MARC Congestion Management Process Policy

Adopted by the MARC Board of Directors on April 28, 2020

BACKGROUND

In the transportation industry, congestion can be generally defined as a condition where the volume of users or vehicles 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, discomfort and dissatisfaction of transportation system users. Some secondary impacts of congestion include decreased productivity and increased greenhouse gas emissions. While many correlate economic growth with an increase in traffic, there are many ways to address an increase in traffic so that it does not become congestion. Therefore, transportation planners, engineers, and decision makers should seek to manage congestion rather than totally eradicate it.

Based on 2017 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 level of existing highway capacity contributes to the relatively low levels of traffic congestion the Kansas City region experiences compared to areas of similar population and economic activity. Despite these low levels of congestion, traffic monitoring services such as KC Scout and Operation Green Light (OGL) indicate that some areas do experience peak period congestion, most often during rush hour, in certain locations throughout the region.

The Kansas City metropolitan area is classified as a Transportation Management Area (TMA) because its population is greater than 200,000. Under current federal policy, 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. Essentially, the overwhelming majority of projects that add travel lanes would not be eligible for federal funds. While the region currently in attainment, area design values for ground level ozone are very close to the current National Ambient Air Quality Standards and therefore remains at risk of becoming a non-attainment area in the future.

With limited funding available, air quality concerns and the public's desire for additional transportation options than single occupant vehicles, the region should focus on addressing recurring and non-recurring congestion using a wide range of strategies before adding additional lanes.

PURPOSE & SCOPE

MARC's Congestion Management Process (CMP) is 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).

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

In accordance with this guidance MARC has developed an eight-step approach within this policy.

INTEGRATION WITH METROPOLITAN TRANSPORTATION PLANNING

The MARC CMP is one component of the metropolitan planning process. It is integrated with the Metropolitan Transportation Plan (MTP), 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 Metropolitan Transportation Plan (MTP)

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

- The MTP provides a set of congestion management related strategies and performance measures that are applied through the CMP;
- The MTP development process includes an evaluation and prioritization of transportation projects and strategies structured around advancing these identified CMP objectives and measures;
- The MTP 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 other special studies, as recommended by the MTP; and
- The CMP Toolbox provides alternative congestion management strategies for consideration in corridor and other studies, which ultimately are reflected in project design and are incorporated into the MTP's fiscally constrained project listing.

Relationship to the Transportation Improvement Program (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), Environmental Impact Statement (EIS), or Planning and Environmental Linkages (PEL) the EA/EIS/PEL 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/PEL from considering other strategies that may not be in the CMP Toolbox, nor does it require that the EA/EIS/PEL select a strategy from the CMP Toolbox as the preferred alternative. However, the EA/EIS/PEL 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 MTP includes specific system performance and congestion performance measures and associated strategies 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 MTP, 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, Miami 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 Network (CMN). 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 CMN, which will be reviewed and updated as necessary at least every five years with the development of the MTP.

4. *Develop Performance Measures*

   System performance measures used for the CMP are derived from requirements outlined in federal planning rules and support the congestion management objectives established in the MTP. These measures 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. Additional details about performance measures are provided in the MTP document.

5. *Institute System Performance Monitoring Plan*

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

- 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 CMN annually, or as often as the data are made available.
- A variety of 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 incorporate the annual average incident clearance times for crashes occurring on the KC Scout system within its travel time studies as that data is made available.
- Crash data are collected and reported by the State Departments of Transportation. MARC will update crash data on the CMN 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 CMN. The model network will be updated in advance of each MTP 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 as part of its travel time studies, based on the availability of data.

The information and data collected through the system performance monitoring plan will be compiled and analyzed in advance of regular sub-allocated calls for projects, 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 CMN, and will summarize the various performance measures used by the CMP.

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 MTP, 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 in advance of each MTP 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 MTP 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 MTP and TIP, MARC awards points to projects that:

   - Facilitate alternative modes of transportation
   - Implement strategies from the CMP Toolbox
   - Address congested segments on the CMN and
   - Support adopted land use objectives

   The TIP and Annual Listing of Projects will allow MARC to track implementation of congestion management strategies at the system-wide level. Projects that add SOV capacity to roadway segments that have not been identified through the system monitoring plan described above and otherwise do not demonstrate congestion through independent studies are not considered aligned with this policy.

