TRANSPORTATION SYSTEM PERFORMANCE AND CRITERIA

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 2013, the daily vehicle miles of travel in the region was over 181 million miles. Currently, travel throughout the region takes approximately 32 percent longer to complete due to congestion; resulting in nearly 1.2 million daily vehicles hours spent in delay. This delay equates to an annual cost of congestion of $4.7 billion for the region. Exhibit III-1 shows the regional peak period congestion levels for 2013.

Exhibit III-1
2013 Peak Period Congestion Levels

Levels of Congestion: 2013

Legend

<table>
<thead>
<tr>
<th>Congestion Index*</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Congestion</td>
<td></td>
</tr>
<tr>
<td>Light Congestion</td>
<td></td>
</tr>
<tr>
<td>Moderate Congestion</td>
<td></td>
</tr>
<tr>
<td>Severe Congestion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Roads</th>
</tr>
</thead>
</table>

Cost of Congestion: $4.7 billion

*Congestion Index is based on a percent increase in travel time.
If the projects, programs, and policies contained in the Mobility 2035 – 2013 Update are implemented, travel time due to congestion is expected to increase nearly 46 percent with an annual congestion cost of $10.2 billion in 2035. 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 the region is to meaningfully reduce congestion levels, additional congestion mitigation strategies aimed at reducing drive-alone travel and making the transportation system operate more efficient will need to be pursued. Exhibit III-2 shows the regional peak period congestion levels for 2035 with planned improvements.

Exhibit III-2
2035 Peak Period Congestion Levels

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. Mobility 2035 – 2013 Update 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.
Develop Performance Measures – Transportation System

Data collection and system performance monitoring provide a high level overview of congested facilities and the severity of congested facilities. The mix of data collection and performance measures evaluated through the CMP look at multiple elements that effect traffic congestion on our metropolitan transportation system. Some of those data elements include corridor analysis, level of service analysis, reliability and speed data, traffic volumes, light rail and commuter rail ridership, and bicycle and pedestrian accessibility analysis. Exhibit III-3 shows 15-Minute Minimum Speed data in the region for the average Monday through Friday. The map was developed using Nokia Traffic Data, which was collected over time.

Exhibit III-3
15-Minute Minimum Speeds

Source: Nokia Traffic Data

The mix of data collection and performance measures outlined in this chapter were chosen to look at multiple elements that effect traffic congestion on our metropolitan transportation system. These performance measures focus on recurring and non-recurring congestion. The data collection and performance measures continue to expand over time as more data becomes available and as other performance measures mature. Exhibit III-4 outlines the existing system monitoring and data collection programs at NCTCOG that focus on the metropolitan transportation system.
Exhibit III-4
Data Collection
Metropolitan Transportation System

(Controlled Access Facilities, Regional Arterial System, Multimodal Freight, and Rail Transportation)

