MARC Congestion Management Process Policy
Adopted by the MARC Board of Directors on May 24, 2011

Background

Traffic congestion can be generally defined as a condition where the volume of users on a transportation facility approaches or exceeds the capacity of that facility. Congestion is characterized by reduced travel speeds, increased travel times and delay, and, in some cases, increased traffic crashes, which can lead to uncertainty, frustration, and dissatisfaction of transportation system users. Some secondary impacts of congestion include decreased productivity and increased greenhouse gas emissions. However, it is important to acknowledge that the high levels of traffic volumes that cause congestion are also symptomatic of growth in economic activity and development. Therefore, transportation planners, engineers, and decision makers should seek to manage congestion rather than totally eradicate it.

Based on 2008 Highway Statistics compiled by the Federal Highway Administration (FHWA), the Kansas City urbanized area has the highest ratio of roadway miles to population in the United States. This massive amount of highway capacity is likely a major contributor to the relatively low levels of traffic congestion in the Kansas City region compared to areas of similar size. Nonetheless, it would be remiss to claim that traffic congestion is nonexistent in the region. In fact, traffic monitoring services such as KC Scout indicate that significant, peak period congestion does exist at various times and locations throughout the region.

The ability to increase highway capacity will always be restricted by limited financial resources. Therefore, it is necessary to plan for efficient management and operation of the existing transportation system. The Congestion Management Process (CMP) is intended to be a systematic way of monitoring, measuring and diagnosing the causes of current and future congestion on a region’s multi-modal transportation systems; evaluating and recommending alternative strategies to manage current and future regional congestion; and monitoring and evaluating the performance of strategies implemented to manage congestion. The CMP also responds to requirements set forth by federal transportation legislation (23 CFR 450.320).

Purpose and Scope

MARC has developed a CMP to meet the unique needs of the Kansas City metropolitan area. The CMP includes an ongoing method to provide information on the performance of the transportation system and on alternative strategies to manage congestion and enhance mobility and safety. The CMP uses an objectives-driven, performance-based approach to managing congestion, and emphasizes effective management of existing facilities through use of travel demand and operational management strategies.

In Transportation Management Areas (TMAs) that are in non-attainment of ozone or carbon monoxide (CO) standards, Federal funds may not be advanced for any new project that will significantly increase the carrying capacity for single-occupant vehicles (SOVs) other than projects that address bottlenecks or safety needs unless the project results from a CMP.
The FHWA and FTA Guidebook, *Advancing Metropolitan Planning for Operations*, outlines an 8-step framework for the development of a CMP.

1. Develop Congestion Management Objectives
2. Identify Area of Application
3. Define System/Network of Interest
4. Develop Performance Measures
5. Institute System Performance Monitoring Plan
6. Identify and Evaluate Strategies
7. Implement Selected Strategies and Manage Transportation System
8. Monitor Strategy Effectiveness

**Integration with the Metropolitan Transportation Planning Process**

The MARC CMP is one component of the metropolitan planning process. It is integrated with the Long-Range Transportation Plan (LRTP), Transportation Improvement Program (TIP) and corridor studies, including those being conducted in accordance with the National Environmental Policy Act (NEPA), through its data and analysis functions as well as through the CMP Toolbox. These relationships are summarized below.

**Relationship to the LRTP**

The MARC CMP is related to the regional Long-Range Transportation Plan in four ways:

- The LRTP provides a set of congestion management objectives and performance measures that are applied through the CMP;
- The LRTP development process includes an evaluation and prioritization of transportation projects and strategies structured around advancing these identified CMP objectives and measures;
- The LRTP provides system performance information in support of the CMP which is used by MARC and its planning partners to identify corridors or segments for detailed analysis in Corridor or Major Investment Studies, as recommended by the LRTP; and
- The CMP Toolbox provides alternative congestion management strategies for consideration in MIS and Corridor Studies, which ultimately are reflected in project design and are incorporated into the LRTP’s financial constrained project listing.

