SECTION I - OVERVIEW OF THE DALLAS-FORT WORTH CONGESTION MANAGEMENT PROCESS (CMP)

TRAFFIC CONGESTION: A GROWING PROBLEM

With the Dallas-Fort Worth (DFW) urban area as its center, the North Central Texas region plays an important role in the State of Texas, as well as the entire southwestern United States. The region provides critical air and ground transportation hubs for the movement of people and goods throughout the United States and internationally. Locally, these transportation systems support many high technology manufacturers and telecommunications firms, large retail and wholesale distribution centers, and a growing convention and tourism industry.

Nearly six million people reside in the North Central Texas Metropolitan Planning Area, and population is expected to increase by 70 percent over the next 30 years. North Central Texas Council of Governments (NCTCOG) 2030 Demographic Forecast estimates a 2030 population over 8.5 million persons supporting nearly five million jobs. These projections represent 30-year increases (from base year 2000) of 3.5 million residents, 1.3 million households, and 2.1 million jobs. The rate of growth projected through the three decades is at a magnitude never before experienced in the DFW Metropolitan Area.[1]

Urban activity in this area is supported by various ground transportation systems, including:

- 750 centerline miles of freeways
- 62 centerline miles of toll roads
- 50 miles of high occupancy vehicle lanes
- 1,754 miles of regional arterials
- 45 miles of light rail transit
- 35 miles of commuter rail transit

These systems will help alleviate a growing traffic congestion problem in the Metroplex. The rapid growth of the Dallas-Fort Worth region in the past decade has led to increasing transportation problems. A favorable business environment, tax advantages, and the availability of developable land continue to attract many businesses to the region. While growth has many benefits, the recent rate of growth has so overloaded the transportation system that available financial resources to improve transportation have not kept pace. The effects are now evident in increased traffic congestion and delay, and substandard air quality.

CONGESTION MANAGEMENT PROCESS: A MANAGEMENT SOLUTION

The Congestion Management Process (CMP) seeks a "management" solution to a growing traffic problem by targeting resources to operational management and travel demand reduction strategies. Although major capital investments are needed to meet the growing travel demand, the CMP also develops lower cost strategies that complement major capital recommendations. The result is a more efficient and effective transportation system, increased mobility, and safer travel.

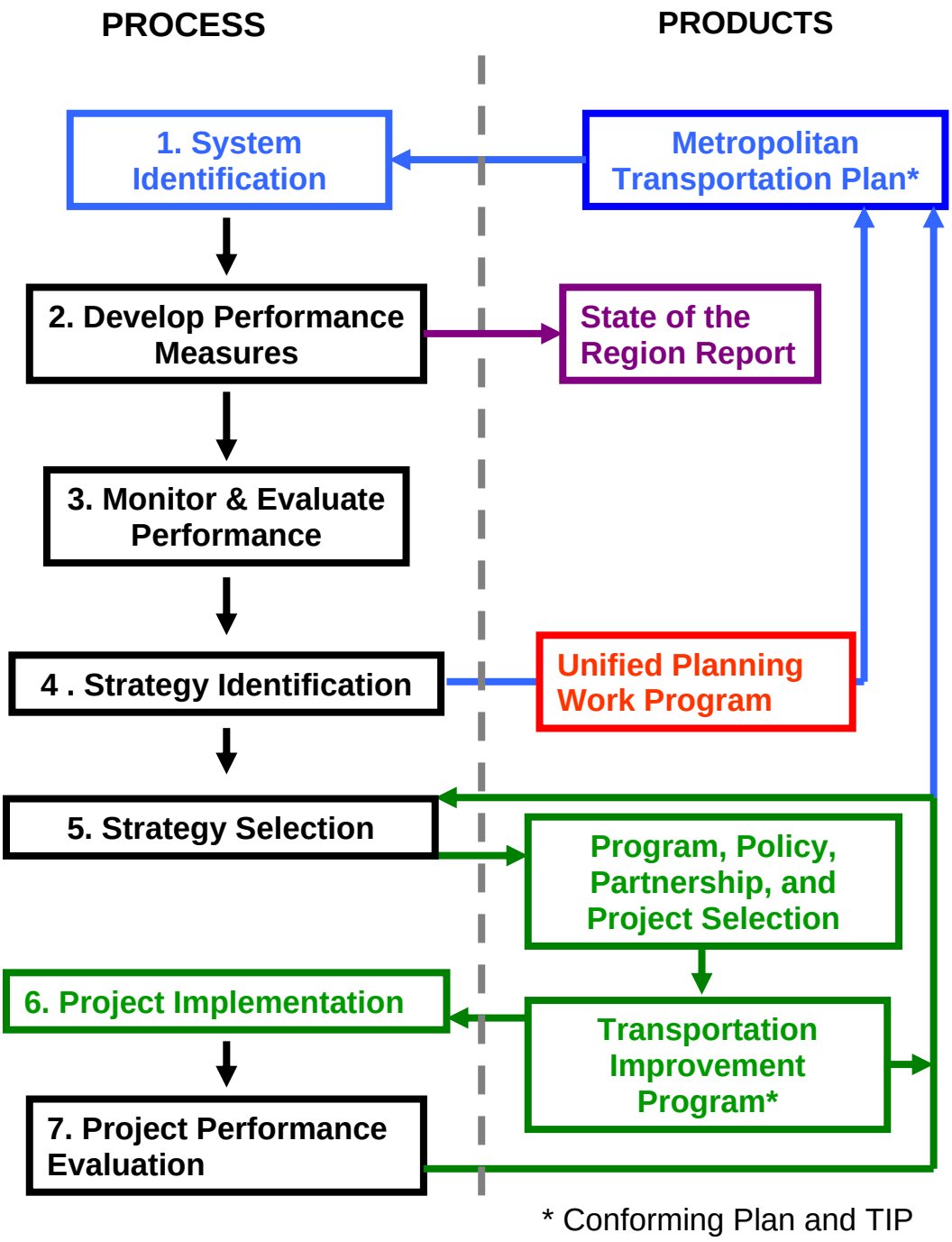
Integrating a management approach into the provision of transportation services and infrastructure is a challenge. Traditional modeling and decision-making systems are biased to the evaluation and implementation of capacity improvements. Tempering these systems with a congestion management approach not only offers opportunities for stretching transportation resources, it is at the heart of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) metropolitan planning legislation.

