North Central Texas

INTELLIGENT TRANSPORTATION SYSTEM (ITS) STRATEGIC DEPLOYMENT PLAN

MAY 2016

North Central Texas Council of Governments

North Central Texas

Intelligent Transportation System (ITS) Strategic Deployment Plan

Prepared by the North Central Texas Council of Governments in coordination with stakeholder agencies throughout the North Central Texas Region

May 2016

What is NCTCOG?

The North Central Texas Council of Governments is a voluntary association of cities, counties, school districts, and special districts which was established in January 1966 to assist local governments in **planning** for common needs, **cooperating** for mutual benefit, and **coordinating** for sound regional development.

It serves a 16-county metropolitan region centered around the two urban centers of Dallas and Fort Worth. Currently the Council has **234 members**, including 16 counties, 168 cities, 22 independent school districts, and 28 special districts. The area of the region is approximately **12,800 square miles**, which is larger than nine states, and the population of the region is about **7 million** which is larger than 38 states.

NCTCOG's structure is relatively simple; each member government appoints a voting representative from the governing body. These voting representatives make up the **General Assembly** which annually elects a 15-member Executive Board. The **Executive Board** is supported by policy development, technical advisory, and study committees, as well as a professional staff of 324.

NCTCOG's offices are located in Arlington in the Centerpoint Two Building at 616 Six Flags Drive (approximately one-half mile south of the main entrance to Six Flags Over Texas).

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NCTCOG's Department of Transportation

Since 1974 NCTCOG has served as the Metropolitan Planning Organization (MPO) for transportation for the Dallas-Fort Worth area. NCTCOG's Department of Transportation is responsible for the regional planning process for all modes of transportation. The department provides technical support and staff assistance to the Regional Transportation Council and its technical committees, which compose the MPO policy-making structure. In addition, the department provides technical assistance to the local governments of North Central Texas in planning, coordinating, and implementing transportation decisions.

Prepared in cooperation with the Texas Department of Transportation and the U. S. Department of Transportation, Federal Highway Administration.

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APPENDIX A – NCTCOG REGIONAL ITS DEPLOYMENT PLAN PROJECT LISTING

LIST OF ACRONYMS

ATIS	Advanced Travel Information System
ATMS	Advanced Traffic Management System
AVL	Automated Vehicle Location
BBU	Battery Backup Unit
CASA	Center for Collaborative Adaptive Sensing of the Atmosphere
CCTV	Closed-Circuit Television
CV/AV	Connected Vehicle/Autonomous Vehicle
DART	Dallas Area Rapid Transit
DCTA	Denton County Transportation Authority
DFW	Dallas Fort Worth International Airport
DMS	Dynamic Message Sign
DSS	Decision Support Systems
EMC	Emergency Management Center
EOC	Emergency Operations Center
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FWTA	Fort Worth Transportation Authority
GPS	Global Positioning System
ITS	Intelligent Transportation System
LED	Light Emitting Diode
LBJ	IH 635 -Lyndon Baines Johnson Freeway
MAPP	Mobility Assistance Patrol Program
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
NCTCOG	North Central Texas Council of Governments
NOAA	National Oceanic and Atmospheric Administration
NTE	North Tarrant Express
NTTA	North Texas Tollway Authority

LIST OF ACRONYMS (Cont.)

RVDS	Radar Vehicle Detection System
SPaT	Signal Phase and Timing data
TRF	Traffic Operations Division
TIP	Transportation Improvement Plan
TMC	Traffic Management Center or Transportation Management Center
TOD	Toll Operations Division
TTI	Texas A&M Transportation Institute
TxDOT	Texas Department of Transportation
USDOT	United States Department of Transportation
V2I	Vehicle to Infrastructure
V2V	Vehicle to Vehicle
VIVDS	Video Imaging Vehicle Detection System

1 INTRODUCTION

1.1 Project Overview

The Regional Intelligent Transportation System (ITS) Architecture, in addition to being a useful planning tool, is also a requirement of the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) for any region deploying ITS projects using federal transportation funding. A FHWA Final Rule and a FTA Final Policy issued in 2001 require that regions develop an ITS architecture and show how ITS projects conform to their Regional ITS Architecture in order to receive federal funding. Although not required by FHWA and FTA, an ITS Strategic Deployment Plan supports the Regional ITS Architecture by identifying ITS projects that are either planned or necessary to successfully implement the ITS architecture. The ITS Strategic Deployment Plan also links each project to the Regional ITS Architecture by identifying the ITS service packages that correspond to those projects.

The Regional ITS Architecture for the North Central Texas Region was updated in 2014. The update was led by the North Central Texas Council of Governments, and was completed in close coordination with region stakeholders. The web portal for the regional architecture is located at http://www.nctcog.org/trans/its/RegITSArch/reference/index.html. No formal printed report was produced.

This document, the North Central Texas ITS Strategic Deployment Plan, was developed to be a companion document to the North Central Texas Regional ITS Architecture. The updated Regional ITS Architecture establishes a blueprint for transportation integration and should be updated periodically (annually) to reflect technological advances in ITS. The ITS Strategic Deployment Plan supports the Regional ITS Architecture by identifying specific projects and initiatives that stakeholders would like to implement. These projects support the vision of ITS integration and operations developed in the Regional ITS Architecture.

