



State of Texas
Regional ITS Architectures and Deployment Plans

Wichita Falls Region

Regional ITS Deployment Plan

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LIST OF ACRONYMS

| | |
|---------|--|
| AFB | Air Force Base |
| ARES | Amateur Radio Emergency Services |
| ATIS | Advanced Travel Information System |
| ATMS | Advanced Traffic Management System |
| AVL | Automated Vehicle Location |
| BRINSAP | Bridge Inventory Inspection System |
| C2C | Center-to-Center |
| CAD | Computer Aided Dispatch |
| CCTV | Closed-Circuit Television |
| DART | Dallas Area Rapid Transit |
| DMS | Dynamic Message Signs |
| DPS | Department of Public Safety |
| EMS | Emergency Medical Services |
| FHWA | Federal Highway Administration |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| HAR | Highway Advisory Radio |
| HAZMAT | Hazardous Materials |
| HCRS | Highway Condition Reporting System |
| HRI | Highway-Rail Intersections |
| ISP | Information Service Provider |
| ITS | Intelligent Transportation System |
| MDT | Mobile Data Terminal |
| RWIS | Road Weather Information System |
| TDCJ | Texas Department of Criminal Justice |
| TEA-21 | Transportation Equity Act for the 21st Century |
| TMC | Transportation Management Center |



LIST OF ACRONYMS

| | |
|-------|--|
| TOC | Traffic Operations Center Transit Operations Center |
| TxDOT | Texas Department of Transportation |
| USGS | United States Geological Survey |
| VIVDS | Video Image Vehicle Detector System |
| WIM | Weigh-in-Motion |



SUMMARY

In January 2001, the Federal Highway Administration (FHWA) issued a final rule to implement Section 5206(e) of the Transportation Equity Act for the 21st Century (TEA-21) requiring that Intelligent Transportation System (ITS) projects funded through the Highway Trust Fund conform to the National ITS Architecture and applicable standards.

To meet these requirements the Texas Department of Transportation (TxDOT) initiated the development of regional ITS architectures and deployment plans throughout the State of Texas. Although not required by the FHWA final rule, TxDOT took the opportunity to also develop an ITS deployment plan for each Region. The Wichita Falls Regional ITS Architecture and Regional ITS Deployment Plan were prepared as part of this initiative.

The Wichita Falls Regional ITS Deployment Plan outlines a vision for ITS deployment, and identifies and prioritizes projects that are needed to implement the ITS architecture on a short-, medium-, and long-term basis. In doing so, this plan also helps the Region to prioritize funding decisions. As infrastructure is incrementally built-out over a 20-year horizon, integration among key foundation systems in the Region can occur as the system grows and expands.

Stakeholders from throughout the Region participated in the development of the Regional ITS Deployment Plan. Participants included representatives from TxDOT, cities, counties, emergency management, transit management, Oklahoma DOT, Sheppard AFB, and the United States Geological Survey (USGS).

Building on the dialogue, consensus, and vision outlined in the Regional ITS Architecture, stakeholders in the Wichita Falls Region prioritized market packages and potential ITS projects for deployment in the Region. Projects were identified to correspond to the needs and priorities identified by the regional stakeholders, and were categorized into 5-year, 10-year, and 20-year timeframes.

The majority of ITS projects recommended for the Wichita Falls Region were identified in the following key areas:

- Travel and Traffic Management;
- Emergency Management
- Maintenance and Construction Management; and
- Public Transportation Management.

Recommended ITS projects in the 5-year, 10-year, and 20-year deployment timeframes were summarized in tables for each deployment horizon. This summary included the project name and a brief description, primary responsible agency, a planning level estimate of probable cost, an indication of whether or not funding had been identified for that project, as well as an estimated duration for implementation. For each recommended ITS project, more detailed project descriptions were developed which mapped each project back to applicable market packages and also identified any prerequisite project requirements.

With the substantial amount of effort invested by stakeholders in the Wichita Falls Region to develop both the Regional ITS Architecture and the Deployment Plan, developing a plan for maintaining these important tools was a key component of the process.

1. INTRODUCTION

1.1 Project Overview

The FHWA final rule to implement Section 5206(e) of the TEA-21 requires that ITS projects funded through the Highway Trust Fund conform to the National ITS Architecture and applicable standards. The rule requests that the National ITS Architecture be used to develop a local implementation of the National ITS Architecture, which is referred to as a “Regional ITS Architecture.”

In order to meet these requirements, TxDOT initiated the development of regional ITS architectures and deployment plans throughout the State of Texas. Although not required by the FHWA final rule, TxDOT sought to have an ITS deployment plan developed for each Region. The ITS Deployment Plan outlines a vision for ITS deployment in the Region and identifies and prioritizes projects that are needed to implement the ITS architecture on a short-, medium-, and long-term basis. In doing so, this plan also helps the Region to prioritize funding decisions by having a comprehensive, phased approach to the regional ITS program, so that the infrastructure can be incrementally built-out over a 20-year horizon, and integration among key foundation systems in the Region can occur as the system grows and expands.

The Wichita Falls Regional ITS Deployment Plan was developed using the Regional ITS Architecture developed in 2004. Through the architecture development process, stakeholders reached consensus on the transportation needs in the Region that could be addressed with ITS, worked with the architecture team to customize and prioritize market packages that formed the basis for the ITS Deployment Plan, and identified the required interfaces to provide the desired level of integration of systems and agencies within the Wichita Falls Region.

The Wichita Falls Regional ITS Architecture provided the framework and prioritized the key functions and services desired by stakeholders in the Region. The ITS Deployment Plan builds on the architecture by outlining specific ITS project recommendations and strategies for the Region, and identifying deployment timeframes so that the recommended projects and strategies can be implemented over time. Agency responsibilities for implementing and operating the systems also are a key component of the ITS Deployment Plan.

1.2 Document Overview

The Wichita Falls Regional ITS Deployment Plan is organized into four key sections:

Section 1 – Introduction

This section provides a brief overview of the Wichita Falls Regional ITS Deployment Plan, as well as an overview of some of the key features and stakeholders in the Wichita Falls Region.

Section 2 – Prioritization of Market Packages

Section 2 contains the prioritized market packages for the Wichita Falls Region. Included in this section is an overview of the prioritization process and detailed descriptions of the high, medium and low priority market packages.

Section 3 – Prioritization of Projects

Project recommendations have been developed for the Wichita Falls Region to provide an incremental, phased build-out of the Region’s ITS. These projects are categorized into 5-year, 10-year, and 20-year deployment timeframes.

Section 4 – Maintaining the Regional ITS Architecture and Deployment Plan

A procedure for maintaining the ITS Deployment Plan and submitting new projects to add to the plan is recommended in this section.

1.3 The Wichita Falls Region

1.3.1 Geography and Regional Characteristics

The Wichita Falls Region is located in north central Texas and shares a border with the State of Oklahoma. The boundaries of the Wichita Falls Region were defined by stakeholders to correspond with the TxDOT Wichita Falls District, although it was recognized by stakeholders that including other cities and communities along US 287 in the Fort Worth District would be beneficial. The Wichita Falls Region is bordered by six other TxDOT Districts, including: the Childress District to the west; the Abilene, Brownwood, Fort Worth and Dallas Districts to the south; and the Paris District to the east.

The counties included in the Wichita Falls Region are:

- Archer;
- Baylor;
- Clay;
- Cooke;
- Montague;
- Throckmorton;
- Wichita;
- Wilbarger; and
- Young.

TxDOT partners with local governments for roadway construction, maintenance, and traffic operations support, and serves as the responsible agency for on-system roadways in cities with populations less than 50,000. The City of Wichita Falls is the only city in the project Region with a population that exceeds the 50,000 threshold.

1.3.2 Transportation Infrastructure

Several key corridors traverse the Wichita Falls Region, making it an important gateway to the Texas Panhandle, Oklahoma, and neighboring TxDOT Districts, particularly Fort Worth and Dallas. Major roadway facilities within the Region include I-35 in the eastern part of the Region, I-44 in the Wichita Falls metro area through to Oklahoma, and US Highways 81, 277/82, 281, and 287.

I-35 and US 287 are important routes from the Dallas/Fort Worth metro area, and as such, there is a significant amount of commercial vehicle traffic that uses these corridors. Any

restrictions on these corridors will likely affect nearby or alternate routes, which are limited once outside of the metro areas. In the event of a major incident on one of the Region's primary corridors, there are limited traveler services on facilities outside of the Gainesville, Muenster, Bowie, Wichita Falls, and Vernon areas.

US Highway 287 is an important link between Colorado and Dallas/Fort Worth, which creates a major truck route through the Wichita Falls Region and on through the Panhandle. The amount of truck traffic is expected to increase along US 287 in the near future. Lockheed Martin will have a jet fighter manufacturing plant in Fort Worth, and this route will be the primary corridor for trucks hauling goods from the plant that need to head north to connect with I-40.

1.3.3 Existing ITS in the Wichita Falls Region

The Wichita Falls Region has already begun implementing intelligent transportation system infrastructure. TxDOT has permanent and portable dynamic message signs (DMS) that are utilized primarily for displaying construction and closure information. Video Image Vehicle Detection Systems (VIVDS) have been installed at several intersections in the Region by TxDOT and the City of Wichita Falls.

At the time the Regional ITS Architecture and Deployment Plan was being developed, TxDOT was embarking on an ITS deployment that includes a traffic management center (TMC) at the TxDOT Wichita Falls District Office, TxDOT's Advanced Traffic Management System (ATMS) software, nine closed circuit television (CCTV) cameras on metro area freeways, and ice detection on bridges. This phase of ITS deployment also includes road weather information system (RWIS) sensors and flood detection devices that will be implemented at specific locations in the Region. As part of the TMC and ATMS implementation, TxDOT Wichita Falls also is establishing a communications connection with the City of Wichita Falls Police. The City Police Dispatch will provide after-hours back up to the TxDOT TMC operators, and will have shared viewing of video and limited control of certain devices. Flood data sharing between TxDOT Wichita Falls and the USGS (via a satellite download) also is part of TxDOT's TMC implementation.

Signal preemption for emergency vehicles is in place within the City of Wichita Falls for fire vehicles and several emergency management agencies are utilizing computer aided dispatch (CAD) systems.

1.3.4 Wichita Falls Stakeholders

Stakeholder coordination and involvement is one of the key elements to the development of a regional ITS architecture and deployment plan. Because ITS often transcends traditional transportation infrastructure, it is important to involve non-traditional stakeholders in the architecture development and visioning process. Input from these stakeholders, both public and private, is a critical part of defining the interfaces, integration needs, and overall vision for ITS in the Wichita Falls Region.

The following is a list of stakeholders in the Wichita Falls Region who have participated in the project workshops or provided input to the study team as to the needs and issues that should be considered as part of the Wichita Falls Regional ITS Architecture and Deployment Plan:

- American Red Cross;
- City of Bowie;
- City of Gainesville;
- City of Iowa Park;
- City of Olney;
- City of Vernon;
- City of Wichita Falls;
- City of Windthorst;
- Clay County;
- James Allred Prison;
- Nortex Regional Planning Commission;
- Oklahoma Department of Transportation;
- Oklahoma Highway Patrol;
- Red River Authority;
- Rolling Plains Management Corporation (SHARP Lines);
- Senate District 30;
- Sheppard Air Force Base;
- Texas Department of Health;
- Texas Department of Public Safety;
- Texas Traveler Information Center;
- Texoma Area Paratransit System;
- TxDOT Traffic Operations Division (Austin);
- TxDOT Wichita Falls District;
- United Regional Healthcare System;
- US Geological Survey;
- Wichita County;
- Wichita County Amateur Radio Emergency Services (ARES);
- Wichita Falls Air Evac Lifeteam; and
- Young County.

Stakeholder agencies that are participating in the development of the Wichita Falls Regional ITS Deployment Plan are listed in **Table 1** along with contact information for agency representatives that have participated.



Table 1 – Wichita Falls Stakeholder Agencies and Contacts

| Stakeholder Agency | Contact | Address | Phone Number | E-Mail |
|-----------------------------|-----------------|--|--------------------------|-----------------------------------|
| American Red Cross | Steve Ayer | 1809 5th Street Wichita Falls, Texas 76301 | 940-322-8686 (ext 11) | sayer@cst.net |
| American Red Cross | Bev Shumann | 1809 5th Street Wichita Falls, Texas 76301 | 940-322-8686 (ext 20) | bevs@cst.net |
| City of Bowie | James Cantwell | 304 Lindsey Street Bowie, Texas 76230 | 940-872-2251 | N/A |
| City of Bowie | Jesse Gutierrez | 304 Lindsey Street Bowie, Texas 76230 | 940-872-1114 (ext 30) | N/A |
| City of Gainesville | Allan Stanley | 200 S. Rush Gainesville, Texas | 940-668-4551 | N/A |
| City of Iowa Park | Mike Price | 103 East Cash Iowa Park, Texas 76367 | 940-592-2131 | N/A |
| City of Olney | Joe Gamble | PO Box 546 Olney, Texas 76374 | 940-564-2102 | gambill@mail.com |
| City of Vernon | Jim Murray | 1725 Wilbarger Vernon, Texas 76384 | 940-552-2581 | jmurray@chipshot.net |
| City of Wichita Falls | Lin Barnett | 2100 Seymour Hwy Wichita Falls, Texas 76301 | 940-761-7450 | lin.barnett@cwftx.net |
| City of Wichita Falls | Mark Beauchamp | 2100 Seymour Highway Wichita Falls, Texas 76307 | N/A | mark.beauchamp@cwftx.net |
| City of Wichita Falls | Larry Blowers | 2100 Seymour Highway Wichita Falls, Texas 76301 | 940-761-7642 | N/A |
| City of Wichita Falls | John Henderson | 1300 7th Street Wichita Falls, Texas 76307 | 940-761-7619 | N/A |
| City of Wichita Falls PD | Glenn Barham | 610 Holliday Wichita Falls, Texas 76301 | 940-761-7797 | glenn.barham@wfpd.net |
| City of Wichita Falls PD | Karl Lillie | 610 Holliday Wichita Falls, Texas 76301 | 940-761-6897 | karl.lillie@wfpd.net |
| City of Wichita Falls PD | R.W. Smith | 610 Holliday Wichita Falls, Texas 76301 | 940-761-6897 | richard.smith@wfpd.net |
| City of Windthorst | Ervin Campbell | PO Box 128 Windthorst, Texas 76389 | 940-423-6682 | N/A |
| City of Windthorst | Sue Steinberger | PO Box 128 Windthorst, Texas 76389 | 940-423-6288 | N/A |
| Clay County | Kenneth Liggett | 100 N Bridge Henrietta, TX 76365 | 940-538-5597 | N/A |
| Department of Public Safety | William Sellers | 5505 North Central Freeway Wichita Falls, Texas 76305 | 940-851-5500 | william.sellers@txdps.state.tx.us |
| James Allred Prison | Danny Horton | 2101 FM 369 North Iowa Park, Texas 76367 | 940-855-7492 | N/A |



Table 1 – Wichita Falls Stakeholder Agencies and Contacts (continued)

| Stakeholder Agency | Contact | Address | Phone Number | E-Mail |
|---|--------------------|---|--------------------------|---------------------------------|
| Nortex Regional Planning Commission | Mary Kilgo | 4309 Old Jacksboro Hwy. Wichita Falls, Texas 76302 | 940-322-5281 | mkilgo@texasconnection.org |
| Oklahoma Department of Transportation | Bob Rose, P.E. | 2205 N. Highway 81 Duncan, Oklahoma 73533 | 580-255-7586 | N/A |
| Oklahoma Highway Patrol | Mike McClelland | 705 East Gore Lawton, Oklahoma 73501 | 580-353-0783 | mmcclell@dps.state.ok.us |
| Radio Hamm Operator Wichita County Area | David Gaines | 4215 Seabury Dr Wichita Falls, Texas 76319 | 940-692-7338 | n5dhg@earthlink.net |
| Red River Authority | Curtis Campbell | 900 8th Street, Suite 502 Wichita Falls, Texas 76301 | 940-723-8697 | N/A |
| Red River Authority | Sharon Faver | 900 8th Street, Suite 502 Wichita Falls, Texas 76301 | 940-723-8697 | N/A |
| Rolling Plains Mgmt Corporation | Lezlie Carroll | 300 E. California Crowell, Texas 79227 | 940-684-1571 | sharplines@yahoo.com |
| Senate District 30 | Craig Estes | 4245 Kemp, Suite 306 Wichita Falls, Texas 76308 | 512-463-0130 | craig.estes@senate.state.tx.us |
| Sheppard Air Force Base 82nd TRW Command Post | Michael Chapman | 419 Avenue G, Suite 4 Sheppard Air Force Base, Texas 76311 | 940-676-6266 | michael.chapman@sheppard.af.mil |
| Texas Department of Health | Jerry Bradshaw | 4309 Jacksboro Hwy, Suite 101 Wichita Falls, Texas 76302 | 940-767-8593 (ext 52) | jerry.bradshaw@tdh.state.tx.us |
| Texas Traveler Information Center | Becki Boyd | 900 Central Frwy Wichita Falls, Texas 76306 | 940-723-7931 | N/A |
| Texas Traveler Information Center | Lisa Vian | 900 Central Frwy Wichita Falls, Texas 76306 | 940-723-7931 | N/A |
| Texoma Area Paratransit System | Ven Hammonds | 6104 Texoma Parkway Sherman, Texas 75090 | 903-893-4601 | tapsinc1@airmail.net |
| TxDOT Austin Traffic Operations | Alex Power | Attn: TRF-Cedar Park #51, Wing E 125 East 11th Street Austin, Texas 78701-2483 | 512-416-3444 | apower@dot.state.tx.us |
| TxDOT Wichita Falls | Carolyn Askins | 1601 Southwest Parkway Wichita Falls, Texas 76301 | N/A | caskins@dot.state.tx.us |
| TxDOT Wichita Falls | Molli Choate | 1601 Southwest Parkway Wichita Falls, Texas 76302 | 940-720-7757 | mchoate@dot.state.tx.us |
| TxDOT Wichita Falls | Tim Hertel | 1601 SW Parkway Wichita Falls, Texas 76302 | 940-720-7721 | thertel@dot.state.tx.us |
| TxDOT Wichita Falls | Adele Lewis | 1601 SW Parkway Wichita Falls, Texas 76302 | 940-720-7728 | alewis@dot.state.tx.us |