<table>
<thead>
<tr>
<th>Observed or Modeled Data</th>
<th>Data Element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeled</td>
<td>Level Of Service</td>
<td>DFW Regional Travel Model</td>
</tr>
<tr>
<td>Observed/Modeled</td>
<td>Corridor Analysis</td>
<td>NCTCOG</td>
</tr>
<tr>
<td>Observed</td>
<td>Reliability/Speed</td>
<td>ITS Data Archive Project</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nokia Traffic Data (NTD)</td>
</tr>
<tr>
<td>Observed</td>
<td>Volumes (7-day and 24-hour vehicle counts)</td>
<td>Regional Traffic Signal Retiming Program (RTSRP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Traffic Count Website</td>
</tr>
<tr>
<td>Modeled</td>
<td>Truck Traffic Forecast</td>
<td>DFW Regional Travel Model</td>
</tr>
<tr>
<td>Observed</td>
<td>Vehicle Classification Counts</td>
<td>TxDOT and RTSRP</td>
</tr>
<tr>
<td>Observed</td>
<td>Crash Data</td>
<td>DPS/TxDOT</td>
</tr>
<tr>
<td>Observed/Modeled</td>
<td>Regional Demographic Data</td>
<td>NCTCOG</td>
</tr>
<tr>
<td>Observed</td>
<td>DART Light Rail Train Ridership</td>
<td>DART</td>
</tr>
<tr>
<td>Observed</td>
<td>TRE Average Weekday Ridership by Station</td>
<td>TRE</td>
</tr>
<tr>
<td>Observed</td>
<td>TRE Route Ridership</td>
<td>TRE</td>
</tr>
<tr>
<td>Observed</td>
<td>DCTA A-train Ridership</td>
<td>DCTA</td>
</tr>
<tr>
<td>Observed</td>
<td>The T Bus Ridership</td>
<td>The T</td>
</tr>
<tr>
<td>Observed</td>
<td>Bicycle and pedestrian accessibility to transit,</td>
<td>NCTCOG</td>
</tr>
<tr>
<td></td>
<td>major employers, and other major destinations</td>
<td>Cities</td>
</tr>
</tbody>
</table>
Included in Exhibit III-5 is a list of future performance data elements that may be collected.

### Exhibit III-5

**Future Data Collection**

**Metropolitan Transportation System**

_(Controlled Access Facilities, Regional Arterial System, Multimodal Freight, and Rail Transportation)_

<table>
<thead>
<tr>
<th>Observed or Modeled Data</th>
<th>Data Element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeled/Observed</td>
<td>Travel Time/Speed</td>
<td>ITS Data Archive Project, NTTA, DFW Airport, NTD, Addison Tunnel</td>
</tr>
<tr>
<td>Modeled</td>
<td>Vehicle Miles of Travel (VMT)</td>
<td>DFW Regional Travel Model</td>
</tr>
<tr>
<td>Modeled/Observed</td>
<td>Vehicle Classification</td>
<td>DFW Regional Travel Model, ITS Data Archive, TxDOT Saturation Counts</td>
</tr>
<tr>
<td>Modeled</td>
<td>Vehicle Miles of Travel (VMT) or Travel Time Contour</td>
<td>DFW Regional Travel Model, RTSRP Synchro</td>
</tr>
<tr>
<td>Modeled</td>
<td>Level-of-Service</td>
<td>DFW Regional Travel Model</td>
</tr>
<tr>
<td>Observed</td>
<td>Turning Movement Counts</td>
<td>RTSRP</td>
</tr>
<tr>
<td>Observed</td>
<td>Travel Time</td>
<td>RTSRP, ITS Data Archive</td>
</tr>
<tr>
<td>Observed</td>
<td>Vehicle Classification Counts</td>
<td>RTSRP, TxDOT Saturation Counts, ITS Data Archiving Project</td>
</tr>
<tr>
<td>Modeled</td>
<td>Vehicle Emissions (Nox and VOC)</td>
<td>RTSRP Synchro, UTA Study</td>
</tr>
<tr>
<td>Observed</td>
<td>Train Volume at Spot Locations</td>
<td>Freight Railroads</td>
</tr>
<tr>
<td>Modeled</td>
<td>Total Rail Boardings</td>
<td>TransCAD - Transit Summary Reports, Transit Summary Daily Report and On-Off table</td>
</tr>
<tr>
<td>Modeled</td>
<td>HBW, HNW, NHB and all Transit Person Trip Reduced</td>
<td>TransCAD - Transit Summary Report, Transit Summary Daily Report and Mode of Access Reports</td>
</tr>
<tr>
<td>Modeled</td>
<td>Transit Passenger Miles</td>
<td>TransCAD - Transit Summary Report and Transit Summary Daily Report</td>
</tr>
<tr>
<td>Modeled</td>
<td>Forecasted Transit Flow Information in Each Route</td>
<td>TransCAD - Flow Table</td>
</tr>
<tr>
<td>Modeled</td>
<td>Transit Route System</td>
<td>TransCAD - ACTTRNT</td>
</tr>
<tr>
<td>Observed</td>
<td>Subsidy per Passenger - All Modes, Light Rail, Commuter Rail</td>
<td>DART/FWTA/DCTA/NTD</td>
</tr>
<tr>
<td>Observed</td>
<td>Transit Ridership - System-wide, Light Rail, Commuter Rail</td>
<td>DART/FWTA/DCTA/NTD</td>
</tr>
</tbody>
</table>
## Observed or Modeled Data