As shown in Exhibit I-1, the CMP is fully integrated into the region's transportation planning and programming processes. The diagram below illustrates the seven components to the CMP and the role of the conforming Metropolitan Transportation Plan (MTP) and Transportation

Improvement Program (TIP), the Unified Planning Work Program, and the State of the Region Report in this process.

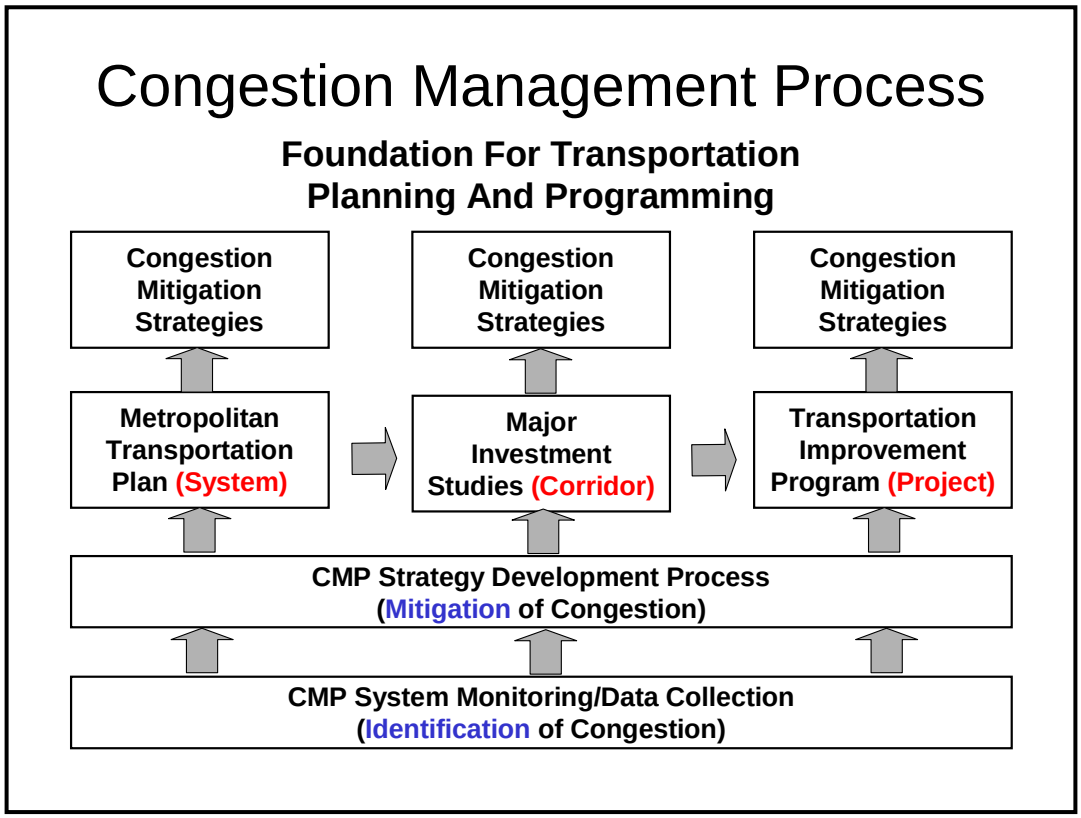
EXHIBIT I-1

CONGESTION MANAGEMENT PROCESS AND PRODUCTS



To complement the diagram above, Exhibit I-2 identifies how the CMP is integrated into various planning functions. With the identification and mitigation of current and future traffic congestion as the foundation of planning and programming decision making, strategies for congestion mitigation are developed on the system level (in the MTP), on the corridor level (in major investment studies), and on the project level (in the TIP).

EXHIBIT I-2



The need to operate the current transportation system as efficiently as possible is a top priority, because of the air quality and financial challenges faced by the DFW Metropolitan Area. The CMP comprises three types of management approaches proven to be cost-effective tools in addressing these challenges. Transportation System Management (TSM), Travel Demand

Management (TDM), and Intelligent Transportation Systems (ITS) are very cost-effective, quick-implementation projects, policies, and programs that encourage the use of alternate travel modes and improve the efficiency of the transportation system.