Table 1 – Wichita Falls Stakeholder Agencies and Contacts (continued)

| Stakeholder Agency | Contact | Address | Phone Number | E-Mail |
|-------------------------------------|-----------------|--|---------------------|----------------------------------|
| TxDOT Wichita Falls | Davis Powell | 1601 Southwest Parkway Wichita Falls, Texas 76302 | 940-720-7717 | dpowel2@dot.state.tx.us |
| TxDOT Wichita Falls Area Office | Glenn Albritton | 2844 East Central Freeway Wichita Falls, Texas 76301 | 940-322-1634 | gallbri@dot.state.tx.us |
| United Regional Health Care System | Kim Brownlee | 1600 10th Street Wichita Falls, TX 76301 | 940-764-3093 | N/A |
| US Geological Survey | Mick Baldys | 3020 Buchanan Wichita Falls, Texas | 940-692-4283 | N/A |
| US Geological Survey | Mike Dorsey | 3020 Buchanan Wichita Falls, Texas | 940-692-4283 | N/A |
| US Geological Survey | Dave Holmes | 3010 Buchanan Wichita Falls, Texas 76308 | 940-692-4283 | dholmes@usgs.gov |
| Wichita County Emergency Management | Lee Bourgoin | 506 Holiday Street Wichita Falls, Texas 76301 | 940-763-0820 | N/A |
| Wichita County Precinct 3 | Gordon Griffith | 610 East Jefferson Iowa Park, Texas 76367 | 940-766-8260 | gordon.griffith@co.wichita.tx.us |
| Wichita Falls Air Evac Lifeteam | Shelly Dove | 1610 10th Street Wichita Falls, Texas 76301 | 940-764-3990 | AE34@air-evac.com |
| Wichita Falls Air Evac Lifeteam | Jim Whitman | 1610 10th Street Wichita Falls, Texas 76301 | 940-764-3990 | AE34@air-evac.com |
| Wichita Falls Air Evac Lifeteam | Pete Wolf | 1610 10th Street Wichita Falls, Texas 76301 | 940-764-3990 | AE34@air-evac.com |
| Young County | John Bullock | Young County Courthouse 516 4th Street, Room 103 Graham, Texas 76450 | 940-362-4301 | j.bullock@youngcounty.org |

2. PRIORITIZATION OF MARKET PACKAGES

2.1 Prioritization Process

Of the 75 available market packages in the National ITS Architecture Version 4.0, 35 were selected and customized for deployment in the Wichita Falls Region. Stakeholders were asked to prioritize the market packages into high, medium, and low priorities, based on regional needs, feasibility and likelihood of deployment, and overall contribution of the market package to the goals and vision for ITS functionality in the Region. A summary of these prioritized market packages is shown in **Table 2**.

The market package prioritization was a key factor in developing recommendations for ITS deployment and integration in the Wichita Falls Region. These priorities identified the key needs and services that are desired in the Wichita Falls Region, as well as the interfaces that need to be established to provide integrated functionality and establish communication between elements. These priorities also took into consideration the ITS infrastructure and capabilities that were already in place in the Region or soon to be implemented.

This section includes detailed descriptions of the prioritized market packages for the Wichita Falls Region. The market packages are organized into high, medium, and low priorities. It is important to note that the high, medium, and low prioritization does not necessarily correspond to any specific time frame (such as five, ten, or twenty year deployment horizon). For example, a market package can be a high priority, but because of funding or prerequisite project requirements, it might not be feasible for deployment for several years. Maturity and availability of technology were other factors for prioritizing the market packages. Other considerations included whether or not the market package was better suited for private deployment and operations rather than public. As an example, ISP-based Route Guidance might be viewed as a valuable traveler information service for motorists in the Region, but stakeholders felt this market package was best suited for deployment by a private service provider, and as such, deemed it a low priority for agencies in the Region.

Each market package in the following subsections includes:

- A brief definition of the market package (which have been modified from the National ITS Architecture definitions);
- Any existing infrastructure from that market package that is already existing in the Wichita Falls Region;
- Agencies currently operating or maintaining systems that apply to that market package;
- Planned projects that will address some or all of the services that are contained in the market package; and
- Any additional needs to bring the market package to the desired level of deployment or functionality.

Table 2 – Summary of Prioritized Market Packages for the Wichita Falls Region

| High Priority | Medium Priority | Low Priority |
|--|---|--|
| <ul style="list-style-type: none"> ▪ Network Surveillance ▪ Surface Street Control ▪ Traffic Information Dissemination ▪ Regional Traffic Control ▪ Incident Management System ▪ Emergency Response ▪ Road Weather Data Collection ▪ Weather Information Processing and Distribution ▪ Work Zone Management ▪ Work Zone Safety Monitoring ▪ Maintenance and Construction Activity Coordination ▪ Transit Fixed-Route Operations ▪ Demand Response Transit Operations ▪ Transit Security ▪ Transit Traveler Information ▪ Broadcast Traveler Information ▪ ITS Data Mart | <ul style="list-style-type: none"> ▪ Standard Railroad Grade Crossing ▪ Railroad Operations Coordination ▪ Emergency Routing ▪ Roadway Automated Treatment ▪ Winter Maintenance ▪ Roadway Maintenance and Construction ▪ Transit Vehicle Tracking ▪ Transit Passenger and Fare Management ▪ Multi-modal Coordination ▪ Weigh-in-Motion ▪ HAZMAT Management ▪ Interactive Traveler Information ▪ ITS Data Warehouse | <ul style="list-style-type: none"> ▪ Freeway Control ▪ Maintenance and Construction Vehicle Tracking ▪ Maintenance and Construction Vehicle Maintenance ▪ ISP-based Route Guidance ▪ In Vehicle Signing |

2.2 High Priority Market Packages

Market packages that were selected as high priorities for the Wichita Falls Region are listed and described in **Table 3**. These market packages typically represent systems or functions that serve as foundations on which to build regional ITS programs. Listed in this section are market packages that address baseline control, monitoring and coordination technologies for surface streets and freeways, road/weather conditions data gathering, transit, incident management and emergency response.

Many of these high priority market packages have components that are in various stages of deployment and operation in the Wichita Falls Region; that is, there are already systems and technologies deployed to deliver some of these high priority services and functions. For example, the Wichita Falls traffic signal systems and VIVDS have already been deployed and these are key components of the Surface Street Control market package. Although these devices are in place, this market package is still listed as a high priority. There are additional capabilities and functionality contained in this market package that are planned for implementation in the near-

term, thus building on the existing infrastructure and expanding the services of this particular market package in the Wichita Falls Region.

Table 3 – High Priority Market Packages for the Wichita Falls Region

| Network Surveillance (ATMS01) | High Priority |
|--|---|
| <p>This market package includes traffic detectors, other surveillance equipment, the supporting field equipment, and wireline communications to transmit the collected data back to the Traffic Management Subsystem. The derived data can be used locally or remotely. The data generated by this market package enables traffic managers to monitor traffic and road conditions, identify and verify incidents, detect equipment faults, and collect census data for traffic strategy development and long range planning. The collected data can also be analyzed and made available to users and the Information Service Provider Subsystem.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Traffic Count Stations ▪ TxDOT VIVDS ▪ TxDOT Wichita Falls TMC and ATMS Implementation ▪ TxDOT Wichita Falls CCTV ▪ TxDOT Wichita Falls RWIS ▪ City of Wichita Falls VIVDS | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ City of Wichita Falls |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Traffic Signal System Expansion Phase 1 ▪ TxDOT Traffic Signal System Upgrades Phase 1 ▪ TxDOT Wichita Falls CCTV Phase 2 | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Arterial Management System ▪ City of Wichita Falls CCTV ▪ City of Wichita Falls Traffic Operations Center Enhancements ▪ City of Wichita Falls Traffic Signal System Expansion Phase 2 ▪ City of Wichita Falls Traffic Signal System Expansion Phase 3 ▪ City of Wichita Falls Work Zone Safety Monitoring ▪ TxDOT Wichita Falls CCTV Phase 3 ▪ TxDOT Wichita Falls Flood Monitoring System Phase 2 ▪ TxDOT Wichita Falls ITS Expansion and Upgrade ▪ TxDOT Wichita Falls RWIS Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 3 ▪ TxDOT Wichita Falls TMC Expansion ▪ TxDOT Wichita Falls Traffic Signal System Upgrades Phase 2 ▪ TxDOT Wichita Falls Work Zone Safety Monitoring | |



Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| Surface Street Control (ATMS03) | High Priority |
|--|---|
| <p>This market package provides the central control and monitoring equipment, communication links, and the signal control equipment that support local surface street control and/or arterial traffic management. A range of traffic signal control systems are represented by this market package ranging from static pre-timed control systems to fully traffic responsive systems that dynamically adjust control plans and strategies based on current traffic conditions and priority requests. This market package is consistent with typical urban traffic signal control systems.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Traffic Signal System ▪ City of Wichita Falls Traffic Signal System | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ City of Wichita Falls |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Traffic Signal System Expansion Phase 1 ▪ TxDOT Traffic Signal System Upgrades Phase 1 | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Arterial Management System ▪ City of Wichita Falls CCTV ▪ City of Wichita Falls Emergency Vehicle Traffic Signal Preemption Expansion ▪ City of Wichita Falls Traffic Operations Center Enhancements ▪ City of Wichita Falls Traffic Signal System Expansion Phase 2 ▪ City of Wichita Falls Traffic Signal System Expansion Phase 3 ▪ TxDOT School Zone Flashers Paging System ▪ TxDOT Wichita Falls Emergency Vehicle Traffic Signal Preemption ▪ TxDOT Wichita Falls TMC Expansion ▪ TxDOT Wichita Falls Traffic Signal System Upgrades and Expansion ▪ TxDOT Wichita Falls Traffic Signal System Upgrades Phase 2 | |



Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|---|
| <p>Traffic Information Dissemination (ATMS06)</p> | <p>High Priority</p> |
| <p>This market package allows traffic information due to construction, maintenance, and weather, to be disseminated to drivers and vehicles using roadway equipment such as dynamic message signs or highway advisory radio.</p> <p>This package also covers the equipment and interfaces that provide traffic information from a traffic management center to the media (for instance via a direct tie-in between a traffic management center and radio or television station computer systems), Transit Management, Emergency Management, and Information Service Providers.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Permanent DMS on I-44/US 287 ▪ TxDOT Portable DMS ▪ TxDOT Wichita Falls TMC and ATMS Implementation ▪ City of Wichita Falls Police/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ City of Wichita Falls |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ TxDOT Center-to-Center Communications ▪ TxDOT Wichita Falls DMS Phase 2 (I-35) | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ 911 Call Centers/TxDOT Wichita Falls TMC Connection ▪ City and County/TxDOT TMC Connection ▪ City of Wichita Falls Arterial Management System ▪ City of Wichita Falls Traffic Operations Center Enhancements ▪ City of Wichita Falls Transit/City of Wichita Falls TOC Connection ▪ DPS/TxDOT Wichita Falls TMC Connection ▪ Kiosks at Travel Information Centers (TxDOT TextBox) ▪ Media Access to City of Wichita Falls CCTV ▪ Media Access to TxDOT CCTV Feeds ▪ Regional 511 Advanced Traveler Information System Server ▪ SHARP Lines Transit Operations Center/City of Wichita Falls TOC Connection ▪ Sheppard AFB/City of Wichita Falls TOC Connection ▪ Sheppard AFB/TxDOT TMC Connection ▪ TxDOT Wichita Falls DMS Phase 3 ▪ TxDOT Wichita Falls HAR ▪ TxDOT Wichita Falls ITS Expansion and Upgrade ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 1 ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 2 ▪ TxDOT Wichita Falls TMC Expansion ▪ TxDOT Wichita Falls Web Page Enhancements | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| Regional Traffic Control (ATMS07) | High Priority |
|---|--|
| <p>This market package provides for the sharing of traffic information and control among traffic management centers to support a regional control strategy. This package relies on roadside instrumentation supported by the Surface Street Control and Freeway Control Market Packages and adds hardware, software, and communications capabilities to implement traffic management strategies that are coordinated between allied traffic management centers. The extent of information and control sharing is determined through working arrangements between jurisdictions.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls TMC and ATMS Implementation ▪ City of Wichita Falls Police/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ City of Wichita Falls Police |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ TxDOT Center-to-Center Communications | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City and County/TxDOT TMC Connection ▪ City of Wichita Falls Traffic Operations Center Enhancements ▪ Interstate Coordination ▪ TxDOT Wichita Falls TMC Expansion ▪ TxDOT Wichita Falls TMC/City of Wichita Falls TOC Connection | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| Incident Management System (ATMS08) | High Priority |
|--|---|
| <p>This market package manages both unexpected incidents and planned events so that the impact to the transportation network and traveler safety is minimized. The market package includes incident detection capabilities through roadside surveillance devices (e.g. CCTV) and through regional coordination with other traffic management, maintenance and construction management, and emergency management centers as well as weather service entities and event promoters. Information from these diverse sources is collected and correlated by this market package to detect and verify incidents and implement an appropriate response.</p> <p>The response may include traffic control strategy modifications or resource coordination between center subsystems. The coordination with emergency management might be through a CAD system or through other communication with emergency field personnel. The coordination can also extend to tow trucks and other allied response agencies and field service personnel.</p> <p>Incident response also includes presentation of information to affected travelers using the Traffic Information Dissemination, Broadcast Traveler Information or Interactive Traveler Information market packages.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Texas/Oklahoma Electronic Incident Notification Messaging ▪ Permanent and Portable DMS ▪ TxDOT Wichita Falls TMC and ATMS Implementation ▪ TxDOT Wichita Falls CCTV Phase 1 ▪ City of Wichita Falls Police/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ Texas DPS ▪ Oklahoma Highway Patrol ▪ City of Wichita Falls Police ▪ Wichita County Skywarn Organization ▪ ARES Radio Operators |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ TxDOT Center-to-Center Communications ▪ TxDOT Wichita Falls CCTV Phase 2 ▪ TxDOT Wichita Falls DMS Phase 2 (I-35) | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City and County/TxDOT TMC Connection ▪ City of Wichita Falls Arterial Management System ▪ City of Wichita Falls CCTV ▪ City of Wichita Falls Police Dispatch Center Enhancements ▪ City of Wichita Falls Traffic Operations Center Enhancements ▪ DPS/TxDOT Wichita Falls TMC Connection ▪ Interstate Coordination ▪ Media Access to City of Wichita Falls CCTV ▪ Media Access to TxDOT CCTV Feeds ▪ Regional 511 Advanced Traveler Information System Server ▪ Sheppard AFB Emergency Services/City of Wichita Falls PSAP Communications Connection ▪ Sheppard AFB/City of Wichita Falls TOC Connection ▪ Sheppard AFB/TxDOT TMC Connection ▪ TDCJ/TxDOT TMC Connection ▪ TxDOT Wichita Falls CCTV Phase 3 | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|--|
| Incident Management System (ATMS08) | High Priority |
| <p>Additional Needs (continued)</p> <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls DMS Phase 3 ▪ TxDOT Wichita Falls HAR ▪ TxDOT Wichita Falls ITS Expansion and Upgrade ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 1 ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 2 ▪ TxDOT Wichita Falls TMC Expansion ▪ TxDOT Wichita Falls TMC/City of Wichita Falls TOC Connection | |
| Emergency Response (EM01) | High Priority |
| <p>This market package includes emergency vehicle equipment, equipment used to receive and route emergency calls, and wireless communications that enable safe and rapid deployment of appropriate resources to an emergency. Coordination between Emergency Management Subsystems supports emergency notification and coordinated response between agencies.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Texas DPS CAD ▪ Wichita Falls Police Department CAD ▪ Wichita Falls Police Department Central Dispatch ▪ Wichita Falls Fire Department Central Dispatch ▪ City of Wichita Falls Traffic Signal Preemption ▪ Wichita County Sheriff Emergency Services Centralized Dispatch ▪ Texas/Oklahoma Electronic Incident Notification Messaging ▪ City of Wichita Falls Police/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ Texas DPS ▪ City of Wichita Falls ▪ Wichita County Sheriff ▪ Oklahoma Highway Patrol ▪ TxDOT ▪ Wichita County Skywarn Organization ▪ ARES Radio Operators |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Police Dispatch Center Enhancements | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ 911 Call Centers/TxDOT Wichita Falls TMC Connection ▪ City of Wichita Falls Emergency Vehicle Traffic Signal Preemption Expansion ▪ City of Wichita Falls Police AVL and MDTs ▪ DPS/TxDOT Wichita Falls TMC Connection ▪ Prison Vehicle AVL ▪ Sheppard AFB Emergency Services/City of Wichita Falls PSAP Communications Connection ▪ Sheppard AFB/TxDOT TMC Connection ▪ TDJC/TxDOT TMC Connection ▪ TxDOT Wichita Falls Emergency Vehicle Traffic Signal Preemption | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|--|
| Road Weather Data Collection (MC03) | High Priority |
| <p>This market package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway. In addition to fixed road weather information system (RWIS) stations at the roadside, sensing of the roadway environment can also occur from sensor systems located on Maintenance and Construction Vehicles. The collected environmental data is used by the Weather Information Processing and Distribution Market Package to process the information and help operators make decisions on operations.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls RWIS (including Flood Detection) ▪ USGS/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ USGS |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Winter Maintenance System ▪ Other City/County Winter Maintenance Systems ▪ TxDOT Wichita Falls Anti-icing Program Phase 1 ▪ TxDOT Wichita Falls Anti-icing Program Phase 2 ▪ TxDOT Wichita Falls Flood Monitoring System Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 3 | |



Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| | |
|--|--|
| Weather Information Processing and Distribution (MC04) | High Priority |
| <p>This market package processes and distributes the environmental information collected from the Road Weather Data Collection market package. This market package uses the environmental data to detect environmental hazards such as icy road conditions, high winds, and dense fog, so system operators and decision support systems can make decisions on corrective actions to take. The continuing updates of road condition information and current temperatures can be used by system operators to more effectively deploy road maintenance resources, issue general traveler advisories, issue location specific warnings to drivers using the Traffic Information Dissemination market package, and aid operators in scheduling work activity.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ USGS/TxDOT Wichita Falls TMC Connection ▪ TxDOT Wichita Falls TMC and ATMS Implementation ▪ City of Wichita Falls Police/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT ▪ USGS ▪ City of Wichita Falls Police |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ TXDOT Center-to-Center Communications ▪ TxDOT HCRS Enhancements | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Winter Maintenance System ▪ Other City/County Winter Maintenance Systems ▪ TxDOT Wichita Falls Web Page Enhancements | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| Work Zone Management (MC08) | High Priority |
|--|--|
| <p>This market package directs activity in work zones, controlling traffic through portable DMS and informing other groups of activity (e.g., ISP, TM, other maintenance and construction centers) for better coordination management. Work zone speeds and delays are provided to the motorist prior to the work zones.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Portable Traffic Signals ▪ TxDOT HCRS ▪ TxDOT Permanent and Portable DMS ▪ TxDOT Wichita Falls TMC and ATMS Implementation | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ TxDOT HCRS Enhancements ▪ TxDOT Center-to-Center Communications ▪ TxDOT Wichita Falls DMS Phase 2 (I-35) | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Work Zone Safety Monitoring ▪ Regional 511 Advanced Traveler Information System Server ▪ TxDOT Wichita Falls Area Office Maintenance Workstations ▪ TxDOT Wichita Falls DMS Phase 3 ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 1 ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 2 ▪ TxDOT Wichita Falls Work Zone Safety Monitoring | |

| Work Zone Safety Monitoring (MC09) | High Priority |
|--|----------------------|
| <p>This market package includes systems and strategies to improve work crew safety and reduce collisions between the motoring public and maintenance vehicles and activities. Included in this market package is detection for vehicle intrusions to the work zone and warning systems to alert workers and drivers of potential safety hazards. This market package supports both stationary and mobile work zones.</p> | |
| <p>Existing Infrastructure</p> <p>None identified</p> | <p>Agency</p> |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Work Zone Safety Monitoring ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 2 ▪ TxDOT Wichita Falls Work Zone Safety Monitoring | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|---|
| Maintenance and Construction Activity Coordination (MC10) | High Priority |
| This market package supports the dissemination of maintenance and construction activity information to centers which can utilize it as part of their operations, or to the Information Service Providers who can provide the information to travelers. | |
| Existing Infrastructure | Agency |
| <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls TMC and ATMS Implementation | <ul style="list-style-type: none"> ▪ TxDOT |
| Planned Projects | |
| <ul style="list-style-type: none"> ▪ TXDOT Center-to-Center Communications ▪ TXDOT HCRS Enhancements | |
| Additional Needs | |
| <ul style="list-style-type: none"> ▪ City of Wichita Falls Maintenance Vehicle AVL ▪ County Maintenance Vehicle AVL ▪ Interstate Coordination ▪ TxDOT Wichita Falls Area Office Maintenance Workstations ▪ TxDOT Wichita Falls Web Page Enhancements | |

| | |
|--|---|
| Transit Fixed-Route Operations (APTS2) | High Priority |
| This market package performs vehicle routing and scheduling, as well as automatic driver assignment and system monitoring for fixed-route transit services. This service determines current schedule performance using automated vehicle location (AVL) data and provides information displays for the Transit Management Subsystem. Static and real time transit data is exchanged with Information Service Providers where it is integrated with that from other transportation modes (e.g. rail, ferry, air) to provide the public with integrated and personalized dynamic schedules. | |
| Existing Infrastructure | Agency |
| <ul style="list-style-type: none"> ▪ Wichita Falls Transit Operations Center ▪ Wichita Falls Transit Web Site | <ul style="list-style-type: none"> ▪ City of Wichita Falls |
| Planned Projects | |
| None identified at this time | |
| Additional Needs | |
| <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit AVL and MDTs ▪ City of Wichita Falls Transit Electronic Fare Collection System ▪ City of Wichita Falls Transit Kiosks ▪ City of Wichita Falls Transit Operations Center Enhancements and CAD ▪ City of Wichita Falls Transit Security System ▪ City of Wichita Falls Transit Web Page Enhancements ▪ City of Wichita Falls Transit/City of Wichita Falls TOC Connection ▪ Multi-Modal Coordination ▪ Regional Transit Smart Card | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|--|
| <p>Demand Response Transit Operations (APTS3)</p> | <p>High Priority</p> |
| <p>This market package performs vehicle routing and scheduling as well as automatic driver assignment and monitoring for demand responsive transit services. This package monitors the current status of the transit fleet and supports allocation of these fleet resources to service incoming requests for transit service while also considering traffic conditions. The Transit Management Subsystem provides the necessary data processing and information display to assist the transit operator in making optimal use of the transit fleet. This service includes the capability for a traveler request for personalized transit services to be made through the Information Service Provider (ISP) Subsystem.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Rolling Plains Transit Centralized Dispatch ▪ Texoma Rural Transit Centralized Dispatch | <p>Agency</p> <ul style="list-style-type: none"> ▪ Rolling Plains Management Corporation (SHARP Lines) ▪ Texoma Area Paratransit System |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit AVL and MDTs ▪ City of Wichita Falls Transit Electronic Fare Collection System ▪ City of Wichita Falls Transit Kiosks ▪ City of Wichita Falls Transit Operations Center Enhancements and CAD ▪ City of Wichita Falls Transit Security System ▪ City of Wichita Falls Transit Web Page Enhancements ▪ City of Wichita Falls Transit/City of Wichita Falls TOC Connection ▪ Multi-Modal Coordination ▪ Regional Transit Smart Card ▪ SHARP Lines AVL ▪ SHARP Lines Transit Operations Center and CAD ▪ SHARP Lines Transit Security Alarms and Cameras ▪ SHARP Lines Transit Operations Center/City of Wichita Falls TOC Connection ▪ SHARP Lines Web Site ▪ Texoma AVL ▪ Texoma Transit Operations Center and CAD ▪ Texoma Transit Security Alarms and Cameras ▪ Texoma Web Site | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| Transit Security (APTS5) | High Priority |
|---|---|
| <p>This market package provides for the physical security of transit passengers. An on-board security system is deployed to perform surveillance and warn of potentially hazardous situations. Public areas (e.g. stops, park and ride lots, stations) are also monitored.</p> <p>Information is communicated to the Transit Management Subsystem using wireless or wireline infrastructure. Security related information is also transmitted to the Emergency Management Subsystem when an emergency is identified that requires an external response. Incident information is communicated to the Information Service Provider.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Texoma Rural Transit On-board Video Recording | <p>Agency</p> <ul style="list-style-type: none"> ▪ Texoma Area Paratransit System |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit Security System ▪ SHARP Lines Transit Security Alarms and Cameras ▪ Texoma Transit Security Alarms and Cameras | |

| Transit Traveler Information (APTS8) | High Priority |
|---|---|
| <p>This market package provides transit users at transit stops and on-board transit vehicles with ready access to transit information. The information services include transit stop annunciation, imminent arrival signs, and real-time transit schedule displays that are of general interest to transit users. Systems that provide custom transit trip itineraries and other tailored transit information services are also represented by this market package.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ District Transit Information Center ▪ Wichita Falls Transit Web Site | <p>Agency</p> <ul style="list-style-type: none"> ▪ Rolling Plains Management Corporation ▪ Texoma Area Paratransit System ▪ Wichita Falls Transit |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit Kiosks ▪ City of Wichita Falls Transit Web Page Enhancements ▪ SHARP Lines Web Site ▪ Texoma Web Site | |

Table 3 – High Priority Market Packages for the Wichita Falls Region (continued)

| Broadcast Traveler Information (ATIS1) | High Priority |
|---|--|
| <p>This market package collects traffic conditions, advisories, general public transportation information, toll and parking information, incident information, air quality and weather information, and broadly disseminates this information through existing infrastructure and low cost user equipment (e.g., FM subcarrier, cellular data broadcast). This market package differs from the Traffic Information Dissemination market package, which provides localized highway advisory radio (HAR) and DMS information capabilities.</p> <p>The information may be provided directly to travelers by an information service provider (ISP) or other traveler service providers so that they can better inform travelers of conditions. Successful deployment of this market package relies on availability of real-time traveler information from roadway instrumentation, probe vehicles or other sources.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT HCRS ▪ TxDOT Wichita Falls TMC and ATMS Implementation ▪ TxDOT Web Page (static information only) | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT |
| <p>Planned Projects</p> <ul style="list-style-type: none"> ▪ TxDOT HCRS Enhancements | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit Web Page Enhancements ▪ Media Access to City of Wichita Falls CCTV ▪ Media Access to TxDOT CCTV Feeds ▪ Regional 511 Advanced Traveler Information System Server ▪ SHARP Lines Web Site ▪ Texoma Web Site ▪ TxDOT Wichita Falls Web Page Enhancements | |

| ITS Data Mart (AD1) | High Priority |
|--|--|
| <p>This market package provides a focused archive that houses data collected and owned by a single agency, district, private sector provider, research institution, or other organization.</p> <p>This focused archive typically includes data covering a single transportation mode and one jurisdiction that is collected from an operational data store and archived for future use. It provides general query and report access to archive data users.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ BRINSAP System ▪ TxDOT Pavement Management System | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <p>None identified at this time</p> | |

2.3 Medium Priority Market Packages

Table 4 outlines market packages that were deemed medium priority by stakeholders in the Wichita Falls Region. These market packages were identified as useful and desirable services and functions for the Region, although very few of these market packages have existing infrastructure in place or planned over the next few years. The feasibility of funding for these market packages was a factor in the prioritization. Availability and maturity of technology also was a consideration, particularly for the maintenance and construction management market packages. Many of these market packages were recently developed and added to the National ITS Architecture, and are not yet widely deployed.

Table 4 – Medium Priority Market Packages for the Wichita Falls Region

| Standard Railroad Grade Crossing/ Railroad Operations Coordination (ATMS13/ATMS15) | Medium Priority |
|---|---|
| <p>This market package manages highway traffic at highway-rail intersections (HRIs) where rail operational speeds are less than 80 miles per hour. Both passive (e.g., the crossbuck sign) and active warning systems (e.g., flashing lights and gates) are supported.</p> <p>These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning systems are activated on notification by interfaced wayside equipment of an approaching train. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities. Health monitoring of the HRI equipment and interfaces is performed; detected abnormalities are reported to both highway and railroad officials through wayside interfaces and interfaces to the traffic management subsystem.</p> <p>The Railroad Operations Coordination component provides an additional level of strategic coordination between rail operations and traffic management centers. Rail operations provides train schedules, maintenance schedules, and any other forecast events that will result in HRI closures. This information is used to develop forecast HRI closure times and durations that may be used in advanced traffic control strategies or to enhance the quality of traveler information.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Railroad Preemption at Two Intersections ▪ Passive Detention at Several Intersections throughout the Region | <p>Agency</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls ▪ TxDOT |
| <p>Planned Projects</p> <p>None identified at this time</p> | |
| <p>Additional Needs</p> <p>None identified at this time</p> | |

Table 4 – Medium Priority Market Packages for the Wichita Falls Region (continued)

| Emergency Routing (EM02) | Medium Priority |
|--|---|
| <p>This market package supports automated vehicle location and dynamic routing of emergency vehicles. The service also supports coordination with the Traffic Management Subsystem, collecting detailed road network conditions and requesting special priority or other specific emergency traffic control strategies on the selected route(s). The service provides for information exchange between care facilities and both the Emergency Management Subsystem and emergency vehicles.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Texas DPS CAD ▪ Wichita Falls Police Department CAD ▪ City of Wichita Falls Emergency Vehicle Signal Preemption ▪ City of Wichita Falls Police/TxDOT Wichita Falls TMC Connection | <p>Agency</p> <ul style="list-style-type: none"> ▪ Texas DPS ▪ City of Wichita Falls |
| <p>Planned Projects None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Emergency Vehicle Traffic Signal Preemption Expansion ▪ City of Wichita Falls Police AVL and MDTs ▪ DPS/TxDOT Wichita Falls TMC Connection ▪ TxDOT Wichita Falls Emergency Vehicle Traffic Signal Preemption | |

| Roadway Automated Treatment (MC05) | Medium Priority |
|---|--|
| <p>This market package automatically treats a roadway section based on environmental or atmospheric conditions. Treatments include fog dispersion, anti-icing chemicals, etc. The market package includes the environmental sensors that detect adverse conditions, the automated treatment system itself, and driver information systems (e.g., dynamic message signs) that warn drivers when the treatment system is activated.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ Permanent and Portable DMS ▪ TxDOT Wichita Falls RWIS | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT |
| <p>Planned Projects None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls Anti-icing Program Phase 1 ▪ TxDOT Wichita Falls Anti-icing Program Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 3 | |

Table 4 – Medium Priority Market Packages for the Wichita Falls Region (continued)

| Winter Maintenance (MC06) | Medium Priority |
|---|--|
| <p>This market package supports winter road maintenance including snow plow operations, roadway treatments (e.g., salt spraying and other anti-icing material applications), and other snow and ice control activities. This package monitors environmental conditions and weather forecasts and uses the information to schedule winter maintenance activities, determine the appropriate snow and ice control response, and track and manage response operations.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls RWIS ▪ TxDOT Wichita Falls TMC and ATMS Implementation | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT |
| <p>Planned Projects None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Winter Maintenance System ▪ Other City/County Winter Maintenance Systems ▪ TxDOT Wichita Falls Anti-icing Program Phase 1 ▪ TxDOT Wichita Falls Anti-icing Program Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 3 | |

| Roadway Maintenance and Construction (MC07) | Medium Priority |
|---|--|
| <p>This market package supports numerous services for scheduled and unscheduled maintenance and construction on a roadway system or right-of-way. Maintenance services would include landscape maintenance, hazard removal, routine maintenance activities, and repair and maintenance of both ITS and non-ITS equipment on the roadway. Environmental conditions information is also received from various weather sources to aid in scheduling maintenance and construction activities.</p> | |
| <p>Existing Infrastructure</p> <ul style="list-style-type: none"> ▪ TxDOT Wichita Falls RWIS | <p>Agency</p> <ul style="list-style-type: none"> ▪ TxDOT |
| <p>Planned Projects None identified at this time</p> | |
| <p>Additional Needs</p> <ul style="list-style-type: none"> ▪ City of Wichita Falls Winter Maintenance System ▪ Other City/County Winter Maintenance Systems ▪ TxDOT Wichita Falls Area Office Maintenance Workstations ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 1 ▪ TxDOT Wichita Falls Portable Smart Work Zones Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 2 ▪ TxDOT Wichita Falls RWIS Phase 3 | |