<table>
<thead>
<tr>
<th>Observed or Modeled Data</th>
<th>Data Element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>On-Time Performance-All Modes, Light Rail, Commuter Rail</td>
<td>DART/DCTA</td>
</tr>
<tr>
<td>Observed</td>
<td>Parking Utilization</td>
<td>Transit Agencies/Local Agencies</td>
</tr>
<tr>
<td>Observed</td>
<td>Inventory of Bicycle and Pedestrian Facilities and Accommodations</td>
<td>NCTCOG/Cities</td>
</tr>
<tr>
<td>Observed</td>
<td>Bicycle and Pedestrian Use Within the Region</td>
<td>NCTCOG/Cities</td>
</tr>
<tr>
<td>Observed</td>
<td>Inventory of Bicycle and Pedestrian Facility Gaps and Missing Connections</td>
<td>NCTCOG/Cities</td>
</tr>
<tr>
<td>Observed</td>
<td>Safety Enhancements for Bicyclists, Pedestrians, and Motorists through Infrastructure Improvements</td>
<td>NCTCOG/Cities</td>
</tr>
<tr>
<td>Observed</td>
<td>Bike User Counts to Select a Group of Regionally Significant Trails</td>
<td>NCTCOG/Cities</td>
</tr>
</tbody>
</table>

Exhibit III-6 highlights the performance measures associated with the established CMP goals and objectives as discussed in the Overview section.
##CMP Goals, Objectives and Performance Measures

<table>
<thead>
<tr>
<th>CMP Goals and Action</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| **Goal:** Identify quick-to-implement low cost strategies and solutions to better operate the transportation system. | • Reduce SOV trips through travel demand management strategies.  
• Increase usage of park-and-ride lots.  
• Provide all users with travel alerts and alternate routes in the case of incidents, special events, weather, construction, and severe congestion at choke points.  
• Increase the number of intersections that are equipped and operating with traffic signals that enable real-time monitoring and management of traffic flows.  
• Reduce mean roadway clearance time per incident (Defined as the time between awareness of an incident and restoration of lanes to full operational status.) |
| **Action:** Implement quick-to-implement low cost strategies and solutions to better operate the transportation system. | • Number of users in the region participating on Try Parking It.  
• Utilization rate of park-and-ride lots in the region.  
• Percent of routes where traveler alerts and alternate route information is provided in the case of incidents, special events, weather, construction, and severe congestion choking points.  
• Percent of intersections in the region equipped and operating with traffic signals that enable real-time monitoring and management of traffic flows.  
• Average roadway clearance times. |
| **Goal:** More evenly distribute congestion across the entire transportation corridor. | • Reduce the percentage of facility miles (highway, arterial, rail, etc.) experiencing recurring congestion during the peak period.  
• Maintain the rate of growth in facility miles experiencing recurring congestion as less than the population growth rate (or employment growth rate.)  
• Increase the number of HOV/Managed lanes in the region.  
• Increase alternative (non-SOV) mode share for all trips.  
• Increase active (bike/ped) mode share.  
• Increase mode share in transit.  
• Increase access to transit (within two miles) to specified percentage of the population. |
| **Action:** Conduct inventory of corridor system to identify availability of existing options. | • Percent of lane-miles operating at LOS F or V/C > 1.0.  
• Population growth rate.  
• Total number of HOV/Managed lanes in the region.  
• Share of employees walking, biking, telecommuting, carpooling/vanpooling, riding transit, driving. Track through Try Parking It website.  
• Share of trips by each mode of travel.  
• Percent of trips that take transit as a mode of travel.  
• Percent of population within two miles of a transit station. |
| **Goal:** Ensure corridors have options and available alternate routes/modes to relieve daily congestion and during incidents and accidents. | • Reduce buffer index on freeway system during peak and off-peak periods.  
• Reduce delay associated with incidents on arterials.  
• Conduct joint training exercises among operators and emergency responders in the region.  
• Increase the percentage of regional staff with incident management responsibilities that have completed and participated in the regional Freeway Incident Management Training. |
| **Action:** Prioritize corridors based on available options and alternate/modes routes. | • The buffer index (represents the extra time (“buffer”) travelers add to their average travel time when planning trips in order to arrive on-time 95 percent of the time.)  
• Incident response and clearance times.  
• Number of participants and joint training exercises conducted among operators and emergency responders.  
• Percent of staff in a corridor that have completed regional Freeway Incident Management Training. |
Monitor And Evaluate Performance - Corridor Analysis Methodology

