

SECTION III - REGIONAL ARTERIAL SYSTEM

SYSTEM IDENTIFICATION

The Regional Arterial System is a subcomponent of a broader regional thoroughfare system. The NCTCOG Regional Thoroughfare Plan (RTP) recognizes the network of arterial facilities having regional travel significance upon which the Regional Arterial System is based. The RTP includes all roadways classified as principal arterials through the TEA-21 functional classification effort, as well as those facilities included in the National Highway System (NHS). In addition to the basic framework of federally designated facilities, complementary local government principal arterials are incorporated to complete the 1,756 miles of regional arterials. A detailed summary of typical roadway classification guidelines is provided in Exhibit III-1.

The Regional Arterial System, shown in Exhibit III-2, is a critical component of the Metropolitan Transportation Plan in providing transportation support and access. This system of arterials is expected to carry 21 percent of all vehicular traffic in the region. The significance of regional arterials to the region's transportation system becomes increasingly essential as reliever facilities to parallel controlled access facilities, as well as supporting accessibility to other regional facilities to and from local land uses. Travel on regional arterials is expected to rise by almost 64 percent over current levels by the year 2030.

DEVELOP PERFORMANCE MEASURES

The region's system monitoring and data collection programs rely heavily on data already being collected or planned to be collected in the Dallas-Fort Worth Region. Exhibit III-3 outlines the existing and planned system monitoring and data collection programs at NCTCOG.

REGIONAL THOROUGHFARE PLAN
ROADWAY CLASSIFICATION GUIDELINES

Criteria	Interstate Freeway, Urban Freeway, and Toll Road	Urban Expressway	Strategic Regional Arterial	Enhanced Regional Arterial	Regional Arterial	Enhanced Principal Arterial	Principal Arterial	Minor Arterial
Trip Length	very long	long to very long	long	long	moderate to long	moderate to long	moderate to long	moderate
Traffic Volume	very high	high to very high	high	high	high	moderate to high	moderate to high	moderate
Service to Activity Centers	regional and major generators	regional and major generators and specialized land uses	regional and major generators and specialized land uses	regional and major generators and specialized land uses	regional major and minor generators and specialized land uses	regional major and minor generators and specialized land uses	regional major and minor generators and specialized land uses	minor generators and individual communities
System Continuity	connects to other freeways, urban expressways, regional, principal, and minor arterials	connects to freeways, other urban expressways, regional, principal, and minor arterials	connects to freeways, urban expressways, regional, principal, and minor arterials	connects to freeways, urban expressways, regional, principal, and minor arterials	connects to freeways, urban expressways, regional, principal, minor arterials, and collectors	connects to freeways, urban expressways, regional, principal, minor arterials, and collectors	connects to freeways, urban expressways, regional, principal, minor arterials, and collectors	community continuity; connects with principal arterial and freeway systems; usually does not cross community boundaries
Facility Spacing	5 – 20 miles	3 – 10 miles	3 – 5 miles	2 – 5 miles	1 – 5 miles	1 – 3 miles	1 – 3 miles	½ – 2 miles
Land-Use Interaction	should not penetrate neighborhoods	Should not penetrate neighborhoods	should not penetrate neighborhoods	should not penetrate neighborhoods	should not penetrate neighborhoods	should not penetrate neighborhoods	should not penetrate neighborhoods	should not penetrate neighborhoods
Access Management	fully controlled	fully controlled; no median access; specialized design controls limiting curb access are used to facilitate traffic flow and ensure safety	partially controlled; specialized design controls limiting curb access are used to facilitate traffic flow and ensure safety	partially controlled; specialized design controls are used to provide median and curb access and ensure safety	partially controlled; spacing and design controls are used to facilitate traffic flow and ensure safety	partially controlled; spacing and design controls are used to facilitate traffic flow and ensure safety	partially controlled; spacing and design controls are used to facilitate traffic flow and ensure safety	control is limited; design controls are used to ensure safety
Intersection Treatment	fully grade separated	grade separated at all intersections	grade separated at isolated intersections	grade separated at isolated intersections	grade separated at isolated intersections	at-grade	at-grade	at-grade
Median Treatment	barrier	barrier	barrier or restricted left-turn bay	left-turn lanes or bays	left-turn lanes or bays	left-turn lanes or bays	left-turn lanes or bays	none
Design Speeds	55 – 70 mph	50 – 55 mph	45 – 50 mph	40 – 45 mph	40 – 45 mph	40 – 45 mph	40 – 45 mph	40 mph
Transit Service	express	express	express and local	express and local	express and local	express and local	express and local	local