The ITS Strategic Deployment Plan was developed with significant input from stakeholder agencies across the North Central Texas Region. While the plan strives to present an accurate snapshot of existing ITS deployments and future ITS plans in the Region, it will inevitably become outdated over the long term. Needs and priorities of the Region will change in the future, and in order to remain effective, the plan should be periodically reviewed and updated. The NCTCOG plans to update the ITS Strategic Deployment Plan annually to address this need.

1.2 North Central Texas Region

The North Central Texas Council of Governments (NCTCOG) serves a 16-county region of North Central Texas, which encompasses the two urban centers of Dallas and Fort Worth. The NCTCOG has established a 12 county Metropolitan Planning Area (MPA) for transportation needs. These boundaries are shown in **Figure 1**. The MPA develops a long-range metropolitan plan for the transportation system in the North Central Texas Region along with the Transportation Improvement Plan (TIP) which serves as a short-term planning document that

lists approximately three years of funded transportation projects designed to carry out the recommendations of the region. . The Region encompasses approximately 9,489 square miles in North Central Texas and has a population of approximately 7 million according to the 2014 U.S. Census population estimates.

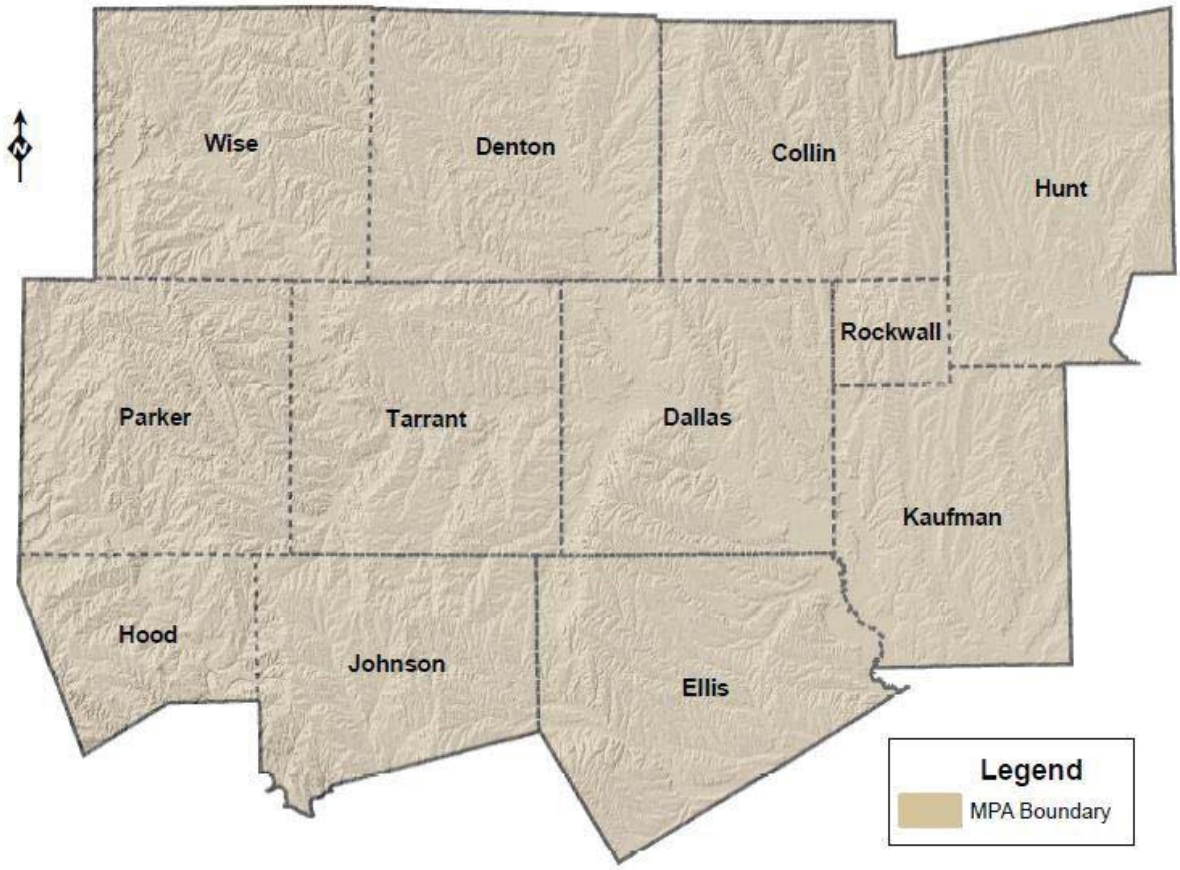


Figure 1 – North Central Texas Regional Boundaries

When developing the stakeholder group, the project team coordinated with the NCTCOG in order to include the appropriate agencies. Stakeholders included representatives from traffic, transit, public safety, emergency management, toll, and rail agencies in the North Central Texas Region.

Table 1 identifies the stakeholder agencies that participated in the North Central Texas ITS Strategic Deployment Plan Workshop or provided input during individual interviews:

Table 1 - Stakeholder Agency Participants

City of Allen
City of Arlington
City of Carrolton
City of Cedar Hill
City of Coppell
City of Dallas
City of Denton
Dallas Area Rapid Transit
Dallas/Fort Worth International Airport
Denton County Transportation Authority
City of Euless
Federal Highway Administration
Town of Flower Mound
City of Fort Worth
Fort Worth Transportation Authority
City of Frisco
City of Garland
City of Grand Prairie
City of Grapevine
City of Irving
LBJ Express
City of Lewisville
City of Mansfield
City of McKinney
City of Mesquite
North Central Texas Council of Governments
North Texas Tollway Authority
NTE Express
City of Plano
City of Richardson
City of Richland Hills
City of Rowlett
City of The Colony
TxDOT Dallas District
TxDOT Fort Worth District
TxDOT Traffic Operations Division (TRF)
TxDOT Toll Operations Division (TOD)

1.3 Document Overview

The North Central Texas ITS Strategic Deployment Plan is organized into the following five sections:

Section 1 – Introduction

This section provides an overview of the North Central Texas ITS Strategic Deployment Plan, including a description of the North Central Texas Region and participating stakeholders.

