

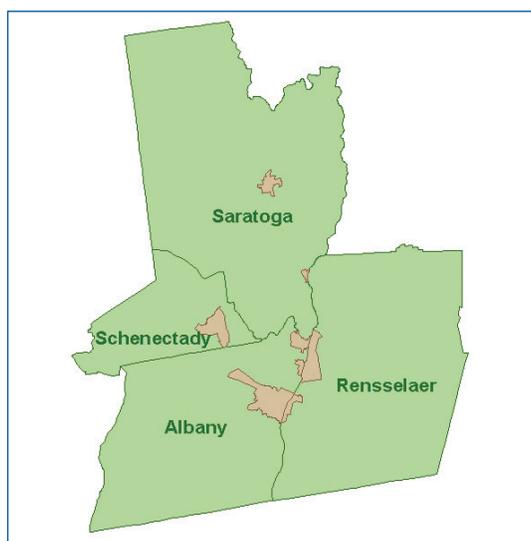
## Capital District Transportation Committee

December 2010



The Congestion Management Process (CMP) of the Capital District Transportation Committee (CDTC) is closely linked to, and directly draws on, the vision and principles in the *New Visions* metropolitan transportation plan (MTP). A central feature of the CMP is recognition that while reducing traffic congestion is important, it is not the preeminent goal of transportation planning in the region. Congestion reduction objectives must be balanced with multiple planning objectives. CDTC has found through public outreach, including surveys, that the public wants more multimodal options, more vibrant urban centers, and more livable communities. The *New Visions* plan calls for a strong livability agenda—land use planning, urban reinvestment, transportation choices, and community values. The region's focus on livability has placed strong emphasis on management and operations (M&O) strategies as a key approach for congestion management. M&O strategies are seen as supporting livability goals by minimizing construction of new pavement and addressing travel time reliability problems that travelers have identified as their greatest congestion concern.

### Capital District Transportation Commission



Source: CDTC.

### Background on CDTC

CDTC is the designated metropolitan planning organization (MPO) for the Albany-Schenectady-Troy metropolitan area of New York State. The region currently has a population of 800,000 and an urban development pattern with four central cities: Albany, Saratoga Springs, Schenectady, and Troy. Albany, the largest municipality, has about 95,000 residents, and its central business district, with about 40,000 employees, is the largest downtown employment center. There are several smaller city and suburban employment centers, and suburban residential development is dispersed, with the most substantial radial development to the north along I-87 into Saratoga County.

The CDTC Policy Board has representatives from four counties, eight cities, one town, the Capital District Transportation Authority (CDTA), New York State Department of Transportation (NYSDOT), Capital District Regional Planning Commission, New York State Thruway Authority, the Albany Port District Commission, the Albany County Airport Authority, and at-large members representing the area's towns and villages.

## CMP Process Model

CDTC's CMP is fully integrated into its metropolitan transportation planning process; in practice, development of the CMP is not easily differentiated from development of the MTP and Transportation Improvement Program (TIP). The CMP involves data collection and interpretation of system performance, which feeds MTP development and short-range programming. At the same time, activities conducted for the CMP flow out of the vision and principles established in the MTP.

CDTC's first Congestion Management System (CMS) was developed in the mid-1990s with the original *New Visions* plan. That plan emphasized providing a comprehensive transportation system, with modest increases in congestion balanced by improvements in transit, bicycle, and pedestrian access; overall reliability; and reduced social and environmental impacts. The CMS largely was kept in place over the next several updates to the MTP. However, the *New Visions 2030* plan of 2007 was a more substantial update, including adoption of a new CMP.

Since the CMP is so integrated in the overall planning process, it is somewhat difficult to describe a step-by-step CMP process. However, if it were broken down into steps, the key components might be described as follows:

1. Public Participation
2. Congestion Management Goals and Principles
3. Development of Performance Measures
4. Data Collection and Analysis
5. Planning, Programming, and Project Implementation

## Public Participation

The starting point for the CMP is public involvement, tied in with the MTP and drawing from corridor studies and other efforts. CDTC believes that what residents of the region want—as articulated in the regional vision and expressed through their involvement in corridor- and project-level studies—must help define the way congestion management is applied in the region.