System performance for the transportation system is measured in a number of different ways. Maps are used to show both recurring (expected) and non-recurring (unexpected) congestion on limited access facilities and the DFW Regional Travel Model simulates levels of service designations. The CMP utilizes various performance measures to conduct a transportation system corridor analysis to evaluate the overall transportation system. The initial step in the corridor analysis process is to conduct a corridor level inventory to determine the various options that exist along the corridor that may assist in alleviating congestion on the main roadway facility. The inventory looks at four categories of options that may influence congestion levels: alternative roadway infrastructure (services), modal options (services), system demand (recurring), and system reliability (non-recurring). This section provides an overview of the elements that were analyzed within the four categories.

Alternative Roadway Infrastructure

The factors that influence alternative roadway infrastructure include the presence of parallel freeways, toll roads, frontage roads, parallel arterials, and direct connections or interchanges. These elements are critical components of the regional transportation system. Freeways and tollways in North Central Texas are critical elements in the regional transportation system. These roadway facilities are characterized by controlled-access general-purpose lanes, express/HOV, tolled managed lanes, and frontage roads. The freeway and tollway system accounts for a small percentage of the total roadway lane miles in the DFW Metropolitan Area, but carries nearly half of all vehicular travel in the region.

In addition to freeway and tollway system, regionally significant arterials are identified based on their role to complement and enhance the major roadway and transit systems by providing the necessary transportation support and access to and from local land uses. This network is comprised of several key components including facilities which serve regional transportation needs, provide service to regional activity centers, aid in intra-community connectivity, and maintain access to and from areas outside of the region. More information on these components is included in the System Identification section.

Modal Options

The factors that influence modal options include the presence of transit options (bus and/or rail), park-and-ride facilities, HOV/Managed lanes, and bicycle/pedestrian options.

Transit Options

Public transportation services throughout the Dallas-Fort Worth region are provided by small and large transit-focused organizations. The three largest organizations include DART, DCTA, and The T. Each agency operates in an established service area and offers transit services that range from traditional bus route services to light rail train services. DART’s service area is nearly 700 square miles and has a service population of 2.4 million people. DCTA’s service area is 157 square miles and has a service population of 235,000 people. The T’s service area is 350 square miles and has a service population of 730,000 people. Exhibit III-7 highlights the service areas
for these agencies. In an effort to improve travel across the region, the transit agencies have coordinated their fare structures to provide riders seamless connections between service providers and modes. More information on the regional transit system and the services provided by each is located in the System Identification section.