Section 2 – Recommended ITS Deployments – Local Deployments

This section describes the existing and planned ITS deployments by individual stakeholder agencies in the Region. The local deployments section provides a high-level overview of local deployments.

Section 3 – Recommended ITS Deployments – Regional Deployments

This section describes the recommended regional ITS deployments for the North Central Texas Region. Nine deployment areas are identified; which are:

- Regional Traveler Information Improvements
- Traffic Incident Management Improvements
- Upgrade Traffic Signal Systems
- Network and Probe Surveillance
- Center-to-Center Communications
- Transit Interactive and Broadcast Traveler Information
- Archived Data Warehouse Implementation
- Severe Weather Information Systems
- Connected Vehicles

For each deployment area, a description of the following is provided: basis of need, stakeholders involved, deployment components, time frame, and Regional ITS Architecture conformance.

Section 4 – Funding and Project Implementation

This section contains the funding criteria established by NCTCOG, project selection, project scopes and associated time frame for implementation.

Section 5 – Maintaining the North Central Texas ITS Strategic Deployment Plan

This section contains a description of the maintenance procedure for the North Central Texas ITS Strategic Deployment Plan.

2 RECOMMENDED ITS DEPLOYMENTS – LOCAL DEPLOYMENTS

The North Central Texas Region began developing plans to deploy ITS in the mid-1990s. At that time, this strategy was termed IVHS – Intelligent Vehicle Highway Systems. Primary deployments included management and operations; surveillance and monitoring; information delivery; control; data communications; and interagency communications[1]. Management and operations consisted of the Texas Department of Transportation's (TxDOT) Traffic Management Centers (TMCs), North Texas Tollway Authority's (NTTA) Safety Operations Center, various cities' TMCs and the Dallas Area Rapid Transit (DART) operations center. It also included the Mobility Assistance Patrol Program (MAPP) and incident management. Surveillance consisted of vehicle detectors, closed circuit television (CCTV) cameras, and vehicle probes. Information delivery included basic press releases, phone links, and dial-in service lines. Control included reversible lanes and traffic signals. Data communication included a variety of wired and wireless mediums. In addition, interagency communications consisted of the manual voice use of the telephone.

Over time, the stakeholders in the North Central Texas region have continued efforts to deploy ITS. Data collected to develop this deployment plan reveals interest in deploying additional ITS services and improving operations. Most agencies had a set of priority deployments for their agency, which often included an expansion of existing systems and programs as well as the implementation of new ITS systems and programs to meet existing and future needs. Agency plans include projects that are local in nature focusing primarily on needs within the geographic area that the agency served, but also those that have a regional significance knowing that travelers traverse daily across many municipality boundaries on multiple agency facilities in their daily commutes.

In this Section, a summary is provided of the existing ITS deployments in the North Central Texas Region, as well as the plans for expansion of existing systems and deployment of new systems. The North Central Texas ITS Strategic Deployment Plan focuses on local, as well as regional ITS deployments and initiatives. In the North Central Texas ITS Strategic Deployment Plan, the stakeholder's individual ITS projects included identifying local initiatives; however, many of these initiatives and strategies are part of a larger regional deployment effort with regional significance. These North Central Texas regional deployments are presented in Section 3 – Recommended ITS Deployments – Regional Deployments.

2.1 Overview of Existing Local ITS Deployments

The North Central Texas Region has made significant investments in the deployment of ITS. State and regional agencies focus primarily on investments made by the FHWA, FTA, TxDOT and

[1] Source: Table A, Existing ITS System Capability; Plan Summary Dallas Area-Wide Intelligent Transportation Systems Plan by Texas Transportation Institute (TTI) for the Federal Highway Administration, July 1996.

NTTA. TxDOT and NTTA have dedicated TMCs to manage and operate ITS within the Region. Field sensors, CCTV cameras, and Dynamic Message Sign (DMS) units have also been deployed by both TxDOT and NTTA, with TxDOT also deploying Bluetooth devices to detect travel times along the IH 45 hurricane evacuation route. The NTTA, TxDOT and the Public- Private Partnership Toll Operators of LBJ Express and North Tarrant Express (NTE) lanes are currently operating motorist assistance patrols or courtesy patrols on tollways, freeways and managed lanes to assist stranded motorists and to assist with incident clearance and management. TxDOT has intellectual property agreements in place to share data and camera feeds with local television stations and traffic reporting companies to help disseminate traveler information. TxDOT has established a fiber connection to many local municipalities, NTE, LBJ Express and NTTA. The North Central Texas Region is in the process of developing and implementing center-to-center capabilities. Additionally, TxDOT currently provides real-time traffic information through TxDOT maintained websites. Stakeholders in the region, led by DART, recently implemented an Integrated Corridor Management (ICM) project on US 75, including the deployment of the first 511 traveler information system in Texas.