**Relationship to the TIP**

The MARC CMP is related to the development of the regional Transportation Improvement Program in four ways:

- The CMP provides system performance information for use by MARC in evaluating projects nominated for inclusion in the TIP;
- The CMP provides system performance information for project sponsors, which may influence their recommended projects for incorporation in the TIP;
• The CMP provides information about alternative congestion management strategies considered for SOV capacity projects to be advanced using federal funds; and
• The CMP objectives are integrated with the application scoring process used to select and prioritize projects in the TIP.

Relationship to Corridor Studies
The MARC CMP is related to the development of corridor studies and related NEPA documents in two ways:

• The CMP provides system performance information which is used by MARC to identify corridors or segments for detailed analysis in corridor or NEPA studies; and
• The CMP Toolbox provides alternative congestion management strategies for consideration in corridor studies and related NEPA documents. When traffic congestion is referenced in the Purpose and Need statement for an Environmental Assessment (EA) or Environmental Impact Statement (EIS), the EA/EIS shall consider the congestion management strategies included in the MARC CMP Toolbox as a starting point for the development of alternative strategies. This does not preclude the EA/EIS from considering other strategies that may not be in the CMP Toolbox, nor does it require that the EA/EIS select a strategy from the CMP Toolbox as the preferred alternative. However, the EA/EIS document must include a discussion of how the CMP Toolbox strategies were addressed.

Relationship to the Regional Intelligent Transportation Systems (ITS) Architecture
All ITS strategies implemented from the CMP Toolbox will be consistent with the Regional ITS Architecture. MARC will ensure that both the Regional ITS Architecture and the CMP Toolbox are reviewed for consistency and reconciled as necessary when either is updated.
MARC Congestion Management Process

1. Develop Congestion Management Objectives

The CMP is an objectives-driven, performance-based approach to managing congestion. The development of congestion management objectives allows stakeholders to focus on specific aspects of congestion and provides a way to measure the effectiveness of congestion management strategies.

The region’s long-range transportation plan includes specific system performance and congestion objectives in addition to a broader range of regional transportation objectives. Each objective is supported with specific transportation system performance measures which establish a desired trend for each measure over the timeframe of the plan. As congestion management objectives and measures are developed and refined in future updates to the long-range transportation plan, the CMP will reflect those changes.

2. Identify Area of Application

The CMP applies to the geographic area defined by the MARC Metropolitan Planning Area (MPA) boundary, including the counties of Johnson, Leavenworth, and Wyandotte in Kansas, and Cass, Clay, Jackson and Platte in Missouri. This area corresponds to the area covered by the Kansas City Regional ITS Architecture and the MARC regional travel demand model.

3. Define System/Network of Interest

For the purposes of data collection and system monitoring, MARC has identified a subset of the regional street and highway network as the Congestion Management (CM) Network. These facilities include:

- All National Highway System routes;
- All routes with average daily mid-block traffic volumes of 25,000 or more for segments of 2 miles or more in length; and
- All routes with high levels\(^1\) of transit service.

MARC will maintain a map of the CM Network, which will be updated at least every four years with the development of the long-range transportation plan.

4. Develop Performance Measures

System performance measures used for the CMP are derived from the congestion management objectives established in the long-range transportation plan. These measures should allow MARC to identify the location, duration, extent, and causes of recurring and non-recurring congestion.

\(^1\) The level of transit service depends on such factors as ridership and frequency and hours of service. MARC will consult with transit providers in the region to ensure that appropriate transit routes are considered when designating and updating the congestion management network.
Through the CMP, congestion related performance measures will be tracked over time, allowing MARC to monitor progress towards meeting the congestion management objectives, and to evaluate the effectiveness of congestion management strategies. Additional details about performance measures are provided in the long-range transportation plan document.

5. Institute System Performance Monitoring Plan

The MARC CMP currently incorporates the following data collection and system monitoring activities for the CM Network.

