CONGESTION MANAGEMENT SYSTEM FOR NORTHEASTERN ILLINOIS

"An hour and ten minutes from Route 53 to the post office."

Congestion. A word that drivers dread hearing. Not only is it a personal inconvenience, but it creates a drag on the economy’s efficiency and adds to air pollution. It is a problem in Chicago and across the nation. Chart 1 shows that the total average miles driven per day have increased significantly over the last ten years. During the same time period, the miles of roadway have increased at a much slower rate. The Congestion Management System (CMS) is designed to lessen the impacts of congestion by giving policy makers the information they need to make investment decisions that will increase the efficiency and effectiveness of the transportation system.

Chart 1.

Average Daily Vehicle Miles Traveled in the Chicago Area, 1985-1995

WHY A CONGESTION MANAGEMENT SYSTEM?
The Intermodal Surface Transportation Efficiency Act of 1991 (commonly referred to as ISTEA [pronounced “Ice-tea”]) requires that congestion be considered in the selection of transportation improvement projects and that all urbanized areas with populations in excess of 200,000 develop and implement a CMS. The CMS, in turn, requires that all reasonable alternatives be identified and evaluated for their ability to alleviate congestion and enhance mobility. Furthermore, when the addition of general purpose traffic lanes is determined to be the appropriate solution for a particular corridor, the CMS requires that appropriate demand and operational management strategies also be implemented to increase the efficiency of the corridor and extend the life of the improvement.
The CMS for northeastern Illinois is administered by the Chicago Area Transportation Study (CATS) and is guided by three goals:

1. Lessen congestion on the region's transportation network through multimodal solutions with priority given to alternatives to adding traffic lanes.
2. Improve the traveling public's mobility and accessibility to goods and services through multimodal choices, especially for the elderly, disabled and economically disadvantaged.
3. Improve the movement of goods on multiple modes and access to origins and destinations through consideration of multimodal solutions.

**CMS Components**

To meet its goals, the CMS needs to include methods to monitor and evaluate the performance of the transportation system, ways to identify alternatives to building additional traffic lanes or to enhance the effectiveness of facilities, the means to assess and implement cost-effective actions through project selection and the ability to evaluate the effectiveness of strategies after they are implemented.

**System Monitoring and Performance Evaluation.** System monitoring provides the information necessary to identify existing and potential problems, identify potential solutions, and evaluate the effectiveness of these solutions. A monitoring program has been established which includes the definition of a monitoring network and the establishment of performance measures. The roadway network being monitored includes all expressways, tollways and regionally important roads and is displayed in Map 1. The monitoring program also covers area transit systems.
The CMS will use a number of existing activities to monitor the performance of the transportation network. These activities include:

- CATS travel time runs
- Illinois Department of Transportation (IDOT) expressway surveillance
- CATS simulation models
- Strategic Regional Arterial (SRA) activities
- Information from CATS committees
- Transit agency monitoring programs
- IDOT's Illinois Roadway Information System

In addition to the above activities, the CMS will attempt to integrate the following additional data sources into the process:

- IDOT's Signal Coordination and Timing (SCAT) Program
- Intelligent Transportation Systems (ITS)
- Council of Mayors Perceived Sites of Congestion Surveys
- Illinois State Toll Highway Authority traffic data

Information from these activities and data sources will be used to determine the performance level of the region's transportation system. To provide a well-rounded picture of transportation performance, a set of performance measures were selected covering congestion, accessibility, and transit. The performance measures selected for the northeastern Illinois CMS are:

- Zonal Time and Travel Speed
- Volume-to-Capacity Ratio
- Density of Expressway Traffic
- Intersection Level of Service
- Duration of Time Delay at Congested Conditions
- Percentage of Truck Traffic
- Percentage of Households and Employment within "X" Miles of a Bus Route
- Percentage of Households and Employment within "X" Miles of an Expressway Interchange
- Transit System Measures
- Modal Shares
- Person Throughput
- Vehicular Occupancy
- Incident Measures

The results of the performance measure assessment will be published and made available to decision-makers in a periodic report identifying the performance of and deficiencies in the transportation network.