EXHIBIT III-2

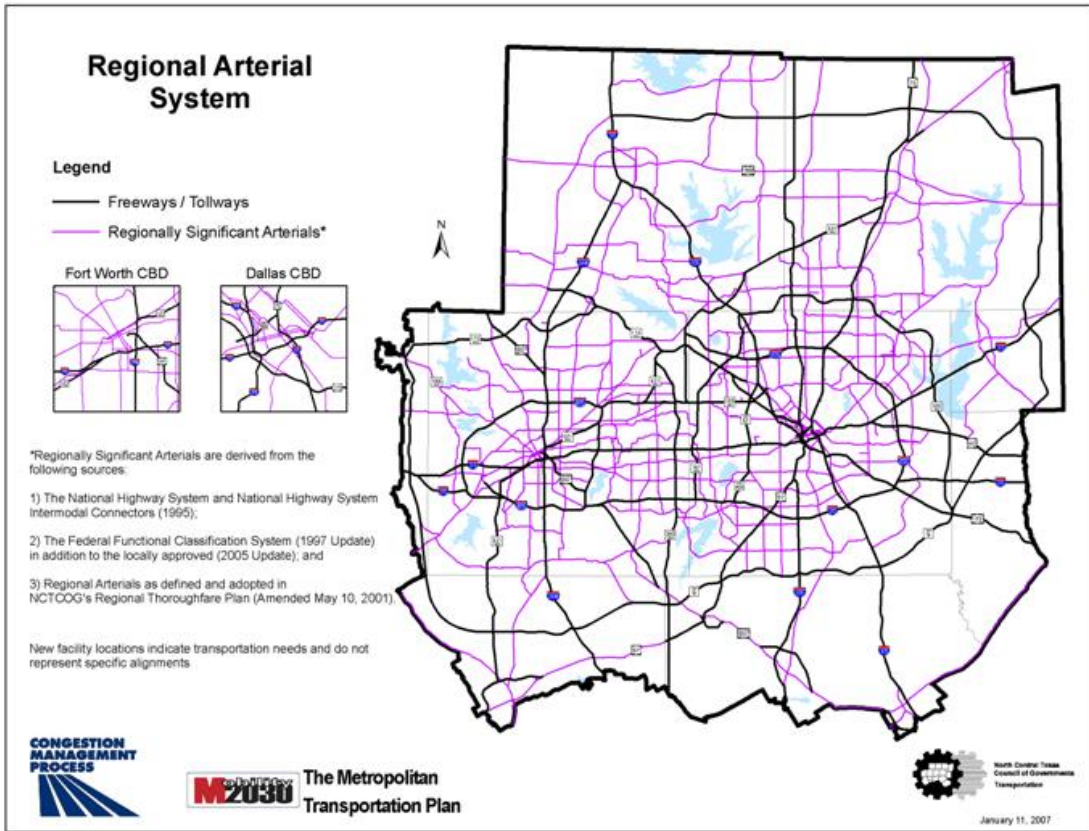


EXHIBIT III-3

**DATA COLLECTION EFFORTS/PERFORMANCE MEASURES
REGIONAL ARTERIAL SYSTEM**

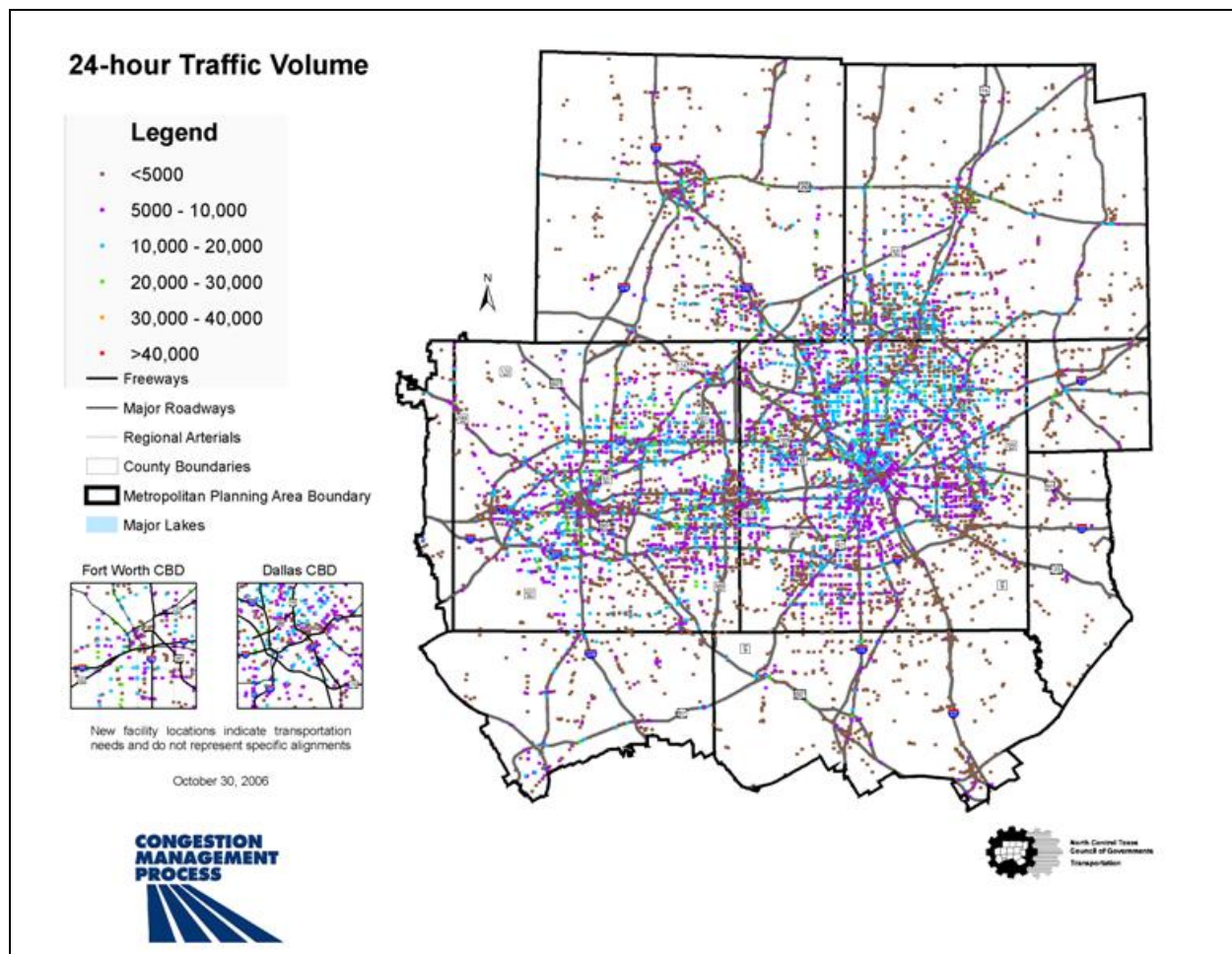
Observed or Modeled Data	Data Element	Source
Observed	Volumes (7-day and 24-hour vehicle counts)	Thoroughfare Assessment Program Traffic Count Website
Modeled	Vehicle Miles of Travel (VMT) or Travel Time Contour	Regional Travel Model TAP Synchro
Modeled	Level-of-Service	Regional Travel Model
Observed	Turning Movement Counts	Thoroughfare Assessment Program
Observed	Travel Time	Thoroughfare Assessment Program ITS Data Archive
Observed	Vehicle Classification Counts	Thoroughfare Assessment Program TxDOT Saturation Counts ITS Data Archiving Project
Modeled	Vehicle Emissions (Nox and VOC)	TAP Synchro UTA Study

Gray Shading = possible future data elements

MONITOR AND EVALUATE PERFORMANCE

NCTCOG identifies data collection and system performance measures to identify congested links in the system. Exhibit III-4 illustrates average annual daily traffic on the regional arterial system. High traffic counts are in North Dallas, the Dallas Central Business District, the Fort Worth Central Business District, and Northwest Fort Worth.

EXHIBIT III-4



STRATEGY IDENTIFICATION

Congestion management strategies on the regional arterial system include the implementation of Transportation System Management (TSM), Travel Demand Management (TDM), and Intelligent Transportation System (ITS) improvements. All TSM, TDM, and ITS strategies are outlined in Appendices A, B, and C. A variety of strategies can be deployed to alleviate congestion on the regional arterial facilities. The type of strategy implemented depends on the type of congestion experienced.