Table 4 – Medium Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|------------------------|
| Transit Vehicle Tracking (APTS1) | Medium Priority |
| This market package monitors current transit vehicle location using an Automated Vehicle Location System. The location data may be used to determine real time schedule adherence and update the transit system's schedule in real-time. | |
| Existing Infrastructure None identified | Agency |
| Planned Projects None identified at this time | |
| Additional Needs <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit AVL and MDTs ▪ City of Wichita Falls Transit Operations Center Enhancements and CAD ▪ SHARP Lines AVL ▪ SHARP Lines Transit Operations Center and CAD ▪ SHARP Lines Web Site ▪ Texoma AVL ▪ Texoma Transit Operations Center and CAD ▪ Texoma Web Site | |

| | |
|--|------------------------|
| Transit Passenger and Fare Management (APTS4) | Medium Priority |
| This market package manages passenger loading and fare payments on-board vehicles using electronic means. It allows transit users to use a traveler card or other electronic payment device. Sensors mounted on the vehicle permit the driver and central operations to determine vehicle loads, and readers located either in the infrastructure or on-board the transit vehicle allow electronic fare payment. Data is processed, stored, and displayed on the transit vehicle and communicated as needed to the Transit Management Subsystem. | |
| Existing Infrastructure None identified | Agency |
| Planned Projects None identified at this time | |
| Additional Needs <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit Electronic Fare Collection System ▪ City of Wichita Falls Transit Passenger Counters ▪ Regional Transit Smart Card | |

Table 4 – Medium Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|------------------------|
| Multi-modal Coordination (APTS7) | Medium Priority |
| <p>This market package establishes two way communications between multiple transit and traffic agencies to improve service coordination. Multimodal coordination between transit agencies can increase traveler convenience at transfer points and also improve operating efficiency. Coordination between traffic and transit management is intended to improve on-time performance of the transit system to the extent that this can be accommodated without degrading overall performance of the traffic network. More limited local coordination between the transit vehicle and the individual intersection for signal priority is also supported by this package.</p> | |
| Existing Infrastructure None identified | Agency |
| Planned Projects None identified at this time | |
| Additional Needs <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit/City of Wichita Falls TOC Connection ▪ Multi-modal Coordination | |

| | |
|---|--------------------------|
| Weigh-In-Motion (CVO06) | Medium Priority |
| <p>This market package provides for high speed weigh-in-motion with or without Automatic Vehicle Identification capabilities. This market package provides the roadside equipment that could be used as a stand-alone system or to augment the Electronic Clearance (CVO03) market package.</p> | |
| Existing Infrastructure ▪ Weigh-In-Motion | Agency ▪ TxDOT |
| Planned Projects None identified at this time (WIM projects typically mainstreamed into pavement rehabilitation projects) | |
| Additional Needs <ul style="list-style-type: none"> ▪ Wichita Falls Weigh-In-Motion Expansion | |

| | |
|---|------------------------|
| HAZMAT Management (CVO10) | Medium Priority |
| <p>This market package integrates incident management capabilities with commercial vehicle tracking to assure effective treatment of HAZMAT materials and incidents. HAZMAT tracking is performed by the Fleet and Freight Management Subsystem. The Emergency Management Subsystem is notified by the Commercial Vehicle if an incident occurs and coordinates the response. The response is tailored based on information that is provided as part of the original incident notification or derived from supplemental information provided prior to the beginning of the trip or gathered following the incident depending on the selected policy and implementation.</p> | |
| Existing Infrastructure None identified | Agency |
| Planned Projects None identified at this time | |
| Additional Needs None identified at this time | |

Table 4 – Medium Priority Market Packages for the Wichita Falls Region (continued)

| | |
|---|---|
| Interactive Traveler Information (ATIS2) | Medium Priority |
| <p>This market package provides tailored information in response to a traveler request. Both real-time interactive request/response systems and information systems that "push" a tailored stream of information to the traveler based on a submitted profile are supported. The traveler can obtain current information regarding traffic conditions, transit services, ride share/ride match, parking management, and pricing information.</p> <p>Information can be accessed via phone, kiosk, Personal Digital Assistant, personal computer, and a variety of in-vehicle devices. Successful deployment of this market package relies on availability of real-time transportation data from roadway instrumentation, probe vehicles or other means.</p> | |
| Existing Infrastructure | Agency |
| <ul style="list-style-type: none"> ▪ TxDOT Web Page (static information only) | <ul style="list-style-type: none"> ▪ TxDOT |
| Planned Projects | |
| <ul style="list-style-type: none"> ▪ TxDOT HCRS Enhancements | |
| Additional Needs | |
| <ul style="list-style-type: none"> ▪ City of Wichita Falls Transit Kiosks ▪ Kiosks at Travel Information Centers (TxDOT TextBox) ▪ Regional 511 Advanced Traveler Information System Server ▪ TxDOT Wichita Falls Web Page Enhancements | |

| | |
|--|------------------------|
| ITS Data Warehouse (AD2) | Medium Priority |
| <p>This market package includes all of the data collection and management capabilities provided by the ITS Data Mart, and adds the functionality and interface definitions that allow the collection of data from multiple agencies and data sources spanning across modal and jurisdictional boundaries. It performs the additional transformations and provides the additional data management features that are necessary so that all the data can be managed in a single repository. The potential for large volumes of carried data suggests additional on-line analysis and data mining features that are also included in this market package in addition to the basic query and reporting user access features offered by the ITS Data Mart.</p> | |
| Existing Infrastructure | Agency |
| None identified | |
| Planned Projects | |
| None identified at this time | |
| Additional Needs | |
| <ul style="list-style-type: none"> ▪ Nortex Regional Data Archive | |

2.4 Low Priority Market Packages

Five of the market packages that were identified and customized for the Wichita Falls Region were ranked as low priority by stakeholders. These market packages are listed in **Table 5**. The services contained in these lower priority market packages were deemed useful and desirable for the Region, but stakeholders did not feel that public agencies should put a strong focus on these market packages in the near-term. These market packages were included as part of the Regional ITS Architecture so as not to preclude them from future deployment in the Region.

Some of these market packages were identified as candidates for private sector deployment and operations, such as ISP-Based Route Guidance. Others, such as Maintenance and Construction Vehicle Tracking, were identified as being potential considerations for future implementation.

Table 5 – Low Priority Market Packages for the Wichita Falls Region

| Market Package Name | Description | Comments |
|---|--|---|
| Freeway Control (ATMS04) | This market package provides the communications and roadside equipment to support ramp control, lane controls, and interchange control for freeways. This package is consistent with typical urban traffic freeway control systems. This package incorporates the instrumentation included in the Network Surveillance Market Package to support freeway monitoring and adaptive strategies as an option. This market package also includes the capability to utilize surveillance information for detection of incidents. | Due to minimal congestion delays along freeways in the Region, freeway control is not a high priority at this time. There are detection, surveillance, and traveler information tools already in place with additional devices planned for urban area freeways. Additional freeway control strategies will be evaluated for potential implementation in the future. |
| Maintenance and Construction Vehicle Tracking (MC01) | This market package will track the location of maintenance vehicles and other equipment to ascertain the progress of their activities. These activities can include ensuring the correct roads are being plowed and work activity is being performed at the correct locations. | This market package was not deemed a high priority at this time, however, it was expected that the information from this market package may be useful to the Region in the future if maintenance activities become more automated. |
| Maintenance and Construction Vehicle Maintenance (MC02) | This market package performs vehicle maintenance scheduling and manages both routine and corrective maintenance activities on vehicles and other maintenance and construction equipment. It includes on-board sensors capable of automatically performing diagnostics for maintenance and construction vehicles, and the systems that collect this diagnostic information and use it to schedule and manage vehicle maintenance. | Based on the current state of technology, this market package was not identified as needed in the Wichita Falls Region at this time. As technology evolves, the Region might consider evaluating and implementing this market package in the future. |



Table 5 – Low Priority Market Packages for the Wichita Falls Region (continued)

| Market Package Name | Description | Comments |
|----------------------------------|---|--|
| ISP-Based Route Guidance (ATIS5) | This market package offers the user pre-trip route planning and turn-by-turn route guidance services, which are generated by an Information Service Provider (ISP). Routes could be based on static information or reflect real time network conditions. This approach simplifies the user equipment requirements and can provide the infrastructure better information on which to predict future traffic. The package includes two way data communications and optionally also equips the vehicle with the databases, location determination capability, and display technology to support turn-by-turn route guidance. | This market package is best suited for deployment and ongoing operations by a private sector ISP. Fee-based subscription services are typically required for delivery of this service. Stakeholders recognized a need to support this market package but public agencies in the Region will not take an active role in its implementation. |
| In Vehicle Signing (ATIS9) | This market package supports distribution of traffic and travel advisory information to drivers through in-vehicle devices. It includes short range communications between roadside equipment and the vehicle and wireline connections to the Traffic Management Subsystem for coordination and control. This market package also informs the driver of both highway-highway and highway-rail intersection status. | This market package requires substantial effort on the part of private fleets to instrument their vehicles before this market package can prove an effective method of information dissemination. |

3. PRIORITIZATION OF PROJECTS

In order to achieve the vision of the Regional ITS Architecture, a Region must deploy carefully developed projects that provide the functionality and interoperability identified in the architecture. A key step toward that vision is the development of an ITS Deployment Plan that identifies specific projects, timeframes, and responsible agencies.

Input from all stakeholders is required in order for the stakeholders to have ownership of the ITS Deployment Plan and also to be sure that the plan has realistically identified projects and timeframes for the Region. Cost is another important factor. Cost can vary a great deal for many ITS elements, depending on the level of deployment, maturity of the technology, type of communications, etc. For example, freeway network surveillance could be adequately achieved for one Region by the deployment of still-frame CCTV cameras only at freeway interchanges. In another Region, there may be a desire for full-motion cameras deployed at one mile intervals to provide complete coverage of the freeway. The infrastructure and telecommunications costs for these two projects would vary a great deal, yet either one could be suitable for a particular Region.

In order to achieve input from stakeholders, a workshop was held in the Wichita Falls Region on March 24, 2004 to present the draft Regional ITS Deployment Plan and discuss potential projects. Each project recommended for the Regional ITS Deployment Plan was discussed, and consensus was reached by the stakeholders on the project description and the timeframe for implementation.

In the following sections, projects are categorized into short-term projects (5-year deployment timeframe), mid-term projects (10-year deployment timeframe), and long-term projects (20-year deployment timeframe). For each timeframe, a summary table has been included that provides a brief project description, responsible agency, probable cost, an indication as to whether funding has been identified, and an estimated duration for the project to be designed and implemented. The agency identified as the responsible agency will be responsible for implementation, operations and maintenance unless otherwise noted.

Following each table, a more detailed description of individual projects is included. This section also lists the market packages associated with each project and any pre-requisite projects that are required.

3.1 Short-Term Projects (5-Year)

Table 6 provides a description of projects for the Wichita Falls Region in the 5-year timeframe. These projects represent the highest priority for the Region and should be strongly considered for implementation in the short-term. Immediately following **Table 6** are project descriptions for each of the short-term recommendations. These short-term project recommendations were developed based on the first phase of ITS implementation taking place in the fall/winter of 2004.

3.2 Mid-Term Projects (10-Year)

Table 7 provides a description of projects in the 10-year timeframe. Several of these projects are continuations of projects that will begin in the 5-year timeframe. These projects are important to the Region, but will need further review at the time of their deployment to ensure they are still a priority for the Region. Immediately following **Table 7** are project descriptions for each of the mid-term recommendations.

3.3 Long-Term Projects (20-Year)

Table 8 provides a description of projects in the 20-year timeframe. While these projects represent market packages and anticipated future needs identified for the Region, they will need to be closely reviewed prior to implementation. It is expected that a major update to the Region's ITS Deployment Plan will occur prior to year 10 which would allow stakeholders to reassess these long-term projects to be sure that they are still feasible for the Region. Immediately following **Table 8** are project descriptions for each of the long-term recommendations.



Table 6 – Short-Term Projects (5-Year)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|---|---|-----------------------------|------------------|----------------------------|----------------------------|
| Travel and Traffic Management | | | | | |
| TxDOT Wichita Falls DMS Phase 2 (I-35) | Implement additional dynamic message signs (DMS) on I-35. Phase 1 is already implemented. | TxDOT | \$400,000 | Yes (Partial) | 2 years |
| TxDOT Wichita Falls CCTV Phase 2 | Implement additional closed-circuit television (CCTV) cameras along key routes including Spur 325/SH 240, US 82, and I-35. Includes, associated communications, modems and other support infrastructure | TxDOT | \$400,000 | Yes (Partial) | 6 months |
| TxDOT Center-to-Center Communications | Enhance coordination with other TxDOT Districts through implementation of center-to-center communications between Wichita Falls, Ft. Worth, Dallas and other TxDOT Districts | TxDOT | N/A | Yes (statewide initiative) | 6 months |
| TxDOT Wichita Falls TMC/City of Wichita Falls TOC Connection | Implement a link between the TxDOT Wichita Falls Traffic Management center (TMC) and City of Wichita Falls Traffic Operations Center (TOC) to share video, real-time traffic data, and other information | TxDOT/City of Wichita Falls | To Be Determined | No | 1 year |
| TxDOT Traffic Signal System Upgrades Phase 1 | Expand TxDOT traffic signal system at intersections throughout the Region. Also includes the implementation of Video Image Vehicle Detection System (VIVDS). | TxDOT | To Be Determined | Yes | 5 years |
| TxDOT Wichita Falls Web Page Enhancements | Enhance a web page in the Wichita Falls Region for travel information, including real-time conditions, winter storm alerts and advisories, closures, etc. Include TxDOT and local agency information, as well as a link to Oklahoma roadway conditions information. | TxDOT | \$75,000 | No | 1 year |
| Media Access to TxDOT CCTV Feeds | Implement a video switch that will allow local media permissive access to TxDOT CCTV camera feeds (media to provide fiber/leased line for access to switch, TxDOT to implement switch) | TxDOT/Local Media | \$40,000 (TxDOT) | No | 3 months |
| City of Wichita Falls Traffic Signal System Expansion Phase 1 | The City of Wichita Falls is in the process of upgrading its signal system. Also includes the implementation of VIVDS. | City of Wichita Falls | \$100,000/year | Yes | 5 years (underway) |



Table 6 – Short-Term Projects (5-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|---|--|-----------------------|------------------|----------------------------|----------------------------|
| Emergency Management | | | | | |
| DPS/TxDOT Wichita Falls TMC Connection | Install connection from Department of Public Safety (DPS) to TxDOT TMC for CCTV shared video monitoring and incident information coordination | TxDOT/DPS | To Be Determined | No | 3 months |
| City of Wichita Falls Police Dispatch Center Enhancements | Expand the capabilities of the City of Wichita Falls Police Dispatch Center to facilitate video monitoring and incident information coordination. This project also includes a radio upgrade. | City of Wichita Falls | To Be Determined | Yes | 1 year |
| Sheppard AFB/TxDOT TMC Connection | Implement a link from Sheppard Air Force Base (AFB) to the TxDOT TMC to allow for shared viewing of CCTV cameras, real time data, and exchange of incident information (particularly for base restrictions/closures) | TxDOT/Sheppard AFB | To Be Determined | No | 3 months |
| Maintenance and Construction Management | | | | | |
| City of Wichita Falls Work Zone Safety Monitoring | Procure a portable work zone safety monitoring system that can be set up at work sites, lane closures or other areas where crews would benefit from advance warning of an oncoming vehicle into the construction/maintenance activity zone. Includes detectors and alarms. | City of Wichita Falls | \$500,000 | No | 1 year |
| TxDOT HCRS Enhancements | Implement enhancements to the Highway Condition Reporting System (HCRS). This is a statewide effort that is currently underway. | TxDOT | N/A | Yes (statewide initiative) | 1 year |
| TxDOT Wichita Falls Area Office Maintenance Workstations | Implement workstations at Wichita Falls District Area Offices to allow maintenance staff to enter information into HCRS, provide shared control of some field devices, view sensor data and camera images | TxDOT | \$40,000 | No | 2 years |
| TxDOT Wichita Falls Flood Monitoring System Phase 2 | Implement additional flood monitoring and warning sensors at key locations in the region prone to flooding | TxDOT | \$100,000 | No | 1 year |
| TxDOT Wichita Falls RWIS Phase 2 | Install additional road weather information system (RWIS) sensors at key locations in the region to provide accurate temperature, pavement conditions, precipitation and wind data as well as detect the presence of ice on the roadway | TxDOT | \$100,000 | Yes | 6 months |