Consideration of Alternative Strategies. A key intent of the CMS is considering alternatives to adding traffic lanes for relieving congestion and enhancing mobility. Some examples of these alternatives are shown in Table 1. Several steps have been taken to promote the use of these alternative strategies. Examples of this include the Operation GreenLight program, the SRA program, and the SCAT program. The Regional Transportation Plan (RTP) and numerous sub-regional and corridor studies also reflect the importance that the region places on alternative strategies. To enhance this effort, a number of additional activities have been or will be implemented.

Interim Congestion Management System

The interim CMS for northeastern Illinois has been in place since October 1993. It includes a discussion of regional demand and operational management strategies (Table 1) and makes a commitment to review the viability of all reasonable alternatives to projects that require the addition of traffic lanes (add-lanes projects).

CMS Alternatives Review Guidelines

The CMS Alternatives Review Guidelines published in 1995 provide guidance for project planners on the requirements related to the consideration of alternatives and outline a suggested process for conducting a CMS alternatives review. The guidelines also identify "reasonable" alternatives to adding general purpose traffic lanes.

Travel Demand Reduction (TDR) Report

As part of the interim CMS, CATS and IDOT developed a procedure for identifying and evaluating TDR strategies for application with add-lanes projects. These strategies are intended to improve the efficiency of the transportation system by reducing the number of automobile trips. Examples of TDR strategies include expansion of transit services, employers-oriented rideshare programs, improved pedestrian and bicycle access, and employee parking management programs. Under the TDR program, reviews and site-screenings of add-lanes projects are performed to identify opportunities for applying TDR strategies in project corridors. The resulting TDR reports are incorporated into the CMS or environmental assessment documents for the project.
**Table 1.** Examples of Demand and Operational Management Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Example Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommuting</td>
<td>Traffic Signal Coordination</td>
</tr>
<tr>
<td>Targeted Work Zones</td>
<td>Traffic Signal Rating</td>
</tr>
<tr>
<td>Parking and Ride Facilities</td>
<td>Transit Subsidy</td>
</tr>
<tr>
<td>Mixed Land Use</td>
<td>Innovative Toll Collection</td>
</tr>
<tr>
<td>Adding Turn Lanes</td>
<td>Increased Parking</td>
</tr>
<tr>
<td>Turning Restrictions</td>
<td>Increased Transit Service</td>
</tr>
<tr>
<td>Parking Management</td>
<td>Emergency Traffic Plans</td>
</tr>
<tr>
<td>Transit-Friendly Design</td>
<td>Land Use Policies/Regulations</td>
</tr>
<tr>
<td>Commercial Vehicle Improvements</td>
<td>Agency Management</td>
</tr>
<tr>
<td>Transportation Management</td>
<td>Intelligent Transportation Systems</td>
</tr>
</tbody>
</table>

**Congestion Mitigation Handbook**

To assist in the analysis of alternative strategies, a Congestion Mitigation Handbook has been developed as a resource for project planners. It provides guidelines on identifying and analyzing strategies and on conducting post-implementation evaluations. The handbook includes an overview of alternative strategies, detailed descriptions of individual strategies, a description of the TDR program, and a discussion of approaches for evaluating strategies after they are implemented.

**Corridor Screening Studies**

As resources allow, CATS will lead selected corridor screening studies. The purpose of these studies will be to identify those congestion mitigation strategies that appear most reasonable for the particular location. While these studies will be advisory in nature, project planners may use the results to define alternatives that will be examined in greater detail as part of subsequent studies. Corridors to be examined will be selected based upon a combination of performance monitoring results and knowledge derived from other studies.

Project Selection. The project selection or programming process builds upon numerous activities including long range transportation planning, ITS deployment planning, project generation, and program integration, review and approval and leads to the development of the region's Transportation Improvement Programs (TIP). To ensure that congestion management strategies are appropriately considered in the project selection process, congestion relief should remain a factor within this process and the implementation schedule, implementation responsibilities, and potential funding sources must be defined for each proposed congestion mitigation strategy.

The current programming process for northeastern Illinois, in large part, already incorporates these elements. The CMS will document these current efforts and enhance them through a systematic approach to the development and analysis of information.

**Effectiveness Evaluation.** The CMS regulations incorporate a "feedback loop" in the congestion management process. Evaluating the effectiveness of strategies after they have been implemented is necessary to determine if they achieved the desired result. To assist in this effort, a number of additional activities have been or will be implemented.

