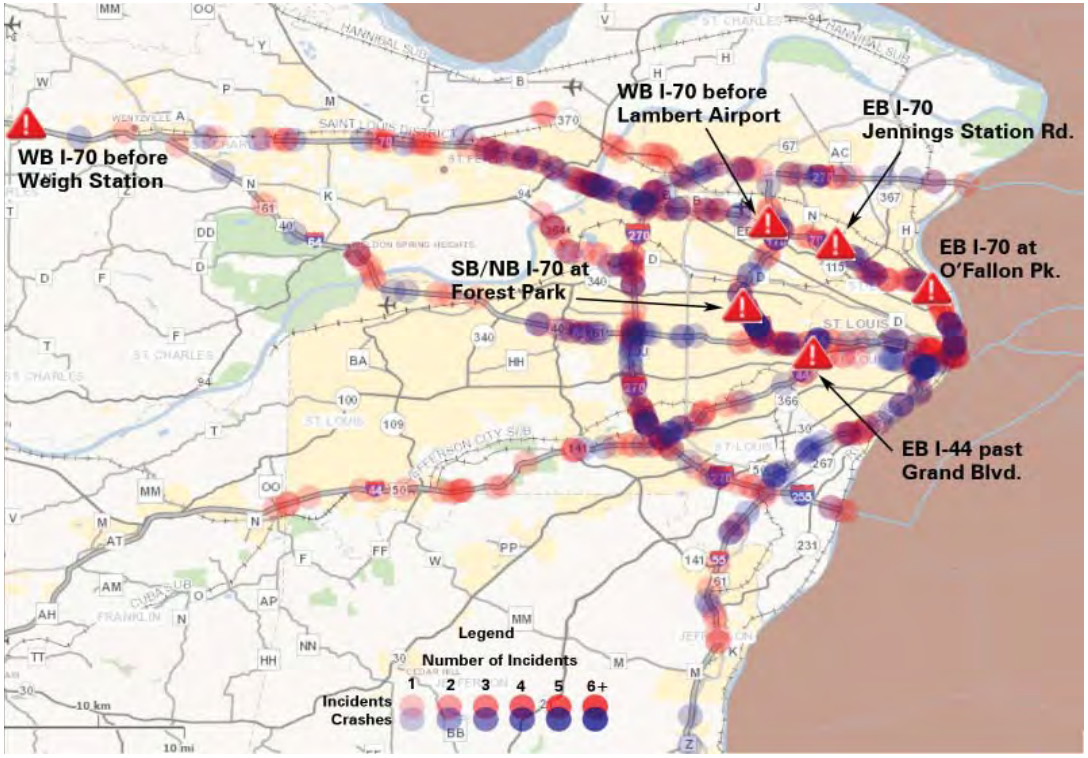


Figure 5: PM Peak Changes

AM Peak Changes in April 2013

B C D	Mobility Declined
A	Mobility Remained Low

Freeway Systems Management

This section of the report includes Regional Mobility Overview maps that depict congested locations on the regional freeway system in AM and PM peak traffic hours and speed graphs of the freeway corridors experiencing the most severe recurring congestion.

The Regional Mobility Overview maps use a "speed index," which is defined as the ratio of the speed at which vehicles travel during a period to the speed at free-flow conditions, to evaluate congested conditions. The average speed over the entire peak period is used in the calculation. Congestion is categorized into high, medium and low mobility areas and depicted on a map of the region. Changes from the previous month's report are highlighted. The locations of severe recurring congestion are clearly identified in this manner, and any emerging trends are quickly identified. A sample map is shown in Figure 5.

The freeway speed graphs depict the congestion during peak hours along an entire corridor. They use the same scale of congestion as the overview maps to measure the level of congestion. As with the maps, changes from the previous month are noted. In addition, the year-to-date and same month of the previous year are shown on the graph. A sample graph is shown in Figure 6.

Figure 6: Corridor Mobility

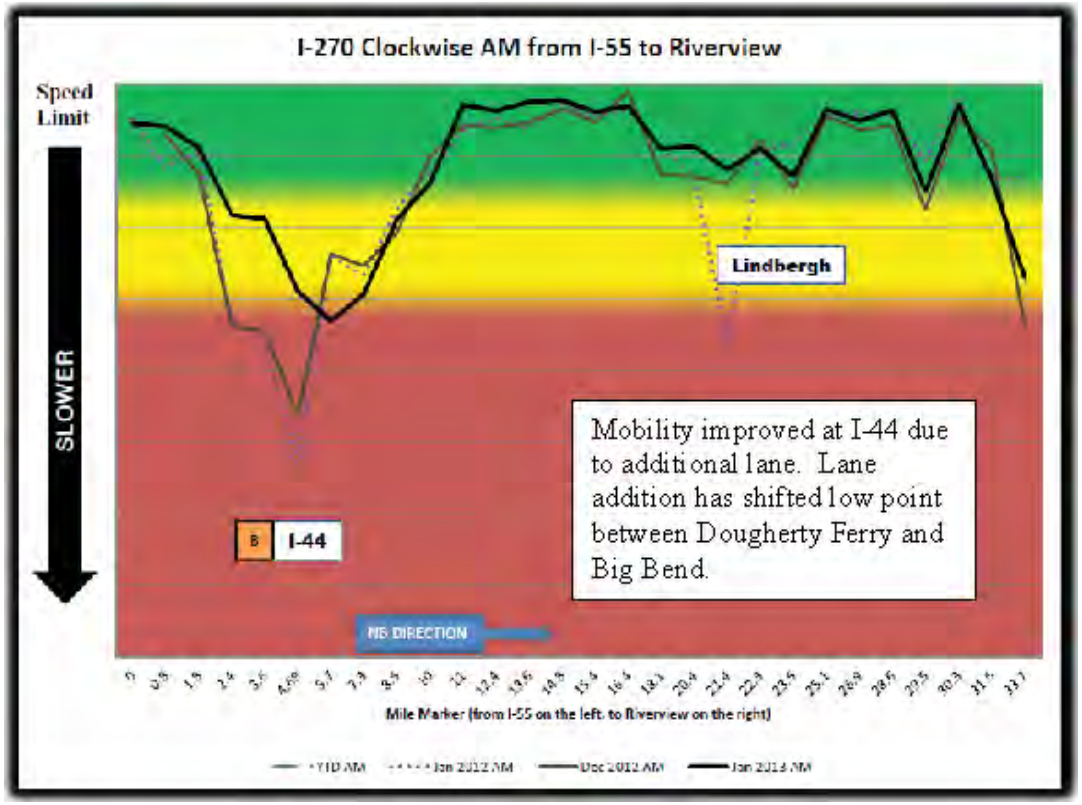
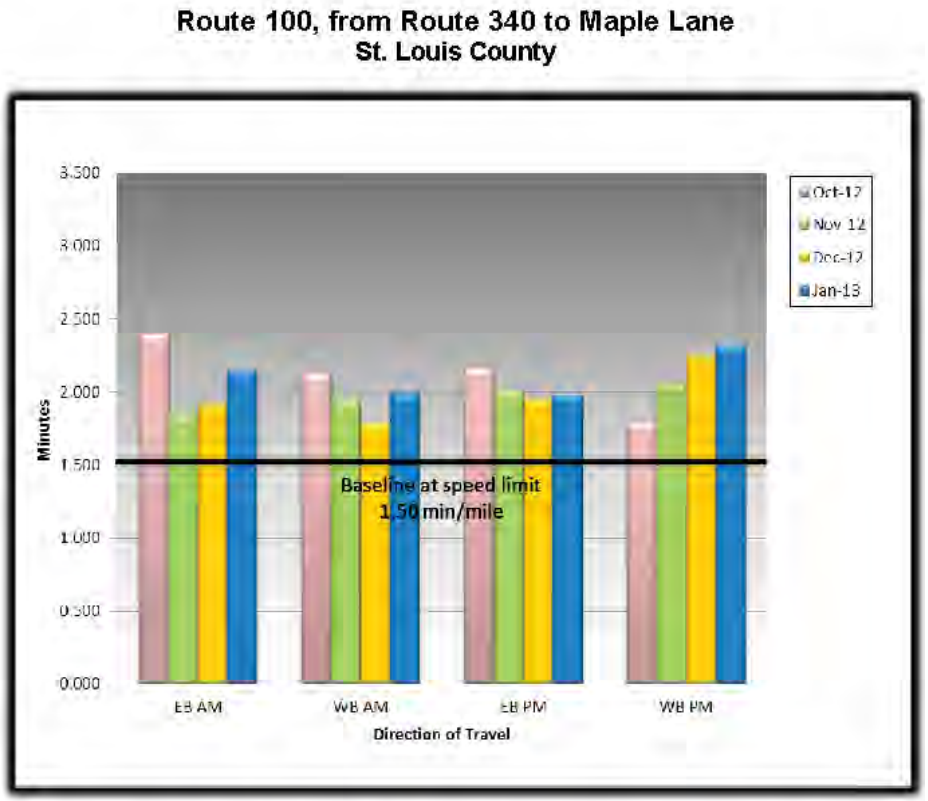


Figure 7: Speed Based Mobility



Travel times continue to fluctuate for this corridor due to varying circumstances. Routine driver behavior changes, emergency vehicle preemption, and schools being back in session contributed to the travel time variances along this corridor.

The corridor is in its final optimized configuration upon completion of the plans in May. We are awaiting the final report.

Number of Signals - 8
Length of system - 4.2 miles
Speed Limit is 40 mph
Number of Lanes - this is a five lane section with a two way left turn lane.
Weighted AADT for length of segment - 39500
AM peak flow is eastbound. PM peak flow is westbound.
This system is currently under construction to install a Sensys Travel Time system.

Arterial Management

The Mobility Report analyzes major arterials using a travel time measure. Travel time per mile during peak traffic times is determined and compared to a baseline of travel time per mile using the route's speed limit. The purpose of this measure is to determine how well arterials are operating during peak traffic times. MoDOT is in the process of automating arterial travel time data collection. Figure 7 depicts a typical arterial travel time graph from the Mobility report. The graph depicts four consecutive months to identify trends.

The Monthly Mobility report is used both as a tool to evaluate needed operational changes to the system to address congestion problems, and as an input to the planning process to identify and evaluate needed improvements to the roadway system. Each month there is a Monthly Mobility Report meeting to discuss the mobility performance of the transportation system in the previous month. This serves as a forum to observe and track existing congestion problems, and to identify emerging trends of improving or worsening congestion on the system.