The TSM approach to congestion mitigation seeks to identify improvements to new and existing facilities of an operational nature. These techniques are designed to improve traffic flow and safety through better management and operation of existing transportation facilities. TSM strategies that are adopted in the MTP include intersection improvements, traffic signal enhancements, and removal of freeway and arterial bottlenecks. Appendix A highlights the Dallas-Fort Worth TSM strategies.

TDM strategies address the demand side of travel behavior by reducing the number of vehicles that travel on roadways through the promotion of alternatives to driving alone. TDM strategies adopted as part of the MTP include employer trip reduction programs, vanpool programs, park-and-ride facility development, and the creation of the transportation management association. Appendix B highlights the Dallas-Fort Worth TDM strategies.

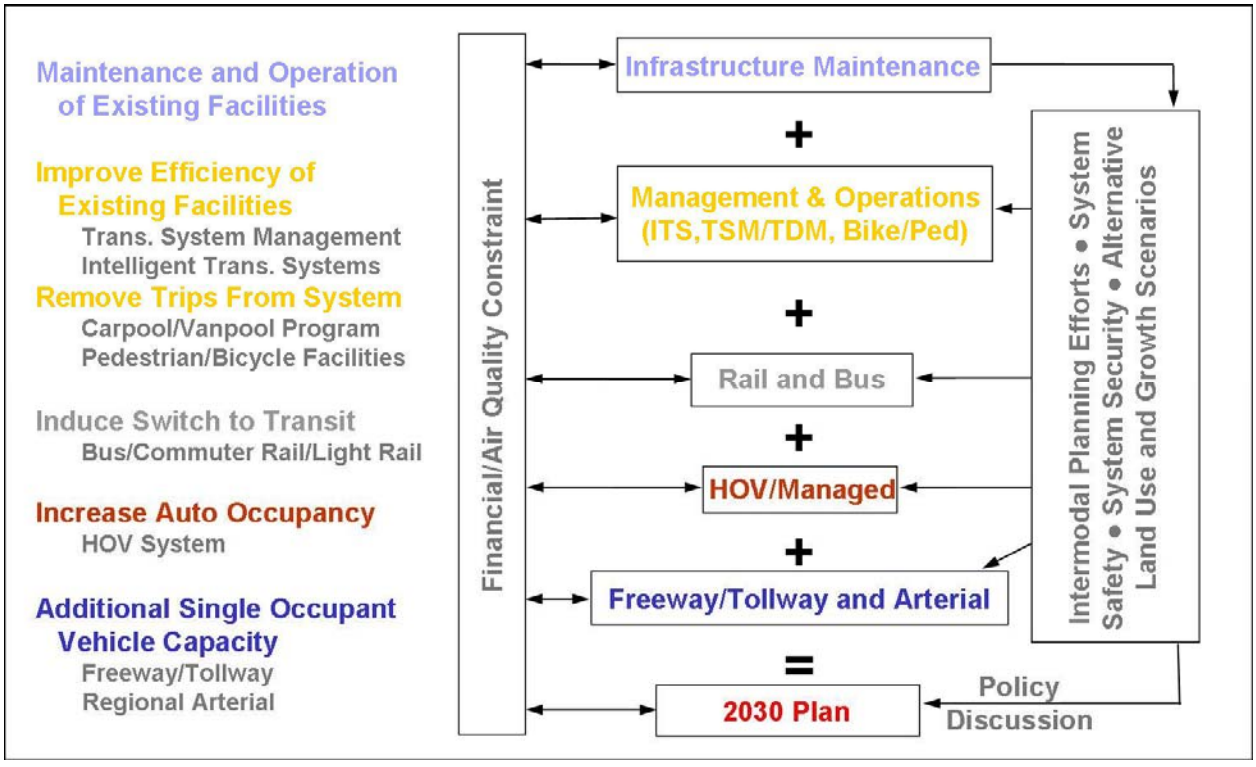
The planning, programming, and implementation of ITS programs and projects are additional tools recommended for this region. ITS utilizes closed circuit television, lane control signals, dynamic message signs, ramp meters, mobility assistance patrols, and traffic flow detectors to identify and manage the conditions of the transportation system. The transit authorities in the region – Dallas Area Rapid Transit (DART) and Fort Worth Transportation Authority (the T) – are developing vehicle business systems including computer automated dispatch and automated vehicle locator systems. The roadway and transit ITS systems are being designed to provide operators and travelers with real-time information on system performance in an effort to make systems safer, more reliable, and to provide travel alternatives to residents and commuters. The ITS strategies are highlighted in Appendix C.

Integrating The CMP Into The Metropolitan Transportation Plan

The Mobility 2030: The Metropolitan Transportation Plan was developed amid growing concerns regarding the air quality of the DFW Metropolitan Area and the lack of funds for needed transportation projects and programs. In the plan development process, available funds are allocated first to the lower cost emissions-reducing projects and programs, and then to the more traditional major capital projects, if they can be afforded (from both a financial and air quality standpoint). A diagram outlining the plan development process is shown in Exhibit I-3.