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 regular 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. While the Kansas City region is not currently designated as a nonattainment area, it is prudent to identify projects that may be subject to these provisions should this status change in the future. 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 travel lanes, turn lanes or auxiliary lanes for a distance of one-half mile or more on a facility classified as minor collector or higher on the FHWA functional classification system.

The CMP SOV worksheet 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.

In the MARC TMA, in order 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. Sponsors should refer to MARC's Transportation Congestion and Reliability in Kansas City report as a resource to determine where existing congestion/unreliability has been identified as an area of concern. Alternatively, a project sponsor may provide a study which documents that congestion/system unreliability (as defined in MARC's report) is occurring or anticipated to occur given recently completed development. 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 MTP and TIP planning documents.

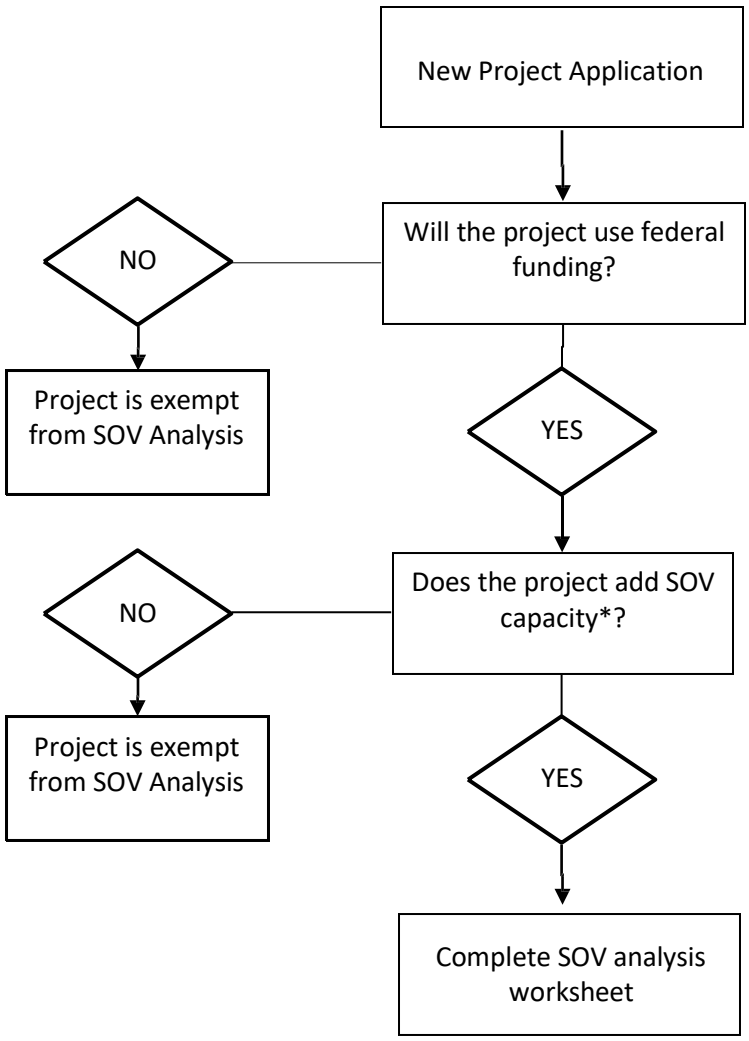
EXEMPT PROJECTS

The following projects are exempt from the SOV capacity analysis process:

- Projects that do not add SOV capacity such as bike/pedestrian improvements
- Projects intended to improve mobility for non-highway modes of transportation, and
- Projects that will not use federal funding.

The flowchart in Figure 1 describes the screening process MARC will use to determine which projects must be addressed by the CMP.

MARC CMP
SOV Analysis Screening Process



*Projects that add one or more travel, turn or auxiliary lanes for a distance of one-half mile or more on a roadway facility classified as minor collector 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 Metropolitan Transportation Plan;
- The CMN will be reviewed and updated as necessary every five years, with the development of the MTP. Changes to the CMN will be approved by the MARC Highway Committee;
- Travel time data will be collected and analyzed every four years by MARC, in advance of each update to the MTP;
- CMN 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 regularly by MARC, based on available data.
- The regional travel demand forecasting model network will be updated in advance of each update to the MTP;
- Observed traffic volumes will be incorporated into the transportation database as they are made available to MARC;
- In collaboration with the MARC Highway Committee 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 in consultation with the MARC Highway Committee.