Table 6 – Short-Term Projects (5-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|---|---------------------------------|-----------------|--------------------|----------------------------|
| <i>Maintenance and Construction Management (continued)</i> | | | | | |
| TxDOT Wichita Falls Portable Smart Work Zones Phase 1 | Procure portable smart work zone equipment for TxDOT, including speed warning trailers, portable DMS, portable CCTV, portable detection, and other systems to enhance work zone safety. Include a link from field equipment to TMC and Maintenance sections | TxDOT | \$400,000 | No | 1 year |
| TxDOT Wichita Falls Work Zone Safety Monitoring | Procure a portable work zone safety monitoring system that can be set up at work sites, lane closures, or other areas where crews would benefit from advance warning of an oncoming vehicle into the construction/maintenance activity zone. Includes detectors and alarms. | TxDOT | \$500,000 | No | 1 year |
| <i>Public Transportation Management</i> | | | | | |
| Texoma Transit Operations Center and CAD | Enhance the current Texoma Transit Operations/Dispatch Center and implement computer aided dispatch (CAD) for communications and fleet activity logs | Texoma Area Paratransit System | \$200,000 | No | 1 year |
| Texoma Transit Security Alarms and Cameras | Install alarms and video cameras for surveillance on-board Texoma demand-response fleet | Texoma Area Paratransit System | \$10,000/veh | No | 6 months |
| SHARP Lines Transit Operations Center and CAD | Implement a Transit Operations Center and CAD system to support demand-response transit services in the Region | Rolling Plains Management Corp. | \$200,000 | No | 6 months |
| SHARP Lines Transit Security Alarms and Cameras | Install alarms and video cameras for surveillance on-board SHARP Lines demand-response fleet (33 vehicles) | Rolling Plains Management Corp. | \$10,000/veh | No | 6 months |
| City of Wichita Falls Transit Operations Center Enhancements and CAD | Implement enhancements to the current City Transit Dispatch center, including CAD to automate some of the operations functions, and support better coordination among transit, traffic and emergency operations | City of Wichita Falls | \$250,000 | No | 1 year |
| City of Wichita Falls Transit Security System | Install alarms and video cameras for surveillance on-board City of Wichita Falls transit vehicles. | City of Wichita Falls | \$10,000/veh | No | 6 months |



Table 6 – Short-Term Projects (5-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|--|---|------------------|----------------------------|----------------------------|
| Public Transportation Management (continued) | | | | | |
| City of Wichita Falls Transit Web Page Enhancements | Enhance the current City of Wichita Falls web page to provide additional information, including road conditions/service disruptions, and links to other transit providers in the region. | City of Wichita Falls | \$50,000 | No | 3 months |
| City of Wichita Falls Transit/City of Wichita Falls TOC Connection | Establish a link between the Wichita Falls Transit Operations Center and the City's Traffic Operations Center to share information about road conditions, closures, and incidents | City of Wichita Falls | To Be Determined | No | 3 months |
| SHARP Lines Transit Operations Center/City of Wichita Falls TOC Connection | Establish a link between the SHARP Lines Transit Operations Center and the City's Traffic Operations Center to share information about road conditions, closures, and incidents | Rolling Plains Management Corp./City of Wichita Falls | To Be Determined | No | 3 months |
| Commercial Vehicle Operations | | | | | |
| Wichita Falls Weigh-In-Motion Expansion | Implement additional Weigh-in-Motion (WIM) stations on roadways in the Wichita Falls Region. Possible routes include I-35, US 187 and US 82. This is a statewide program administered by TxDOT Transportation Planning and Programming Division. | TxDOT | N/A | Yes (statewide initiative) | 2 years |

*Agency listed is responsible for implementation, operations, and maintenance unless otherwise noted.

**Probable Cost is not an estimate because no design work has been done.

Wichita Falls Region Short-Term Projects (5-year)

Travel and Traffic Management

TxDOT Wichita Falls DMS Phase 2 (I-35)

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Work Zone Management (MC08)

Prerequisite Projects: None

Description: This project will implement additional DMS at key locations in the Wichita Falls Region. Priority locations are along I-35. A Phase 1 DMS project has already been implemented which includes DMS on metro area freeways. This project is partially funded.

The estimated cost of this expansion is \$400,000.

TxDOT Wichita Falls CCTV Phase 2

Associated Market Packages:

- Network Surveillance (ATMS01)
- Incident Management (ATMS08)

Prerequisite Projects: None

Description: This project includes the deployment of additional CCTV cameras along key segments of roadway in the Wichita Falls Region, including Spur 325/ SH 240 at the entrance to Sheppard AFB, US 82, and I-35. This also includes associated communications, modems, and other support infrastructure. The CCTV cameras can be used for homeland security, incident detection and verification, to monitor congestion and to aid in the dispatch of emergency vehicles. The information gathered by CCTV cameras (video feed) can be shared with the area emergency management agencies.

The estimated cost of this project is \$400,000. This project is partially funded.

TxDOT Center-to-Center Communications

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Regional Traffic Control and Coordination (ATMS07)
- Incident Management System (ATMS08)
- Weather Information Processing and Distribution (MC04)
- Work Zone Management (MC08)
- Maintenance and Construction Activity Coordination (MC10)

Prerequisite Projects: None

Description: The Center-to-Center (C2C) Communications project will enhance coordination with TxDOT Districts (and potentially other agencies) through connection to the statewide C2C core infrastructure. A communication backbone must be developed with sufficient capacity between the TxDOT Wichita Falls District Office and existing C2C infrastructure. Determination of whether the backbone should be TxDOT owned, leased, or a combination thereof will be determined at a later date. The software required to support C2C communications is integrated with the TxDOT developed ATMS, so significant software development efforts are not anticipated. Resources will be required to oversee installation of the communications backbone between the TxDOT Wichita Falls District Office and statewide C2C facilities. As part of connecting to the statewide C2C infrastructure, the Wichita Falls Region will provide data to the statewide web server and statewide data archiving database. In return, access to information from other TxDOT Districts (and potentially other agencies) will be available to enhance operations throughout the Region.

TxDOT Wichita Falls TMC/City of Wichita Falls TOC Connection

Associated Market Packages:

- Regional Traffic Control and Coordination (ATMS07)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project includes the implementation of a link between the TxDOT Wichita Falls TMC and the City of Wichita Falls TOC to share video, real-time traffic data, and other information. The cost of this connection will be determined based on the communication method chosen.

TxDOT Traffic Signal System Upgrades Phase 1

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)

Prerequisite Projects: None

Description: This project includes the expansion of the TxDOT traffic signal system at signalized intersections throughout the Region. It also includes the implementation of VIVDS.

The estimated cost is \$350,000 per year.

TxDOT Wichita Falls Web Page Enhancements

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Weather Information Processing and Distribution (MC04)
- Maintenance and Construction Activity Coordination (MC10)
- Broadcast Traveler Information (ATIS1)
- Interactive Traveler Information (ATIS2)

Prerequisite Projects: None

Description: TxDOT Wichita Falls plans to implement a web page that will serve as a traveler information tool for motorists in the Region. This web page will be an enhanced version of what Wichita Falls-area information is currently available via the statewide TxDOT web page, and is envisioned to include current closures and restrictions, maintenance activities, hazards, real-time weather and pavement conditions, weather emergencies impacting travel, and motorist alerts and advisories. Additional content and links could include information about traveler services in towns and cities in the Region, or links to Chambers of Commerce. Information on major corridors in neighboring regions as well as Oklahoma also could be included.

The estimated cost of this project is \$75,000.

Media Access to TxDOT CCTV Feeds

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management (ATMS08)
- Broadcast Traveler Information (ATIS1)

Prerequisite Projects: None

Description: This project includes the implementation of a video switch that will allow local media permissive access to TxDOT CCTV camera feeds. Local media would need to provide fiber/leased line for access to the video switch, TxDOT would implement and maintain the switch.

The estimated cost to TxDOT for this project is \$40,000.

City of Wichita Falls Traffic Signal System Expansion Phase 1

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)

Prerequisite Projects: None

Description: This project includes upgrading the City of Wichita Falls signal system as well as implementing VIVDS at certain locations.

The estimated cost of this project is \$100,000 per year.

Emergency Management

DPS/TxDOT Wichita Falls TMC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Emergency Response (EM01)
- Emergency Routing (EM02)

Prerequisite Projects: None

Description: Install telecommunications connection and end equipment from the DPS dispatch center to TxDOT TMC to share CCTV and incident data/images and provide information on current road conditions that could assist with incident/emergency management. The cost for this project will depend on the communications used to implement the connection (i.e., fiber connection or leased lines).

City of Wichita Falls Police Dispatch Center Enhancements

Associated Market Packages:

- Emergency Response (EM01)
- Incident Management (ATMS08)

Prerequisite Projects: None

Description: This project expands the capabilities of the City of Wichita Falls Police Dispatch Center to facilitate video monitoring and incident information coordination. These enhancements also include a radio upgrade.

Sheppard AFB/TxDOT TMC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Emergency Response (EM01)

Prerequisite Projects: None

Description: This project implements a link from Sheppard AFB to the TxDOT TMC to allow for shared viewing of CCTV cameras, real-time data, and exchange of incident information.

Maintenance and Construction Management

City of Wichita Falls Work Zone Safety Monitoring

Associated Market Packages:

- Network Surveillance (ATMS01)
- Work Zone Management (MC08)
- Work Zone Safety Monitoring (MC09)

Prerequisite Projects: None

Description: This project will include the use of advanced warning systems to detect unauthorized vehicles that have entered the perimeter of the work zone. The intent of such systems is to help decrease the number of accidents in work zones due to motorists getting too close to workers or their equipment. Intrusion detection devices can alert construction workers and the motorist that the motorist has entered the safe zone and should take evasive action. The project is estimated to cost \$500,000.

TxDOT HCRS Enhancements

Associated Market Packages:

- Weather Information Processing and Distribution (MC04)
- Work Zone Management (MC08)
- Maintenance and Construction Activity Coordination (MC10)
- Broadcast Traveler Information (ATIS1)
- Interactive Traveler Information (ATIS2)

Prerequisite Projects: None

Description: TxDOT's HCRS will be enhanced on a statewide basis. The HCRS will use data from the Wichita Falls District Office, both automated and manually entered. It is envisioned that the ATMS software will enhance the data collection and consolidation processes for automated information. This is a statewide effort; the Wichita Falls District will be affected by this project, and will contribute information to the HCRS, but will not be responsible for funding the enhancements or for the implementation schedule. The HCRS enhancements are currently underway.

TxDOT Wichita Falls Area Office Maintenance Workstations

Associated Market Packages:

- Roadway Maintenance and Construction (MC07)
- Work Zone Management (MC08)
- Maintenance and Construction Activity Coordination (MC10)

Prerequisite Projects: None

Description: This project includes the implementation of workstations at Wichita Falls District Area Offices to allow maintenance staff to enter information into HCRS, provide shared control of some field devices, view sensor data and camera images. This will allow Area Offices in the Region to have some of the same monitoring/control functions as the District Office/TMC for devices in those Areas.

The estimated cost of this project is \$40,000.

TxDOT Wichita Falls Flood Monitoring System Phase 2

Associated Market Packages:

- Network Surveillance (ATMS01)
- Road Weather Data Collection (MC03)

Prerequisite Projects: None

Description: This project includes implementing additional flood monitoring stations and warning sensors at key locations in the Region prone to flooding. An initial phase of flood detection and monitoring was already installed as part of the ITS implementation in the District in the fall of 2004.

This will enable faster detection of flooded areas, as well as faster response times by maintenance crews to close flooded or near flooded roadway segments as necessary. The typical flood monitoring station is composed of a stream gauge, a rain gauge, a temperature sensor, a wind speed sensor, and a wind direction sensor and remote communications support. Other upgrades that may support operational decision making include sensors to measure relative humidity, soil moisture content, solar radiation, and air and water quality.

The estimated cost of this project is \$100,000.

TxDOT Wichita Falls RWIS Phase 2

Associated Market Packages:

- Network Surveillance (ATMS01)
- Road Weather Data Collection (MC03)
- Roadway Automated Treatment (MC05)
- Winter Maintenance (MC06)
- Roadway Maintenance and Construction (MC07)

Prerequisite Projects: None

Description: This project will install additional road weather information system sensors at key locations in the region to provide accurate temperature, pavement conditions, precipitation, and wind data as well as detect the presence of ice on the roadway. Some of these sites will be installed near USGS flood detection stations. Through the satellite connection between TxDOT Wichita Falls and USGS, there will be a two-day exchange of flood and RWIS information. Real time weather information improves response time, increases winter maintenance efficiency and minimizes the traveling public's exposure to hazardous weather related roadway conditions. Archived RWIS information also provides valuable historic information for planning purposes. Data including temperature (atmospheric and pavement), precipitation, wind, humidity, visibility (white out/heavy fog) and even pavement surface conditions (i.e., snow, chemical) are collected by sensors placed at the roadside (typically on a 30 foot tower) and embedded in the roadway. Remote processing units placed along the roadway communicate with various types of road and weather sensors. Data from the units are transmitted to the central ATMS server, via dial-up modem or other low bandwidth telecommunications methods, which will be located at the TxDOT Wichita Falls TMC. A Phase 1 RWIS project was implemented in 2004 as part of TxDOT Wichita Falls' initial ITS program implementation. Phase 1 also included flood detection sensors.

The estimated cost of this project is \$100,000.

TxDOT Wichita Falls Portable Smart Work Zones Phase 1

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Roadway Maintenance and Construction (MC07)
- Work Zone Management (MC08)
- Work Zone Safety Monitoring (MC09)

Prerequisite Projects: None

Description: This project includes the procurement of portable smart work zone equipment for TxDOT that includes speed warning trailers, portable DMS, portable CCTV, portable detection and other systems to enhance work zone safety. It also includes a link from field equipment to the TxDOT Wichita Falls TMC and District maintenance sections.

The estimated cost of this project is \$400,000.

TxDOT Wichita Falls Work Zone Safety Monitoring

Associated Market Packages:

- Network Surveillance (ATMS01)
- Work Zone Management (MC08)
- Work Zone Safety Monitoring (MC09)

Prerequisite Projects: None

Description: This project will include the use of advanced warning systems to detect unauthorized vehicles that have entered the perimeter of the work zone. The intent of such systems is to help decrease the number of accidents in work zones due to motorists getting too close to workers or their equipment. Intrusion detection devices can alert construction workers and the motorist that the motorist has entered the safe zone and should take evasive action. It is anticipated that this project will be conducted on, and possibly required of contractors by TxDOT, on a per-project basis.

The estimated cost of this project is \$500,000.

Public Transportation and Management

Texoma Transit Operations Center and CAD

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: None

Description: This project includes the enhancement of the current Texoma Transit Operations/Dispatch Center and implementation of a CAD system for communications and fleet activity logs. The CAD system will provide data processing support to assist the dispatchers in managing communications with vehicles and generate management reports. The main goal of this project is to use automation to plan daily optimal routes where origins, destinations, common locations, and client requested times and equipment needs are grouped so that the most efficient routes with the maximum number of shared rides (several clients sharing a vehicle) are created for the paratransit services.

This CAD system will provide reporting functions by automatically logging all communications between the dispatch center and the driver, including time, vehicle/driver ID, nature of the communication, and response.

This project is estimated to cost \$200,000.

Texoma Transit Security Alarms and Cameras

Associated Market Packages:

- Demand Response Transit Operations (APTS3)
- Transit Security (APTS5)

Prerequisite Projects: None

Description: This project includes the installation of alarms and video cameras for surveillance on-board the Texoma demand-response fleet.

This project is estimated to cost \$10,000 per vehicle.

SHARP Lines Transit Operations Center and CAD

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: None

Description: This project includes the implementation of a Transit Operations Center and CAD system to support demand-response transit services in the region. The CAD system will provide data processing

support to assist the dispatchers in managing communications with vehicles and generate management reports. The main goal of this project is to use automation to plan daily optimal routes where origins, destinations, common locations, and client requested times and equipment needs are grouped so that the most efficient routes with the maximum number of shared rides (several clients sharing a vehicle) are created for the paratransit services.

The CAD system will provide reporting functions, by automatically logging all communications between the dispatch center and the driver, including time, vehicle/driver ID, nature of the communication, and response.

This project is estimated to cost \$200,000.

SHARP Lines Transit Security Alarms and Cameras

Associated Market Packages:

- Demand-Response Transit Operations (APTS3)
- Transit Security (APTS5)

Prerequisite Projects: None

Description: This project includes the installation of alarms and video cameras for surveillance on-board SHARP Lines demand-response fleet (33 vehicles). This project is estimated to cost \$10,000 per vehicle.

City of Wichita Falls Transit Operations Center Enhancements and CAD

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Transit Fixed-Route Operations (APTS2)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: None

Description: This project implements enhancements to the current City of Wichita Falls Transit Dispatch Center, including CAD to automate some of the operations functions, and support better coordination among transit, traffic, and emergency operations. The CAD system will provide data processing support to assist the dispatchers in managing communications with vehicles and generate management reports.

This CAD system will provide reporting functions, by automatically logging all communications between the dispatch center and the driver, including time, vehicle/driver ID, nature of the communication, and response.

This project is estimated to cost \$250,000.