CMP Reports

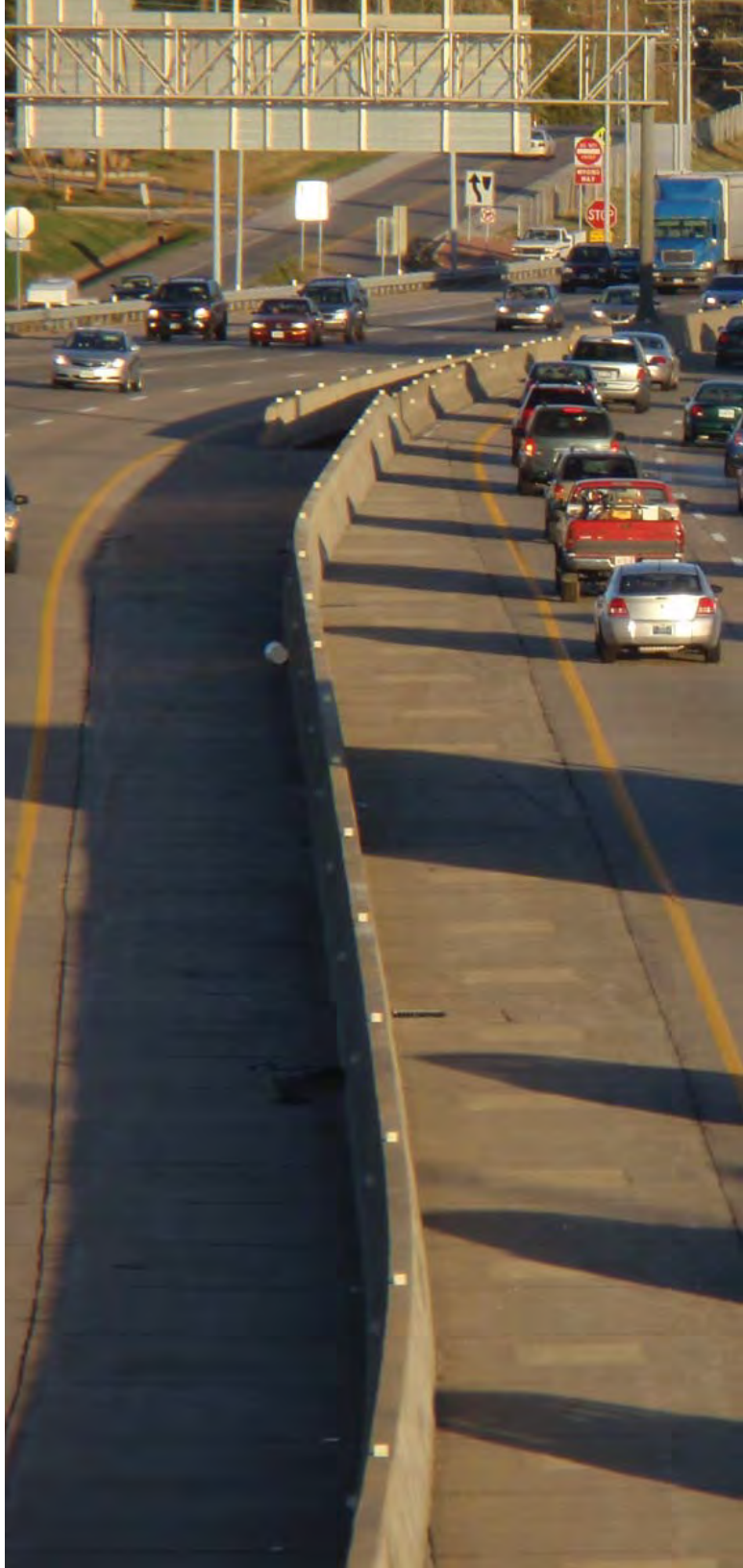
The Mobility Report is a flexible document that is used to focus on specific areas for closer analysis based on need. Major construction projects that are expected to have a large impact on mobility in the region during construction are included in the report for the duration of the project. The data and analysis each month is used to identify changes in work zone operations and traffic mitigation to minimize the negative impact the project has on regional mobility. When projects are implemented that are designed to reduce congestion on a specific corridor, the report is used as a platform to report on "after" studies that analyze the impact the project has had on the targeted congestion.

Regional partners are invited to participate in the monthly meetings, and each monthly report is published electronically on MoDOT's Gateway Guide web page. Since the majority of the CMP monitoring system is on MoDOT's system, the report will continue as part of the regional CMP. East West Gateway will work with the other local partners to establish data sources for congested segments of the system that currently do not have routine data collection. Once the data sources are established, EWG will publish yearly reports on CMP activity and the status of regional congestion.

EWG publishes a *State of the System* report that is a supplement to each iteration of the RTP. This report utilizes EWG's regional Travel Demand Model to produce analyses of a number of system reliability and mobility measures. The results of these analyses are published in regional map form and include:

- Average Peak Travel Time
- Peak Hour Highway Travel Delay—Trip Origin
- Peak Hour Highway Travel Delay—Trip Destination
- Travel Time Index, current and future
- Highway Congestion— Peak Periods

As part of the CMP process, future *State of the System* reports will be accompanied by a CMP report that will include a summary of the analyses that have taken place over the past several years. The identified regional congestion locations and needs will be documented in this report. This will occur on the same cycle as the RTP, and will provide the regional congestion information needed to properly address congestion in the RTP as it is developed.



7

Identify and Assess Congestion Management Strategies

The identification and assessment of appropriate congestion mitigation strategies is a key component of the CMP. At this point in the CMP process the completed data and analysis is used to formulate strategies appropriate for the region to effectively manage congestion and make progress toward achieving the regional congestion management objectives.

A wide range of strategies is available that fall into several broad categories. These categories include demand management strategies, traffic management and operations strategies, public transportation strategies and road capacity strategies. Regionally, many of these strategies have already been implemented. The strategies should also take into consideration:

- Contribution to meeting regional congestion management objectives
- Local Context—strategies should be appropriate for the community and surrounding environment
- Contributions to other goals and objectives, such as safety, economic vitality and system preservation

Current Regional CMP Strategies

Traffic Management and Operations (M&O) Strategies

These strategies focus on optimizing the performance of the existing transportation system rather than building new infrastructure. A variety of these strategies are currently being implemented in the region, supported by regional Intelligent Transportation Systems of varying scales operated by MoDOT (Gateway Guide), IDOT, the city of St. Louis, St. Louis County, and St. Charles County. MoDOT's Gateway Guide ITS system is the most comprehensive and encompasses the majority of the congested routes included in the regional CMP monitoring system.

M&O strategies that are active in the St. Louis region include:

- ***Freeway Management:*** The freeway management system monitors traffic flow on the freeways on a continuous basis. Incidents are identified and responded to quickly. Congestion is documented and analyzed, and both operational and road improvement strategies are developed based on this data to address the problem areas. Both MoDOT and IDOT have freeway management systems. MoDOT's includes the entire urban freeway system. IDOT's covers selected sections of the freeway system.

- ***Arterial Management:*** The arterial management systems provide the ability to monitor and control traffic signal systems remotely. They provide enhanced ability to manage incidents and events, and the flexibility to make changes in operation in real time in response to incidents on the system through central traffic control systems. MoDOT and the city of St. Louis and St. Louis County currently have central traffic signal control systems. St. Charles County is in the process of installing and implementing such a system. MoDOT also has travel time systems on its major arterials, and has remote video monitoring on three of its major arterial corridors. Regularly scheduled optimization of coordinated traffic signal systems is also an arterial management strategy used in the region.

An intensive regional arterial management effort was used during a major reconstruction project in 2008 and 2009 on I-64 in St. Louis city and county. Sections of the freeway were completely closed during this two-year period with all of the traffic dispersed over the remaining road system. St. Louis city and county, along with MoDOT, worked together closely to manage traffic around the closure during construction very successfully despite the magnitude of the closure.

Although the project has been completed, cooperation and coordination have continued in the region, although not to the level that was necessary during the I-64 project.

MoDOT and St. Louis County have entered into a cooperative agreement that enables them to share fiber and allow communication between their traffic signal systems. These events are a demonstration that regional arterial management is recognized and accepted as a regional strategy.

- ***Traffic Incident Management:*** The incident management program consists of detection, response, clearance, and information/routing and covers primarily the freeway system. Motorist Assist and Emergency Response crews patrol the St. Louis Metro area in search of lane obstructions

caused by disabled vehicles, debris and vehicle crashes. The goal of the program is to clear the roadway as quickly and safely as possible.

- ***Work Zone Management:*** MoDOT actively monitors work zone activity. A monthly meeting is held to discuss upcoming work zones and assess their traffic impacts. Decisions are made on the appropriate timing of work zones with respect to conflicting work zones and for traffic generating events in the region to minimize the traffic impacts. The impacts of active work zones are monitored and traffic control plans are modified to reduce impacts to traffic where delays are excessive.

- ***Traveler Information Services:*** The Gateway Guide web site provides travel times, highway traffic speeds, incident information, work zone information and live traffic camera images. *GatewayGuide.com* is a full-service, real-time information web site that provides up-to-date information on traffic flow, crashes and active construction. The camera feeds are shared with the media for use in public broadcasts. MoDOT also posts travel times on dynamic message signs on the freeways and selected arterials.

Demand Management Strategies

Travel Demand Management (TDM) strategies include strategies that promote alternative forms of travel to reduce the number of automobiles on the road. Strategies that are active in the St. Louis region include:

- ***Rideshare Program:*** RideFinders is a free ride-matching service that enables commuters in the St. Louis region to find a ride to work or college in a carpool or vanpool. RideFinders helps nearly 10,000 commuters save millions of dollars in commuting costs while eliminating millions of driving miles. RideFinders also works with nearly 900 participating employers and colleges to help their employees and students rideshare.

- ***Pedestrian and Bicycle Improvements:*** Great Rivers Greenway is a regional organization dedicated to building an interconnected system of trails and greenways, on-street bicycle routes and parks encompassing a 600-mile system of more than 45 greenways that will crisscross the St. Louis region. They have a dedicated tax based funding stream, and included in their goals are "Connecting Communities and Neighborhoods" and "Providing Transportation Choices." So far, 104 miles of greenways have been built.

Public Transportation Strategies

Improving transit operations, improving access to transit, and expanding transit service can help reduce the number of vehicles on the road by making transit more attractive or accessible. Strategies that are active in the St. Louis region include:

- ***Operations Strategies:*** Metro, the region's largest transit provider, periodically reviews updated ridership numbers and adjusts transit service and stop locations if necessary based on ridership changes. Metro provides electronic real-time, "next train/bus" information at Metro and selected bus stops.

- ***Capacity Strategies:*** Moving Transit Forward, Metro's long range plan, identified the I-64, I-44, I-55, and I-70 corridors and Grand Boulevard as the best opportunities for quickly expanding high-performance transit services and access to jobs, particularly all-day, two-way, express travel between neighborhoods and employment centers. Metro, along with several regional partners, is currently engaged in the St. Louis Rapid Transit Connector Study to identify the two transit projects that seem to offer the best chance of success. This study will lay the ground-work for pursuing federal funding.

- ***Accessibility Strategies:*** East-West Gateway uses a rating system to evaluate projects for inclusion in the regional TIP. Projects that include improvements to bicycle and pedestrian facilities that provide access to transit stops are scored higher than similar projects that don't include these improvements. This encourages applicants for TIP funding to include the bicycle and pedestrian improvements.

Road Capacity Strategies

These strategies address increasing the road network's base capacity. Some examples are adding lanes to existing roads or building new highways, as well as redesigning specific bottlenecks (such as interchanges and intersections) to increase their capacity. Management and operations strategies are given due consideration before additional capacity is considered. Strategies that are being used in the region include:

- Removing Bottlenecks
- Interchange and Intersection Improvements
- Overpasses or Underpasses at Congested Intersections
- Add Lanes on Major Freeways

For example, there has been an ongoing strategy in the region to identify and address bottleneck locations. I-270 between I-44 and Route 100 (Manchester Road) is an example of such a bottleneck. This segment of interstate has experienced severe recurring congestion, both northbound in the morning peak traffic period and southbound in the evening peak. A study was completed to determine what was causing the congestion, and what possible solutions there were.