While congestion is an important issue, surveys in the Capital District indicate the public views other issues as more important. For instance, an October 2004 survey found that 71 percent of residents are satisfied with the quality of life offered by their community, and only 39 percent experienced traffic congestion lasting more than 15 minutes over the previous 2 weeks. CDTC has consistently found through many surveys and public involvement activities that the public wants more bicycle, pedestrian, and other improvements, even if they come at the expense of congestion relief (no improvement compared to today's conditions). For instance, the CDTC Route 5 Corridor Study, which involved a survey of residents and business owners, posed the question "Would you be willing to accept traffic levels and congestion roughly as they are on Route 5 now if we could improve transit, walking, biking, landscaping, attractiveness, and safety?" Eighty-one percent of respondents said "yes." Many who answered "no" or "not sure" said they believed all the objectives in the question were important in addition to congestion relief, so a tradeoff would not be necessary.

## Congestion Management Goals and Principles

The next step is establishment of congestion management goals and principles. The CMP contains two goals developed by CDTC and agreed to by the MPO Policy Board:

- *Support growth in economic activity and maintain the quality of life in the Capital District by limiting the amount of "excess" delay encountered in the movement of people, goods, and services.*
- *Make contributions to the avoidance and mitigation of congestion on all modes by implementing demand management programs first, before performing capacity*

expansions. Reducing single-occupant vehicle travel can be accomplished by encouraging telecommuting and programs that reduce the need for travel; balancing travel demand by time of day; encouraging use of transit, ridesharing, pedestrian, and bicycle modes; improving operational efficiencies; and achieving complementary transportation and land use systems.

In addition, congestion management principles are included in CDTC's *New Visions* plan, and are designed to help guide selection of actions. Overall, the plan contains 31 principles that address improving system performance, managing congestion, protecting investments, developing the region's potential, linking transportation and land use, and planning for all modes. The congestion management principles were originally developed in coordination with NYSDOT and include:

- *Management of demand is preferable to accommodation of single-occupant vehicle demand growth.*
- *Cost-effective operational actions are preferable to physical highway capacity expansion.*
- *Land use management is critical to protection of the transportation system investment.*
- *Capital projects designed to provide significant physical highway capacity expansion are appropriate congestion management actions only under certain conditions.*
- *Significant physical highway capacity additions carried out in the context of major infrastructure renewal are appropriate only under certain conditions.*
- *Incident management is essential to effective congestion management.*
- *Corridor protection and official street mapping are necessary to preserve options.*

Three additional congestion management principles were added in the latest version of the plan, developed by CDTC and approved by the board:

- *Any major highway expansion considered by CDTC will include a management approach.*
- *In project development and design, other performance measures, such as pedestrian, bicycle, and transit access; community quality of life; and safety will be considered along with congestion measures.*
- *NYSDOT guidelines for roundabouts will be used for all CDTC Federal-aid projects that involve intersection improvements.*

In the *New Visions* plan, CDTC looked at alternative growth scenarios (status quo, concentrated growth, hyper-growth, and concentrated hyper-growth). The plan recommends a concentrated growth pattern because of the many benefits it would have for the region. The principles essentially support the region's commitment to investment in its urban centers, no matter how many growth pressures exist. CDTC also recognizes that achieving its goals requires cooperation among a wide range of stakeholders.

### *Development of Performance Measures*

CDTC has integrated all the *New Visions* performance measures into its CMP as a way to reaffirm public support for considering multiple objectives in planning and project development. CDTC noted that while congestion is an important issue, it does not trump all others, and this should be recognized in the CMP. Some congestion might not be bad—it is needed for transit to be effective, for instance—and trying to eliminate all congestion can be counterproductive for other goals.

The *New Visions* plan places a strong focus on livability, and this is reflected in the CMP's inclusion of performance measures addressing congestion and other issues, such as transit and bicycle accessibility, safety, air quality, and land use. CDTC believes there is public consensus that urban investment is good for the entire region, not just its cities. There also is recognition that focusing transportation investments disproportionately

on alleviating suburban traffic congestion can represent disinvestment in cities, given limited funding and the inability to widen roads in the urban core. Consequently, issues of how to address congestion are closely tied to equity issues.