City of Wichita Falls Transit Security System

Associated Market Packages:

- Transit Fixed-Route Operations (APTS2)
- Demand-Response Transit Operations (APTS3)
- Transit Security (APTS5)

Prerequisite Projects: None

Description: This project includes the installation of alarms and video camera surveillance on-board City of Wichita Falls transit vehicles. Cameras will be for on-board recording only, and are not envisioned to be monitored remotely. Video will be stored for a pre-determined amount of time via video tape or emerging digital video recording technology. While the main objective of on-board surveillance projects has been to identify individuals committing criminal acts or creating disturbances on buses, there have been noticeable maintenance benefits such as a reduction of litter and debris.

This project is estimated to cost \$10,000 per vehicle.

City of Wichita Falls Transit Web Page Enhancements

Associated Market Packages:

- Transit Fixed Route Operations (APTS2)
- Demand-Response Transit Operations (APTS3)
- Transit Traveler Information (APTS8)
- Broadcast Traveler Information (ATIS1)

Prerequisite Projects: None

Description: This project included the enhancement of the current City of Wichita Falls web page to provide additional information, including road conditions/service disruptions, and links to other transit providers in the region.

This project is estimated to cost \$50,000.

City of Wichita Falls Transit/City of Wichita Falls TOC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Transit Fixed-Route Operations (APTS2)
- Demand-Response Transit Operations (APTS3)
- Multi-modal Coordination (APTS7)

Prerequisite Projects: City of Wichita Falls Transit Operations Center Enhancements and CAD

Description: This project establishes a link between the Wichita Falls Transit Operations Center and the City's Traffic Operations Center to share information about road conditions, closures, and incidents.

SHARP Lines Transit Operations Center/City of Wichita Falls TOC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: SHARP Lines Transit Operation Center and CAD

Description: This project establishes a link between the SHARP Lines Transit Operations Center and the City's Traffic Operations Center to share information about road conditions, closures, and incidents.

Commercial Vehicle Operations

Wichita Falls Weigh-In-Motion Expansion

Associated Market Packages:

- Weigh-in-Motion (CVO06)

Prerequisite Projects: None

Description: This project will implement additional WIM stations on roadways in the Wichita Falls Region. These WIM stations are installed by TxDOT Transportation Planning and Programming, and are typically installed as part of pavement rehabilitation projects in areas where WIM information is deemed valuable. Currently, there are WIM stations installed, but these are just for planning purposes (no enforcement). Possible routes for additional WIM include I-35, US 287, and US 82. For mainline WIM, a smooth, straight approach prior to the scale is required to eliminate vehicle vibrations, which can greatly reduce the accuracy. In order to achieve the smooth surface, a new concrete pad is often installed prior to the WIM site. Pull out sites typically weigh trucks at slower speeds and do not require as significant construction as the main-line sites for installation, providing a pull out site is available.



Table 7 – Mid-Term Projects (10-Year)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|--|------------------------------------|--------------------------|--------------------|----------------------------|
| Travel and Traffic Management | | | | | |
| TxDOT Wichita Falls TMC Expansion | Expand the TxDOT Wichita Falls TMC in phases, including additional Advanced Traffic Management System (ATMS) capabilities as they become available, increased operational hours and additional interfaces to other agencies and equipment | TxDOT | \$200,000 | No | 4 years |
| TxDOT Wichita Falls DMS Phase 3 | Implement additional DMS at key locations in the Wichita Falls Region. Potential locations include US 82 and Spur 325. | TxDOT | \$400,000 | No | 2 years |
| TxDOT Wichita Falls CCTV Phase 3 | Implement additional CCTV cameras on key routes in the Region. | TxDOT | \$200,000 | No | 2 years |
| Interstate Coordination | Establish a link and an interface between TxDOT Wichita Falls and Oklahoma Department of Transportation to share pertinent information about closures, restrictions, incident, and weather hazards on key corridors that impact both states. | TxDOT/ODOT | To Be Determined | No | 1 year |
| TxDOT Wichita Falls HAR | Implement highway advisory radio (HAR) to provide en-route information about closures, hazards, incidents, weather advisories and other impacts | TxDOT | \$20,000/ transmitter | No | 6 months |
| Kiosks at Travel Information Centers (TxDOT TextBox) | Implement interactive, touch-screen kiosks at travel information centers and rest areas in the Wichita Falls Region. Kiosks would provide access to real-time road and traffic conditions, weather conditions, and points of interest (6 kiosks @25K each plus software development/interfaces). | TxDOT | \$200,000 | No | 2 years |
| TxDOT Wichita Falls Traffic Signal System Upgrades Phase 2 | Expand the TxDOT traffic signal system at signalized intersections throughout the Region. Also includes the implementation of VIVDS. | TxDOT | \$100,000/year | No | 10 years |
| TxDOT School Zone Flashers Paging System | Implement a school zone flasher paging system for use in programming school zone flashers | TxDOT/Independent School Districts | To Be Determined | No | 1 year |



Table 7 – Mid-Term Projects (10-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|---|--|------------------------------------|--------------------------------------|--------------------|----------------------------|
| Travel and Traffic Management (continued) | | | | | |
| Regional 511 Advanced Traveler Information System Server | Implement an Advanced Travel Information System (ATIS) Server in the Wichita Falls District Office that will collect, consolidate and distribute travel information to 511 phone based system, web, and private Information Service Providers (ISPs) | TxDOT | To Be Determined | No | 1 year |
| Sheppard AFB/City of Wichita Falls TOC Connection | Implement a link from Sheppard AFB to the City of Wichita Falls TOC to allow for shared viewing of CCTV cameras, and information about closures and restrictions on major arterials near the base | Sheppard AFB/City of Wichita Falls | To Be Determined | No | 3 months |
| City of Wichita Falls CCTV | Implement CCTV cameras along key routes/near key intersections in the City of Wichita Falls (8 cameras) | City of Wichita Falls | \$200,000 | No | 2 years |
| Media Access to City of Wichita Falls CCTV | Implement a video switch that will allow local media permissive access to City CCTV camera feeds (media to provide fiber/leased line for access to switch, City to implement switch) | City of Wichita Falls/Local Media | \$40,000 (City of Wichita Falls) | No | 3 months |
| City of Wichita Falls Traffic Signal System Expansion Phase 2 | Continue to expand and upgrade City of Wichita Falls traffic signal system, including VIVDS | City of Wichita Falls | \$100,000/year | No | 5 years |
| Emergency Management | | | | | |
| TxDOT Wichita Falls Emergency Vehicle Traffic Signal Preemption | Implement preemption at select TxDOT traffic signals. This project includes controller upgrades, sensors and transmitters. Emergency agencies would be responsible for the purchase of on-board transmitters. | TxDOT | To Be Determined | No | 1 year |
| City of Wichita Falls Police AVL and MDTs | Equip approximately 100 City of Wichita Falls Police vehicles with AVL and mobile data terminals (MDTs) | City of Wichita Falls | \$10,000/vehicle (includes software) | No | 2 years |
| City of Wichita Falls Emergency Vehicle Traffic Signal Preemption Expansion | Install emergency vehicle signal preemption devices on additional City of Wichita Falls traffic signals for Fire and Emergency Medical Services (EMS) | City of Wichita Falls | To Be Determined | No | 1 year |



Table 7 – Mid-Term Projects (10-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|--|--|------------------|--------------------|----------------------------|
| Emergency Management (continued) | | | | | |
| Sheppard AFB Emergency Services/City of Wichita Falls PSAP Communications Connection | Implement a communications connection between the Sheppard AFB Emergency Services and the City of Wichita Falls Public Safety Access Point (PSAP) for incident management coordination | Sheppard AFB/City of Wichita Falls | To Be Determined | No | 6 months |
| Maintenance and Construction Management | | | | | |
| TxDOT Wichita Falls Anti-icing Program Phase 1 | Install pavement/ice detection and implement anti-icing systems at key locations, particularly bridges and overpass structures (ice/temperature detectors funded) | TxDOT | \$300,000 | No | 1 year |
| TxDOT Wichita Falls RWIS Phase 3 | Install additional RWIS devices at locations throughout the Region | TxDOT | \$100,000 | No | 1 year |
| TxDOT Wichita Falls Portable Smart Work Zones Phase 2 | Procure additional portable smart work zone equipment for TxDOT, including speed warning trailers, portable DMS, portable CCTV, portable detection, and other systems to enhance work zone safety. Include a link from field equip to TMC and Maintenance sections. | TxDOT | \$400,000 | No | 1 year |
| Public Transportation | | | | | |
| Multi-modal Coordination | Implement a link between area transit agencies to better share information and coordinate daily and weekly schedules, services and provide improved travel information to patrons. This project also includes enhanced information sharing among traffic management and transit centers. | Texoma Area Paratransit/Rolling Plains Management Corp/City of Wichita Falls | To Be Determined | No | 6 months |
| Texoma AVL | Implement AVL on Texoma vehicles to provide for real-time, precise vehicle locating | Texoma Area Paratransit Service | To Be Determined | No | 1 year |
| Texoma Web Site | Implement a web site for Texoma Paratransit that will provide information about services (hours, fares), allow patrons to schedule service, and include links to other transit agencies | Texoma Area Paratransit Service | \$50,000 | No | 1 year |



Table 7 – Mid-Term Projects (10-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|--|-------------------------------------|-----------------|--------------------|----------------------------|
| Public Transportation (continued) | | | | | |
| SHARP Lines AVL | Implement AVL on SHARP Lines vehicles to provide for real-time, precise vehicle locating (33 vehicles) | Rolling Plains Management Corp. | \$250,000 | No | 1 year |
| SHARP Lines Web Site | Implement a web site for SHARP Lines that will provide information about services (hours, fares), allow patrons to schedule service, and include links to other transit agencies in the region | Rolling Plains Management Corp. | \$50,000 | No | 1 year |
| City of Wichita Falls Transit AVL and MDTs | Install automated vehicle location devices and mobile data terminals on City of Wichita Falls fixed-route transit vehicles. These technologies will provide for real-time location information, as well as allow automated information exchange between the drivers and the dispatch center. | City of Wichita Falls Transit | \$10,000/veh | No | 1 year |
| City of Wichita Falls Transit Kiosks | Implement an interactive touch-screen kiosk at the Sikes Senter Transfer Station and other key locations to provide patrons with information about schedules, fares, routes. Could include 'next-bus' arrival information by incorporating AVL data. | City of Wichita Falls Transit | \$75,000 | No | 1 year |
| Information Management | | | | | |
| Nortex Regional Data Archive | Implement and manage a regional data archive for traffic data, transit information, and rail operations that can be used by local, state and federal agencies for planning and statistical analysis | Nortex Regional Planning Commission | \$200,000 | No | 2 years |

*Agency listed is responsible for implementation, operations, and maintenance unless otherwise noted.

**Probable Cost is not an estimate because no design work has been done.

Wichita Falls Region Mid-Term Projects (10-Year)

Travel and Traffic Management

TxDOT Wichita Falls TMC Expansion

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)
- Traffic Information Dissemination (ATMS06)
- Regional Traffic Control (ATMS07)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project will expand the TxDOT Wichita Falls TMC and would include the implementation of additional ATMS software capabilities as they become available, increased operational hours and additional interfaces to other agencies. It is envisioned that within 10 years, ITS infrastructure will be more widely deployed throughout the Region, and the TMC will need to be able to accommodate the additional control and management responsibilities. Additional interfaces with neighboring TxDOT Districts, other state, local or county agencies, as well as with Oklahoma, will likely require additional hardware or software modifications at the TMC to support those interfaces.

The estimated cost is approximately \$200,000.

TxDOT Wichita Falls DMS Phase 3

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Work Zone Management (MC08)

Prerequisite Projects: TxDOT Wichita Falls DMS Phase 2

Description: This project continues the deployment of DMS at locations along roadways in the Region for purposes of traffic information dissemination and incident management. Potential locations for this phase include US 82 and Spur 325.

The estimated cost is approximately \$400,000.

TxDOT Wichita Falls CCTV Phase 3

Associated Market Packages:

- Network Surveillance (ATMS01)
- Incident Management (ATMS08)

Prerequisite Projects: None

Description: This project includes the deployment of additional CCTV cameras at key locations in the Wichita Falls Region including US 82 and Spur 325. The CCTV cameras can be used for incident detection and verification, to monitor congestion, for monitoring/security near the access roads to Sheppard, and to aid in the dispatch of emergency vehicles. The information gathered by the CCTV cameras (video feed) can be shared with the area emergency management agencies and Sheppard AFB Operations Center. This project would expand on the network of CCTV cameras implemented in 2004.

The estimated cost of this project is approximately \$200,000.

Interstate Coordination

Associated Market Packages:

- Regional Traffic Control and Coordination (ATMS07)
- Incident Management System (ATMS08)
- Maintenance and Construction Activity Coordination (MC10)

Prerequisite Projects: None

Description: This project includes establishing a link and an interface between TxDOT Wichita Falls TMC and Oklahoma DOT to share pertinent information about closures, restrictions, incident, and weather hazards on key corridors that impact both states. Initial tasks of the project include meeting with representatives of various partner state agencies and authorities to determine willingness to share data, technical and institutional barriers, data sharing content, transmission frequency, and next steps. Agreements will be required between project partners to clarify: use of data, privacy issues, liability issues, and data quality maintenance.

TxDOT Wichita Falls HAR

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project includes the implementation of HAR to provide en-route information about closures, hazards, incidents, weather advisories and other impacts. HAR will allow operators at the Wichita Falls TMC to record travel advisory messages related to traffic, incidents, and weather for

transmission at the roadside to vehicles traveling in the vicinity of the HAR transmitter(s). It also includes roadside signs with flashing beacons to alert motorists to tune in for a current message.

The estimated cost of this project is approximately \$20,000 per transmitter.

Kiosks at Travel Information Centers (TxDOT TexBox)

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Interactive Traveler Information (ATIS2)

Prerequisite Projects: None

Description: This project implements interactive, touch-screen kiosks at travel information centers and rest areas in the Wichita Falls Region. Kiosks would provide access to real-time road and traffic conditions, weather conditions, and points of interest.

The estimated cost of this project is \$200,000.

TxDOT Wichita Falls Traffic Signal System Upgrades Phase 2

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)

Prerequisite Projects: TxDOT Traffic Signal System Upgrades Phase 1

Description: The project includes the expansion of the TxDOT traffic signal system at signalized intersections throughout the Region. It also includes the implementation of VIVDS. The estimated cost of this implementation is \$100,000 per year.

TxDOT School Zone Flashers Paging System

Associated Market Package:

- Surface Street Control (ATMS03)

Prerequisite Projects: None

Description: This project implements a paging system for use in programming school zone flashers. The project includes installing a paging and central system(s) to allow remote control of school flashers for schools in rural areas. Two-way paging systems are available for programming and troubleshooting school zone time clocks (AC or solar powered). A two-way paging system will allow programming of times for the new school year, special events, and even turn flashers in the system on during emergencies from a central location. Two-way paging also provides acknowledgement that the flasher received the message and provides routine diagnostic/operational status messages. The main benefit of a paging system is eliminating costly trips to the field to reprogram units or manually operate flashers.

Regional 511 Advanced Traveler Information System Server

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Work Zone Management (MC08)
- Broadcast Traveler Information (ATIS1)
- Interactive Traveler Information (ATIS2)

Prerequisite Projects: TxDOT Center-to-Center Communications, TxDOT HCRS Enhancements

Description: Install a server dedicated to traveler information in the TxDOT Wichita Falls TMC. This server would be installed as part of a statewide 511 rollout in Texas and would provide a gateway for public and private entities to access current conditions, closures, restrictions, weather, and other valuable travel information. Relevant data from the ATMS and HCRS would be sent to the ATIS server where it would be consolidated and ‘packaged’ for distribution via phone (511) and also web as well as to private partners who desire access to information in the Wichita Falls Region. These private partners could include local media and information service providers, which would link to the ATIS server to download information, or obtain real-time feeds, depending on the link provided by the private partner. Appropriate security measures and firewalls could be designed into the server to allow or restrict access to registered, authorized users. By fusing various types of data from a variety of sources (traffic management, incident management, and others), this data can be converted to usable information for travelers as well as other agencies.

Sheppard AFB/City of Wichita Falls TOC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project implements a link from Sheppard AFB to the Wichita Falls TOC to allow for shared viewing of CCTV cameras, and information about closures and restrictions on major arterials near the base. This connection is in addition to the communications connection that Sheppard AFB would have with the TxDOT Wichita Falls TMC.

City of Wichita Falls CCTV

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project includes the deployment of CCTV cameras at selected intersections in the City of Wichita Falls. The CCTV cameras can be used to monitor congestion associated with recurring events as well as for incidents, and signal control adjusted according to the vehicular demand. The information gathered by the CCTV cameras (video feed) can be shared with the TxDOT District Office for shared or after-hours viewing/monitoring. There will be a total of 8 cameras. The estimated cost of this implementation is \$200,000.