EXHIBIT 1-3

PLAN DEVELOPMENT PROCESS



The process began by assuming that the current infrastructure and other transportation strategies were in place. Funding necessary to maintain and operate the current transportation system was then allocated. Next, an assessment of the 2030 travel demand was done to identify future congested locations and to identify transportation system deficiencies. The first

priority was to squeeze as much efficiency out of the current transportation system as possible and to eliminate as many trips as possible from peak travel times. Congestion mitigation strategies were developed to increase transportation system efficiency through transportation systems management and to reduce drive-alone travel through travel demand management, including bicycle and pedestrian strategies. With these strategies assumed, alternative rail systems were developed in an effort to reduce automobile travel. If trips could not be eliminated altogether, a mode change to transit was modeled. Following the identification of a recommended rail system, HOV and managed facilities were evaluated as a strategy to increase auto occupancy of the remaining trips. Finally, to accommodate the remaining demand, single-occupant vehicle capacity was evaluated in congested corridors. Throughout the development of each of these components, air quality and financial impacts were evaluated to ensure that financial feasibility and air quality conformity requirements could be met. In addition, each component was also reviewed for sustainable development and intermodal opportunities so that the recommendations minimized community impacts and accommodated freight movement.

Surface transportation projects, programs, and policies were developed that aggressively target traffic congestion and improve air quality for the DFW Metropolitan Area in a cost-effective manner. The recommendations reflect a balanced transportation system, both in terms of providing multimodal options and financial constraint. Exhibit I-4 shows the cost of each plan component, demonstrating a continued investment in traditional capital improvements, while prioritizing funds in more non-traditional modes, as well as a system-oriented approach to management and operations.

EXHIBIT I-4

METROPOLITAN TRANSPORTATION PLAN COST SUMMARY

Metropolitan Transportation System Components	Cost in 2006 Dollars (Billions)
Transit Operation and Maintenance	10.6
Roadway Operation and Maintenance	10.7
Congestion Mitigation Strategies	2.1
Bicycle and Pedestrian Facilities, Transportation Enhancements	1.1
Rail and Bus Transit System	11.0
HOV and Managed Facilities	3.3
Freeway and Toll Road System	26.5
Regional Arterial and Local Thoroughfare System	5.7
Total	**$71.0**

Congestion mitigation is an integral element of the Metropolitan Transportation Plan. It serves as a guide for implementing both near-term and long-range regional transportation improvements. The CMP identifies where congestion occurs or is expected, evaluates strategies to mitigate congestion, and develops plans for implementation of the most cost-effective strategies. While CMP strategies will be implemented across the entire area, the congested area has been targeted for more intensive data collection and monitoring efforts as part of the ongoing congestion management process.

The performance of the current and future transportation system was measured in conjunction with the plan development process. A variety of quantifiable system performance measures were used to identify the extent and duration of traffic congestion. Candidate strategies were assessed for their effectiveness and feasibility of implementation in the region. A number of regional congestion mitigation strategies were recommended for implementation. These were relatively low-cost measures designed to manage the transportation system and reduce travel demand.

This program includes operational management and travel demand reduction strategies anticipated to be the most cost-effective for this region. Total program cost for the congestion mitigation element of the plan is approximately $2.1 billion. This is in addition to the high occupancy vehicle and managed lanes system, rail and bus transit, and bicycle/pedestrian recommendations, which together total $15.4 billion.

The adopted congestion mitigation strategies include traffic signal and intersection improvements aimed at reducing delay on arterial streets. Freeway bottleneck removal combined with deployment of incident detection and response systems, including motorist assistance and accident clearance, are proposed to maintain traffic flow on the controlled-access highway system. TDM strategies such as employer trip reduction programs, park-and-ride facilities, and vanpool programs are also included.