The study included development of a micro-simulation traffic model of the corridor to evaluate possible alternatives. The alternatives evaluated included ramp metering and lane use changes, neither of which solved the congestion problem. The conclusion of the study was that the only solution was to add a lane in each direction on this highway segment. This was achieved by a combination of road widening and narrowing to 11-foot lanes. The northbound lane has been completed and an initial follow-up study has shown that the improvement resulted in a significant reduction in congestion at this bottleneck location. The study is ongoing to evaluate the longer term impacts of the project.

Congestion Management Strategies

The existing strategies described above address the CMP objectives and are ongoing and sustainable in the St. Louis region. They will continue as part of the regional CMP. The CMC will work to support and enhance these existing strategies and to expand them into regional inter-jurisdictional strategies where appropriate.

The concept of regional arterial management has proven to be successful in the St. Louis region, and has been shown to have a level of recognition and acceptance by regional jurisdictions. It is, in fact, an active program in the region, although it is currently not a formalized program. The CMC will provide a forum for consistent coordination of regional arterial operations to support this effort.

The previous Congestion Management System (CMS) included the development of a *St. Louis Region CMS Congestion Mitigation Handbook*. This handbook describes a number of different strategy types that can be used to manage congestion. The purpose of this handbook was to serve as a resource or reference guide to help identify and screen alternative strategies. This handbook will be adopted as part of the CMP as the *St. Louis Region CMP Congestion Mitigation Handbook*.

8

Program and Implement Congestion Management Strategies

The St. Louis region has been active in implementing congestion management strategies for more than a decade. This includes maintenance and operations (M&O) strategies, demand management strategies, public transit strategies and road capacity strategies. The strategies tabulated below have been implemented and currently are in use in the St. Louis region.

M & O Strategies

- Freeway Management
- Arterial Management
- Traffic Incident Management
- Work Zone Management
- Traveler Information Services

Demand Management Strategies

- Regional Rideshare Program
- Pedestrian and Bicycle Improvements

Public Transit Strategies

- Operations Strategies
- Capacity Strategies
- Accessibility Strategies

Road Capacity Strategies

- Bottleneck Removal
- Interchange and Intersection Improvements
- Overpasses or Underpasses at Congested Interchanges
- Add Lanes on Major Freeways

The "Identify and Assess Strategies" section of this document discusses these strategies and describes where they have been implemented in the St. Louis region. These strategies are all ongoing and sustainable in the St. Louis region, and they will continue as a part of the regional CMP. In addition, through the CMP process, the feasibility of expanding these strategies and implementing additional strategies will be examined and evaluated. If a new or expanded strategy is determined to be feasible and beneficial in reducing emissions, efforts will be made to identify funding to implement it.

Regional Prioritization of Strategies

Regional Transportation Plan (RTP)

Development of the RTP includes use of a structured prioritization process for evaluation of projects that are included in the plan. There are seven evaluation categories that are applied to each project considered for inclusion in the RTP which are:

- Functional Class and Usage
- Preservation
- Safety
- Congestion
- Freight
- Access
- Sustainable Development

Two of the seven evaluation categories, ***Congestion*** and ***Access***, reflect and support CMP objectives. ***Congestion*** evaluates before and after LOS to establish the improvement that a project makes to congested conditions. ***Access*** evaluates the level of need for transit and the transit density in a project area to measure how much access to transit is increased. These, along with the other factors, are weighted and combined into a prioritization rating, which is used to help determine where a project fits into the RTP. The specific scoring methodology for RTP project prioritization is included in *Appendix E: RTP Project Priority Evaluation Methodology.*

The evaluation criteria are being reviewed for updating prior to being used for evaluation of projects in the next cycle of the RTP, pending determination of federal performance measure requirements mandated in MAP 21. The CMP performance measures will be a factor in determining the updated measures. In addition, the CMP will be discussed in the RTP, and CMP objectives and strategies will be woven into the goals, objectives and strategies of the RTP. All projects using federal transportation funds must be identified in the RTP's investment plan or otherwise be consistent with the plan's principles.

Transportation Improvement Plan (TIP)

The TIP is the implementation of the RTP. The TIP is a schedule of transportation improvements over the next four years. Each year, staff requests the programs from our respective partners including but not limited to Metro, Madison County Transit District, MoDOT, and IDOT. These programs are in turn checked to verify they meet the framework of the RTP.

The CMP connection and involvement with the TIP includes the following:

- The CMP is a resource for system performance information for use in evaluating projects for inclusion in the TIP.

- The CMP objectives are consistent with the project scoring process used in the evaluation and prioritization of projects in the TIP.

- The CMP is a resource for identifying multi-modal congestion mitigation strategies for project development.

As part of the development of the TIP, Council staff evaluates projects submitted by local governments and agencies for funding consideration under the *Surface Transportation Program—Suballocated Funds* (STP-S) category. The TIP also uses a structured prioritization process to evaluate projects for inclusion into the TIP. The six evaluation categories for the TIP include:

- Preservation
- Safety
- Congestion
- Access to Opportunity
- Sustainable Development
- Goods Movement

As with the RTP, two of the six evaluation categories, ***Congestion*** and ***Access to Opportunity***, evaluate factors that reflect and support CMP objectives.

Congestion uses LOS improvement criteria to measure vehicular congestion impact; improved, expanded or new transit operations to evaluate transit impacts; and a set of criteria to evaluate the impact a project has on providing opportunities for non-motorized forms of travel.

Access to Opportunity includes criteria that evaluate the level of need for transit in the project area and to what degree the project increases access to transit for the community. These, along with the other factors, are given a weighting and combined into a prioritization rating, which is used to rank projects being considered for inclusion into the TIP. The specific scoring methodology for TIP project prioritization is included in *Appendix F: TIP Evaluation Methodology*.

The TIP project rating system will be reviewed and updated with respect to both the updated RTP prioritization criteria and the CMP objectives and performance measures. Consideration will be given to including factors that tie the prioritization process more closely to the CMP.

Implementation of Projects That Add Capacity

The St. Louis region is a non-attainment area in regards to air quality. Federal requirements specifically state that, "in a TMA designated as a non-attainment area for ozone or carbon monoxide, pursuant to the Clean Air Act, federal funds may not be programmed for any project that will result in a significant increase in the carrying capacity for SOVs (i.e., a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination of bottlenecks), unless the project is addressed through a congestion management process meeting the requirements of federal planning and programming regulations."[3]

While capacity-expanding projects are not prohibited, the CMP requirement means that an analysis must be performed to consider whether alternatives to capacity increases exist before it can be added to the TIP. As a result, any project in the St. Louis region that is determined to be of "Regional Significance" must be evaluated to determine if this is required. East-West Gateway has developed regionally significant project screening criteria for identification of regionally significant projects. Guidance containing these criteria is included in *Appendix G: Regionally Significant Project Screening Criteria*. If such an analysis is required, the CMP's *St. Louis Region Congestion Mitigation Handbook* is a resource to be used when considering alternative strategies to projects that add capacity to the system.

Starting with the FY 2015 TIP, EWG will require that, prior to adding a project to the TIP that increases SOV capacity, documentation must be submitted by the sponsoring agency showing that proper consideration of demand management strategies to address the congestion problems has been given.

To meet this requirement an evaluation of the impact to SOV capacity of reasonable demand management strategies that fit in the corridor must be completed. The evaluation should estimate the ADT that can be reduced by the demand management strategies. If the remaining future ADT, after taking into account the reduction to SOVs as a result of reasonable demand management strategies, is sufficient to justify the increased capacity, the project is eligible to be added to the TIP.

3 Statewide and Metropolitan Planning Final Rule 23CFR Part 450 Section 320.

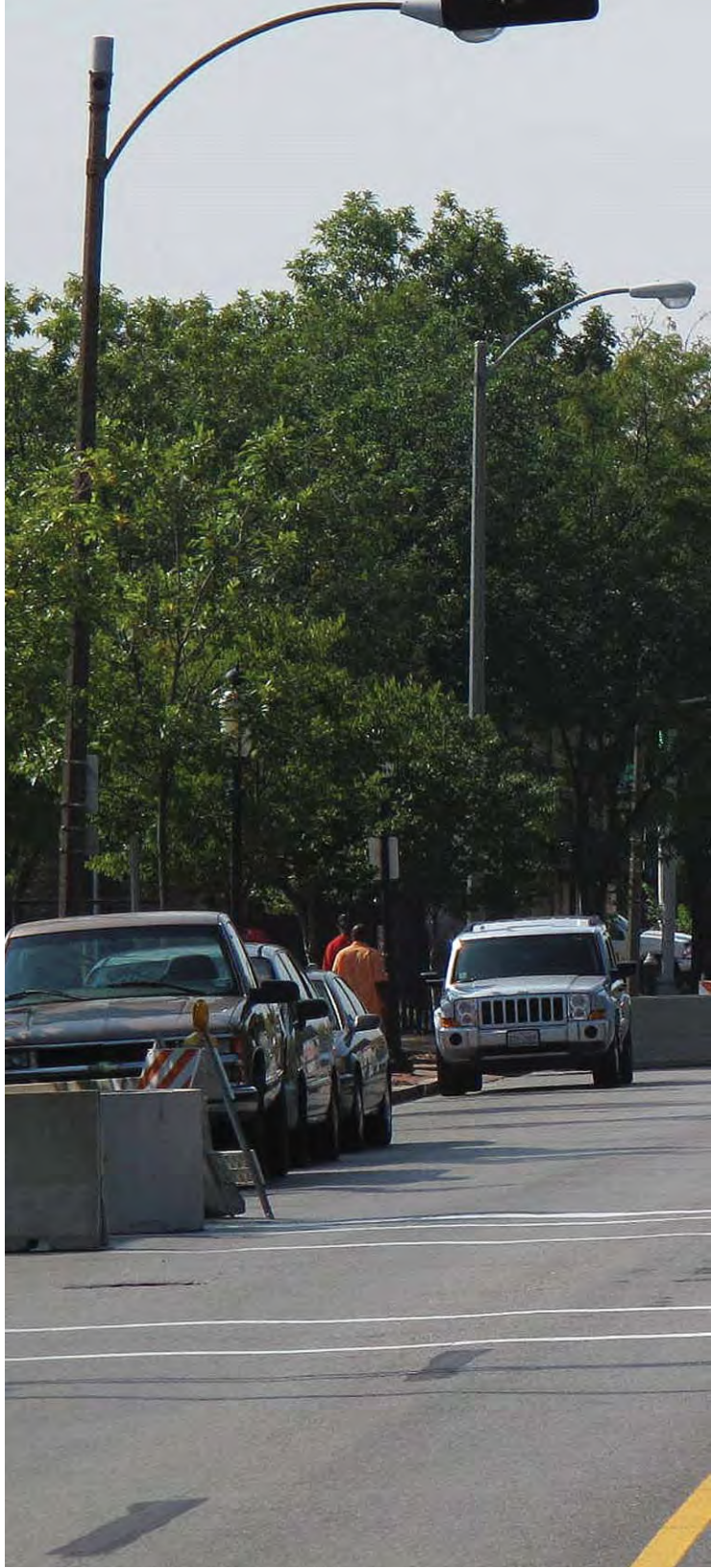
Congestion Mitigation and Air Quality (CMAQ) Program

Because of the region's non-attainment status federal CMAQ funds are distributed to the region. These funds are provided specifically for projects that reduce congestion and improve air quality. EWG uses a prioritization process based on "cost per metric tons of emissions reduced" to determine the cost effectiveness of a project and to rank CMAQ projects for inclusion in the TIP. This ensures that the region is getting the best value in improved air quality from the CMAQ funds.