CDTC uses the concept of “excess delay” as the primary measure of congestion in the CMP. This measure recognizes that the goal is not to reduce all delay or achieve free-flow speeds during all hours of the day. Excess delay is the amount of time spent at a given location that exceeds the amount of time that is generally considered acceptable. For automobile travel, excess delay is defined as the amount of time at an intersection or highway segment in which level of service (LOS) E or F exceeds the maximum LOS D time. In contrast to a measure such as “number of lane-miles at LOS E/F,” the measure of excess delay reflects not only the intensity of congestion but also the duration and number of people affected (measured in “person-hours”). The measure indicates that LOS E or F does not necessarily indicate a critical congestion problem.

During development of *New Visions 2030*, Working Group B (see text box) identified the importance of performance measures that address nonrecurring delay. This concept has become an important focus of performance related to the CMP. There is increasing recognition that the public is willing to live with some congestion as long as it is predictable, but that incident-based, weather-based, and other nonrecurring delays are the most disruptive to travelers.

Recognizing the importance of nonrecurring congestion, the “planning time index” was added as a performance measure to assess the predictability and reliability of highway travel time for expressways. The index gives a ratio of driving time on one of the slowest traffic days (based on the 95<sup>th</sup> percentile worst traffic speed) to driving at 55 miles per hour.

### *Data Collection and Analysis*

CDTC used its travel demand forecasting model, Systematic Travel Evaluation and Planning (STEP), to estimate excess delay and to identify Critical Congestion Corridors (CCCs). This was done based on STEP’s estimates of volumes and theoretical capacities.

### Involvement of Operations Staff In Development of the CMP

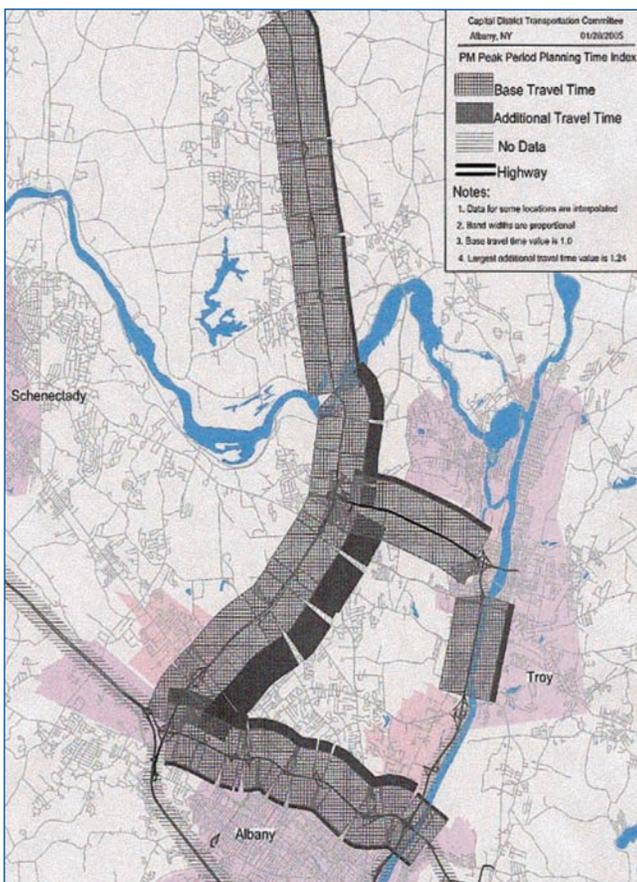
The involvement of operations staff has played a key role in the CDTC’s CMP, particularly in developing performance measures and data collection. In 1995, the Expressway Management Task Force was initiated and provided input to the original *New Visions* plan. That group later morphed into what is called “Working Group B,” which started in 2004 and had significant input on performance measures for the 2007 plan. The Regional Operations Committee was established after completion of the plan; it has met periodically to coordinate and discuss operations issues in the region.