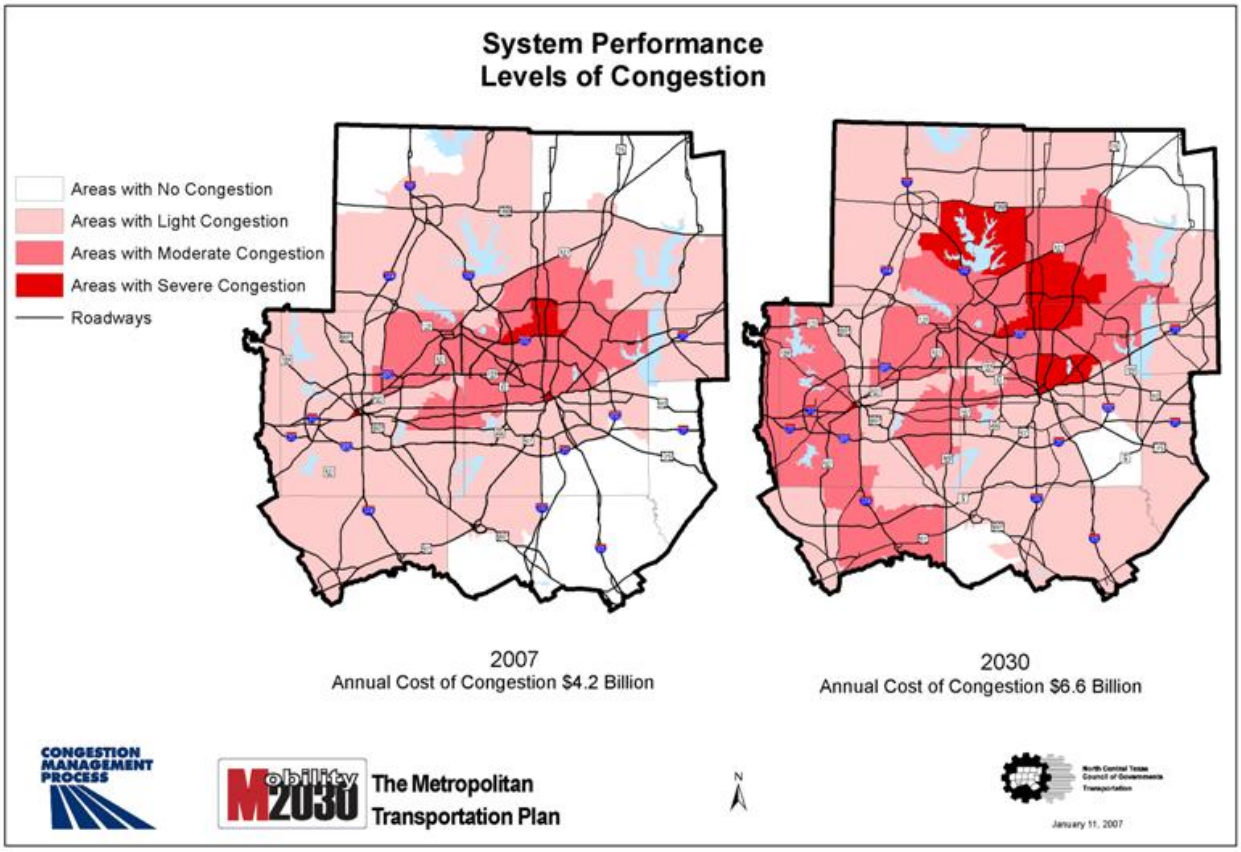
System Performance

A transportation system's performance can be measured in several ways, especially when dealing with a multimodal transportation system. It is often measured in terms of how successful the system is in reducing roadway traffic congestion. If multimodal options, trip reduction programs, system management projects, and other travel policies are effective, the result will be reflected through reduced congestion on the roadway system. However, demographic growth may increase faster than transportation system capacity can be provided, either due to implementation issues or financial constraint.

In 2007, the daily vehicle miles of travel in the region were 144 million. Regionwide, commuters have experienced a 35 percent increase in travel time due to congestion, resulting in $4.2 billion in lost productivity due to traffic congestion annually. Travel and congestion are not uniform

throughout the region as illustrated in Exhibit 1-5 representing peak hour congestion levels in 2007 and 2030 with plan recommendations in place.

EXHIBIT 1-5



If the projects, programs, and policies contained in the Mobility 2030: The Metropolitan Transportation Plan are implemented, travel time due to congestion is expected to increase by 36 percent with an annual congestion cost of $6.6 billion. Severe congestion will spread to include southeast Denton County and additional portions of north Dallas and south Collin Counties. Financial, environmental, and social constraints will make it very difficult to accommodate the increased demand for travel resulting from the regional growth. If we are to meaningfully reduce congestion levels, we must continue to pursue additional congestion

mitigation strategies aimed at reducing drive-alone travel and making the transportation system more efficient.

The implementation of congestion mitigation strategies continues to involve the public sector, private sector, and public/private partnerships. Transportation policies need to be developed to strengthen land use/transportation decision-making processes and to guide investment toward cost-effective solutions. The Mobility 2030: The Metropolitan Transportation Plan emphasizes that we cannot afford to build our way out of our traffic congestion problem. While the construction of new facilities will take place, we must also find effective and practical solutions to address the air quality and traffic congestion challenges that confront us.

Integrating the CMP Into the Corridor Study and NEPA Process

Federal law prohibits single-occupant vehicle (SOV) capacity from being added in transportation management areas (urbanized areas with a population greater than 200,000) which are also nonattainment areas for ozone, unless the recommendation is part of the regional CMP. The CMP focuses on balancing additional capacity with congestion management strategies to complement each other in a corridor analysis. The result may be that a given corridor may not include all of the capacity that would be required to eliminate all congestion at all times of day, but may provide enough physical capacity to eliminate much of the congestion in the off-peak periods and shoulders of the peak period, but will rely on identified congestion management strategies to improve traffic flow in the peak periods. This approach allows for a series of scaled-back projects that may be proposed across the region rather than concentrating resources in a few heavily congested areas and providing no improvements in other areas.

Since these recommendations are the result of the system planning process which is aimed at maximizing system-level performance and financial issues, the result in each corridor must be

refined to reflect the specific issues associated with the corridor. This refinement of the MTP and CMP is the purpose of corridor studies and NEPA. The corridor study refines the recommendations identified in the MTP while the NEPA process evaluates the environmental and social impacts of the proposed corridor recommendations. Often the corridor study and NEPA evaluation are performed concurrently. If the recommendations of the corridor/NEPA studies are different than those of the MTP or CMP, including the financial placeholder assumption, the MTP and CMP must be updated to reflect the recommendations. Since the MTP including the CMP component is financially constrained, any change in the financial assumption for the corridor will have impacts for the entire MTP and should be thoroughly evaluated.

Relationship of the CMP with Corridor/NEPA Studies

As the Dallas-Fort Worth region seeks to integrate a management philosophy into all aspects of transportation planning and programming, it is intended that congestion management strategies be developed as part of all corridor studies and subsequently included as part of the NEPA evaluation. NCTCOG staff provides guidance and support to all corridor study lead agencies, as they seek to incorporate operational management and travel demand reduction strategies on proposed facilities. The evaluation of all reasonable congestion mitigation strategies is viewed as essential to progressive transportation planning in this region.