Many of the municipalities in the North Central Texas Region have developed traffic management centers, emergency operation centers, installed centralized traffic signal systems, and deployed field sensors and CCTV cameras. The cities of Arlington, Dallas and Grand Prairie have deployed a limited number of DMS on arterial streets. The City of Dallas has flood monitoring stations. TxDOT and NTTA maintain weather stations to provide information on freezing temperatures on bridges. Transit agencies, including DART, FWTA and DCTA have deployed ITS to assist with vehicle tracking, security, fare payment, and passenger counting. DART has implemented systems to allow them to provide real-time information through websites and mobile applications as well as at transit centers and stops. These transit agencies are also archiving much of the data they collect on system performance and ridership as part of the FTA's reporting requirements. The City of Dallas has implemented traffic signal priority for the DART light rail transit vehicles.

2.2 Overview of the Expansion of Existing Local ITS Deployments

Stakeholders that participated in the North Central Texas ITS Strategic Deployment Plan workshop expressed a desire to expand their local existing ITS systems and a desire to deploy additional technologies and services.

TxDOT noted the need to increase coverage of their freeway management system in the North Central Texas area, and extend coverage to some of the fast growing outlying areas. There was also a desire to deploy additional ITS devices and upgrade to new technologies on freeways in the North Central Texas Region. TxDOT expressed a need to deploy additional ITS technologies for the daily operation of high occupancy vehicles (HOV) and managed toll lanes and peak-hour shoulder-use projects. The NTTA also noted a need to provide increased deployment of devices to improve traffic management and dissemination of information on their facilities. TxDOT and NTTA recently implemented the TMC operations software, *LoneStar,* and expressed the need for additional features and functionality to meet regional needs. A continuation for the courtesy patrol or motorist assistance patrols was also noted by TxDOT and NTTA.

Many municipalities consistently recognized the need to expand their advanced traffic management systems, including upgrading or expanding communication to additional traffic signals as well as the implementation of technologies such as adaptive traffic signal control. In addition, municipalities expressed a need to upgrade end of life signal controller hardware, install new communication systems and upgrade vehicle detectors. Additional deployments of arterial CCTV cameras and Bluetooth or Wi-Fi devices are needed to improve monitoring capabilities, provide more travel time information on corridors and improve active traffic management. The City of Dallas would like to expand their arterial DMS deployment and integrate with TxDOT to disseminate traveler information. The LBJ Express and NTE intend to expand the use of their mobile application for traveler information to additional corridors to increase ridership.

DART, the Fort Worth Transit Authority (FWTA) and the Denton County Transportation Authority (DCTA) are planning to expand transit signal priority at signalized locations. DART and DCTA are also continuing to add passenger counters on their rail and bus system and improve their transit traveler information systems. DART, FWTA and DCTA will continue to add CCTV on their vehicles to increase security. DART will continue deploying Automated Vehicle Location (AVL) on buses and expand the capabilities of the transit systems to provide this information at transit centers and stops.

Numerous stakeholders participating in the North Central Texas ITS Strategic Deployment Plan Workshop have developed, or are in the process of developing, plans for the implementation and expansion of their ITS systems.

2.3 Implementation of New Local ITS Deployments

At the individual agency level, the focus on new ITS deployments included increased capabilities for monitoring and controlling systems, increased capabilities for disseminating traveler information, and increased coordination and information sharing between agencies.

Installation of Wi-Fi and Bluetooth readers was noted by several stakeholders to improve real-time traveler information. Deployment of DMS on arterial streets to disseminate traveler information for event management, as well as provide information on freeway conditions prior to motorists entering the freeway, was noted as a need by multiple agencies.

Several municipalities noted an interest in deploying adaptive signal control in the future to allow signal timing plans that are developed in real time to meet the needs of the changing traffic conditions due to special events, incident management or construction.

The cities of Frisco, Plano and McKinney are interested in developing a mobile phone application that will allow bicyclists and pedestrians to communicate with the city's Advanced Traffic Management System (ATMS) and allow the city to detect when a bicyclist is approaching a traffic signal rather than rely on loops or video to detect bikes, which is sometimes unreliable. The City of Plano is implementing systems to determine the availability of parking and provide real-time information to travelers on parking availability.

The City of Garland is interested in implementing flood detection system. Multiple agencies expressed the need to develop a system that will alert motorists of severe weather conditions and to notify emergency providers when rail crossings may be blocked for extended periods.

TxDOT and several municipalities noted the need to implement center-to-center capabilities to allow sharing of incident information, traffic conditions, and CCTV camera feeds between agencies. TxDOT is currently in the process of implementing center-to-center communications with local stakeholders during the development of the North Central Texas Regional ITS Deployment Plan.

Table 2 (next page) provides a summary of existing and future ITS deployments by state, regional, municipal, and transit agencies.