These funds have been successfully used in funding the congestion management strategies that have been implemented and are ongoing in the region. These funds will continue to be a primary resource in funding congestion management activities generated by the CMP. As with the RTP and TIP prioritization processes, the CMAQ prioritization process will also be reviewed for updates. In particular, meeting CMP objectives and implementing and sustaining congestion management strategies will be emphasized.

The St. Louis region has been very active in its efforts to identify congestion problems and manage them using a variety of strategies. This includes prioritization processes for both the RTP and the TIP that ensure managing congestion is one of the priorities considered in the selection of projects throughout the regional planning process. The CMP formalizes these activities into a regional process to address congestion.

The CMP supports the continuance of existing strategies, expanding those strategies regionally where appropriate, and updating strategies to adjust for changing conditions. It provides for the collection and analysis of performance measure data from multiple sources and its integration into the regional planning process. The CMP also provides for consideration and implementation of new congestion management strategies where appropriate.



9

Evaluation of Congestion Management Strategies

Evaluation of implemented CMP strategies for effectiveness is an essential step, and is a required element of the process. The purpose of this step is to ensure that implemented strategies are having the desired impact on congestion, and to make changes, as necessary, based on the findings. The changes can range from modifying a strategy to improve its effectiveness to eliminating a strategy from future consideration if it is deemed to be ineffective in the region. Systematic evaluation of strategies results in increased effectiveness of the CMP as the regional process moves forward.

Two general approaches are used for this type of analysis. These are system level performance evaluations and strategy effectiveness evaluations. A system level evaluation is a regional analysis of historical trends to identify improvement or degradation of congested conditions in the region as a whole. A strategy effectiveness evaluation is a project or program level analysis of before and after conditions for a specific congestion mitigation project or program. Both types of analysis are used in the St. Louis Region.

EWG maintains a regional travel demand model that includes a system level analysis of congestion in the region. It is periodically updated with information from regional DOTs, transit agencies, local jurisdictions and EWG's own data gathering efforts to keep the model current and reflective of existing conditions. As part of each RTP there is a *State of the System Technical Supplement* that includes a discussion of the state of regional mobility and congestion, and a depiction of the current state of congestion on the region's freeway system based on the regional travel demand model.

MoDOT evaluates system performance each month with its *St. Louis Regional Mobility Report*. The Gateway Guide ITS system provides a continuous flow of data on system performance that is used to evaluate system operations on a corridor basis and identify changes in congestion levels from previous months. This report is used as an ongoing effort to evaluate performance of the system and the effectiveness of the congestion mitigation strategies active in the region. It is also used to evaluate the effectiveness of congestion mitigation projects that are completed in the region.

An operational strategy commonly used in the region is the optimization of coordinated traffic signal systems on arterial corridors. The procedure includes both before and after analysis of a traffic signal system's operation to document the decrease in system delay due to the resulting improved traffic signal coordination that results. MoDOT does this on a regular rotating time cycle, while other jurisdictions do it on an as-needed basis, or as funding and resources allow.

The CMP will coordinate evaluation efforts and provide consolidated regional reports on evaluation results. In addition to the monthly mobility reports, EWG will publish an annual report on regional congestion, mitigation efforts and evaluation results. A multi-year summary of CMP activity, strategy results, and identified needs will be prepared in conjunction with the *State of the System* report that accompanies each version of the *St. Louis Metropolitan Area Regional Transportation Plan*.

10

CMP Framework for Coordination

A Congestion Management Committee (CMC) comprised of public stakeholders from representative federal and state transportation authorities and jurisdictions throughout the bi-state region has been established as part of the development and implementation of the CMP. Specifically, the CMC is made of representatives from: EWGCOG staff, IDOT, MoDOT, FHWA, FTA, principal local jurisdictions with performance data abilities and responsibilities as well as the region's transit agencies. (See *Appendix H: CMC Development and Roster*)

EWG has led the planning process and development of the CMP product. However, MoDOT, IDOT, local county, city and municipal transportation agencies, and the region's transit agencies have and will continue to play important roles in individual tasks, and through participation in the CMC. The primary role of the CMC is as an operational forum where inter-jurisdictional coordination, funding strategies, and data sharing can be addressed. This committee will have a continuing oversight role as well as specific tasks related to various CMP activities, specifically dealing with ongoing data collection, analysis, development and approval of performance measures and CMP program implementation. Specific roles of the CMC and its members include, but are not limited to:

- Monitoring implementation and ongoing performance of the CMP
- Attending quarterly meetings of the CMC
- Reviewing reports on the status of congestion in the region
- Informing EWG, local jurisdictions and transportation agencies in the region of the state of congestion in the region and of potential solutions
- Promoting regional coordination of inter-jurisdictional arterial operations
- Making recommendations to regional jurisdictions and the EWG Board on implementation of congestion mitigation strategies
- Making recommendations for updates to CMP regional objectives and performance measures as appropriate
- Coordinating data collection and regional data sharing to support the CMP

The CMC plays a crucial role in making the regional Congestion Management Process a success. Substantial and continuing communication and coordination between all stakeholders is key factor in achieving a cooperative regional effort toward mutual congestion management goals. The CMC will be the focus of the communication and coordination and a key to the success of the CMP.

Appendices

A-H

Appendix A

St. Louis Region Congestion Management Process (CMP) Requirements And Development

SAFETEA-LU – Development of the Congestion Management Process

The congestion management requirement introduced in ISTEA and continued under the Transportation Equity Act for the 21st Century (TEA-21) was redefined under the most recent transportation authorization law, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The new planning requirements for MPOs now refers to a Congestion Management Process (CMP) which stands to reflect the new goals and outcomes of the law by establishing an integrated, objectives driven, decision making tool that will serve as an integral component of the metropolitan transportation planning process.

Federal Requirements

The metropolitan transportation planning regulations adopted under SAFETEA-LU address the requirements of the CMP at 23CFR Part 450 Section 320. As defined under SAFETEA-LU, "the CMP will serve as a systematic approach, collaboratively developed (among stakeholders) and implemented throughout the metropolitan region, that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies".

The CMP is required to be developed and implemented as an integral part of the metropolitan planning process. The federal initiative provides the planning framework for a CMP that represents the state-of-the-practice in identifying congestion and addressing congestion impacts through systematic operational management and demand oriented strategies. The CMP also enables MPOs to bring a data driven, objective basis to the process of identifying and implementing congestion management strategies that will allow the region to target the principal causes of congestion at the most congested and safety impacted areas and achieve the greatest benefit to the region.

Congestion Management Process Requirements

a) The transportation planning process in a TMA shall address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities eligible for funding under title 23 U.S.C. and title 49 U.S.C. Chapter 53 through the use of travel demand reduction and operational management strategies.

(b) The development of a congestion management process should result in multimodal system performance measures and strategies that can be reflected in the metropolitan transportation plan and the Transportation Improvement Plan. The level of system performance deemed acceptable by state and local transportation officials may vary by type of transportation facility, geographic location (metropolitan area or subarea), and/or time of day. In addition, consideration should be given to strategies that manage demand, reduce single occupant vehicle (SOV) travel, and improve transportation system management and operations. Where the addition of general-purpose lanes is determined to be an appropriate congestion management strategy, explicit consideration is to be given to the incorporation of appropriate features into the SOV project to facilitate future demand management strategies and operational improvements that will maintain the functional integrity and safety of those lanes.

(c) The congestion management process shall be developed, established, and implemented as part of the metropolitan transportation planning process that includes coordination with transportation system management and operations activities. The congestion management process shall include:

(1) Methods to monitor and evaluate the performance of the multimodal transportation system, identify the causes of recurring and non-recurring congestion, identify and evaluate alternative strategies, provide information supporting the implementation of actions, and evaluate the effectiveness of implemented actions;

(2) Definition of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the

evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since levels of acceptable system performance may vary among local communities, performance measures should be tailored to the specific needs of the area and established cooperatively by the State(s), affected MPO(s), and local officials in consultation with the operators of major modes of transportation in the coverage area;

(3) Establishment of a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions. To the extent possible, data collection program should be coordinated with existing data sources (including archived operational/ITS data) and coordinated with operations managers in the metropolitan area;

(4) Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies that will contribute to the more effective use and improved safety of existing and future transportation systems based on the established performance measures. The following categories of strategies, or combinations of strategies, are some examples of what should be appropriately considered for each area:

(i) Demand management measures, including growth management and congestion pricing;
(ii) Traffic operational improvements;
(iii) Public transportation improvements;
(iv) ITS technologies as related to the regional ITS architecture; and
(v) Where necessary, additional system capacity;

(5) Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy (or combination of strategies) proposed for implementation; and

(6) Implementation of a process for periodic assessment of the effectiveness of implemented strategies, in terms of the area's established performance measures. The results of this evaluation shall be provided to decision makers and the public to provide guidance on selection of effective strategies for future implementation.

(d) In a TMA designated as nonattainment area for ozone or carbon monoxide pursuant to the Clean Air Act, Federal funds may not be programmed for any project that will result in a significant increase in the carrying capacity for SOVs (i.e., a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination of bottlenecks), unless the project is addressed through a congestion management process meeting the requirements of this section.

(e) In TMAs designated as nonattainment for ozone or carbon monoxide, the congestion management process shall provide an appropriate analysis of reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for SOVs (as described in paragraph (d) of this section) is proposed to be advanced with Federal funds. If the analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor and additional SOV capacity is warranted, then the congestion management process shall identify all reasonable strategies to manage the SOV facility safely and effectively (or to facilitate its management in the future). Other travel demand reduction and operational management strategies appropriate for the corridor, but not appropriate for incorporation into the SOV facility itself, shall also be identified through the congestion management process. All identified reasonable travel demand reduction and operational management strategies shall be incorporated into the SOV project or committed to by the State and MPO for implementation.

(f) State laws, rules, or regulations pertaining to congestion management systems or programs may constitute the congestion management process, if the FHWA and the FTA find that the State laws, rules, or regulations are consistent with, and fulfill the intent of, the purposes of 23 U.S.C. 134 and 49 U.S.C. 5303.