The CMP will have a role in all corridor studies conducted in the region. The CMP will conduct an analysis of expected benefits and costs for all TSM, TDM, and ITS strategies to be considered in these corridors. This analysis will be done on an as-needed basis and will become part of the corridor study and subsequent NEPA documentation. In this way, the regional strategies identified in the MTP will be applied on a corridor level. Any additional congestion mitigation strategies identified will then be evaluated for their application on the

corridor or sub-area level and, pending results of the corridor analyses, will be considered for inclusion in the regional Metropolitan Transportation Plan.

As portrayed in Exhibit I-6, the development of CMP strategies in corridor studies is conducted by first evaluating the effects of the adopted regional congestion mitigation strategies in the corridor. This is done by:

1. Identifying the committed TSM, TDM, and ITS strategies from the TIP, the MTP, and local government bond programs;

2. Quantifying the effects of the committed TDM strategies with regional travel model trip table adjustments; and

3. Quantifying the effects of the committed TSM and ITS strategies with regional travel model network speed and capacity adjustments. This CMP scenario becomes the baseline for all the MIS alternatives.

Next, using this CMP baseline, a TSM/TDM/ITS-Only Alternative is developed which attempts to accommodate travel demand in the corridor without the major transportation investment. This is done using the following steps:

1. Conduct an inventory of the corridor's transportation systems and facilities;

2. Assess current and future corridor conditions;

3. Identify transportation deficiencies and problems in the corridor;

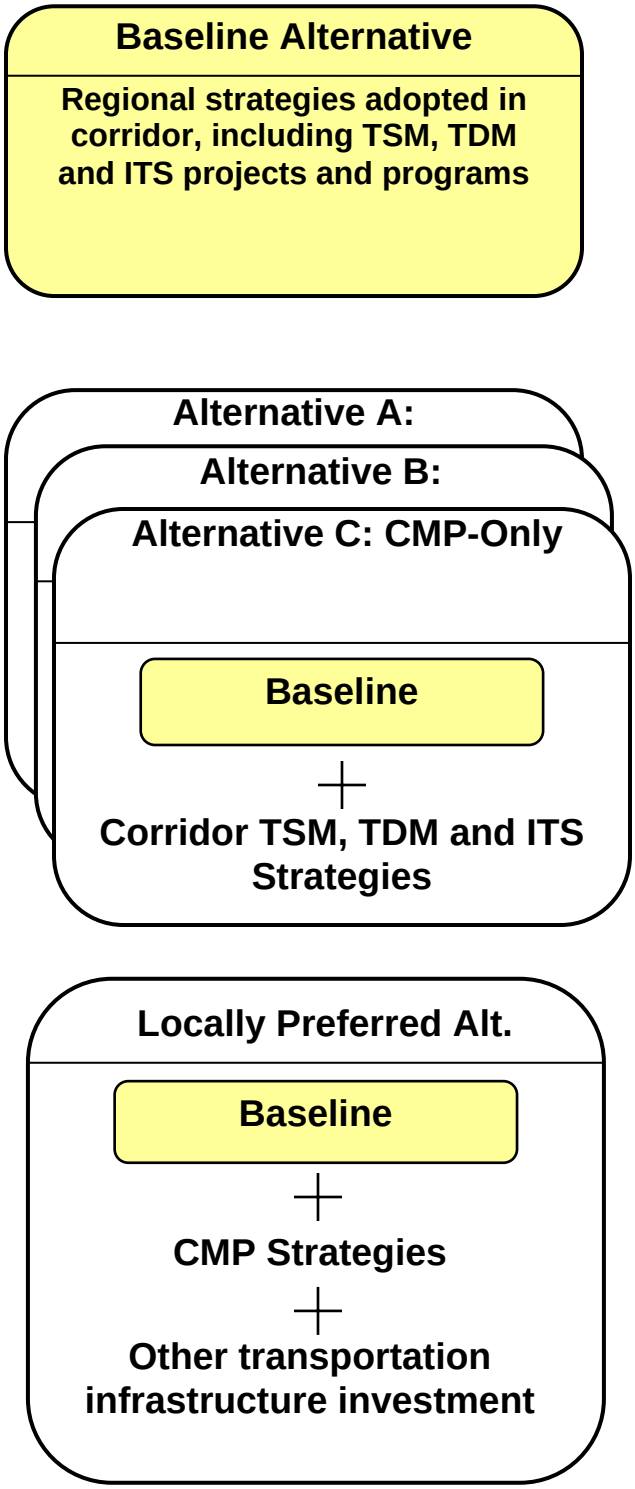
4. Identify strategies which can be implemented directly by individual agencies without needing evaluation;

5. Identify corridor-level TSM, TDM, and ITS strategies which address the problems and deficiencies in the sub-area, and the specific actions which support those strategies; and

6. Conduct an evaluation of the actions to assess their impacts in the corridor, documenting the extent to which these actions can alleviate travel demand in the corridor.

EXHIBIT I-6

CMP STRATEGY DEVELOPMENT IN MAJOR INVESTMENT STUDY CORRIDORS



Evaluate the effects of the adopted regional Congestion Management Process strategies in the corridor. This scenario becomes the Baseline for the MIS alternatives.

Using the Baseline, develop a TSM/TDM/ITS-only alternative to accommodate travel demand in the corridor without the major transportation investment.