To address nonrecurring delay, Working Group B gathered data from the Intelligent Transportation System (ITS) called MIST, Management Information System for Transportation. The dataset covered all of 2003 and was used to identify both recurring and nonrecurring delay on major expressways (I-87, I-90, I-787, and Alternative Route 7). Harvesting such data is very time consuming, so data collection is not conducted on an ongoing basis. However, the data were used to assess traffic delays as part of the 2007 CMP. The data analysis and planning time index helped confirm anecdotal information that I-87, called “the Northway,” was much worse than other freeways from a reliability perspective. As shown in figure 1, the planning time index for I-87 northbound in the PM peak was 1.66, compared to 1.20–1.37 on other highways.

While the ITS data have not been used on a regional scale since the 2007 CMP, they have been used in some circumstances for project and construction planning. For instance, on I-90 there was the question of how to handle construction—whether to close the road in one direction, on nights and weekends, and so on. Using modeling analysis completed by CDTC, NYSDOT was able to determine the best way to reconstruct the route while minimizing travel delay.

Some ongoing data collection occurs periodically, including intersection studies by CDTC and transit passenger counts by CDTA. However, CDTC does not develop congestion reports on a regular basis. It hopes to conduct floating car studies using the global positioning system (GPS) to gather more information on reliability. CDTC is also interested in conducting speed monitoring using truck fleets, particularly to address arterial reliability. In addition, transit buses have technology with potential for incident management and planning applications.

**Figure 1: PM Peak Period Planning Time Index in 2003**



Source: CDTC, *The Metropolitan Congestion Management Process*, 2007.

## **Planning, Programming, and Project Implementation**

The analysis of excess delay conducted in the CMP was also used to identify CCCs. The primary purpose in identifying CCCs is for use as a screening tool: resources will not be invested in adding capacity if the project is not in a CCC.

**Linkage Studies.** CDTC's linkage studies have become the primary focus of corridor and local-area planning. The Community and Transportation Linkage Planning Program is the cornerstone of CDTC's local planning assistance and public outreach efforts, and focuses on transportation, land use, and good site and community design as essential elements in achieving regional transportation system goals. More than 60 studies have been conducted to date. CDTC asks municipalities to put up a 25 percent match and agree to the New Vision's principles, and it hires a consultant to help address local transportation and land use planning issues. These studies often involve in-depth analysis of a given corridor, addressing issues such as traffic, safety, pedestrian and bicycle access, urban revitalization and redevelopment, and transit-supportive built environments. Visualization techniques are often used to help the public understand alternative options for a corridor or roadway (see figure 2).

**Figure 2: Visualization Example – Brevator Street (Harriman Campus, University of Albany Transportation Study), Existing and Concept**



Source: CDTC.

**Operations Efforts.** The CMP and activities of the various iterations of the Regional Operations Committee have been successful in putting more focus on M&O strategies. The Transportation Management Center (TMC) has been a great success story—co-locating it with the State police has helped both to work together. In addition, transit signal priority (TSP) is receiving a lot of interest. A recent study of 30–40 signals found that 17 could get TSP without adversely affecting traffic on other roadways. One challenge is coordinating with the multiple owners of the signals, which are in different jurisdictions.

**TIP Process.** The TIP involves an open solicitation for any municipality. The selection process is very competitive—CDTC recently received applications seeking a total of \$600 million, for which only \$100 million was available. The evaluation process includes quantitative measures, such as forecasts of excess delay reductions, emission reductions, safety impacts, and other factors. The performance measures are not used in a deterministic way to rank proposals but as planning guidelines to set priorities. Overall funding is broken into different segments for different kinds of projects, such as bicycle/pedestrian projects and ITS projects, based on regional priorities. Within each grouping, the evaluation process seeks to determine the best projects for funding, with a deliberate effort to ensure program balance by geographic area. In the ITS category, funding is dedicated for the TMC. When enough financial resources become available, CDTC and regional stakeholders would like to fund a program to upgrade, coordinate, and maintain signal systems.