Appendix B

St. Louis Region Congestion Management Process (CMP) Regional Transportation Plan (RTP) 10 Planning Principles

The Ten Principles

In 2009, the Council conducted the Renewing the Region (RTR) initiative to assess the region's economic and social health, and to explore possible ways to enhance cooperative planning and action in the region. That initiative provided the context for this plan update. The initiative resulted in a framework, or set of principles used to guide this long-range transportation plan. These principles were derived from discussions with a broad range of citizens and regional leaders over nine months. Those discussions occurred through interviews, focus groups and small group meetings, centered on identifying issues likely to affect the region's future growth and prosperity. The principles challenge the region to think beyond strictly transportation and begin to make the connection between transportation and the broader society. Those Ten Principles follow:

1 Preserve and maintain the existing system

One of the major challenges facing states and metropolitan areas is keeping the transportation system in good repair. The decades-long emphasis on system expansion has limited the resources available for rehabilitating and replacing aging system components. Failing pavements, deficient bridges, and deteriorated transit facilities create safety problems, reduce operational efficiency, and negatively impact travel quality. Deferring preservation work is also significantly more expensive than pursuing a regular cycle of maintenance, rehabilitation, and replacement.

2 Support public transportation

Great cities have great transit systems. A healthy regional economy includes a public transportation option for people who need it to get to their jobs, to school and to other essential destinations. Residents who do not ride on transit rely on many who do throughout the region. Public transit spurs economic development, lowers the cost of living for those who use it, reduces traffic congestion and improves air quality by taking cars off the road.

3 Support neighborhoods and communities throughout the region

A healthy metropolitan economy is comprised of healthy neighborhoods throughout the eight counties. St. Louis is a large, diverse region, with historic and newer rural, suburban and urban communities that all make vital contributions to the metropolitan economy. They support residential life, employment, schools and places to visit for area residents and tourists. Where appropriate to support existing communities, strategic enhancement or expansion to the system may be warranted.

4 Foster a vibrant downtown

Every world-class city has a downtown skyline with first class office space, hotels, restaurants, residential choices, entertainment venues, green space, and shopping in a dense, walkable and attractive setting. Whether area residents work downtown or visit for sports or entertainment, they expect downtown to flourish and they take pride in its success. As a key job center, the central business district is an economic engine that provides important linkages among businesses, large and small, the outside world, and the people who live and work in the entire region.

5 Provide more transportation choices

With the growing emphasis on livability and sustainability, it is important to create viable options to automobile use. This suggests an increasing emphasis on public transportation, but also developing more opportunities for walking, bicycling, and telecommuting. All of these will help reduce dependence on foreign oil, improve air and water quality, reduce greenhouse gas emissions, and reduce the ever-growing household cost of transportation. Serious attempts to expand travel options will require closer attention to the interplay of land use and transportation

6 Promote safety and security

The goal for any transportation system is to move people and goods efficiently, effectively, and safely. Travel safety, as it affects all aspects of the multimodal transportation system, is a continuing priority. There is also the question of system security, or protecting the system against human or naturally-caused disasters. Both maximizing safety in everyday usage and securing the system against catastrophic acts are prime considerations for transportation planning and investment decisions.

7 Support a diverse economy throughout the region

The transportation needs of the regional economy are as diverse as the economy itself. One sector might require the reliable movement of heavy goods into and out of the area; another sector might rely on public transportation for access to labor; and another might necessitate good airline connections to other major cities. A good multimodal transportation system, whose component parts work together as seamlessly as possible, is necessary to sustain and grow the region's economy. It is essential to understand the transportation needs of the various economic sectors throughout the region and target investments to meet those needs.

8 Support quality job development

In order to grow the metropolitan economy, economic development strategies need to support the growth of wealth producing jobs. Good paying jobs allow residents to save and to return money to the economy through purchases of goods and services, and the payment of taxes benefit the whole economy many times over. Transportation expenditures that serve good quality employment opportunities are a sound investment.

9 Strengthen intermodal connections

The connecting points between transportation modes are critical to the efficient flow of both people and goods. From a people movement perspective, intermodal connections are the points at which public transportation interacts with other modes—walking, bicycling, automobiles, aviation, and even other transit modes—to allow the easy transfer of people from one mode to another. From a freight perspective, these connections occur at points where shipments can be transferred between modes, i.e., truck, barge, pipeline, train, and airplane. Increasing the opportunities for these types of connections enhances the effectiveness of the overall transportation system, providing improvements in both mobility and economic efficiency.

10 Link transportation planning to housing, environment, education and energy

Transportation is tightly interwoven within the entire social, economic, and natural farbric of the region. It is, therefore, only one part of a broader integrated system, with all parts affecting all other parts. Thoughtfully analyzing, planning, and investing in ways that recognize the linkages between those parts is a necessary step toward creating a healthier and more sustainable region.

Appendix C

St. Louis Region Congestion Management Process (CMP) Performance Measure Methodology

Speed Index

This measure tracks the average speed during the morning and evening peaks on various freeway sections.

The Speed Index is calculated according to the following equation:
Speed Index = Average speed/Free flow speed
Average speeds are taken from sensor data. The free flow speed is variable and is equal to the highest hourly average speed for any hour in that data set.

The Speed Index measure is used to define congested conditions on area freeways according to this scale:
High Mobility: Speed Index of 0.90+
Medium Mobility: Speed Index of 0.80 to 0.90
Low Mobility: Speed Index of <0.80 (Unacceptable Congestion)

Travel Time Index

The purpose of this measure is to determine how well selected arterials across the region are operating during the peak traffic times. As improvements are made, such as signal timing, equipment upgrades, or access management improvements, this measure will show the effects of those efforts and decisions on the arterial system.

Travel times are measured on various arterial routes. For the majority of the routes, automated travel time systems are utilized to determine the travel times. For routes that do not have an automated travel time system, data is collected from driving a route multiple times during the A.M. and P.M. peak periods and timing how long it takes to traverse the route.

The Travel Index is calculated according to the following equation:
Travel Time Index = Travel Time (Minutes)/Distance Traveled (Miles)
An average minutes per mile based on a traveling at the speed limit through the corridor is calculated and used as the baseline for comparison. If the actual average minutes per mile are at the baseline, traffic is moving at the speed limit without any stops.

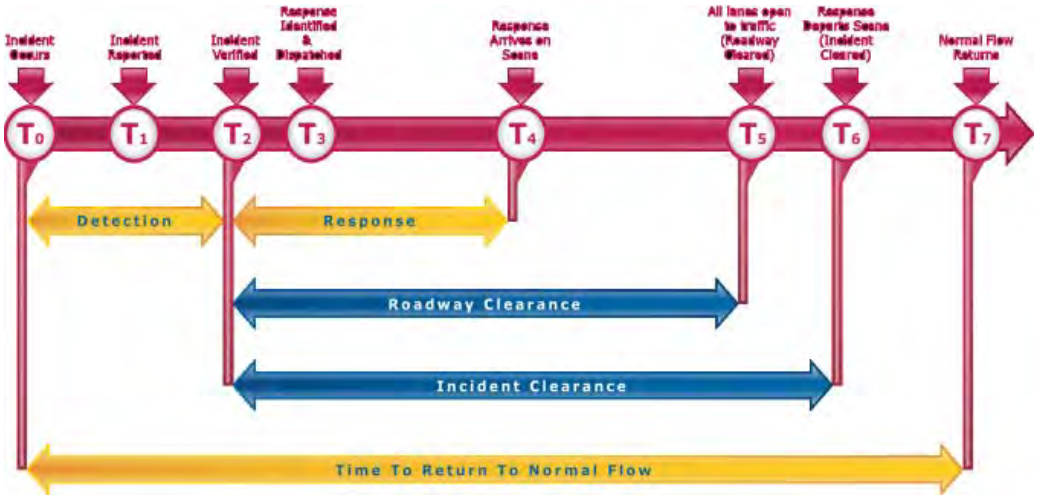
This is used as a comparative measure to determine if mobility on a route is improving or degrading. At this time thresholds for defining when an arterial route is considered congested have not been set.

Incident Response and Clearance Time

FHWA Incident Timeline to measure incident response:

Average Time for Backup to Clear = T6 – T5
Average Time to Clear Incident from Lanes = T5 – T2

FHWA Incident Timeline to Measure Incident Response:



This measure tracks the impact incidents have on non-recurring congestion. Reductions in time to clear incidents results in reduced congestion from incidents.

Incident Levels

Major Impact Traffic Incident – Road closure > 2 hours

Major traffic incidents are typically traffic incidents involving hazardous materials, fatal traffic crashes involving numerous vehicles, and other natural or man-made disasters. These traffic incidents typically involve closing all or part of a roadway facility for a period exceeding 2 hours.

Moderate Impact Traffic Incident – Blocked travel lanes/closure 30 min – 2 hours

Moderate traffic impact incidents typically affect travel lanes for a time period of 30 minutes to 2 hours, and usually require traffic control on the scene to divert road users past the blockage. Full roadway closures might be needed for short periods during traffic incident clearance to allow traffic incident responders to accomplish their tasks.

Minor Impact Traffic Incident – Lane closures < 30 minutes

Minor traffic incidents are typically disabled vehicles and minor crashes that result in lane closures of less than 30 minutes. On-scene responders are typically law enforcement and towing companies, and occasionally highway agency service patrol vehicles.

Appendix D

St. Louis Region Congestion Management Process (CMP) Transportation Performance Survey Instrument

East-West Gateway Council of Government (EWGCOG) staff is in the process of developing the Congestion Management Process (CMP) consistent with federal planning and programming requirements under the current national transportation act SAF-ETEA -LU. The CMP will serve as a systematic process that provides information on transportation system performance and operational and management strategies to address and alleviate congestion and enhance the mobility of persons and goods throughout the region.

The CMP focuses directly on system performance and efficiency and calls for broader, multimodal performance monitoring. This requires a coordinated, seamless process of monitoring, which provides valuable feedback to guide the metropolitan planning and project programming processes. As a whole, the CMP is intended for use in examining strategies for maximizing capacity and the efficient and effective movement of goods and services within the transportation system network.

EWGCOG staff, in conjunction with regional public stakeholders, is working toward collecting actual travel data information, data reporting methods, and data performance measures (that which is being collected and reported) for comprehensive review and coordination. As an important step in the process, staff is conducting a survey/inquiry to surmise exactly what transportation data collection methods and actual data are being assembled that reflect the multimodal performance of the regional transportation system. The outcome will result in an understanding of uniform techniques for data collection, broadened and accurate understanding of the system's performance and data sharing opportunities for the purposes of the CMP.

Attached is a list of various performance measures and data collection objectives covering the multimodal (vehicle, bicycle/ped, transit) system Please indicate whether or not your department collects data representative of the performance measures, verifying: yes/no, frequency, type of data output, and data useage . Moreover, if relevant, please describe how the data is collected, assessed and utilized in your planning and programming process.

EWGCOG staff will follow up with you directly to answer any questions you might have about the CMP and the data collection survey we are conducting region-wide. Thank you in advance for your participation and input in this important planning and programming process. Please feel free to contact Mark Ashby, EWGCOG transportation staff, 314-421-4220 ext. 239, in the interim, with any questions or the need for further elaboration.