If a CMP-only alternative cannot meet all travel demand needs, develop congestion mitigation (TSM, TDM and ITS) strategies to complement the locally preferred major transportation alternative. These are inventoried in the regional CMP, and monitored for staged implementation through the TIP.

If the CMP only alternative cannot satisfactorily address the congestion issues, additional capacity alternatives are evaluated along with appropriate CMP strategies which compliment the capital investment. This is done through the following tasks:

1. Identify problems and deficiencies in the corridor that are unique to the locally preferred alternative;
2. Review strategies for their compatibility with the locally preferred alternative and identify opportunities for staged implementation;
3. Identify TSM, TDM, and ITS actions which address the problems and deficiencies in the corridor, and enhance the operation of the facility;
4. Conduct an evaluation of the locally preferred alternative (which includes the CMP complement);
5. Recommend a program of TSM, TDM, and ITS strategies that can be incorporated into the facility and in the corridor. Identify implementation responsibilities and outline an implementation schedule;
6. Incorporate recommended CMP strategies into the NEPA evaluation and commit to them as part of the corridor development planning.

Using the strategies described above, the following questions are addressed:

- What are the effects of TSM, TDM, and ITS strategies in the corridor?
- How much travel demand can be accommodated by TSM, TDM, and ITS strategies?
- Is the major transportation investment really needed? Can it be scaled down?
- What is the most appropriate mix of transportation infrastructure and management strategies for this corridor?

Corridor/NEPA Study Recommendations

As the Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth region, NCTCOG is involved in several ongoing corridor/NEPA studies. These studies represent very different transportation challenges in the region and are varying in scope. Once the lead agency has completed a draft corridor/NEPA study, the recommendations must be endorsed by the lead

agency. Following the lead agency endorsement, NCTCOG's Regional Transportation Council (RTC) must endorse the recommendations, including the CMP strategies. The recommendations of the corridor/NEPA study must be the same as the recommendations in the MTP for the subject corridor. If differences exist and the RTC endorses the results of the study, the MTP is modified to reflect the results.

The operational management and travel demand reduction strategies identified in a corridor/NEPA study are seen as commitments being made by the DFW region at two levels: project-level and program-level implementation. In February 1998, the RTC passed resolution number R98-01 (Appendix D), which requires that all major investment studies (now referred to as corridor/NEPA studies) include an evaluation of operational management and travel demand reduction solutions to congestion and air quality concerns. The resolution also required that an inventory of all commitments made in environmental documents be created and used to monitor the timely implementation of these commitments. Program-level commitments are inventoried in the regional CMP. They are included in the financially constrained MTP and future resources are earmarked for their implementation. The CMP also carries an inventory of all corridor/NEPA study commitments, detailing the type of strategy, implementation responsibilities and schedules, and expected costs. At the project implementation level, these projects are monitored so they can be added to the regional TIP at the appropriate time with respect to the single-occupancy vehicle facility implementation.

CMP strategy development is critical to the successful integration of congestion management into the Corridor Study process. However, traditional evaluation tools and decision-making systems, geared to supporting major capital investment decisions, are perhaps relied upon too heavily to make decisions on the appropriate level of operational management and travel demand reduction strategies. Additionally, the need for developing management strategies as

part of a Corridor/NEPA Study is not clearly understood by some individuals who may serve on MIS technical and policy groups. For these reasons, it is imperative that the MPO play an active role in educating strategy development committees on the need for an open debate of all reasonable congestion mitigation strategies.

Integrating The CMP Into The Transportation Improvement Program Process

The MTP is both a strategic planning document and a detailed, long-range plan for future investment in the DFW region. It identifies and prioritizes projects and programs designed to enhance the roadway network, transit services, and goods movement through the year 2030. The long-range plan is constrained by available revenues to fund the maintenance, operation, and construction of the transportation system and by vehicle emissions budgets established to attain clean-air standards. Candidate MTP projects have been identified from city, county, state, and transit agency submittals. Additional projects have been added to the list based upon needs identified by the MPO.

In order to make sound programming decisions and to ensure that selected projects conform to air quality and financial planning mandates, it is necessary to evaluate programs and projects proposed for inclusion in the TIP. This evaluation process is described in the following paragraphs.

Regionally And Non-Regionally Significant Added Capacity Projects

The Regional Arterial System network is based on NCTCOG's Regional Thoroughfare Plan (RTP). The RTP documents the comprehensive planning endeavor undertaken to establish a thoroughfare network that identifies the arterial roadway facilities having regional travel significance. The RTP attempts to standardize, in general format, how roadways are classified due to the wide variation in how cities distinguish roadways. The arterial designation used in

the RTP is intended to provide some level of regional consistency, yet be broad enough to allow local flexibility. The RTP identifies two arterial categories: "regionally significant arterials" and "non-regionally significant arterials." Regionally significant arterials can range from urban expressways to principal arterials. The definition of these two designations intentionally overlaps to denote flexibility and acknowledgement that each roadway has its own unique characteristics. The MPO will perform Single Occupancy Vehicle (SOV) analyses on all federal and state-assisted added-capacity projects on regionally and non-regionally significant roadways.