Table 2 - North Central Texas Existing and Future ITS Deployments

	Freeway and Arterial Applications																		Transit Applications									
AGENCY	Traffic Management/Operations Center	Centralized Traffic Signal Control System	Field Sensors – Freeway	Field Sensors – Arterial Intersection	Bluetooth/Wi-Fi Readers	CCTV Cameras	Dynamic Message Signs	Arterial Dynamic Message Signs	Lane Control Signals/ Dynamic Lane Assignment Signs	Wrong Way Driver Detection	Flood Monitoring/ Weather Stations	Motorist Assistance Patrol	Emergency Vehicle Signal Preemption	Electronic Toll Collection	Center-to-Center Comm. for Traffic Info.	Real-Time Traveler Info. Website/Mobile Data	Connected Vehicles	Archived Data	Transit Operations Center	Transit Vehicle Tracking	Transit Security Systems	Automated Fare Payment	Automated Passenger Counters	Transit Signal Priority	Center-to-Center Comm. for Traffic Info.	Real-Time Traveler Info. Website/Mobile Data	Real-Time Trav. Info. at Transit Centers/Stops	Archived Data
State and Regional																												
TxDOT - DAL	✓	✓	✓		✓	✓	✓		✓	✧	✓	✧		✓	✓	✓		✓										
TxDOT – FW	✓	✓	✓			✓	✓		✓	✧	✓	✧		✓	✓	✓		✓										
NTTA	✓		✓			✓	✓			✓		✧		✓	✧			✓										
Municipalities																												
City of Allen	✓	✓		✓		✧							✓		✧													
City of Arlington	✓	✓		✓		✧		✓	✓				✓		✧		✧											
City of Carrollton	✓	✓		✓		✧									✧													
City of Coppell		✧		✓		✧					✧				✧													
City of Dallas	✓	✓		✓		✓		✓			✓				✧									✓				
City of Denton	✓	✓		✓		✓							✓															
Town of Flower Mound	✓	✓		✓	✧	✓					✧		✓		✧	✓									✓			
City of Fort Worth	✓	✓		✓		✓									✧													
City of Frisco	✓	✓		✓	✧	✓		✧	✧				✓		✧	✧	✧											
City of Garland	✓	✓		✓		✓					✧		✓															
City of Grand Prairie	✓	✓		✓		✓		✓					✓		✧													
City of Grapevine		✧		✓	✓	✓									✧													
City of Irving	✓			✓		✧							✓		✧													
City of Lewisville	✓	✓		✓									✓															
City Mansfield		✧		✓																								
City of McKinney	✓	✓		✓		✓		✧					✓															
City of Mesquite	✓	✓		✓		✧							✓															
City of Plano	✓	✓		✓	✧	✓		✧					✓		✧													
City of Richardson	✓	✓		✓	✧	✓							✓				✧											
City of Rowlett		✧		✓									✧															
Transit																												
DART																			✓	✓	✓	✓	✓	✓	✓	✓	✧	
FWTA																			✓			✧	✧	✧	✓	✓	✧	
DCTA																			✓		✧				✧	✓		
Other																												
LBJ and NT Express	✓	✓	✓			✓	✓		✓			✧		✓	✓	✓		✓										
DFW Airport	✓	✓		✧		✓	✧	✧			✓		✓	✓		✓		✓										

✓ Existing Deployments

✧ Future Deployments

A majority of the future ITS deployments that were identified were shared by multiple stakeholders. The local deployments that involve at least two or more regional partners and were an interest of multiple stakeholders are being considered for regional deployments. These deployments are identified below:

- Regional Traveler Information Improvements
- Traffic Incident Management Improvements
- Upgrade Traffic Signal Systems
- Network and Probe Surveillance
- Center-to-Center Communications
- Transit Interactive and Broadcast Traveler Information
- Archived Data Warehouse Implementation
- Severe Weather Information Systems
- Connected vehicles

These regional deployments are described in detail in Section 3 – Recommended ITS Deployments – Regional Deployments.

2.4 Recommended Local ITS Deployments by Agency

A list of all recommended local ITS deployments by individual agency is presented in **Table 3**. These projects were considered a need by each agency and meet individual agency goals for improving the transportation network. Each project identified includes the corresponding ITS service package(s) from the North Central Texas Regional ITS Architecture. The ITS service packages are provided to reveal how each recommended deployment fits within the Regional ITS Architecture. The ITS service packages are important as they demonstrate Regional ITS Architecture conformity, which in turn are important if a project is seeking use of federal transportation funds for implementation.

The projects identified in **Table 3** are primarily projects that will be implemented by individual agencies to meet individual goals of the state, regional, or municipal agency. A more detailed comprehensive list of local deployments is provided in **Appendix A**.