STRATEGY SELECTION/PROJECT IMPLEMENTATION

As mentioned in Section I of this document, the Regional Transportation Council (RTC) passed resolution number R98-01 (Appendix D), which requires that all Major Investment Studies (MIS) include an evaluation of operational management and travel demand reduction solutions to congestion and air quality concerns. Each congestion management recommendation and commitment documented in the inventory will be monitored to ensure its inclusion in the Metropolitan Transportation Plan (MTP) and the Transportation Improvement Program (TIP) by an applicable deadline.

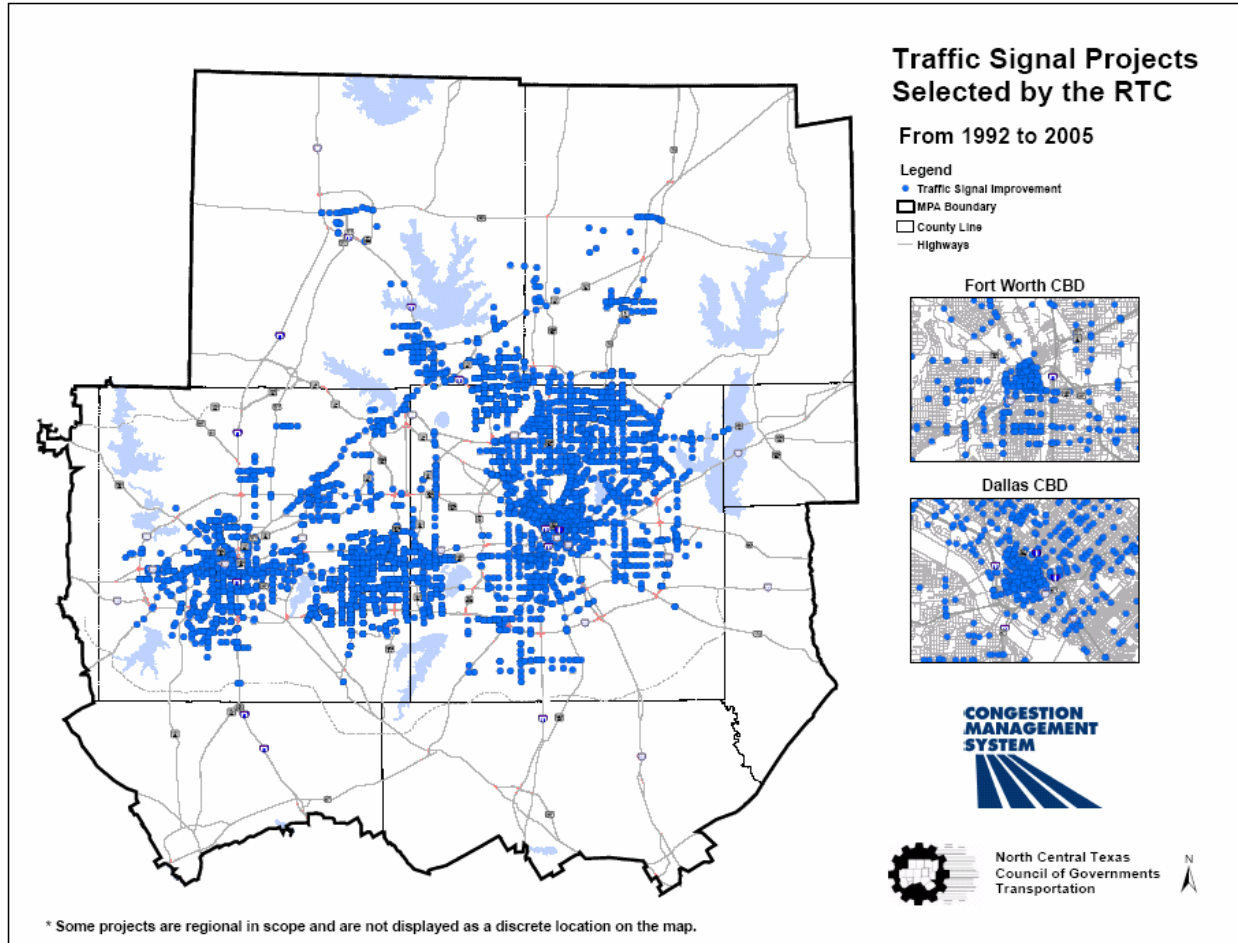
Strategy selection and project implementation is the next step in the CMP. This step is initiated through the Transportation Improvement Program (TIP). The selection of operational and travel demand reduction strategies for arterials are based on the type of strategies that yield the largest benefit cost ratio. Traffic signal improvements and intersection improvements have shown the most congestion and air quality benefit for their cost. These strategies are also quick to implement, so results can be determined much more quickly than other capacity projects.