Congestion Management Process – Data Collection Survey

Transportation Mode	*Performance Measures*	***Data Collection Method*** (Indicate with an X if your agency collects the following data)	***Data Collection Frequency*** (Monthly, annually, etc.)	***Data Output*** (How data is quantified, tabulated)	***Policy –Project Development Implication*** (Application of Travel Data – How is Data Used))
Vehicle - Roadway	Vehicle Travel Time				
	Average Daily Traffic				
	Volume to Capacity Ratio				
	Volume to Time Ratio				
	Vehicle Miles Traveled				
	Specific/strategic level of service				
	Vehicle Occupancy				
	Incident Measures				
	Percentage of Truck Traffic				
	Travel Surveys				
	Person Throughput				
	Model Outputs				

Congestion Management Process – Data Collection Survey

Transportation Mode	***Performance Measures***	***Data Collection Method*** (Indicate with an X if your agency collects the following data)	***Data Collection Frequency*** (Monthly, annually, etc.)	***Data Output*** (How data is quantified and tabulated)	***Policy –Project Development Implication*** (Application of Travel Data – How is Data Used))
Bicycle and Pedestrian	Person Throughput				
	Origin – Destination				
	Travel Time				
	Bike Lanes – Bike Corridors				
	Travel Surveys				
	Safety – Incident Measures				
	Percentage of Households and Employment with X miles of a Bike Route				

Congestion Management Process – Data Collection Survey

Transportation Mode	***Performance Measures***	***Data Collection Method*** (Indicate with an X if your agency collects the following data)	***Data Collection Frequency*** (Monthly, annually, etc.)	***Data Output*** (How data is quantified and tabulated)	***Policy –Project Development Implication*** (Application of Travel Data – How is Data Used)
Transit	Number of Passengers				
	Boarding Frequency				
	Boarding Volumes				
	Service Frequency				
	Travel Time				
	Travel Speed				
	Passenger Surveys				
	Safety - Accident Data				

Appendix E

St. Louis Region Congestion Management Process (CMP) RTP Project Priority Evaluation Framework

Functional Class and Usage

Base Year (2002-3) ADT

For Missouri, used 2002 MODOT maps. Where no count was taken within a project area, the next closest count available along the same road outside the project area was used. Where more than one count was taken within the project area, the counts were weighted by the distance of segments attributed to each count, then summed for a weighted average.

For Illinois, used 2003 IDOT maps. All Illinois projects having multiple counts, divided the sum of counts by the number of count locations, producing a non-weighted average. Of special note, Route 3 was averaged first in two segments, north and south of tri-level interchange, then averaged again for overall count. Also, the count attributed to only half of the divided approaches to the Poplar St. Bridge was excluded from the Mississippi river bridge data.

For any highway interchange project, summed the full principal arterial count plus half of the intersecting lower classified road, except in case of a principal-to-principal interchange, then summed fully both counts of each road.

No-Build (2030) ADT

For the region, used model-output maps, with counts classified into evaluation framework scoring levels (<10k, 10k-30k, 30k-50k, 50k-100k, >100k). For any interchange projects, the same methodology was applied as in Base Year ADT, using the mid-point of each No-Build count range (5k, 20k, 40k, 75k, 125k) to apply to each road within an interchange.

Base Year (2002-3) DVMT

DVMT was calculated using the distance provided by the DOTs for projects, and the 2002 AADT for MO, and 2003 AADT for IL.
= ((2002 AADT value 000s)*(mileage))/1000

Functional Class

Based on current classification in 2004 (I: Interstates/Expressways, PA: Other Principal Arterials, MA: Minor Arterial, C: Collector, L: Local) with the exception of projects entirely within new rights-of-way or built to expressway or higher standards. For such projects, these were classified based upon their expected classification (Interstates/Expressways (I): I-70, I-64 bridge connector, MO 21, MO 141, MO 364, Other Principal Arterials (PA): IL 3).

Preservation

Pavement Condition

Pavement conditions were evaluated for the length of the project (lane miles), using bi-directional data if available. The lane miles by category were multiplied by category constants (Good=5, Fair=3 and Poor=1) and summed. Total lane miles for the project then divided this total. Projects scored <= 2.33 were scored as Poor. Projects >2.33 and <=3.67 were scored as Fair. And, projects > 3.67 were Good. MoDOT's 2006 PSR GIS data was used for MO projects, and IL 2005 CRS GIS data was used for IL projects.

Number of Deficient Bridges

GIS data (2004 for Missouri and 2005 for Illinois) identifying and rating all bridges, including those that are both structurally deficient and functionally obsolete bridges as well as those rated "poor" or worse was used for the evaluation. The total number of deficient bridges was summed for each project.

Percent of Deficient Bridges

GIS data (2004 for Missouri and 2005 for Illinois) identifying all bridges including those that are both structurally deficient and functionally obsolete bridges as well as those rated "poor" or worse was used for the evaluation. Total number of deficient bridges divided by the total number of bridges.

Safety

High Accident Segments / Intersections

HAL GIS file provided by MoDOT and IDOT were used in evaluation. 2005 for MoDOT, 2004 for IDOT. The total number of HAL including segments and intersections were summed for each project. MoDot provided 2 mile and 10 mile HAL segments. 2 mile HAL segments were utilized in the calculation. In the absence of 2 mile HAL seg-

ments, half the number of 10 mile segments (rounded up to the nearest whole number) were added to the number of HAL intersections for each project.

Fatal Crashes
EWG database of fatal crashes (compiled from MHP reports) for years 2003-2005 was used in evaluation of MO projects. ISP fatal crash database was used for IL portion of the region 2000-2002. Total fatal crashes were summed for the length of each project.

Fatal Crash Rate
Using EWG fatal crash database for MO, and ISP database for IL, fatal crash rates were developed using the total number of fatal crashes between 2000-2002. Crash rates were calculated using the dvmt/aadt data developed for evaluations.
(total fatal crashes/000sDVMT)

Crash Rate
MoDOT provided the data for 2002-2004. IDOT data from 2000-2002 was used for evaluating IL projects. The total crashes along a project corridor was summed then divided by 1000 dvmt.

Congestion

2000 LOS
Retained 2025 prioritization for identical projects. For new or split projects unique to 2030 evaluation, analyzed Skycomp 2000 data. AM and PM values were averaged for peak period direction of congestion. Each segment was weighted based on percentage of total distance. (i.e. 30%C, 70%F). Percentages were multiplied by point values assigned to each congestion category, totals were summed, then divided by 100.

2030 LOS (v/c)

Used 2030-horizon-year model-output map for no-build scenario. Map showing low, medium or high levels of congestion by road segment, projects with multiple classifications for a given project segment were classified by the mode of their mapped data, or which ever classification covered the longest aggregate portion of a project area.

Freight

Number of Shippers and Receivers

Retained 2025 prioritization data for identical projects. For new or split projects unique to 2030 evaluation, reviewed Shippers and Recievers map used in 2025 evaluation to make determination.

Truck Density
Retained 2025 prioritization data for identical projects. For new or split projects unique to 2030 evaluation, analyzed 2000 Sky-Comp GIS data.

Priority Goods Movement Network

Retained 2025 prioritization data for identical projects. For new or split projects unique to 2030 evaluation, consulted Freight ITS staff planner.

Access

Environmental Justice Community

Based on Block group 2000 data, any block group qualified as part of the EJ community, where the percentage of minority (91.97%), below poverty (38.31%), zero vehicle (35.59%), seniors with zero vehicles (53.72%) or disabled populations (36.65%) were at least two standard deviations above the median percentage of their respective populations. Thus, classified projects as not, partially, or mostly serving the EJ community, based upon how well mapped EJ area surrounded or touched the analyzed project.

Transit Intensity

Using Metro and MCT system-wide maps, individual bus route maps and timetables for November 2006, summed the number of unidirectional bus trips along a road. Each trip counted equally regardless of how far any trip of all routes analyzed traveled the evaluated project area.

Redevelopment Support

Retained 2025 prioritization data for identical projects. For new or split projects unique to 2030 evaluation, analyzed dot-density (1 dot = 100 persons or jobs), for household and employment gain and loss.

Sustainable Development

Extent of Development

Retained 2025 prioritization data for identical projects. Identified whether the project had local, corridor or regional impact based on scope of project. For new or split projects unique to 2030 evaluation, used judgment.

Development Directly Served

Analyzed 2000 regional urbanized area map and MODOT standalone (Desoto, Festus-Crystal City, Sullivan, Union, Washington) communities 2002 map. All Illinois projects evaluated fell inside the urbanized area. Any project falling mostly outside of an area was classified as non-urban.

Number of Activity Centers Served

Retained 2025 prioritization data for identical projects. Only major activity centers were used in evaluation, scores were given based on whether the project served none, 1-2, or 3 or more centers. For new or split projects unique to 2030 evaluation, used expert judgment.

Project-Based Ecological Significance

The Project Based Ecological Significance layer contains cells ranging from 0 (low impact) to 9 (high impact). Projects are scored based on the following:
Step One - If the first 1/4-mile buffer within the one-mile buffer touches on a cell classified as an 8 and/or 9, it would receive a zero score.
Step Two - The average cell classification within the buffer is scored as follows with the highest possible score being 3: 8-9 = 0; 7-6-5 = 1; 4-3-2 = 2; 1 = 3.

Conservation Opportunity Areas

For Conservation Opportunity Areas (COA), if a project buffer intersects with a COA it receives zero (0) points and if a project buffer does not intersect with a COA then it receives three (3) points.

RTP Project Priority Evaluation Framework

Functional Class & Usage
- 2010 ADT
- 2040 ADT
- 2010 DVMT
- Functional Class

Preservation
- Pavement Condition
- Number of Deficient Bridges
- % of Deficient Bridges

Safety
- High Accident Segments/Intersections
- Fatal Crashes
- Fatal Crash Rate
- Crash Rate

Congestion
- 2010 LOS
- 2040 LOS

Freight
- Number of Shippers/Receivers in Corridor
- Truck Density
- Priority Goods Movement Network

Access
- EJ Community
- Redevelopment Support
- Transit Intensity

Sustainable Development
- Extent of Development
- Development Directly Served
- Number of Activity Centers Served
- Conservation Opportunity Area Proximity
- Ecological Significance Proximity

RTP Project Priority Evaluation Framework

			max. pts.		0	1	2	3	4	5
Functional Class & Usage			**3**							
a	2005 ADT				n/a	<10	10-30	30-50	50-100	>100
b	2035 ADT				n/a	<10	10-30	30-50	50-100	>100
c	2005 DVMT				n/a	<100	100-250	250-500	500-750	>750
d	Functional Class				n/a	L	C	MA	PA	I
Preservation			**5**							
e	Pavement Condition				n/a	Good		Fair		Poor
f	Number of Deficient Bridges			f1-no.	n/a	0/1	2	3	4	5+
	% of Deficient Bridges			f2-%	n/a	0-20%	20-40%	40-60%	60-80%	80-100%
Safety			**5**							
g	High Accident Segments/Intersections				n/a	0	1	2	3	4+
h	Fatal Crashes				n/a	0	1	2	3	4+
i	Fatal Crash Rate				n/a	<.02	.02-.04	.04-.06	.06-.08	>.08
x	Crash Rate				n/a	<2.0	2.0-4.0	4.0-6.0	6.0-8.0	>8.0
Congestion			**5**							
j	2000 LOS				n/a	A-B	C	D	E	F
k	2035 LOS (j+k)/2				n/a	Low	n/a	Med	n/a	High
Freight			**3**							
l	Number of Shippers/Receivers in corridor				n/a	0,1	2-4	5+	n/a	n/a
m	Truck Density				n/a	<10	10-20	20-30	n/a	n/a
n	Priority Goods Movement Network				no	yes	n/a	n/a	n/a	n/a
Access			**3**							
o	EJ Community				no	partially	mostly	n/a	n/a	n/a
p	Redevelopment Support				no	H	H and E	n/a	n/a	n/a
q	Transit Intensity (o+p+q)/3				no	1-50	50+	n/a	n/a	n/a
Sustainable Development			**4**							
r	Extent of Impact				n/a	Local	Corridor	Regional		
s	Development Directly Served				n/a	non-urban	stand-alone	urbanized		
t	Number of Activity Centers Served (r+s+t)/3				n/a	0	1-2	3+		
u	Ecological Significance									
		Step One		Yes/No	Yes					
		Step Two		Average Rating (No to Step One)		>=4	2<=x<4	<2		
v	Conservation Opportunity Areas				Project Intersects Buffer			Project does not Intersect Buffer		