Table 3 – Recommended Local ITS Deployments

ITS Project	Primary Corresponding ITS Service Packages
North Central Texas Council of Governments (NCTCOG)	
Regional Network	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Continue and Expand Regional Traveler Information System 511DFW	ATMS06 Traffic Information Dissemination ATIS01 Broadcast Traveler Information ATIS02 Interactive Traveler Information
Develop Concept of Operations for a regional corridor	ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System ATMS09 Transportation Decision Support and Demand Management (Arterial Traffic Control)
Center to Center (C2C) Plug Ins for Traffic Signal Communications and Control	ATMS03 Traffic Signal Control ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Provide Devices and Communication to Support Connected Vehicles	AVSS05 Intersection Safety Warning (Connected Vehicle) AVSS10 Intersection Collision Avoidance (Connected Vehicle) AVSS11 Automated Vehicle Operations (Connected Vehicle)
Provide Protection to Copper Wire and Fiber to Reduce Theft and Vandalism	ATMS12 Roadside Lighting Control System
Regional Traffic Signal Retiming Program (RTSRP) provide data collection and analysis and timing plans	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Low Cost Intersection Improvements such as restriping and GPS clocks	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Medium Cost Intersection Improvements	ATMS03 Traffic Signal Control
ITS Security Identify top 10 regional infrastructure components and develop countermeasures	ATMS01 Network Surveillance EM05 Transportation Infrastructure Protection
Critical Infrastructure/Key Resources (CIKR) Analyze risks from major catastrophic events and nominates resources to Homeland Security for evaluation	ATMS01 Network Surveillance ATMS07 Regional Traffic Management (Regional) EM05 Transportation Infrastructure Protection
Develop Process and mechanism to provide severe weather warnings	ATMS01 Network Surveillance MC03 Road Weather Data Collection EM02 Emergency Routing
Regional ITS Data Quality Implementation evaluates data and data collection devices and provides system for data sharing	ATMS07 Regional Traffic Management (Regional) AD1 ITS Data Mart (Regional Info) AD2 ITS Data Warehouse
Wrong Way Driving Detection and Crash Reduction	ATMS01 Network Surveillance ATMS02 Traffic Probe Surveillance ATMS24 Dynamic Roadway Warning
Implement Automated Occupancy Verification Technology for occupancy verification in vehicles	ATMS05 HOV Lane Management, HOV Management (ICM) ATMS18 Reversible Lane Management
Continue Motorist Assistance Patrol Program for stranded motorists and assist first responders while responding to crashes	EM04 Roadway Service Patrols ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
TxDOT - Dallas District	
Extend ITS Deployment with CCTV Cameras, DMS and Vehicle Detection over Wireless Network	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Deploy Additional CCTV Cameras to increase coverage	ATMS01 Network Surveillance ATMS08 Traffic Incident Management System
Deploy additional DMS to increase coverage	ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
DMS rehabilitation	ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Wrong Way Detection	ATMS01 Network Surveillance ATMS02 Traffic Probe Surveillance (Regional Drones)
Upgrade Wireless Transmission of ITS Video/Data with Fiber Optic Cable Installation	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Deploy additional ITS field devices for HOV Lane operation	ATMS05 HOV Lane Management, HOV Management (ICM) ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Deploy additional ITS field devices for Toll Lane Operation	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS10 Electronic Toll Collection
Deploy additional ITS field devices for Dynamic Shoulder Use	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System ATMS23 Dynamic Lane Management and Shoulder Use
Continue Motorist Assistance Patrol Program for stranded motorists and assist first responders while responding to crashes	EM04 Roadway Service Patrols ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
TxDOT -Fort Worth District	
Expand ITS Coverage with CCTV Cameras, DMS, Vehicle Detection and Weather Stations	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Install Fiber Optic Communication	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional)
Deploy additional ITS field devices for Toll Lane Operation	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS10 Electronic Toll Collection
Implementation of road weather information systems	ATMS01 Network Surveillance MC03 Road Weather Data Collection EM02 Emergency Routing
US 377 connected corridor	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional)
DMS rehabilitation	ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Continue Motorist Assistance Patrol Program for stranded motorists and assist first responders while responding to crashes	EM04 Roadway Service Patrols ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
North Texas Tollway Authority (NTTA)	
Install additional CCTV Cameras for increased coverage	ATMS01 Network Surveillance ATMS08 Traffic Incident Management System
Install additional DMS/CMS for additional coverage	ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Install RVDS on existing corridors	ATMS01 Network Surveillance ATMS08 Traffic Incident Management System
Enhance TMC Software to increase functionality	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
City of Dallas	
Central System Software	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Upgrade communications network to support ATMS	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install Arterial Dynamic Message Signs	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Signal Controller and Cabinet upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install CCTV cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Traffic Signal Detection Upgrade	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Citywide Traffic Signal Upgrades	ATMS03 Traffic Signal Control
Traffic Signal Controller Upgrade for Advanced Traffic Control \Transit Priority	ATMS03 Traffic Signal Control APTS09 Transit Signal Priority
City of Fort Worth	
Central System Software	ATMS03 Traffic Signal Control ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional)
Communication Network Expansion	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Signal Controller and Cabinet upgrade	ATMS03 Traffic Signal Control
Communication Expansion to ITS Field Devices	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Signal Controller, Cabinet and Communication upgrade - Hulen project	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install CCTV cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Citywide Traffic Signal Upgrades	ATMS03 Traffic Signal Control
Traffic Signal Detection Upgrade	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Signal Controller and Cabinet upgrade - diamond interchanges	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
Dallas Area Rapid Transit (DART)	
Traffic Signal Controller Upgrade for Advanced Traffic Control \Transit Priority	APTS09 Transit Signal Priority ATMS03 Traffic Signal Control
Love Field Interactive Kiosk	APTS08 Transit Traveler Information ATIS02 Interactive Traveler Information
Center to Center Communications	ATMS01 Network Surveillance ATMS07 Regional Traffic Management (Regional)
Yard Wi-Fi to support LRT CCTV Cameras	APTS01 Transit Vehicle Tracking APTS05 Transit Security
Yard Management Bus Location System	APTS01 Transit Vehicle Tracking APTS05 Transit Security
Improve Terminal Stations Traveler Information System	ATIS02 Interactive Traveler Information APTS08 Transit Traveler Information
Light DART tunnel for Wi-Fi customer Information	APTS05 Transit Security ATIS01 Broadcast Traveler Information ATIS02 Interactive Traveler Information
Comprehensive payment system	APTS04 Transit Fare Collection Management
Paratransit camera project	APTS05 Transit Security APTS08 Transit Traveler Information
Spanish/English translation project	ATIS01 Broadcast Traveler Information APTS08 Transit Traveler Information
Upgrade announcement system for TRE vehicles	APTS07 Multi-modal Coordination, Multi-modal Coordination (ICM) APTS08 Transit Traveler Information
Northwest Plano Park and Ride	APTS01 Transit Vehicle Tracking
Positive Train Control for TRE	APTS01 Transit Vehicle Tracking
Small cell at light rail stations	ATIS02 Interactive Traveler Information APTS05 Transit Security
Transit Signal Priority for D2 and enhancement of phase I TSP	APTS09 Transit Signal Priority
TRE station platform CCTV Cameras	APTS05 Transit Security
Populate all Light Rail Vehicles with a modern camera system.	APTS05 Transit Security
Future ITS Security project	APTS05 Transit Security
Platform extension and impact of three car consist on downtown Transit Signal Priority	APTS09 Transit Signal Priority
TRE Locomotive & Cab Car Cameras	APTS05 Transit Security
TRE Coaches Camera Installation	APTS05 Transit Security
Fiber Optic Line Installation on the TRE	APTS05 Transit Security APTS08 Transit Traveler Information ATIS01 Broadcast Traveler Information
Enhanced Bus Shelter	APTS05 Transit Security APTS08 Transit Traveler Information
Video analytic project for Rail crossings	ATMS01 Network Surveillance ATMS13 Standard Railroad Grade Crossing
Streetcar DVM train matching and licensing project	ATMS01 Network Surveillance APTS10 Transit Passenger Counting