Exhibit III-7
Public Transportation Service Areas

Public Transportation Authority Service Areas

Park-and-Ride Facilities

Park-and-ride facilities serve as collection areas for persons transferring to higher-occupancy vehicles. They are normally located and designed to serve bus or rail transit, but many are used by car and vanpoolers as well. Park-and-ride facilities can be located near a central business district to serve public transit and pedestrian activity areas or in suburban areas to collect riders near the origin of their trips. Combined with HOV/managed lanes, park-and-ride facilities can be an effective incentive for increasing vehicle occupancy, thus reducing congestion and vehicle emissions. Existing, planned, and candidate park-and-ride facilities in the DFW region are provided in Exhibit III-8.
HOV/Managed Lanes

HOV/managed lanes in the DFW area are typically constructed in the medians of existing corridors. The HOV facilities in operation today are considered part of an interim system and are based on the more traditional two plus occupancy requirement. It is intended and recommended in Mobility 2035 – 2013 Update that in order to better manage the available capacity in these HOV corridors and to promote reliability of the overall system, the existing interim HOV corridors would evolve, either all together simultaneously or separately over time, into an HOV/managed lane system. The existing interim HOV lane network includes the following corridors:
• IH 30: East R.L. Thornton Freeway
  ▪ Contra-flow lane with a moveable barrier
  ▪ Limits: Dallas Central Business District to Northwest Drive in Mesquite

• IH 30: Tom Landry Highway
  ▪ One- to two-lane reversible, barrier-separated facility
  ▪ Limits: Center Street in Arlington to Sylvan Avenue in Dallas

• IH 35E: Stemmons Freeway
  ▪ One lane concurrent flow in each direction, buffer-separated facility
  ▪ Limits: IH 635 in Dallas to FM 3040 in Lewisville

• IH 635: LBJ Freeway
  ▪ One lane concurrent flow in each direction, buffer-separated facility
  ▪ Limits: IH 35E to Oates Drive/Galloway Avenue in Mesquite

• IH 35E/US 67: South R.L. Thornton Freeway/Marvin D. Love Freeway
  ▪ One reversible, barrier-separated lane on IH 35E and part of US 67
  ▪ One lane concurrent flow in each direction, buffer-separated on US 67
  ▪ Limits on IH 35E: Dallas Central Business District to US 67
  ▪ Limits on US 67: IH 35E to IH 20

• US 75: Central Expressway
  ▪ One lane concurrent flow in each direction, buffer-separated facility
  ▪ Limits: IH 635 in Dallas to Bethany Drive in Allen
Exhibit III-9 includes a map of the existing and planned HOV/Managed lane system in the DFW region. Exhibit III-10 includes the HOV/managed lanes miles per county.

Exhibit III-9
HOV/Managed Lane System

Legend
- Current Express/ HOV Lanes
- New Managed Lanes

[Map showing the HOV/Managed Lane System in the DFW region]
Bike Options

The Regional Veloweb is a network of off-street shared-use paths designed for use by bicyclists, pedestrians, and other non-motorized forms of transportation. The Veloweb serves as the regional expressway for bicycle transportation. Facilities of this type have a proven track of attracting users and provide recreational, air quality, health, economic development, and mobility benefits to communities across the nation. Linking high quality facilities together to provide intraregional routes which favor bicycle travel will encourage increased use of the bicycle for utilitarian trip purposes.

The original Regional Veloweb map was developed in 1997 based on an extensive study conducted by the NCTCOG Bicycle and Pedestrian Advisory Committee. In 2008, work began to update the Regional Veloweb alignments based on feedback received by local governments and community members and the general need to reassess the functionality and alignment of the Veloweb. The results of the Regional Veloweb update include approximately 1,024 miles of added facilities, bringing the total Veloweb to approximately 1,668 miles. Exhibit III-11 includes a map of the existing, planned, and funded bicycle and pedestrian off-street facilities.
System Demand (Recurring)

The factors that influence system demand include volume over capacity ratios, truck volumes, the number of employees along that roadway corridor by block, and residential population.