*arterial/interchange in area of hhld or emp loss

Appendices

Appendix F

St. Louis Region Congestion Management Process (CMP) FY 2014-2017 Transportation Improvement Program (TIP) Investment Evaluation Methodology

Surface Transportation Program - Suballocated Funds & On-System Bridge Program

Introduction

Investments submitted for inclusion in the Transportation Improvement Program (TIP) will be evaluated in each of the six Project Priority Areas (Figure 1) based on the principles and framework identified in the region's Long Range Transportation Plan, RTP 2040, and scored according to how well the improvement addresses those areas. Performance measures applicable to each priority area were identified through RTP 2040 and refined for incorporation in the evaluation of the improvements submitted for TIP consideration. Performance measures are indicators of a submitted improvement's magnitude of need. These indicators along with a determination of cost effectiveness are used to select investments for inclusion in the TIP. The project evaluation framework utilized for the selection of TIP investments is described below.

Step 1 – Investment Effectiveness

-[The effectiveness rating for an investment is influenced by: how well a project addresses the six priority areas (provided through the project application), the utilization of the facility being improved, the type of improvement proposed, project justification (how the project addresses a perceived need), etc. A seven-part scoring method is used to assign the investment effectiveness rating.

Part 1 (Project Points) - Each project is evaluated to determine its effectiveness in each of the priority areas based on information given by each applicant. A score of 0 to 5 points is assigned for every priority area.

Part 2 (Priority Area Weighting) - The weighting scheme was developed to reflect the importance of the priority areas: Preservation - 6, Safety - 4, Congestion - 3, Access to Opportunity - 3, Sustainable Development - 2, Goods Movement - 2.

Part 3 (Weighted Subscore) - This number is the result of multiplying the project points by the priority area weighting factor for each priority area.

Part 4 (Focus Area Weighting) - A weighting factor of 4 is assigned to the primary priority area while the other areas receive a factor of 1. For the primary priority area, the score is determined by multiplying the weighted subscore from Part 3 by the focus area weight of 4. The scores for the remaining five priority areas are determined by multiplying the weighted subscore by the focus area weight of 1.

Part 5 (Priority Area Score) - This number is the sum of each of the priority area scores from Part 4.

Part 6 (Additional Points) - Each project can earn additional points in two categories: usage and local match.

Usage – Points for usage are determined as follows:

Person Miles Traveled (PMT)	*Additional Points*
0-1,999	0
2,000-3,999	10
4,000-5,999	20
6,000-7,999	30
. . .	. . .
>12,000	60

Local Match – Points for local match are determined as follows

Local Match %	*Additional Points*
20% (MO) or 25% (IL)	0
21% (MO) or 26% (IL)	0.5
22% (MO) or 27% (IL)	1
23% (MO) or 28% (IL	1.5
24% (MO) or 29% (IL)	2
25% (MO) or 30% (IL)	2.5
…	….
>80% (MO) or 85% (IL)	30

Part 7 (Total Score) - The total score is determined by adding the final priority area score from Part 5 to the additional points the project earns.

The following table represents the maximum total possible points available in the application scoring process.

Step 2 – Cost Effectiveness

The investment's cost effectiveness is calculated using a formula that uses the inputs described in STEP 1 and the annualized construction cost.

cost effectiveness = annualized construction cost total points

Priority Area	*Possible Points*	*Priority Weighting*	*Weighted Subscore*	*Focus Weighting*	*Priority Area Score*	*Max. Add'l Points*	*Max. Total Points*
Preservation	5	6	30	4	120		
Safety	5	4	20	1	20		
Congestion	5	3	15	1	15		
Access to Opportunity	5	3	15	1	15		
Sustainable Development	5	2	10	1	10		
Goods Movement	5	2	10	1	10		
TOTAL			100		190	90	280

Appendices

Appendix G

St. Louis Regional Congestion Management Process (CMP) Regionally Significant Project Screening Criteria
St. Louis Non-Attainment and Maintenance Areas

1. Background

This document is intended to serve as a tool for assisting with determining whether a transportation project in the St. Louis Region is "Regionally Significant" with respect to the air quality conformity requirements for Transportation Plan and Transportation Improvement Program (TIP) found in the Transportation Conformity Regulations (40 CFR Part 93). The purpose is to provide pertinent nformation to the Inter Agency Consultation group (IACG) on the characteristics that would normally be used to determine whether a transportation project is regionally significant especially if a roadway facility does not meet the definition of regionally significant project in the transportation conformity regulations. As defined in 40 CFR 93.101 transportation projects (other than exempt projects) located on transportation facilities that are classified as principal arterial or higher are regionally significant. Pursuant to all applicable regulations, the IACG will make the final determination of regional significance1 on a case-by-case basis if needed and additional criteria beyond what is being presented in this document may be used at the IACG's discretion. Transportation conformity is required by the Clean Air Act section 176(c) (42 U.S.C. 7506(c)) to ensure that federal funding and approval are given to highway and transit projects that are consistent with ("conform to") the air quality goals established by a state air quality implementation plan (SIP). Conformity, to the purpose of the SIP, means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards.

The St. Louis MO-IL area is currently a non-attainment area for the 1997 National Ambient Air Quality Standards (NAAQS) of fine particulate matter (PM2.5) and the 1997 NAAQS for Ozone (O3). Part of the region, consisting of the City of St. Louis and that portion of St. Louis County within the I-270 loop, is classified as a limited maintenance area for Carbon Monoxide (CO). The Missouri Limited Carbon Monoxide Maintenance Plan option allows plan conformity without a technical analysis. However, individual projects remain subject to the requirement for "hot-spot" analysis by their project sponsor which is beyond the lead responsibility of the MPO and is not covered by this document.

The East-West Gateway Council of Government (EWG), as the Metropolitan Planning Organization (MPO,) is the lead agency for developing transportation air quality conformity determination, 1997 ozone NAAQS and 1997 PM2.5 NAAQS, for the long range Transportation Plan, TIP and TIP amendments. U.S. DOT makes the final determination of conformity.

Vehicle mile traveled (VMT) for transportation projects (non-regionally significant, nonexempt projects) which cannot be captured by EWG's travel demand model will be analyzed according to reasonable professional practice according to 40 CFR 93.122 Procedures for determining regional transportation-related emissions. According to 93.122, the regional emissions analysis for a transportation plan or TIP must include all regionally significant projects expected in the non-attainment areas, including those that are non-federal (those that need no federal funding or approval). Notwithstanding the other requirements of 40 CFR 93.126, 93.127 and 93.128, all non-exempt road improvement projects, including those not requesting federal funds, will be considered for regional significance and subject to inclusion in an air quality conformity analysis.

Definitions of potential project classifications and their criteria are outlined below. The MPO and IACG will follow the definition in Federal Transportation Conformity Regulations. Please note that for cases in which the regional significance of a project is unclear the IACG will consult to determine the classification of a project.

2. Federal Transportation Conformity Regulations Definition of Regional Significance

CFR § 93.101 Definitions. (Verbatim from Federal Regulations)

Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs
(such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

3. Examples of Projects that are Regionally Significant Below are examples of projects which must be included in the network modeling, regional emissions analysis and conformity analysis for Transportation Plan, TIP and amendments to Plan and TIP.

Interstates and Expressways

- New segment
- Added through lane
- Continuous auxiliary lane
- New interchange

Principal Arterial

- New segment
- Added through lane
- Continuous auxiliary lane
- New interchange

Rail and Fixed Guide-Way Transit

Major expansion of fixed rail or fixed guide-way system

4. Examples of Projects that are not -Regionally Significant (Non-Exempt)

Addition of thru traffic lanes on arterial roads that do not extend the full distance between major intersections

- Addition of thru traffic lanes on roads that are not functionally classified as an arterial or higher and do not serve regional transportation needs
- New collector roads that serve minor developments
- New or expanded park-and-ride lots that do not serve regional transportation needs
- New collector road overpasses

As aforementioned, VMT for projects (non-regionally significant, non-exempt projects) as listed above which cannot be captured by EWG's travel demand model will be analyzed according to reasonable professional practice according to 40 CFR 93.122 Procedures for determining regional transportation-related emissions. All non-regionally significant (non-exempt) projects still need to be included in the Regional Emissions Analysis even if the VMT cannot be captured in the travel demand model. In the future and as applicable, EWG will consult with the IACG and document the use of "off-model" methods for determining VMT and emissions in Transportation Conformity Determination documentation.

5. Examples of Projects that May be Regionally Significant

Listed below are examples of the types of projects that the IACG is to determine whether or not they are regionally significant, non-exempt. If a project is determined to be a regionally significant non-exempt project, it is to be included in the transportation network modeling and conformity analysis.

Interstates and Expressways

- Modification of an existing interchange

Principal Arterial

- Modification of an existing interchange or intersection

Minor Arterial

- New segment
- Added through lane
- Continuous auxiliary lane
- Modification of an existing interchange or intersections

Rail and Fixed Guide-Way Transit

- New stations or terminals that serve major regional transportation needs

6. Exempt Projects

Sections 93.126 –128 of the Transportation Conformity Regulations (March 2010) identify highway and transit project types which are exempt from the requirement to determine conformity altogether (93.126 and 93.128) or exempt from regional emissions analysis (93.127) and key caveats to be considered. These sections are presented in their entirety at the end of this section. The most recent version of the Transportation Conformity Regulations can be found at: http://www.epa.gov/otaq/stateresources/transconf/regs/420b10006.pdf .

Table 2 in Section 93.126 lists projects which are exempt and may proceed toward implementation even in the absence of a conforming transportation plan and Transportation Improvement Program (TIP). A particular action of the type listed in Table 2 is not exempt if EWG, in consultation with other agencies in the IACG, concurs that it has potentially adverse emissions impacts for any reason. The Missouri Department of Transportation (MoDOT), the Illinois Department of Transportation (IDOT), the Missouri Department of Natural Resources (MDNR), the Illinois Environmental Protection Agency (Illinois EPA) and EWG must ensure that exempt projects do not interfere with transportation control measure (TCM) implementation.