The strategy is selected based on the arterial corridor characteristics. Traffic signal improvements are the quickest strategy to implement and can be very effective, as long as the traffic volume at the intersection does not exceed the intersection capacity. If the traffic volume at an intersection exceeds the capacity of the intersection, intersection improvements to add capacity will be needed to complement the traffic signal improvements. In extreme cases, when two heavily traveled regional arterials intersect, the traffic volume can not be accommodated by traffic signal improvements and intersection improvements, which results in the construction of a grade separation. In addition to these operational strategies, other travel demand reductions strategies are implemented along the corridor through the transit authorities in corporation with

major employers. Some of these strategies include vanpools, ridematching, discounted transit passes, and telecommuting.

A total of 1,000 traffic signal improvements are currently slated for implementation, as they are funded under the current version of the TIP. These projects include signal timing optimization, signal equipment upgrades, system interconnection, and a Traffic Signal Integration and Monitoring Project (also known as the Thoroughfare Assessment Program (TAP)). Exhibit III-5 illustrates funded traffic signal projects that will be implemented in the Dallas-Fort Worth region.

EXHIBIT III-5



To date approximately 300 arterial intersection improvements will be implemented through the TIP, thus enhancing arterial traffic flow, in addition to reducing the propensity for accidents. Intersection improvements include turn lanes, traffic islands, grade separations, and channelization. Exhibit III-6 shows funded intersection improvement projects in the Dallas-Fort Worth region.