Volume-to-Capacity (Level of Service)

Level of service (LOS) is one performance measure that has been identified in the CMP to assess the performance of the controlled access system. LOS analysis measures the operational performance of a roadway during the most congested times of the day. LOS is expressed using “A”, “B”, “C”, “D”, “E”, and “F” designations. Vehicles operating on a roadway performing at a LOS of A, B, or C travel at posted speeds with little interference from other vehicles. Vehicles driving on roadways operating at LOS D or E experience speeds much slower than the posted speed limits.
When the volume of traffic on a roadway exceeds the actual capacity, the result is a LOS F condition, causing vehicles to experience stop and go or standstill conditions.

**LOS ABC**
A LOS of A, B, or C represents a relatively uncongested facility. Vehicles can move freely with little interference.

**LOS DE**
A LOS of D or E represents a relatively congested facility. Vehicles can move with some interference.

**LOS F**
A LOS of F represents the worst level of congestion. Vehicles are unable to move freely without interference.

*Source: NCTCOG*
Exhibit III-12 illustrates the performance of the DFW limited access facilities in 2013, based on peak hour roadway level of service.

Aside from recurring congestion or expected delay, non-recurring congestion or unexpected delay is another measure that needs to be quantified on the controlled access facilities. According to the Texas Transportation Institute’s Urban Mobility Study, 52 to 58 percent of delay experienced by motorists in urban areas is caused by unexpected incidents, such as accidents and stalled vehicles. Using the Intelligent Transportation System data and data from the private sector that is available in the region, non-recurring congestion can be measured.
Truck Volume Percentage

Freight transportation is a key component in the DFW regional economy. A number of trade routes intersect in the DFW region creating a need for efficient freight flows. Interstate Highway 35, the North American Free Trade Agreement (NAFTA) Superhighway, runs through the heart of the region, providing crucial connections to the national Interstate Highway system. As a result, 98 percent of the U.S. population can be reached from the DFW region within 48 hours by truck.\(^1\) Freight is vital to our regional economy, as well as the Texas economy. In 2008, the region accounted for 32 percent of the Texas Gross Domestic Product.\(^2\) The North Central Texas region represents one of the largest inland ports in the nation where freight is moved, transferred, and distributed to destinations across the state and around the world. The region has one of the most extensive surface and air transportation networks in the world, providing extensive trade opportunities for the more than 700 motor/trucking carriers and freight forwarders that operate within the region. An inventory of regional freight transportation facilities is shown in Exhibit III-13.

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Exhibit III-13
Regional Freight Transportation Facilities
Exhibit III-14 illustrates daily truck volume on major roadways within the DFW region. The areas highlighted in red represent the corridors with the highest truck volumes, which include sections of IH 20, IH 30, IH 35E, IH 35W, IH 635, and US 75.

Regional Population and Employment Trends

In 2010, the 12-county DFW Metropolitan Planning Area (MPA) had a population of approximately 6.5 million. By the year 2035, these same 12 counties are forecasted to grow to 9.8 million residents. This growth represents a 50 percent increase in the population of North Central Texas over the next 25 years. Historical population growth is important to understanding where populations will grow in the future. Regional population and employment trends and forecasts also determine where residents currently live, work, and carry out leisure activities and where they will be undergoing these activities in the future. The DFW region continues to experience high

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3 2010 Census, www.census.gov
levels of population growth and forecasts project this trend will continue through 2035. Exhibit III-15 highlights the projected change in population density by county between 2013 and 2035.

**Exhibit III-15**
Dallas-Fort Worth Population Growth

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**Regional Employment**

The Dallas-Fort Worth region is home to 18 Fortune 500 companies and represents 32 percent of the state’s economy. Employment within the 12-county MPA is projected to increase 44 percent from 4,292,516 jobs in 2013 to 6,177,016 in 2035. During the same period, the average employment density is projected to increase from 455 to 654 jobs per square mile in the region. Employment growth by county is shown in Exhibit III-16.