**CMS Monitoring Program**

The primary effectiveness evaluation element of the CMS will be the monitoring program. The information derived from this program will assist in determining whether significant projects or strategies resulted in a change in congestion.

**SRA Monitoring Program**

As part of the continuing implementation of the SRA system, a monitoring program is being designed. This program is intended to sample portions of the SRA system annually and will focus on measuring three specific items: the amount of traffic moved through the system, congestion and efficiency of movement, and safety. These will be examined for a corridor based upon the type of improvement implemented.
Criteria have been developed to identify when additional effectiveness evaluations beyond those provided by the monitoring program may be warranted. These criteria include current knowledge of benefits, expected frequency of future implementation, importance of knowing the benefits, and cost of evaluation. At the discretion of project sponsors, these criteria may be used to identify projects for which evaluation would be beneficial. Additionally, an annual determination will be made by CATS’ CMS Task Force of which transportation improvements, if any, should be evaluated beyond the monitoring process. The Evaluation Study Guidelines also identify tools, methods, and performance indicators that may be used to measure the impacts of implemented strategies.

**CMS Evaluation Studies**

As part of its CMS activities, CATS, in conjunction with project sponsors, will perform effectiveness evaluations for selected improvements. Such improvements will be of a larger scale and may be determined using the criteria established as part of the Evaluation Study Guidelines.

**Effectiveness Evaluation Library**

An inventory of federal, state, and local agency information regarding the benefits of various types of strategies will be maintained by CATS. This inventory will be made accessible to those considering implementing various strategies. It will serve as a regional clearinghouse of evaluation information.

**CMS and the Regional Transportation Planning Process**

Several of the activities identified as components of the CMS are currently being accomplished as part of the continuous, comprehensive and cooperative transportation planning process in northeastern Illinois. The CMS will enhance these activities by instituting a systematic approach to the development and analysis of information useful for the RTP, ITS deployment, and the TIP.

As shown in Figure 1, CMS activities will focus primarily on the relationship with the RTP and the TIP. Efforts such as data collection and deficiency analyses have always been conducted in support of the development of long-range planning decisions.
plans. One function of the CMS is to incorporate these actions and expand them into a systematic identification, screening and analysis of congested facilities and corridors. Results of these monitoring, deficiency and alternatives analyses will be used in two primary areas: first, as information to feed into the RRP update which is conducted on a three year cycle and second, as additional information to be used by various program owners for developing the annual element of the RRP.

The strategy consideration component of the CMS helps to make more informed decisions and provides for better analyses by offering guidance on analyzing strategies and by relating the results of effectiveness evaluations. These activities are central to the second direct function of the CMS: examining how TDR activities can enhance and extend the useful life of these projects that include the addition of traffic lanes. These facilities are screened to determine the appropriateness of the facility for conducting an analysis of TDR activity. Information from these analyses is provided to the program owners of the project. This activity of the CMS was an integral part of the Interim CMS for northeastern Illinois.

OTHER CONGESTION MANAGEMENT SYSTEM DOCUMENTS

The Congestion Management System for Northeastern Illinois Technical Supplement provides a detailed description of the CMS components and the legislative requirements of the CMS.

The Congestion Mitigation Handbook is a resource for project planners that provides guidelines on identifying and analyzing alternative strategies.

A ROLE FOR EVERYONE

The success of the CMS will require the support of everyone in the region. CATS has primary responsibility for administering the northeastern Illinois CMS; however, IDOT, local agencies, and the region's transit agencies also play important roles. As the metropolitan planning organization for northeastern Illinois, the CATS Policy Committee, as well as its implementing agencies, have long recognized that a key ingredient in a successful transportation planning effort is the participation of the public. Through the region's public involvement plan, which includes (but is not limited to) open meetings, public hearings, news letters, presentations by CATS staff and the participation of citizen groups on task forces, the public can make meaningful contributions to the transportation planning process. It will take all of these groups working together to make a successful CMS because it will take the efforts of everyone to help reduce congestion.

For additional information on the Congestion Management System, the Regional Transportation Plan, the Intelligent Transportation Systems deployment plan or the Transportation Improvement Program, please contact CATS' Communications Division at (312) 793-3460.