- MARC will analyze and report Census Transportation Planning Program (CTPP) data products collected by the American Community Survey (ACS). The CTPP reports data on variety of transportation performance measures.
- Observed traffic volumes are collected by the State Departments of Transportation and several local units of government on an annual basis. MARC will update and analyze traffic volume data on the CM Network annually, or as often as the data are made available.
- Travel time, speed, and delay data will be used by MARC to calculate congestion related performance measures. MARC will conduct a regional travel time study at least every 4 years. Speed data is continually collected on the KC Scout system, and is made available to MARC for analysis.
- Incident clearance time data for crashes is collected by Kansas City Scout (on the Scout system) and law enforcement agencies. MARC will track and report annual average incident clearance times for crashes occurring on the KC Scout system.
- Crash data are collected and reported by the State Departments of Transportation. MARC will update and analyze crash data on the CM Network annually.
- MARC will develop, apply, and maintain the regional travel demand model. The model outputs will allow MARC to forecast system performance measures on the CM Network. The model network will be updated at least every 4 years in advance of each LRTP update.
- Transit ridership and bus route performance data are collected by two local transit agencies (KCATA and Johnson County Transit), as well as the National Transit Database. MARC will obtain and analyze transit performance data from these sources.
- MARC periodically surveys registered users of the regional Rideshare program to estimate participation levels and associated benefits to the transportation system. MARC will compile and report this data annually, based on the availability of data.

The information and data collected through the system performance monitoring plan will be compiled and updated annually, based on the availability of data. As new, additional sources and types of data become available, MARC will incorporate them into its system performance monitoring plan.

The Performance Measurement Report will identify the location, duration, extent, and causes of congestion on the CM Network, and will summarize the various performance measures used by the CMP. In addition to reporting various congestion related performance measures, the Performance Measurement Report will also include information and progress reports on congestion management strategies implemented on the CM Network.
6. Identify and Evaluate Strategies

The information and data contained in the Performance Measurement Report will be used to identify appropriate congestion management strategies for the MARC region. The identification and selection of strategies for a particular segment or corridor should be tailored to the specific cause or causes of congestion. MARC will work collaboratively with its transportation planning partners to identify and advance appropriate strategies for managing congestion.

The MARC CMP provides information about a wide range of congestion management strategies applicable to the Kansas City region. These strategies are detailed in the CMP Toolbox. The intent of the CMP Toolbox is to provide a reference for the development of alternative strategies for consideration in corridor studies and NEPA documents, which may be conducted and developed within the context of the Kansas City metropolitan transportation planning process.

Congestion reduction strategies will be evaluated for the purposes of developing the LRTP, TIP, NEPA documents, and corridor studies. Evaluation of implemented CMP strategies may be conducted as “before and after” studies for individual projects, through modeling exercises or through literature reviews of the benefits and costs of project types, as appropriate. These evaluations may be conducted by MARC or by individual project sponsors. However, at a minimum, the network for the regional travel demand forecasting model will be updated every four years in advance of each LRTP update, to incorporate implemented CMP strategies involving highway or fixed guideway transit capacity into the existing network.

7. Implement Selected Strategies and Manage Transportation System

Information developed through the CMP will be applied to establish priorities for the MARC transportation planning products, thereby facilitating the implementation of the CMP. During the development of the LRTP and TIP, congestion management objectives and performance measures will be used to rank and select strategies. For the purpose of scoring project applications for both the LRTP and TIP, MARC awards points to a project that:

- Incorporates alternative modes of transportation
- Is located on the CM Network;
- Utilizes strategies from the CMP Toolbox; or
- Addresses congested segments on the CM Network.
- Supports adopted land use objectives

The TIP and Annual Listing of Projects will allow MARC to track implementation of congestion management strategies. Projects on the CM Network will be tracked throughout their implementation, and evaluated for their effectiveness in managing congestion.

8. Monitor Strategy Effectiveness

The CMP is an iterative process, and MARC will work closely with operating agencies to monitor the effectiveness of congestion reduction strategies implemented in the Kansas City region. Data collected through the System Performance Monitoring Plan (see Step 5 above), as
well as data reported by operating agencies such as KC SCOUT and the State DOTs will provide performance measures that can be used to evaluate the effectiveness of implemented strategies. This information will be incorporated into the Performance Measurement Report that will be prepared by MARC on an annual basis, providing feedback that will be used to update and refine the CMP.