Media Access to City of Wichita Falls CCTV

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Broadcast Traveler Information (ATIS1)

Prerequisite Projects: City of Wichita Falls CCTV

Description: This project implements a video switch that will allow local media permissive access to City CCTV camera feeds (media to provide fiber/leased line for access to switch, City to implement switch at the TOC). The estimated cost of this implementation (for the City of Wichita Falls' portion) is approximately \$40,000.

City of Wichita Falls Traffic Signal System Expansion Phase 2

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)

Prerequisite Projects: City of Wichita Falls Traffic Signal System Expansion Phase 1

Description: This project continues the expansion and upgrade of the City of Wichita Falls traffic signal system, including VIVDS. The estimated cost of this implementation is \$100,000 per year.

Emergency Management

TxDOT Wichita Falls Emergency Vehicle Traffic Signal Preemption

Associated Market Packages:

- Surface Street Control (ATMS03)
- Emergency Response (EM01)
- Emergency Routing (EM02)

Prerequisite Projects: None

Description: This project implements preemption at select TxDOT traffic signals in the Wichita Falls Region. This project includes controller upgrades, sensors and transmitters. Typical installations include mounting hardware at the intersection and on each vehicle authorized to preempt the signal. The intersection equipment includes a detector(s) positioned at the intersection approach(es) connected to the traffic signal controller. As a vehicle equipped with a preemption emitter approaches an intersection, the detector activates a change in signal timing to allow fast and safe passage. Preemption systems have been proven to improve safety of emergency personnel and vehicles en-route to an incident. Wichita Falls stakeholders agreed that fire and ambulance would be the only vehicles authorized for preemption. TxDOT will have responsibility for implementing and maintaining preemption sensor on traffic signals, and fire and emergency services will be responsible for installing the on-board units.

City of Wichita Falls Police AVL and MDTs

Associated Market Packages:

- Emergency Response (EM01)
- Emergency Routing (EM02)

Prerequisite Projects: City of Wichita Falls Police Dispatch Center Enhancements

Description: This project equips approximately 100 City of Wichita Falls Police vehicles with AVL and mobile data terminals. The AVL system will convey information regarding real-time vehicle location to the Police Dispatch Center, which will allow for enhanced system monitoring, scheduling, routing (or re-routing), as well as provide for precise bus location information in the event of a breakdown or emergency situation. AVL systems measure actual, real-time position of transit vehicles, and relay that information back to a transit operations center, usually via global positioning system. Used with a geographic information system (GIS) map, bus locations can be displayed for any vehicles in the fleet equipped with the on-board AVL unit. AVL, in conjunction with CAD, allows for improved bus tracking capability, as well as archiving and managing historical data.

Mobile data terminals allow officers to send and receive digital messages. Mobile data terminals can be used by dispatchers to notify officers of adverse conditions, incident information, or routing information. MDTs also can transmit information from the driver to the dispatch center, including status, reports, or silent alarms. An additional feature that can be built-in to the MDT is the ability for vehicle-to-vehicle digital communications, in addition to the vehicle-to-center communications.

This project will cost \$10,000 per vehicle. The cost includes software.

City of Wichita Falls Emergency Vehicle Traffic Signal Preemption Expansion

Associated Market Packages:

- Surface Street Control (ATMS03)
- Emergency Response (EM01)
- Emergency Routing (EM02)

Prerequisite Projects: None

Description: This project includes the installation of emergency vehicle signal preemption devices on additional City of Wichita Falls traffic signals for Fire and EMS. The project includes controller upgrades, sensors and transmitters. Typical installations include mounting hardware at the intersection and on each vehicle authorized to preempt the signal. The intersection equipment includes a detector(s) positioned at the intersection approach(es) connected to the traffic signal controller. As a vehicle equipped with a preemption emitter approaches an intersection, the detector activates a change in signal timing to allow fast and safe passage. Preemption systems have proven to improve safety of emergency personnel and vehicles en-route to an incident. Wichita Falls stakeholders agreed that fire and ambulance would be the only vehicles authorized for preemption.

Sheppard AFB Emergency Services/City of Wichita Falls PSAP Communications Connection

Associated Market Package:

- Emergency Response (EM01)

Prerequisite Projects: None

Description: This project includes the implementation of a communications connection between the Sheppard AFB Emergency Services and the City of Wichita Falls 911 PSAP (currently the City of Wichita Falls Police) for incident management coordination.

Maintenance and Construction Management

TxDOT Wichita Falls Anti-icing Program Phase 1

Associated Market Packages:

- Road Weather Data Collection (MC03)
- Roadway Automated Treatment (MC05)
- Winter Maintenance (MC06)

Prerequisite Projects: None

Description: This project includes the installation of pavement/ice detection and implementation of anti-icing systems at key locations, particularly bridges and overpass structures (ice/temperature detectors at some locations are funded). Anti-icing is a snow and ice control practice that attempts to prevent the formation or development of snow and ice that becomes bonded to the roadway by utilizing timely applications of a freezing point depressant.

Anti-icing devices apply a liquid chemical de-icing agent directly onto the surface before the temperature and humidity levels permit an ice bond to occur. This technique requires the chemical de-icing agents be applied in a timely and accurate manner. Permanent automatic anti-icing systems must be activated by some means, and the level of service is directly impacted by the method that is used to activate the system. To achieve full autonomous operation (non-human intervention), the anti-icing system must be controlled by input from a road weather information system that measures atmospheric and pavement surface conditions, accurately measures the freeze point of the moisture/chemical solution on the road surface and in turn activates the permanent automated anti-icing system when icing conditions are imminent.

Automated anti-icing systems can be installed as part of a bridge re-decking project where equipment is integrated into overall construction. Alternatively, anti-icing systems can be retrofit to existing bridges. Other features that have been included in anti-icing systems are:

- Integration of DMS in advance of locations to warn motorists of operating spray nozzles;
- CCTV to verify anti-icing operations and to monitor critical infrastructure; and
- Bridge structure monitoring (on bridges that may be forming hairline cracks).

The estimated cost of this project is \$300,000.

TxDOT Wichita Falls RWIS Phase 3

Associated Market Packages:

- Network Surveillance (ATMS01)
- Road Weather Data Collection (MC03)
- Roadway Automated Treatment (MC05)
- Winter Maintenance (MC06)
- Roadway Maintenance and Construction (MC07)

Prerequisite Projects: TxDOT Wichita Falls RWIS Phase 2

Description: This project includes the installation of additional RWIS devices at locations throughout the Region. The estimated cost is \$100,000.

TxDOT Wichita Falls Portable Smart Work Zones Phase 2

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)
- Roadway Maintenance and Construction (MC07)
- Work Zone Management (MC08)
- Work Zone Safety Monitoring (MC09)

Prerequisite Projects: TxDOT Wichita Falls Portable Smart Work Zones Phase 1

Description: This project procures additional portable smart work zone equipment for TxDOT, including speed warning trailers, portable DMS, portable CCTV, portable detection and other systems to enhance work zone safety. It includes a link from field equipment to the Wichita Falls to TMC and Maintenance sections. The estimated cost is \$400,000.

Public Transportation

Multi-modal Coordination

Associated Market Packages:

- Transit Fixed Route Operations (APTS2)
- Demand Response Transit Operations (APTS3)
- Multi-modal Coordination (APTS7)

Prerequisite Projects: None

Description: Implement a link between area transit agencies to better share information and coordinate daily and weekly schedules, services and provide improved travel information to patrons. This project also would include links between TMCs (TxDOT and City) and transit operations centers to better share information about roadway and travel conditions.

Texoma AVL

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: None

Description: This project includes the implementation of AVL in Texoma transit vehicles. The AVL system will convey information regarding real-time vehicle location to the Transit Operations Center, which will allow for enhanced system monitoring, scheduling, routing (or re-routing), as well as provide for precise bus location information in the event of a breakdown or emergency situation. AVL systems relay information back to a transit operations center, usually via global positioning system. Used with a

GIS map, bus locations can be displayed for any vehicles in the fleet equipped with the on-board AVL unit. AVL, in conjunction with CAD, allows for improved bus tracking capability, as well as archiving and managing historical data. AVL systems also can be equipped with additional features, including tie-ins to alarm/security systems, vehicle component monitoring, and automatic passenger counter and fare payment systems. Information from the AVL/CAD system can be used by transit managers for real-time operations and management as well as for transit traveler information. In areas where AVL technology has been installed on buses, agencies report a 5-25 percent increase in on-time performance, which translates directly to improved efficiency and operations.

Texoma Web Site

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Demand-Response Transit Operations (APTS3)
- Transit Traveler Information (APTS8)
- Broadcast Traveler Information (ATIS1)

Prerequisite Projects: Texoma AVL

Description: Build website to provide up-to-date transit information. This project will implement web-based transit traveler information that can be accessed by patrons pre-trip to identify routes, schedules, status (delays, bus arrival times, etc. from AVL data) and other pertinent information. This project also should provide for an interactive trip planner to allow patrons to map out their trips, including bus arrival/departure times, transfers, and help them to identify optimum routes and schedules. This trip planning system will enhance current efforts to provide trip planning assistance to patrons by phone. Coordination with TxDOT would allow for current traffic conditions, incidents, closures, special events, and other impacts to the roadway network to be displayed with the transit route and status information. The estimated cost of this project is \$50,000.

SHARP Lines AVL

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: None

Description: Install AVL units on 33 Sharp Lines paratransit vehicles and implement AVL software at the Sharp Lines dispatch center or TOC. The AVL system will convey information regarding real-time vehicle location to the Transit Operations Center, which will allow for enhanced system monitoring, scheduling, routing (or re-routing), as well as provide for precise bus location information in the event of a breakdown or emergency situation. AVL systems relay information back to a transit operations center, usually via global positioning system. Used with a GIS map, bus locations can be displayed for any vehicles in the fleet equipped with the on-board AVL unit. AVL, in conjunction with CAD, allows for improved bus tracking capability, as well as archiving and managing historical data. AVL systems also can be equipped with additional features, including tie-ins to alarm/security systems, vehicle

component monitoring, and automatic passenger counter and fare payment systems. Information from the AVL/CAD system can be used by transit managers for real-time operations and management as well as for transit traveler information. These functions are particularly desirable for the Sharp Lines transit operations, due to the large, rural geographic area that is covered by Sharp Lines, as well as the demand-response nature of the transportation services provided. In areas where AVL technology has been installed on buses, agencies report a 5-25 percent increase in on-time performance, which translates directly to improved efficiency and operations.

The estimated cost of this project is \$250,000.

SHARP Lines Web Site

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Demand-Response Transit Operations (APTS3)
- Transit Traveler Information (APTS8)
- Broadcast Traveler Information (ATIS1)

Prerequisite Projects: Sharp Lines AVL

Description: This project will implement web-based transit traveler information for SHARP Lines that can be accessed by patrons pre-trip to make a reservation, check on status (delays, bus arrival times, etc. from AVL data) and other pertinent information. This project also should provide for an interactive trip planner to allow patrons to map out their trips, including bus arrival/departure times or transfers. This trip planning system will enhance current efforts to provide trip planning assistance to patrons by phone. Coordination with TxDOT would allow for current traffic conditions, incidents, closures, special events, and other impacts to the roadway network to be displayed with the transit route and status information.

Description: This project includes the implementation of a web site for SHARP Lines that will provide information about services (hours, fares), allow patrons to schedule service, and include links to other transit agencies in the region. The cost of this project is \$50,000.

City of Wichita Falls Transit AVL and MDTs

Associated Market Packages:

- Transit Vehicle Tracking (APTS1)
- Transit Fixed-Route Operations (APTS2)
- Demand-Response Transit Operations (APTS3)

Prerequisite Projects: None

Description: Install AVL and MDT units on City of Wichita Falls fixed-route transit vehicles. The AVL system will convey information regarding real-time vehicle location to the transit operations center (TOC), which will allow for enhanced system monitoring, scheduling, routing (or re-routing), as well as provide for precise bus location information in the event of a breakdown or emergency situation. AVL systems measure actual, real-time position of transit vehicles, and relay that information back to the TOC, usually via global positioning system. Used with a GIS map, bus locations can be displayed

for any vehicles in the fleet equipped with the on-board AVL unit. AVL, in conjunction with CAD, allows for improved bus tracking capability, as well as archiving and managing historical data. AVL systems also can be equipped with additional features, including tie-ins to alarm/security systems, vehicle component monitoring, and automatic passenger counter and fare payment systems. In areas where AVL technology has been installed on buses, agencies report a 5-25% increase in on-time performance, which translates directly to improved efficiency and operations.

Mobile data terminals allow bus operators to send and receive digital messages. Mobile data terminals can be used by dispatchers to notify drivers of adverse conditions, route changes, or other impacts to the scheduled route for both fixed-route and demand-response transit operations. MDTs also can transmit information from the driver to the dispatch center, including status, disruptions, or silent alarms. An additional feature that can be built-in to the MDT is the ability for vehicle-to-vehicle digital communications, in addition to the vehicle-to-center communications.

Cost will vary depending on the number of vehicles equipped with AVL/MDT systems, as well as the functions and features designed into the systems (above the basic location and digital communication functions). For planning purposes, the estimated cost is \$10,000 per vehicle.

City of Wichita Falls Transit Kiosks

Associated Market Packages:

- Transit Fixed Route Operations (APTS2)
- Demand-Response Transit Operations (APTS3)
- Transit Traveler Information (APTS8)
- Interactive Traveler Information (ATIS2)

Prerequisite Projects: None

Description: Install transit kiosks at Sikes Senter Transfer Station and other key locations (i.e., civic centers and buildings, event venues, etc.) to provide static and dynamic transit information. These public transit kiosks will provide an easy to use touch screen interface for displaying transit routes and schedules, personalized itineraries and transit route maps.

The City of Wichita Falls Transit will be able to keep the transit kiosk database updated with current routes and schedule information. Each of the transit routes will be displayed on a GIS-based street map. The user will use the touch screen, push-button interface to zoom in or out on the map to generate a desired map view of the transit route for their personalized printout. The user can specify their origin and destination from the touch screen menu structure. The kiosk will then display a list of multi-modal transit options that will transport the user from their origin to their desired destination including a transfer to another route if necessary. The kiosk then displays the series of bus stops for that route along with the arrival time at each stop. A future capability could include using the kiosk as a point-of-sale terminal for patrons to purchase fare tickets, fare cards, or transfers.

The estimated cost for this project is approximately \$75,000.

Information Management

Nortex Regional Data Archive

Associated Market Package:

- ITS Data Warehouse (AD2)

Prerequisite Projects: None

Description: This project includes the implementation and management of a regional data archive for traffic data, transit information, and rail operations that can be used by local, state, and federal agencies for planning and statistical analysis.

The estimated cost for this project is approximately \$200,000.