Please note that in Section 93.127, sentences two, three and four are referring to project level conformity determination which is the responsibility of the project sponsor, not the Metropolitan Planning Organization (MPO). Although it is true that certain situations trigger the necessity for hot-spot/project level analysis per 40 CFR93, it was determined that this obligation is not led by the MPO and is not covered by this document. Moreover, any necessary hot-spot/project level analysis is generally performed by the project sponsor. A particular action of the type listed in Section 93.127, Table 3 is not exempt from regional emissions analysis if EWG, in consultation with other agencies in the IACG, concurs that that has potential regional impacts for any reason.

40 CFR § 93.126 Exempt projects. (Verbatim from Federal Regulations)

Notwithstanding the other requirements of this subpart, highway and transit projects of the types listed in Table 2 of this section are exempt from the requirement to determine conformity. Such projects may proceed toward implementation even in the absence of a conforming transportation plan and TIP.

A particular action of the type listed in Table 2 of this section is not exempt if the MPO in consultation with other agencies (see 93.105(c)(1)(iii)), the EPA, and the FHWA (in the case of a highway project) or the FTA (in the case of a transit project) concur that it has potentially adverse emissions impacts for any reason. States and MPOs must ensure that exempt projects do not interfere with TCM implementation. Table 2 follows:

40 CFR §93.126 - Table 2—Exempt Projects (Verbatim from Federal Regulations)

Safety

- Railroad/highway crossing.
- Projects that correct, improve, or eliminate a hazardous location or feature.
- Safer non-Federal-aid system roads.
- Shoulder improvements.
- Increasing sight distance.
- Highway Safety Improvement Program implementation.
- Traffic control devices and operating assistance other than signalization projects.
- Railroad/highway crossing warning devices.
- Guardrails, median barriers, crash cushions.
- Pavement resurfacing and/or rehabilitation.
- Pavement marking.
- Emergency relief (23 U.S.C. 125).
- Fencing.
- Skid treatments.
- Safety roadside rest areas.
- Adding medians.
- Truck climbing lanes outside the urbanized area.
- Lighting improvements.
- Widening narrow pavements or reconstructing bridges (no additional travel lanes).
- Emergency truck pullovers.

Mass Transit

- Operating assistance to transit agencies.
- Purchase of support vehicles.
- Rehabilitation of transit vehicles
- Purchase of office, shop, and operating equipment for existing facilities.
- Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.).
- Construction or renovation of power, signal, and communications systems.
- Construction of small passenger shelters and information kiosks.

• Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures).
• Rehabilitation or reconstruction of track structures, track, and trackbed in existing rights-of-way.
• Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet
• Construction of new bus or rail storage/ maintenance facilities categorically excluded in 23 CFR part 771.

Air Quality
• Continuation of ride-sharing and van-pooling promotion activities at current Levels.
• Bicycle and pedestrian facilities.

Other
• Specific activities which do not involve or lead directly to construction, such as:
– Planning and technical studies.
– Grants for training and research programs.
– Planning activities conducted pursuant to titles 23 and 49 U.S.C. Federalaid systems revisions.
• Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action.
• Noise attenuation.
• Emergency or hardship advance land acquisitions (23 CFR 710.503).
• Acquisition of scenic easements.
• Plantings, landscaping, etc.
• Sign removal.
• Directional and informational signs.
• Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities).
• Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes.

Note: In PM10 and PM2.5 nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.

40 CFR § 93.127 Projects exempt from regional emissions analyses. (Verbatim from Federal Regulations)

(Please see paragraph 3 on page 4 for discussion about this portion of the Federal Regulations)

Notwithstanding the other requirements of this subpart, highway and transit projects of the types listed in Table 3 of this section are exempt from regional emissions analysis requirements. The local effects of these projects with respect to CO concentrations must be considered to determine if a hot-spot analysis is required prior to making a project-level conformity determination. The local effects of projects with respect to PM10 and PM2.5 concentrations must be considered and a hot-spot analysis performed prior to making a project-level conformity determination, if a project in Table 3 also meets the criteria in §93.123(b)(1). These projects may then
proceed to the project development process even in the absence of a conforming transportation plan and TIP. A particular action of the type listed in Table 3 of this section is not exempt from regional emissions analysis if the MPO in consultation with other agencies (see §93.105(c)(1)(iii)), the EPA, and the FHWA (in the case of a highway project) or the FTA (in the case of a transit project) concur that it has potential regional impacts for any reason. Table 3 follows:

Table 3—Projects Exempt From Regional Emissions Analyses (Verbatim from Federal Regulations)
• Intersection channelization projects.
• Intersection signalization projects at individual intersections.
• Interchange reconfiguration projects.
• Changes in vertical and horizontal alignment.
• Truck size and weight inspection stations.
• Bus terminals and transfer points.

40 CFR § 93.128 Traffic signal synchronization projects. (Verbatim from Federal Regulations)

Traffic signal synchronization projects may be approved, funded, and implemented without satisfying the requirements of this subpart. However, all subsequent regional emissions analyses required by §§93.118 and 93.119 for transportation plans, TIPs, or projects not from a conforming plan and TIP must include such regionally significant traffic signal synchronization projects.

7. Regional Significant Screening Criteria Interrogatories

The following questions can be used to assess whether projects are regionally significant, when it is unclear, such as when projects are on facilities smaller than a principal arterial.

1.) What are the exempt status and functional classification of the roadway project?

- A non-exempt project on a roadway facility classified as a principal arterial or higher is considered regionally significant.
- A project listed under 40 CFR 93.126 or 93.127 is exempt unless the IACG determines that it should be treated as non-exempt because it has potentially adverse emissions for any reason, or regional impacts for any reason.

2.) Is the facility either included in the regional travel demand forecasting model, or would it be if it does not currently exist?

- East-West Gateway includes most "major" roadways (most major collectors and above) in order to improve model performance so if a roadway is not modeled itcan generally be considered to be non-regionally significant.

3.) Does the facility provide direct connection between two roadways classified as a principal arterial or higher?

- Direct connections between major principal arterials and in particular connections to the interstate can generally be considered regionally significant.

4.) Does the facility provide the primary regional connectivity to a "major activity center"?

- This is a criterion listed in the federal regional significance definition; however there can be different interpretations as to what constitutes a major activity center. East-West Gateway suggests the following as general types of major activity centers, with specific locations to be determined on a case-by-case basis:
  - Major hospitals and regional medical centers
  - Central business districts of cities with greater than 5,000 population
  - Major regional retail centers and malls (greater than 1,000,000 square feet)
  - Major colleges and universities
  - Tourist destinations
  - Airports
  - Freight terminals and intermodal transfer centers
  - Sports complexes

5.) Does the project add significant vehicular capacity?

- A project adding general purpose through lanes will typically be regionally significant more often than one that is adding a continuous center turn lane or other projects that do not add significant roadway capacity.

6.) What is the length of the roadway segment being improved and what is the overall corridor length?

- Projects extending (or completing) long sections (typically greater than one mile) is more likely to be regionally significant.
- If the corridor is lengthy and there is an absence of other principal arterials in the vicinity then the roadway is more likely to be regionally significant.
- Collectively, when a series of smaller projects on a regionally significant facilityare completed, the overall improvements can be regionally significant.

7.) What is the current Annual Average Daily Traffic (AADT) of the roadway segment?

- This is less important in determining regional significance although it will provide additional information to be considered along with the above criteria. High traffic segments will tend to be more correlated with the increased regional significance of a roadway.

8. Acronyms

AADT	Average Annual Daily Traffic
BRT	Bus Rapid Transit
CAA	Clean Air Act Amendments of 1990
EPA	U.S. Environmental Protection Agency
EWG	East-West Gateway Council of Governments
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
IACG	Inter Agency Consultation Group
IDOT	Illinois Department of Transportation
Illinois EPA	Illinois Environmental Protection Agency
LRTP	Long-Range Transportation Plan
MDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
MPO	Metropolitan Planning Organization (EWG)
NAAQS	National Ambient Air Quality Standards
SIP	State Implementation Plan
TCM	Transportation Control Measure
TIP	Transportation Improvement Program

Appendix H

St. Louis Region Congestion Management Process (CMP) Congestion Management Committee (CMC)

Regional Congestion Management Process Committee

As part of the current development of the CMP, EWGCOG staff has established a Congestion Management Committee (CMC) comprised of stakeholders from federal, state, counties and jurisdictions throughout the metropolitan region. The CMC will specifically act in the role of advisory in providing vital input and direction to the outcomes and ongoing process. As an outcome, the CMC will continue as a collective framework for cross-jurisdictional coordination of traffic performance reporting and use.

The CMC will work to advance data collection activities in the process of establishing performance measures that accurately measure mode performance and congestion related issues. Apart from the role of providing input, information, and direction to the development and approval of the CMP, the CMC will also act in the capacity of collective coordination of multimodal transportation performance data from facilities throughout the region.

The composition of the CMC is flexible, and will be adjusted on an as needed basis, to insure that proper stakeholders from federal, state, local transportation providers and authorities are included.

As defined in the plan, ongoing CMP development and subsequent monitoring will require the collection, submission and compilation of data from a variety of existing data resources from MODOT, IDOT, counties, and principal jurisdictions in the metro region. EWGCOG staff will maintain primary responsibility for the St. Louis Region CMP in collaborative coordination with the CMC.

CMP Advisory Committee Member Stakeholders

Federal Partner Participants:	Federal Highway and Works Administration (FHWA), and Federal Transit Administration (FTA)
State Partner Participants:	Illinois Department of Transportation (IDOT) and Missouri Department of Transportation (MODOT)
County Partners:	Illinois – Madison, Monroe, St. Clair Missouri – St. Louis City, St. Louis, St. Charles, Jefferson, and Franklin
Municipalities:	Principal municipalities with ITS and transportation performance data infrastructure.
Transit Authorities:	Madison County Transit, Metro, St. Clair Transit
TMAs:	Citizens for Modern Transit and other associated TMAs in the Metro region (including RideFinders)
Other Participants:	Trailnet

Developing MPO Committees Focused on Operations Issues

The CMC stakeholders facilitate a vital forum where inter-jurisdictional coordination, funding strategies, and data sharing can be addressed. In addition, the CMP will use the committee's diverse operations expertise to apply M&O strategies in the regional planning process, and identify ITS systems and data needed to support operations. Through the process of the CMP, the CMC will focus on management and operations functions of regional significance such as traveler information, road weather management, and traffic incident management.

Roles and Responsibilities

EWGCOG will be leading the planning process and development of the CMP product; however, IDOT, MODOT, local county and municipal transportation agencies, and the region's transit agencies (Metro, Madison County transit Districts and St. Clair Transit District) will also play important roles in individual tasks and through participation in the CMC. As noted, this Committee will have a continuing oversight role as well as specific tasks related to various CMP activities, specifically dealing with data collection, analysis, and Program implementation. Specific roles of the CMC and its members include, but are not limited to:

Congestion Management Committee Responsibilities

- Monitoring implementation and ongoing performance of the CMP. Attending quarterly meetings of the CMC
- Reviewing reports on the status of congestion in the region
- Informing EWG, local jurisdictions and transportation agencies in the region of the state of congestion in the region and of potential solutions
- Promoting regional coordination of inter-jurisdictional arterial operations
- Making recommendations to regional jurisdictions and the EWGCOG Board on implementation of congestion mitigation strategies
- Making recommendations for updates to the CMP regional objectives and performance measures as appropriate
- Coordinating data collection and regional data sharing to support the CMP

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