EXHIBIT III-6

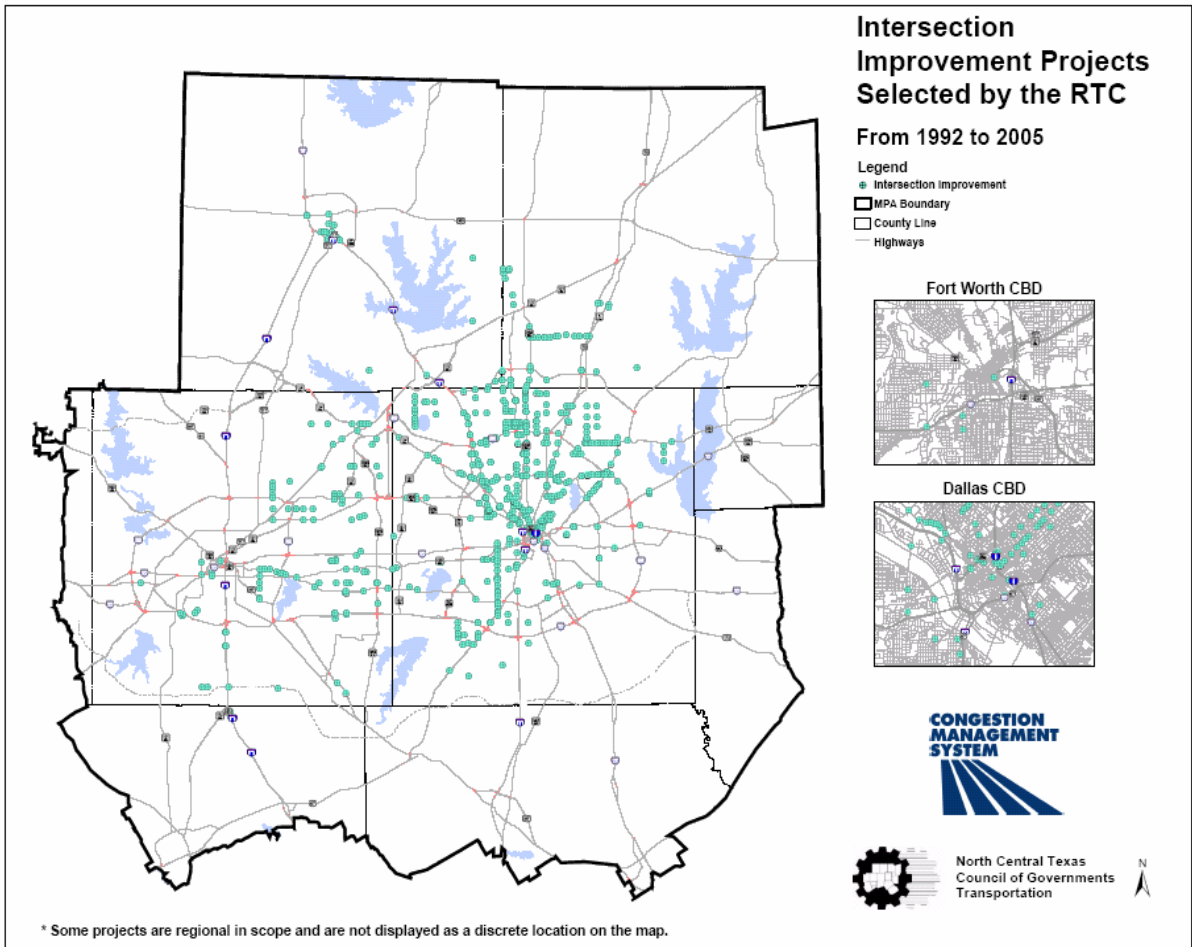
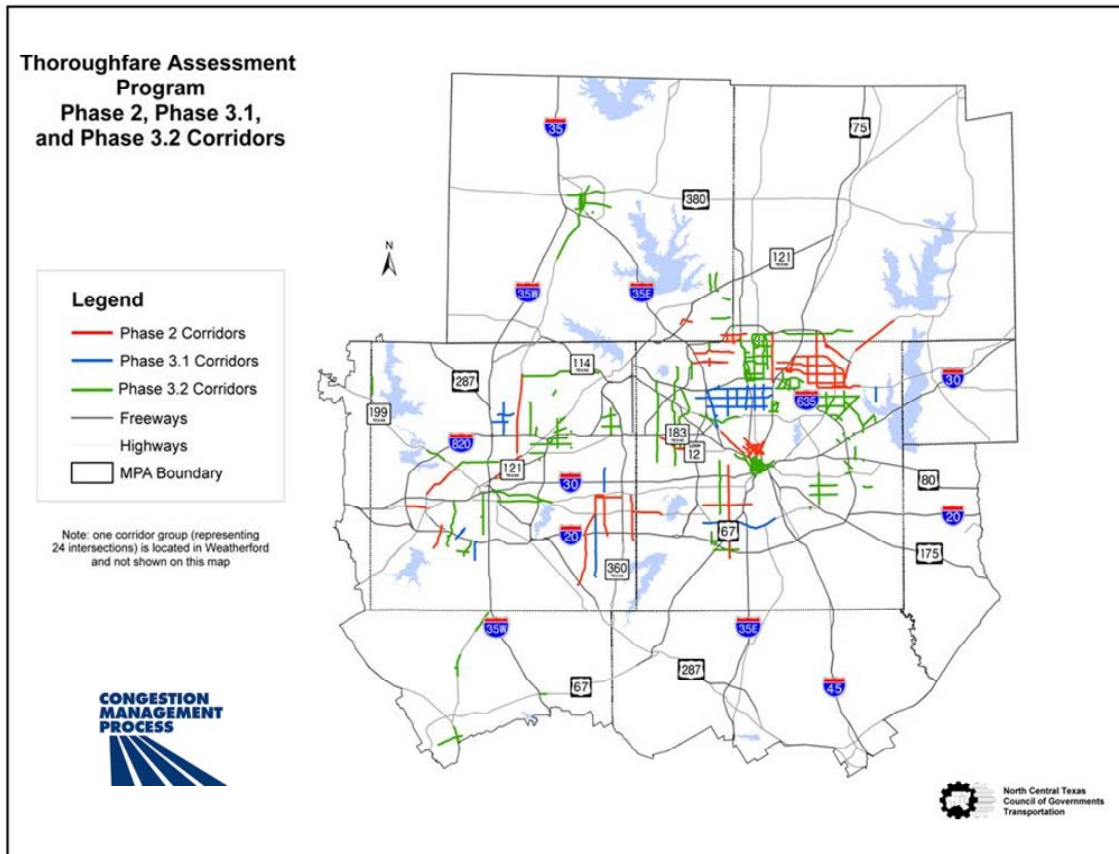


Exhibit III-7 illustrates the TAP corridor locations. The overall goal of the TAP is to increase the capacity of the existing system by improving traffic operations through signal retiming and implementation of low-cost operational improvements along selected corridors.

EXHIBIT III-7



PROJECT PERFORMANCE EVALUATION

Project performance evaluations are conducted to allow NCTCOG and other regional partners to better understand the mobility and air quality benefits of projects. Below is a list of project performance evaluations that have been conducted with more detail provided in the attached CMP Fact Sheets.