Table 8 – Long-Term Projects (20-Year)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|---|-----------------------|------------------|--------------------|----------------------------|
| Travel and Traffic Management | | | | | |
| TxDOT Wichita Falls ITS Expansion and Upgrade | Implement additional and upgrade existing CCTV cameras, DMS, vehicle detectors, as needed | TxDOT | To Be Determined | No | 5 years |
| TxDOT Wichita Falls Traffic Signal System Upgrades and Expansion | Expand TxDOT traffic signal system at signalized intersections throughout the Region. Also includes the implementation of VIVDS. | TxDOT | \$100,000/year | No | 10 years |
| City and County/TxDOT TMC Connection | Implement a connection between TxDOT TMC and County Public Works/Transportation throughout the Region | TxDOT/Counties | To Be Determined | No | 3 years |
| City of Wichita Falls Arterial Management System | Implement additional CCTV cameras on key routes, and install dynamic message signs and detection at key points on the City's arterial network | City of Wichita Falls | To Be Determined | No | 3 years |
| City of Wichita Falls Traffic Operations Center Enhancements | Expand and enhance the City's traffic operations center (in line with requirements of the Arterial Management System) | City of Wichita Falls | To Be Determined | No | 5 years |
| City of Wichita Falls Traffic Signal System Expansion Phase 3 | Continue to expand and enhance the City's signal system, including implementing VIVDS | City of Wichita Falls | \$100,000/year | No | 10 years |
| Emergency Management | | | | | |
| 911 Call Centers/TxDOT Wichita Falls TMC Connection | Implement a connection between 911 Call Centers in the Region and the TxDOT TMC | Counties/TxDOT | To Be Determined | No | 5 years |
| TDCJ/TxDOT TMC Connection | Implement a connection between the Texas Department of Criminal Justice (TDCJ) and the TxDOT TMC for information exchange concerning prisoner transport and prison work crews | TDCJ/TxDOT | To Be Determined | No | 6 months |
| Prison Vehicle AVL | Install automated vehicle location (AVL) on prison transport vehicles | TDCJ | \$10,000/vehicle | No | 1 year |
| Maintenance and Construction Management | | | | | |
| TxDOT Wichita Falls Anti-icing Program Phase 2 | Implement anti-icing systems on additional bridges/overpasses in the Region that are prone to icing during winter months | TxDOT | \$300,000 | No | 1 year |



Table 8 – Long-Term Projects (20-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|--|---|-----------------------|------------------|--------------------|----------------------------|
| Maintenance and Construction Management (continued) | | | | | |
| TxDOT Wichita Falls Maintenance Vehicle AVL | Install AVL system on TxDOT maintenance vehicles | TxDOT | To Be Determined | No | 5 years |
| TxDOT Wichita Falls Vehicle Maintenance Management System | Develop and implement a vehicle maintenance program that will allow TxDOT maintenance sections to track vehicle activities, usage, schedule routine maintenance based on activity levels, and track fleet inventory, including parts and supplies | TxDOT | To Be Determined | No | 2 years |
| County Maintenance Vehicle AVL | Install AVL system on County maintenance vehicles to provide real-time location and status information | Counties | To Be Determined | No | 2 years |
| County Vehicle Maintenance Management System | Develop and implement a vehicle maintenance program that will allow County public works maintenance sections to track vehicle activities, usage, schedule routine maintenance based on activity levels, and track fleet inventory, including parts and supplies | Counties | To Be Determined | No | 4 years |
| City of Wichita Falls Maintenance Vehicle AVL | Install AVL system on municipal maintenance and other public works vehicles to provide real-time location and status information | City of Wichita Falls | To Be Determined | No | 2 years |
| City of Wichita Falls Winter Maintenance System | Implement a winter maintenance decision support system, including enhanced resource and scheduling coordination among key city services, Wichita County and TxDOT to better respond to winter weather emergencies and road conditions | City of Wichita Falls | \$200,000 | No | 2 years |
| Other City/County Winter Maintenance Systems | Implement a winter maintenance decision support system, including enhanced resource and scheduling coordination among counties, municipalities and TxDOT to better respond to winter weather emergencies and road conditions | Other Cities/Counties | \$200,000 | No | 2 years |



Table 8 – Long-Term Projects (20-Year) (continued)

| Program Area/Project | Description | Responsible Agency* | Probable Cost** | Funding Identified | Estimated Project Duration |
|---|---|--|------------------|--------------------|----------------------------|
| Public Transportation Management | | | | | |
| Regional Transit Smart Card | Implement and coordinate a transit fare payment card among the three transit operating agencies in the region, including City fixed-route and demand response. Also coordinate with Dallas Area Rapid Transit (DART) in Dallas. | City of Wichita Falls, Texoma Area Paratransit System, and Rolling Plains Management Corp. | To Be Determined | No | 3 years |
| City of Wichita Falls Transit Electronic Fare Collection System | Implement an automated fare payment card system, including on-board card readers | City of Wichita Falls | \$5,000/veh | No | 2 years |
| City of Wichita Falls Transit Passenger Counters | Implement passenger counters to automatically count boarding and alighting passengers | City of Wichita Falls | \$2,000/veh | No | 2 years |
| Commercial Vehicle Operations | | | | | |
| CVO Warning System | Implement portable roadside transponders on I-35 and on-board devices for participating Commercial Vehicle Operations (CVO) to improve information sharing | TxDOT | To Be Determined | No | 2 years |

*Agency listed is responsible for implementation, operations, and maintenance unless otherwise noted

**Probable Cost is not an estimate because no design work has been done.

Wichita Falls Region Long-Term Projects (20-year)

TxDOT Wichita Falls ITS Expansion and Upgrade

Associated Market Packages:

- Network Surveillance (ATMS01)
- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)

Prerequisite Projects: TxDOT Wichita Falls TMC Expansion, TxDOT Wichita Falls DMS Phases 2 and 3, TxDOT Wichita Falls CCTV Phases 2, and 3, and TxDOT Center-to-Center Communications

Description: This project includes the implementation of additional field equipment, communications, and upgrading of additional CCTV cameras, DMS, vehicle detectors, and TMC enhancements as needed.

TxDOT Wichita Falls Traffic Signal System Upgrades and Expansion

Associated Market Package:

- Surface Street Control (ATMS03)

Prerequisite Projects: TxDOT Wichita Falls Traffic Signal System Upgrades Phase 1, TxDOT Wichita Falls Traffic Signal System Upgrades Phase 2

Description: This project expands the TxDOT traffic signal system at signalized intersections throughout the Region. These signal upgrades also involve the installation of VIVDS for traffic volume data collection and an upgrade of the existing controllers. The cost of this expansion is \$100,000 per year.

City and County/TxDOT TMC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Regional Traffic Control (ATMS07)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project includes the implementation of a connection between the TxDOT TMC and County Public Works/Transportation and other cities throughout the Region.

City of Wichita Falls Arterial Management System

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)
- Traffic Information Dissemination (ATMS06)
- Incident Management System (ATMS08)

Prerequisite Projects: City of Wichita Falls CCTV, City of Wichita Falls Traffic Operations Center Enhancements

Description: This project includes the implementation of additional CCTV cameras on key routes, and would install dynamic message signs and additional detection at key points on the City's arterial network.

City of Wichita Falls Traffic Operations Center Enhancements

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)
- Traffic Information Dissemination (ATMS06)
- Regional Traffic Control (ATMS07)
- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project would continue to enhance the capabilities of the City of Wichita Falls TOC, including control of additional devices and enhanced connectivity with the TxDOT Wichita Falls TMC and local emergency services agencies.

City of Wichita Falls Traffic Signal System Expansion Phase 3

Associated Market Packages:

- Network Surveillance (ATMS01)
- Surface Street Control (ATMS03)

Prerequisite Projects: City of Wichita Falls Traffic Signal System Expansion Phase 1, City of Wichita Falls Traffic Signal System Expansion Phase 2

Description: This project continues to expand and enhance the City's signal system, including implementing VIVDS. The cost of this expansion is \$100,000 per year.

Emergency Management

911 Call Centers/TxDOT Wichita Falls TMC Connection

Associated Market Packages:

- Traffic Information Dissemination (ATMS06)
- Emergency Response (EM01)

Prerequisite Projects: None

Description: This project implements a connection between 911 Call Centers in the Region and the TxDOT TMC.

TDCJ/TxDOT TMC Connection

Associated Market Package:

- Incident Management System (ATMS08)

Prerequisite Projects: None

Description: This project implements a connection between the Texas Department of Criminal Justice (TDJC) and the TxDOT TMC for information exchange concerning prisoner transport and prison work crews. TDJC facility would have access to current road closure/restriction and road weather condition information.

Prison Vehicle AVL

Associated Market Package:

- Emergency Response (EM01)

Prerequisite Projects: None

Description: This project includes the implementation of AVL in prison vehicles. The AVL system will convey information regarding real-time vehicle location. The cost of this project is \$10,000 per vehicle.

Maintenance and Construction Management

TxDOT Wichita Falls Anti-icing Program Phase 2

Associated Market Packages:

- Road Weather Data Collection (MC03)
- Roadway Automated Treatment (MC05)
- Winter Maintenance (MC06)

Prerequisite Projects: TxDOT Wichita Falls Anti-icing Program Phase 1

Description: This project implements anti-icing systems on additional bridges/overpasses in the Region that are prone to icing during winter months. The estimated cost of this project is \$300,000.

TxDOT Wichita Falls Maintenance Vehicle AVL

Associated Market Packages:

- Maintenance and Construction Vehicle Tracking (MC01)

Prerequisite Projects: None

Description: Similar to the transit AVL project, the maintenance AVL project includes equipping TxDOT Wichita Falls maintenance vehicles with global positioning system (GPS)-based vehicle locators. It is envisioned that the location of the vehicle would be overlaid on a basemap showing real-time positions of each equipped vehicle. The main purpose of the system is to assist dispatchers and supervisors to better manage the fleet of vehicles. For example, if a report of a spill occurred on a major roadway, a supervisor could quickly determine which vehicle is closest and best equipped to clean up the spill.

TxDOT Wichita Falls Vehicle Maintenance Management System

Associated Market Package:

- Maintenance and Construction Vehicle Maintenance (MC02)

Prerequisite Projects: None

Description: Implement system to support maintenance of maintenance vehicle fleets with on-board monitoring equipment. This system combines the use of on-board equipment and software to provide TxDOT with capabilities to monitor maintenance, repairs, tires, fuel consumption, mileage, logs, licensing and tags, preventative maintenance scheduling, parts inventory with bar code support and employee, vehicle information, etc. This system will facilitate data input and storage, and will also include report generation capabilities to allow the maintenance agency to generate any type of report needed using an easy to use interface.

County Maintenance Vehicle AVL

Associated Market Packages:

- Maintenance and Construction Vehicle Tracking (MC01)
- Maintenance and Construction Activity Coordination (MC10)

Prerequisite Projects: None

Description: Similar to the transit AVL project, the maintenance AVL project includes equipping county maintenance vehicles with GPS-based vehicle locators. It is envisioned that the location of the vehicle would be overlaid on a basemap showing real-time positions of each equipped vehicle. The main purpose of the system is to assist dispatchers and supervisors to better manage the fleet of vehicles. For example, if a report of a spill occurred on a major roadway, a supervisor could quickly determine which vehicle is closest and best equipped to clean up the spill.

County Vehicle Maintenance Management System

Associated Market Package:

- Maintenance and Construction Vehicle Maintenance (MC02)

Prerequisite Projects: None

Description: Implement system to support maintenance of maintenance vehicle fleets with on-board monitoring equipment. This system combines the use of on-board equipment and software to provide County maintenance agencies with capabilities to monitor maintenance, repairs, tires, fuel consumption, mileage, logs, licensing and tags, preventative maintenance scheduling, parts inventory with bar code support and employee, vehicle information, etc. This system will facilitate data input and storage, and will also include report generation capabilities to allow the maintenance agency to generate any type of report needed using an easy to use interface.

City of Wichita Falls Maintenance Vehicle AVL

Associated Market Packages:

- Maintenance and Construction Vehicle Tracking (MC01)
- Maintenance and Construction Activity Coordination (MC10)

Prerequisite Projects: None

Description: Similar to the transit AVL project, the maintenance AVL project includes equipping City of Wichita Falls maintenance vehicles with GPS-based vehicle locators. It is envisioned that the location of the vehicle would be overlaid on a basemap showing real-time positions of each equipped vehicle. The main purpose of the system is to assist dispatchers and supervisors to better manage the fleet of vehicles. For example, if a report of a spill occurred on a major roadway, a supervisor could quickly determine which vehicle is closest and best equipped to clean up the spill.

City of Wichita Falls Winter Maintenance System

Associated Market Packages:

- Road Weather Data Collection (MC03)
- Weather Information Processing and Distribution (MC04)
- Winter Maintenance (MC06)
- Roadway Maintenance and Construction (MC07)

Prerequisite Projects: None

Description: Implement decision support system which would allow City maintenance personnel access to predicted weather conditions and information on potential for deteriorating road conditions, as well as provide tools to predict weather impacts on road conditions, plan treatment scenarios constrained by available resources and receive treatment recommendations. This system is meant to provide the appropriate information to the appropriate personnel so that they can make proactive winter maintenance decisions. The Federal Highway Administration has developed a prototype of such as system, but it must be implemented on a state and/or regional level.

Other City/County Winter Maintenance Systems

Associated Market Packages:

- Road Weather Data Collection (MC03)
- Weather Information Processing and Distribution (MC04)
- Winter Maintenance (MC06)
- Roadway Maintenance and Construction (MC07)

Prerequisite Projects: None

Description: This project implements a winter maintenance decision support system, including enhanced resource and scheduling coordination among counties, municipalities and TxDOT to better respond to winter weather emergencies and road conditions. This system is meant to provide the appropriate information to the appropriate personnel so that they can make proactive winter maintenance decisions. The Federal Highway Administration has developed a prototype of such as system, but it must be implemented on a state and/or regional level. The estimated cost of this project is \$200,000.

Public Transportation Management

Regional Transit Smart Card

Associated Market Packages:

- Fixed Route Transit Operations (APTS2)
- Demand Response Transit Operations (APTS3)
- Transit Passenger and Fare Management (APTS4)

Prerequisite Projects: City of Wichita Falls Electronic Fare Collection System

Description: This project implements and coordinates a transit fare payment card among the three transit operating agencies in the region, including City fixed-route and demand response providers in the rural areas. There are three primary benefits of these electronic fare collection systems. The first is enhanced revenue collection ability. The second is increased security by not having large amounts of cash or tokens on the vehicle. The third is the increased convenience and security for the transit patron. The transit fare payment card will also coordinate with Dallas Area Rapid Transit (DART) in Dallas. A private partner will be needed to reconcile the electronic payments.

City of Wichita Falls Transit Electronic Fare Collection System

Associated Market Packages:

- Fixed Route Transit Operations (APTS2)
- Demand Response Transit Operations (APTS3)
- Transit Passenger and Fare Management (APTS4)

Prerequisite Projects: None

Description: This project implements a system enabling the use of smart cards an electronic swipe card technology on transit buses. There are three primary benefits of these electronic fare collection systems. The first is enhanced revenue collection ability. The second is increased security by not having large amounts of cash or tokens on the vehicle. The third is the increased convenience and security for the transit patron. Fare boxes will be upgraded to accept smart cards (i.e., cards with passive radio frequency identification technology or a magnetic information strip, such as a credit card) with rider and account information. Electronic fare payment technology is rapidly advancing, and there will be several technological considerations that will need to be examined, such as standards for smart cards and interoperability issues. The estimated cost of this project is \$5,000 per vehicle.

City of Wichita Falls Transit Passenger Counters

Associated Market Package:

- Transit Passenger and Fare Management (APTS4)

Prerequisite Projects: None

Description: This project implements passenger counters to automatically count boarding and alighting passengers. Install automatic passenger counter systems on transit vehicles to accurately count ridership.

The estimated cost of this project is \$2,000 per vehicle.

Commercial Vehicle Operations

CVO Warning System

Associated Market Packages:

- In Vehicle Signing (ATIS9)

Prerequisite Projects: None

Description: Provide for portable roadside transmitters on I-35 to improve information dissemination. Portable transmitters could provide roadway condition or incident information to in-vehicle receivers on commercial vehicles traveling the I-35 corridor. This project will require commercial vehicle operator participation to outfit their fleets with the receivers so that they can hear the warning messages.

4. MAINTAINING THE REGIONAL ITS ARCHITECTURE AND DEPLOYMENT PLAN

The Wichita Falls Regional ITS Deployment Plan is a living document. The recommended projects and timeframes for their implementation reflect the needs of the Region at the time the plan was developed. Wichita Falls is in the early stages of implementing its first phase of ITS technologies, and it is expected that the needs of the Region will change as ITS deployments are put into place, as population and travel patterns change, and as new technology is developed. This first phase, which included dynamic message signs, a TMC at the TxDOT District Office, TxDOT's ATMS software, surveillance equipment (including CCTV cameras and detectors), and weather detection (road pavement conditions and flood detection) was implemented in late 2004. Deployments in neighboring Regions, such as Amarillo, Childress, and Fort Worth as well as in Oklahoma also could have an impact on needs and priorities in the Wichita Falls Region. In order for the ITS Deployment Plan to remain a useful document for Regional stakeholders, the plan must be reviewed and updated over time.

It was agreed that as new programs and initiatives come on line, such as with security and emergency services, new stakeholders are welcome to participate in future discussions, formal updates, and revisions to both the architecture and the deployment plan for the Wichita Falls Region. These could include stakeholders who were invited but unable to consistently participate in the architecture and deployment plan process, new agencies or entities that have a role in the Region's ITS, as well as neighboring TxDOT Districts and states.

TxDOT Traffic Operations Division was identified as the lead to maintain and update the Wichita Falls Regional ITS Architecture and Deployment Plan, with input and guidance from TxDOT Wichita Falls and other stakeholders in the Region. These plans will continue to be driven by stakeholder consensus rather than a single stakeholder. In order for changes to occur in the plan, it is recommended that all stakeholders be invited to a consensus building meeting to discuss any proposed changes to the Regional ITS Architecture or ITS Deployment Plan.

Wichita Falls stakeholders noted that there was a stronger need to periodically review the projects in the Regional ITS Deployment Plan, but recognized it will be important to review new market packages to the National ITS Architecture as well as updated guidance and directives from the United States Department of Transportation to determine their applicability to the Wichita Falls Plans. The Regional ITS Deployment Plan will be reviewed for potential updates every two years, prior to the update of the regional transportation improvement program (TIP). At these review meetings, stakeholders should identify which projects in the ITS Deployment Plan have been deployed. Project status (existing, planned, or future) may have to be updated for many of the projects as they move from the future to planned to existing status. New projects that are recommended by a stakeholder for inclusion in the ITS Deployment Plan should also be discussed to ensure that the Region as a whole feels that the project is consistent with regional needs and priorities. Projects that are added to the ITS Deployment Plan should also be reviewed closely to determine if they fit into the current Wichita Falls Regional ITS Architecture; if a new project does not fit into the ITS Architecture, then the ITS Architecture will need to be revised to include the necessary links and data flows for the project.

This same type of consensus building should also be used should the geographic scope need to change or should additional stakeholders need to be added to the Wichita Falls Regional ITS Architecture and ITS Deployment Plan.