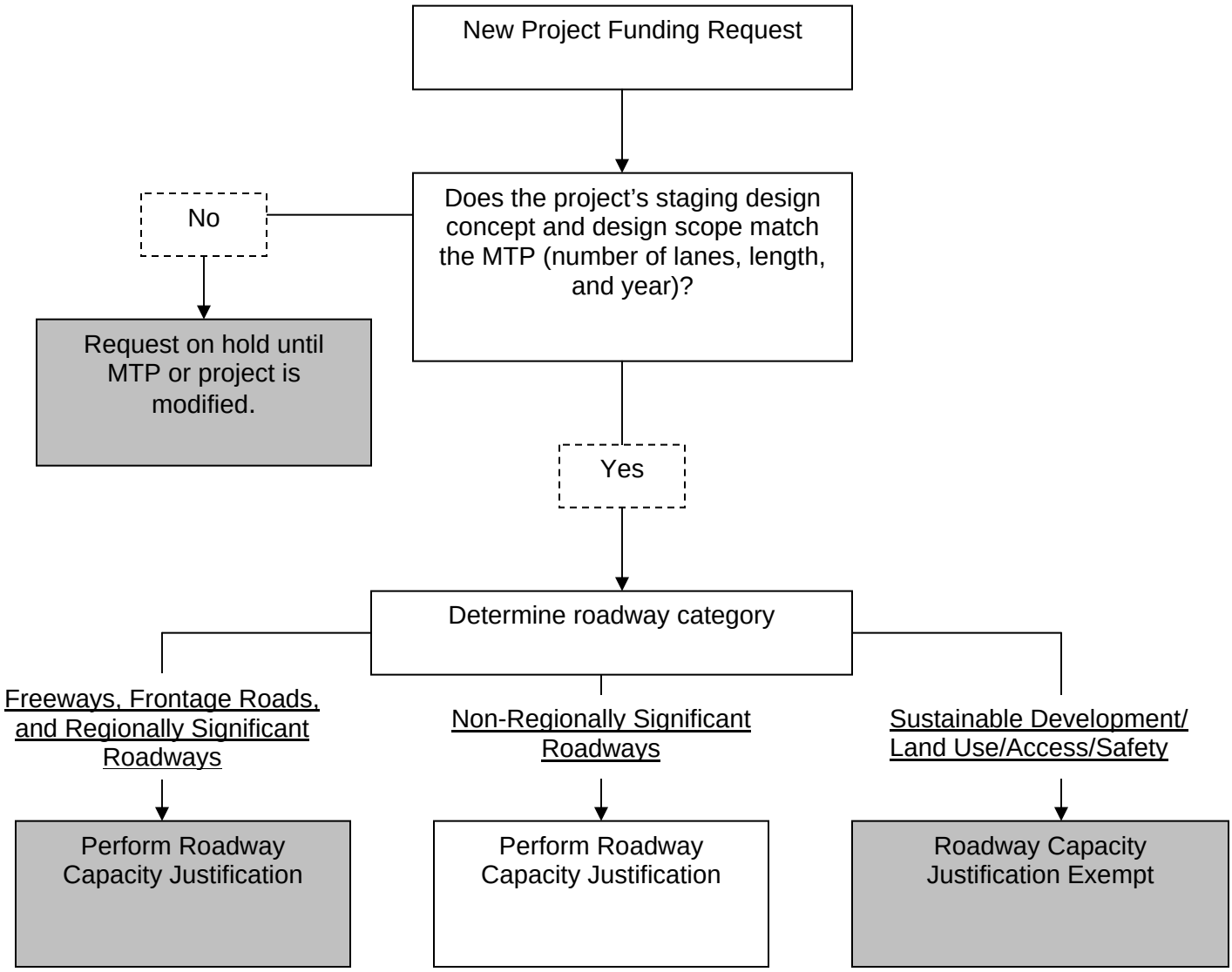
"SOV Analysis" Exempt Projects

There are projects in Mobility 2030: The Metropolitan Transportation Plan that are exempt from congestion mitigation analysis. Projects that are being proposed to solve a safety problem, such as grade-separations, are exempt unless they include added capacity. Candidate projects that solve a bottleneck problem by widening or adding lanes and are less than one mile in length are also classified as exempt projects. Other project types include sustainable development, land use, and access related projects. These projects do not require an SOV analysis by the MPO.

The MPO believes, however, that a continuous program of data collection and project evaluation is essential to implementing a fully functional CMP. Additional data will enhance the ability of the MPO to provide preliminary analysis information for a targeted corridor thus reducing the complexities of matching/scheduling congestion mitigation strategies to added-capacity projects.

EXHIBIT I-7

SOV JUSTIFICATION PROCESS



SUMMARY

The CMP is a systematic process for determining acceptable congestion levels in a region, measuring the congestion performance of the transportation system, and prioritizing strategies for managing that congestion. Federal requirements define the required elements of a CMP and specify that areas with populations over 200,000 must implement and maintain a CMP.

The CMP for the DFW region is fully implemented into the planning and programming process performed as a MPO. The process is integrated in the development of the MTP, the TIP, the Unified Planning Work Program, and the State of the Region, as well as corridor studies.

Based on the demographics highlighted at the beginning of this section, the DFW region is expected to continue to grow at a magnitude never before experienced. As the region continues to grow, traffic congestion is expected to increase. The CMP will continue to be a critical component of the planning process, and operational management and travel demand reduction strategies will be necessary to keep the region desirable for future residents and employers.

[1] North Central Texas Council of Governments, "North Central Texas 2030 Demographic Forecast", 2003.