- Thoroughfare Assessment Program Pilot Corridor Results (Attachment 1)
- Thoroughfare Assessment Program (Attachment 2)

SUMMARY

The Regional Arterial System is a heavily utilized transportation infrastructure in our region and is expected to become more congested with regional growth. There are several existing and planned system monitoring and data collection programs for the regional arterial system that are outlined in Exhibit III-3. These system monitoring measures will help the region better understand where congestion is impacting the arterial system the most, as well as changes in system congestion patterns. System performance and effectiveness can be measured through project performance evaluations including the Thoroughfare Assessment Program. As the region continues to grow, it is essential that the region identifies and implements strategies and programs to alleviate gridlock on this critical component of the transportation system that provides support and access. In order to address congestion management, operational strategies and travel demand reduction strategies and programs are being implemented and tracked in the region through the TIP.

Thoroughfare Assessment Program Pilot Corridors

Report 1, November 2003

The pilot thoroughfare assessments were completed in July 2003 and performed a baseline analysis, recommended and implemented low-cost capital improvements, and performed a subsequent analysis. The pilot thoroughfare assessments were conducted to provide insight with regard to the estimated cost, type of data to collect, and type of eligible improvements prior to the larger regional study.

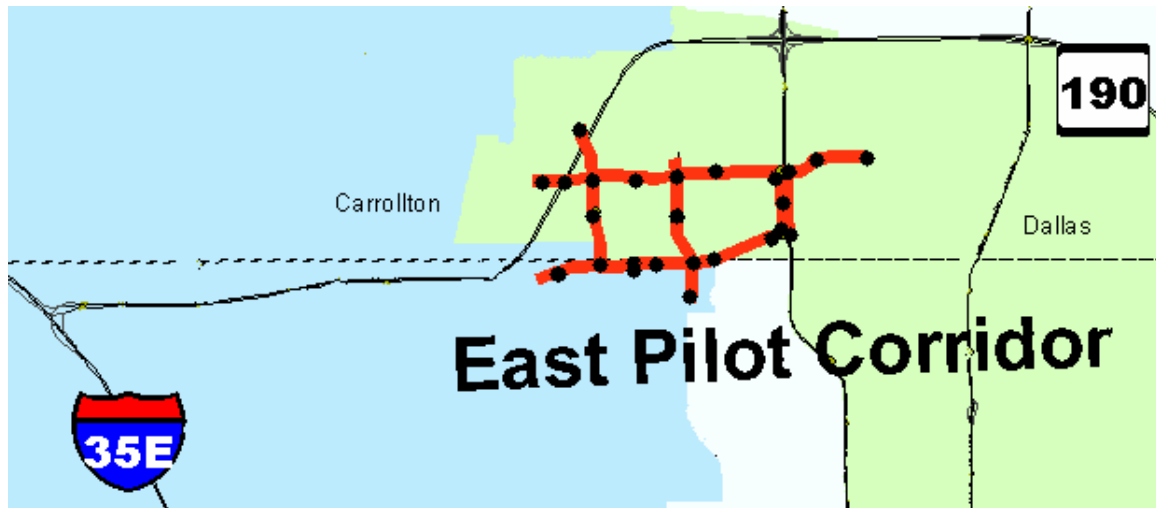
The Thoroughfare Assessment Program east pilot project is a grid of corridors consisting of 29 intersections along Frankford Road, Trinity Mills Road, Marsh Lane and Midway Road in the vicinity of the Dallas North Tollway, as shown in Exhibit 1. These are multi-jurisdictional corridors, which are operated and maintained by the City of Dallas and the City of Carrollton and are located in Dallas, Denton, and Collin Counties.