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4 2012 Fortune 500 Companies. www.money.cnn.com
Exhibit III-16
Dallas-Fort Worth Region Employment Growth

<table>
<thead>
<tr>
<th></th>
<th>2012 Employment</th>
<th>2035 Employment</th>
<th>Growth</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collin</td>
<td>380,184</td>
<td>628,349</td>
<td>248,165</td>
<td>65%</td>
</tr>
<tr>
<td>Dallas</td>
<td>2,146,783</td>
<td>2,854,287</td>
<td>707,504</td>
<td>33%</td>
</tr>
<tr>
<td>Denton</td>
<td>233,187</td>
<td>406,105</td>
<td>172,918</td>
<td>74%</td>
</tr>
<tr>
<td>Ellis</td>
<td>63,260</td>
<td>116,145</td>
<td>52,885</td>
<td>84%</td>
</tr>
<tr>
<td>Hood</td>
<td>21,035</td>
<td>37,036</td>
<td>16,001</td>
<td>76%</td>
</tr>
<tr>
<td>Hunt</td>
<td>48,140</td>
<td>78,163</td>
<td>30,023</td>
<td>62%</td>
</tr>
<tr>
<td>Johnson</td>
<td>70,283</td>
<td>132,917</td>
<td>62,634</td>
<td>89%</td>
</tr>
<tr>
<td>Kaufman</td>
<td>42,630</td>
<td>81,646</td>
<td>39,016</td>
<td>92%</td>
</tr>
<tr>
<td>Parker</td>
<td>49,360</td>
<td>91,660</td>
<td>42,300</td>
<td>86%</td>
</tr>
<tr>
<td>Rockwall</td>
<td>25,924</td>
<td>53,934</td>
<td>28,010</td>
<td>108%</td>
</tr>
<tr>
<td>Tarrant</td>
<td>1,098,965</td>
<td>1,644,463</td>
<td>545,498</td>
<td>50%</td>
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<td>Wise</td>
<td>30,427</td>
<td>52,311</td>
<td>21,884</td>
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<tr>
<td>Total</td>
<td>4,210,178</td>
<td>6,177,016</td>
<td>1,966,838</td>
<td>47%</td>
</tr>
</tbody>
</table>

System Reliability (Non-Recurring)

Lastly, the factors that influence system reliability include facility crash data, roadway shoulders, an incident management training inventory, truck lane restrictions, and the presence of Intelligent Transportation Systems technology.

Regional Crash Rate

NCTCOG receives crash data from TxDOT’s Crash Records Information System (CRIS) annually. The collected data helps to identify crash hotspots and assist in the development of improvement strategies for the locations. Exhibit III-17 displays crash rates by corridor in comparison to the regional crash rate average of slightly over 75 crashes per 100 million vehicle miles traveled. This average crash rate was developed based on 2012 regional crash data. Corridors that have a higher crash rate than the regional average are shown in red, while counties with a rate below the regional average are shown in green.
Shoulders

As it relates to system reliability, shoulders are extremely important in the management of traffic incidents. One advantage of shoulders is that the space can be used for vehicles to stop because of mechanical difficulties or other emergencies. Emergency vehicles and responders can also utilize the shoulder when responding to traffic incidents or making traffic stops. The effective utilization of shoulders during traffic incidents is a main component of the NCTCOG Freeway Incident Management Training Course. Exhibit III-18 highlights the regional limited access facilities that have both inside and outside shoulders or varying shoulder configurations.
Freeway Incident Management Training

NCTCOG was the first agency in the nation to formalize incident management training for all responders in the region. Initiated in 2003, the goal of the Freeway Incident Management (FIM) training course is to initiate a common, coordinated response to traffic incidents that will build partnerships, enhance safety for emergency personnel, reduce upstream traffic accidents, improve the efficiency of the transportation system, and improve air quality in the DFW region. The courses are designed to increase awareness of responder safety issues, improve multi-agency coordination, reduce response and clearance times for traffic incidents, and reduce confusion over roles, responsibilities, and jurisdictional lines. Exhibits III-19 and III-20 display police and fire department attendance for the FIM Training courses.
Exhibit III-19
Freeway Incident Management Training Police Attendance Map
2003 – May 2013