Information on the effectiveness of congestion management strategies over time will also inform revisions and updates to the CMP Toolbox. As strategies are implemented and monitored, the benefits or impacts to congestion will be incorporated into the Toolbox to inform the selection and prioritization of future strategies.
Single Occupant Vehicle (SOV) Capacity Projects

In TMAs designated as nonattainment areas 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 single-occupant vehicles (SOVs), unless the project is addressed through a CMP. For the CMP, the definition of a regionally significant capacity project is consistent with the definition used for the purposes of air quality conformity analysis, and should remain consistent with that definition over time. For the MARC TMA, a project that adds significant SOV capacity is currently defined as adding one or more through lanes for a distance of one-half mile or more on a facility classified as minor arterial or higher on the FHWA functional classification system.

The CMP must provide an appropriate analysis of reasonable travel demand reduction and operational management strategies for the corridor in which a project that will significantly increase in SOV capacity is proposed. If the analysis demonstrates that travel demand reduction and operational management strategies alone cannot provide an acceptable level of mobility and additional SOV capacity is warranted, then the CMP shall identify all reasonable strategies to manage the facility safely and effectively. An acceptable level of mobility is defined by the project sponsor based on agency standards and practices. All identified reasonable travel demand reduction and operational management strategies must be incorporated into the SOV capacity project or committed to by the project sponsor for implementation.

To justify the addition of SOV capacity, a project sponsor shall conduct and document a congestion mitigation analysis during the planning stage of project development showing that additional SOV capacity is necessary to manage congestion. The analysis should include consideration of non-capacity strategies such as travel demand management (TDM) and transportation system management (TSM). Furthermore, the documentation must indicate how the capacity project includes management and operations strategies. MARC will include a report that documents and summarizes the congestion mitigation analyses with LRTP and TIP planning documents.

Exempt Projects

Projects that improve safety or eliminate bottlenecks are exempt from the SOV capacity analysis process. Projects that do not add SOV capacity such as livable communities, bike/pedestrian, and projects intended to improve mobility for non-highway modes of transportation are also exempt from the SOV capacity analysis. These projects are not required to go through the SOV justification process. A project that adds SOV capacity is exempt from the SOV analysis process if it will not use any federal funding.

The flowchart in Figure 1 describes the screening process MARC will use to determine which projects must be addressed by the CMP.
Projects that add one or more through lanes for a distance of one-half mile or more on a roadway facility classified as minor arterial or higher.

*Projects that add one or more through lanes for a distance of one-half mile or more on a roadway facility classified as minor arterial or higher.
CMP Review and Update Process

All elements of the MARC CMP will be reviewed and updated periodically to reflect changes to the region’s transportation goals and objectives and transportation system.

At a minimum:

- Congestion management objectives will be reviewed and revised as necessary in coordination with updates to the Long Range Transportation Plan (LRTP);
- The CM Network will be updated every four years, in advance of each update to the LRTP. Changes to the CM Network will be approved by the MARC Highway Committee and Management and Operations Workgroup;
- Travel time data will be collected and analyzed every four years by MARC, in advance of each update to the LRTP;
- CM Network performance will be updated and analyzed on a cycle consistent with the availability of current, supporting data.
- A Performance Measurement Report will be updated and published annually by MARC, based on available data.
- The regional travel demand forecasting model network will be updated every four years, in advance of each update to the LRTP;
- Observed traffic volumes will be incorporated into the CMP database as they are made available to MARC;
- In collaboration with the MARC Highway Committee and Management & Operations Workgroup, the CMP Toolbox will be reviewed and updated by MARC at least every four years;
- Policies and procedures governing the CMP will be reviewed and revised as necessary to address changes to regional transportation goals and/or federal rules and requirements; and
- These and other elements of the CMP may be reviewed and updated on a case-by-case basis as requested by the TTPC, in consultation with the MARC Highway Committee and Management & Operations Workgroup.