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
City of Allen	
Fiber Optic Communication Ring	ATIS06 Transportation Operations Data Sharing, Transportation Operations Data Sharing (ICM)
Upgrade communication system to local signal controllers	ATMS03 Traffic Signal Control
Upgrade traffic signal controllers and cabinets	ATMS03 Traffic Signal Control
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Update the TMC	ATMS03 Traffic Signal Control ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional)
Center to Center communication and video and data exchange with regional partners	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
City of Arlington	
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Install Arterial Dynamic Message Signs	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Roadside Units for Connected Vehicles	AVSS10 Intersection Collision Avoidance (Connected Vehicle) ATMS08 Traffic Incident Management System
City of Carrollton	
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Center to Center communication and video and data exchange with TxDOT and NTTA	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Communication to regional network (NTTA)	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
ATMS Upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Intersection Vehicle Detection	ATMS03 Traffic Signal Control ATMS01 Network Surveillance
Central Traffic Management Software	ATMS03 Traffic Signal Control ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional)
Adaptive Signal Control	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
City of Coppell	
Center to Center communication and video and data exchange with regional partners	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Conversion of Traffic Signals to new standard	ATMS03 Traffic Signal Control
Enhance traffic operations on strategic regional facilities	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
Local Traffic Signal Control Upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Hazardous weather traffic management	MC03 Road Weather Data Collection MC04 Weather Information Processing and Distribution (Arterial)
City of Denton	
Install Fiber Optic ITS Communication Network	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Town of Flower Mound	
Center to Center communication and video and data exchange with regional partners	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
ATC Controller Upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
MMU Communication	ATMS03 Traffic Signal Control
Fiber Backbone Installation	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Fiber Links to all Intersections	ATMS01 Network Surveillance ATMS07 Regional Traffic Management (Regional)
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
ATMS Video Wall and TMC, PD and EOC	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Video connection and/or AVL for the EMS between accident scene and surrounding hospitals	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Road Weather Sensors at critical bridges	MC03 Road Weather Data Collection MC04 Weather Information Processing and Distribution (Arterial)
Portable Dynamic Message Boards with wireless communication capabilities	ATMS06 Traffic Information Dissemination ATMS21 Roadway Closure Management
Install Wi-Fi or Bluetooth Equipment for Real Time Traffic Monitoring	ATMS01 Network Surveillance ATMS02 Traffic Probe Surveillance (Regional Drones) ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
GPS based preemption for emergency services.	ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
City of Frisco	
Center to Center communication and video and data exchange with regional partners	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install Software and Infrastructure for Adaptive Signal Control	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Enhance Bicycle App to exchange information with Traffic Signals	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
Local Traffic Signal Controller and Detection Upgrade	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install Wi-Fi or Bluetooth Equipment for Real Time Traffic Monitoring and Automated Travel Time Data	ATMS02 Traffic Probe Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install Arterial Dynamic Message Signs	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Traffic Signal Controller Upgrade for Advanced Traffic Control /Transit Priority	APTS09 Transit Signal Priority ATMS03 Traffic Signal Control
Dynamic Lane Assignment Signs	ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System ATMS23 Dynamic Lane Management and Shoulder Use
ATC Controller Upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Dynamic Tollway Lanes - Lane Control Signs upstream of on-ramps on Tollway	ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System ATMS23 Dynamic Lane Management and Shoulder Use
Public Facing Traffic Webpage	ATIS01 Broadcast Traveler Information
GPS based preemption for emergency services.	ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System EM02 Emergency Routing
Provide notification to emergency providers when RR gates are down	ATMS08 Traffic Incident Management System ATMS13 Standard Railroad Grade Crossing
Car Share	ATIS08 Dynamic Ridesharing
Connected Vehicle - Provide SPaT data	AVSS05 Intersection Safety Warning (Connected Vehicle) AVSS10 Intersection Collision Avoidance (Connected Vehicle)
Freight Priority	ATMS03 Traffic Signal Control AVSS05 Intersection Safety Warning (Connected Vehicle)
Pedestrian App	ATMS03 Traffic Signal Control ATMS06 Traffic Information Dissemination
Video Equipment upgrade at EMC	ATMS01 Network Surveillance ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System EM10 Disaster Traveler Information
Automate traffic data reporting	ATMS01 Network Surveillance AD1 ITS Data Mart (Regional Info) AD2 ITS Data Warehouse
Crash Data Exchange between Agencies	ATMS07 Regional Traffic Management (Regional) AD1 ITS Data Mart (Regional Info) AD2 ITS Data Warehouse
Signal system software upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Asset Management System	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
City of Garland	
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Central system and local controller hardware/software upgrade.	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Roadway flood warning system	MC03 Road Weather Data Collection
City of Grand Prairie	
Center to Center communication and video and data exchange with TxDOT and NTTA.	ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install CCTV Cameras and arterial DMS for incident traffic diversions and railroad crossings.	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS13 Standard Railroad Grade Crossing
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Install Arterial Dynamic Message Signs	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install Wi-Fi or Bluetooth Equipment for Real Time Traffic Monitoring and Automated Travel Time Data	ATMS02 Traffic Probe Surveillance (Regional Drones) ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Upgrade vehicle detections	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install Software and Infrastructure for Adaptive Signal Control	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
City of Grapevine	
Center to Center communication and video and data exchange with regional partners	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
TMC Construction	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Incident Management Timing Plans for Frontage Road Signals	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install Fiber Optic Cable Communication	ATMS07 Regional Traffic Management (Regional)
City of Irving	
ATMS upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
TMC construction	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Regional Interconnectivity	ATMS07 Regional Traffic Management (Regional)
City of Mansfield	
Traffic Management Center	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
City of McKinney	
Traffic Signal Controller Upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Expand Fiber Ring	ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install Arterial Dynamic Message Signs	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Public Facing Traffic Webpage	ATIS01 Broadcast Traveler Information
Install Wi-Fi or Bluetooth Equipment for Real Time Traffic Monitoring and Automated Travel Time Data	ATMS02 Traffic Probe Surveillance (Regional Drones) ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Enhance Bicycle App to exchange information with Traffic Signals	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
City of Mesquite	
Upgrade Vehicle Detectors with VIVDs and CCTV Cameras with PTZ capability	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
City of Richardson	
Install Wi-Fi Equipment for Real Time Traffic Monitoring	ATMS02 Traffic Probe Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Automated Turning Movement Counts	ATMS02 Traffic Probe Surveillance ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Advanced Signal Controllers and Cabinets	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Advanced Central Traffic Management Software	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
V2I Test Deployment	AVSS11 Automated Vehicle Operations (Connected Vehicle) ATMS06 Traffic Information Dissemination
Advanced modelling and adaptive signal timing	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
City of Rowlett	
ATMS system software	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Install CCTV Cameras	ATMS01 Network Surveillance ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Traffic Signal Upgrade	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Center to center communication and agency data sharing	ATMS01 Network Surveillance ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install Fiber Optics	ATMS07 Regional Traffic Management (Regional)