Freeway Incident Management Police Coverage

Legend
1 - 6 Personnel
7 - 15 Personnel
16 + Personnel

North Central Texas Council of Governments
May 31, 2013
Truck Lane Restrictions

The concept of a truck lane restriction is to improve safety and mobility on the roadway system by providing additional guidance to the interaction of two classes of vehicles with very different operating characteristics. Based on traffic studies, truck lane restrictions have been shown to improve mobility, safety, and air quality. For a corridor to be eligible to be considered for truck lane restrictions there must be three or more traffic lanes (excluding frontage roads) in each direction, be a controlled access facility, on the State system, and there cannot be left exits/entrances.

In June 2009, NCTCOG completed the Truck Lane Restriction Expansion Study for the expansion of truck lane restrictions along IH 20, IH 30, IH 45, and IH 820. The corridors included in the study built upon the test segments along sections of IH 30 in Tarrant County and IH 20 in Dallas County put in place during the Truck Lane Pilot Study in 2005-2006. On October 29, 2009, the Texas Transportation Commission approved the expansion of truck lane restrictions within the region.
and the expanded restrictions were operational by summer 2010. This expansion added 187 miles of truck lane restrictions for a total of 245 miles of restrictions throughout the region. In 2013, TxDOT District staff completed the third truck lane restriction expansion study for the expansion of truck lane restrictions along 15 additional segments in the region. These additional corridors include portions of IH 20 in Parker County, IH 30 in Dallas and Rockwall Counties, IH 35E in Dallas and Ellis Counties, IH 35W in Tarrant County, IH 45 in Ellis County, IH 635 in Dallas County, IH 820 in Tarrant County, SH 114 in Dallas County, SH 121 in Tarrant County, SH 360 in Tarrant County, State Loop 12 in Dallas County, US 75 in Dallas and Collin Counties, and US 175 in Dallas County. Exhibit III-21 includes the existing and planned Truck Lane Restriction corridors.

Exhibit III-21
Potential Truck Lane Restriction Corridors

All freeway/tollway corridors require additional study for capacity, geometric, and safety improvements related to truck operations.
Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) applies advanced technologies of electronics, communications, computers, control, sensing and detection to transportation systems in order to improve safety, efficiency and service, and travel time reliability through transmitting and applying real-time information.\(^5\) In the DFW region, ITS aids transportation operators and emergency response personnel as they monitor traffic, detect and respond to incidents, and inform the public of traffic conditions via the Internet, roadway devices, and the media. Traffic monitoring and incident detection and response systems are operating on portions of the freeway system in Collin, Dallas, Denton, and Tarrant counties. TxDOT Dallas and Fort Worth Districts each manage and operate traffic management centers (TMCs) in Dallas and Tarrant counties. In addition, the North Texas Tollway Authority (NTTA) manages and operates the TMC for the tolled facilities. The intelligent transportation system components of the TxDOT and NTTA TMCs include closed-circuit television, lane control signals, dynamic message signs, mobility assistance patrols, and vehicle detectors on the limited-access facilities. Exhibit III-22 highlights the existing ITS technology in the Dallas-Fort Worth region.

Exhibit III-22
Existing Intelligent Transportation Systems Technology

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Summary

Evaluating a transportation system’s performance is an integral aspect of the CMP. The mix of data collection and performance measures evaluated through the Congestion Management Process look at multiple elements that affect traffic congestion on our metropolitan transportation system. Some of those data elements include corridor analysis, level of service analysis, reliability and speed data, traffic volumes, light rail and commuter rail ridership, and bicycle and pedestrian accessibility analysis. There are several ways data can be measured, 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.