**Project Development.** CDTC works with NYSDOT and other stakeholders to help ensure project design is consistent with the description used when the project was evaluated for TIP inclusion. Although efforts are moving forward, the project development and design process has traditionally been directed by formal engineering standards and practices, and there have been gaps in full implementation of the CMP at the project level.

The design process generally encourages designing to automobile LOS D or better in the PM peak hour for the 20-year design year (or in the case of bridges, the 30-year design year). This puts an inordinate priority on auto peak-hour LOS. In many cases it causes expensive capacity to be added in anticipation of future potential congestion, even though the existing LOS is acceptable. When this happens, future potential problems are inadvertently given priority for scarce funding over existing more severe problems, and auto LOS is given priority over bicycle, pedestrian, and transit access.

**Local Decision Making.** Although there is remarkable consensus at the regional level that smart growth is a good idea, it sometimes is difficult to apply this at the community level, where each municipality is looking to increase its tax base and home rule applies to land use. CDTC believes there continues to be a pressing need for education and technical support for local planning, and the linkage studies are an important ingredient in its approach. Land use planning is considered in the context of the CMP and congestion-related decisions.

## Lessons Learned and Challenges

A key lesson is that the CMP can be developed in a practical way to balance congestion within the context of multiple regional goals. CDTC has developed a CMP that considers congestion in the context of its regional vision to create more walkable communities and vibrant urban areas, and preserve open space. Key innovative practices from the CMP include:

- **The important role of public involvement**—Rather than considering the CMP as simply a data collection and analysis process, CDTC begins with an understanding of what most concerns the public. What the public values most in its communities should influence how congestion is managed, and the CMP performance measures and analysis should support the regional vision and goals. CDTC has used surveys and visualization techniques, such as comparative images of alternative investments and design treatments, to help understand what the public wants, particularly at the corridor and project levels.

- **A focus on livability and consideration of multimodal performance measures**—CDTC recognizes there must be a balance between various goals, and engineering considerations such as automobile LOS should not be the primary factor in investment decisions. Transit, bicycle, and pedestrian needs are important considerations in the CMP, with emphasis placed on managing travel demand, operating the system efficiently, and fostering smart growth rather than on accommodating single-occupant vehicle demand growth. CDTC believes the region's commitment to its urban centers helps create more equitable transportation investments.
- **A focus on nonrecurring congestion and predictability of delay**—Because system reliability and predictability is more important to the public than recurring congestion delay, CDTC is focusing attention on these issues in setting performance measures for the CMP. CDTC also sees strong potential for the 511 system, ITS, and new technologies, such as GPS, to provide a great deal of data to better understand reliability issues. M&O strategies are viewed as a very important component of the response to congestion because they address the most troubling form of congestion, nonrecurrent delay.

While CDTC has a very innovative CMP approach, it faces several challenges in fully implementing its desired vision. First, the overall funding picture is discouraging, with too few resources to address all the needs. Limited funding means that many desired programs and projects cannot be implemented at this time. In particular, lack of funding for M&O is a constraint. Staff involved in the Regional Operations Committee feel that restricting funding to no more than 3 years for "operations" projects, as mandated by the Congestion Mitigation and Air Quality Improvement (CMAQ) program, hinders ongoing support for M&O strategies.

While CDTC incorporates extensive use of performance measures, data collection could be more systematic and additional efforts could be taken to evaluate the effectiveness of implemented strategies. Project and program evaluation is often challenging, as many different factors, such as gas prices and the economy, can influence traffic congestion, and it might be difficult to determine the effectiveness of individual strategies.

Finally, while the CMP is fully integrated into the planning and programming process, CDTC noted that its principles sometimes are not fully implemented at the project level, and there is a need to better link planning with the National Environmental Policy Act (NEPA) process. Specifically, the project design process is often separated from the planning process and the CMP, and sometimes the design process does not incorporate the tradeoffs among multiple performance measures that the CMP calls for. CDTC would like to see "pavement" projects be more holistic and more consistently include bike lanes, sidewalks, access management, traffic calming, streetscaping, and other elements that address the multiple performance measures noted in the CMP. Project designers and consultants might need further education on the regional vision and CMP measures.