As a result of implementing the new optimized signal timing and recommended low-cost operational improvements along these corridors, the following benefits were quantified:

- 16 to 31 percent decrease in the travel time
- 39 to 67 percent decrease in delay
- 30 to 58 percent decrease in the number of stops
- 20 to 51 percent increase in the average speed
- Nine percent reduction in VOC emissions and three percent reduction in NOx emissions

ATTACHMENT 1
**Thoroughfare Assessment Program
Pilot Corridors**

EXHIBIT 1

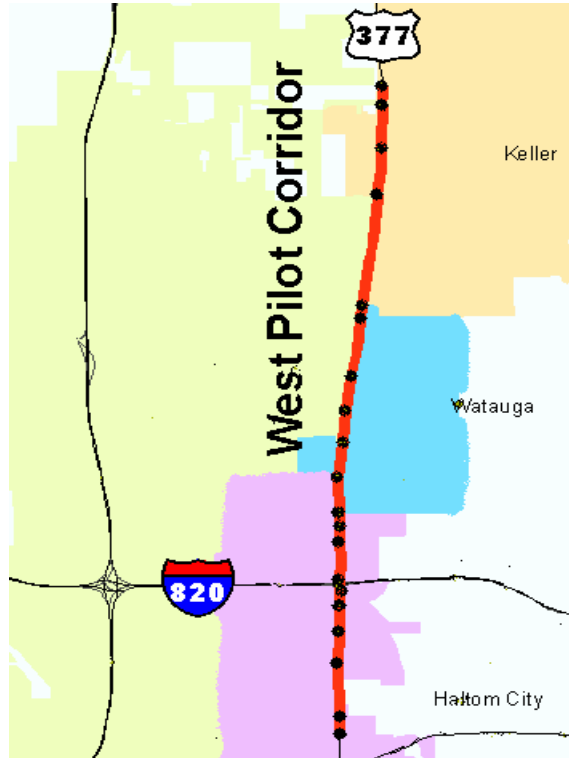


The Thoroughfare Assessment Program west pilot corridor is a linear arterial, which is nine miles long and consists of 19 intersections along U.S. 377 in Tarrant County, as shown in Exhibit 2. The signals along this corridor are operated and maintained by Texas Department of Transportation – Fort Worth District.

As a result of implementing the new optimized signal timing along this corridor, the following benefits were quantified:

- 16 percent decrease in travel time
- 41 percent decrease in delay
- 45 percent decrease in the number of stops
- 19 percent increase in the average speed
- Nine percent reduction in VOC emissions and two percent reduction in NOx emissions

EXHIBIT 2



Thoroughfare Assessment Program

Report 2, January 2007

The Thoroughfare Assessment Program (TAP) includes four phases. The overall goal of the program is to maximize capacity of existing system by improving traffic operations through signal retiming and implementation of low-cost operational improvements along selected corridors.

Phase 1 of this project included funding traffic signal and intersection improvement projects in the 1992, 1994, and 1999 calls for projects. These projects were funded with Congestion Mitigation Air Quality (CMAQ) program and Surface Transportation – Metropolitan Mobility (STP-MM) program funds. The projects funded through these efforts were implemented by local agencies.

Phase 2 of the Thoroughfare Assessment Program audits selected thoroughfares, assesses operational characteristics, estimates air quality benefits, and develops and implements recommended improvements. As part of this Phase, thoroughfares were selected, a pilot project was completed, and an implementation of a region-wide thoroughfare assessment is currently underway. Thoroughfares were selected based on vehicle-hours of delay per signal (50 percent), number of stops per signal (30 percent), and existing system type (20 percent) (i.e. signal linked to master or central system). The criteria selected was developed and approved through the TAP Project Review Committee. The pilot thoroughfare assessment performed a baseline analysis, recommended and implemented low cost capital improvements, performed an improved analysis, and incorporated results from the survey of detectors associated with traffic signals. The pilot thoroughfare assessment provided insight in regards to estimated cost, the type of data collected, and the type of eligible improvements.

Thoroughfare Assessment Program

A region-wide thoroughfare assessment under Phase 2 is currently underway, and includes a baseline analysis, recommendations and implementation of low cost capital improvements, and an improved analysis. The cost of Phase 2 of the TAP is approximately \$4.2M and includes improvements at approximately 446 locations.

Phase 3.1 of the Thoroughfare Assessment Program began in November 2005 and is an extension of Phase 2 of the program that includes auditing of selected thoroughfares, assessments of operational characteristics, estimates of air quality benefits, and the development and implementation of recommended improvements. Approximately 1.8 million dollars was allocated to Phase 3.1, which is estimated to improve an additional 354 locations.

Phase 3.2 began in April 2006 and includes the implementation of low-cost signal timing improvements at approximately 600 locations in the Dallas-Fort Worth region. Approximately 4.8 million dollars was allocated to Phase 3.2. As with Phases 2.0 and 3.1, Phase 3.2 also includes data collection and quantifying air quality benefits.

Exhibit III-7 in this document shows a map of the locations for all three phases of the Thoroughfare Assessment Program.