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
City of Plano	
TMC operation and system monitoring	ATMS03 Traffic Signal Control ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install Software and Infrastructure for Adaptive Signal Control	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Traffic Signal Upgrade - citywide	ATMS03 Traffic Signal Control
Automated Traffic Management Center Software	ATMS03 Traffic Signal Control
Install CCTV Cameras with PTZ along routes of significance	ATMS01 Network Surveillance ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System
Incident Corridor Management New Timing Plans and System Expansion	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Install Arterial Dynamic Message Signs	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Emergency NOW module for traffic signal priority	ATMS03 Traffic Signal Control ATMS08 Traffic Incident Management System EM02 Emergency Routing
Install Wi-Fi Equipment for Real Time Traffic Monitoring	ATMS02 Traffic Probe Surveillance (Regional Drones) ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional)
Automated vehicle notification of traffic signal status	AVSS11 Automated Vehicle Operations (Connected Vehicle)
Center to Center communication and video and data exchange with regional partners	ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Parking management systems	ATMS16 Parking Facility Management ATMS17 Regional Parking Management
Denton County Transit Authority (DCTA)	
Enhanced PTC (Grade Crossing)	ATMS01 Network Surveillance ATMS13 Standard Railroad Grade Crossing APTS05 Transit Security
Bus Cameras & Security Equipment	APTS05 Transit Security
Rail Station Cameras & Security Equipment	ATMS01 Network Surveillance APTS05 Transit Security
Real-Time Mobility On Demand Technology	APTS03 Demand Response Transit Operations APTS07 Multi-modal Coordination, Multi-modal Coordination (ICM) ATIS02 Interactive Traveler Information
Positive Train Control (PTC)	APTS01 Transit Vehicle Tracking
Fort Worth Transit Authority (FWTA)	
Traffic Signal Prioritization	APTS09 Transit Signal Priority
Passenger Counters	APTS10 Transit Passenger Counting
Voice Annunciation	APTS08 Transit Traveler Information
Revenue Collection System	APTS04 Transit Fare Collection Management
Transfer Center Communications	APTS05 Transit Security

Table 3 – Recommended Local ITS Deployments (continued)

ITS Project	Primary Corresponding ITS Service Packages
LBJ Express and NT Express	
Communications between TMCs	ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
Expand DriveOn TEXpress App to support other TxDOT projects	ATMS05 HOV Lane Management, HOV Management (ICM) ATMS06 Traffic Information Dissemination ATMS07 Regional Traffic Management (Regional)
DFW Airport	
Install Dynamic Message Signs (DMS)	ATMS06 Traffic Information Dissemination ATMS08 Traffic Incident Management System
Permanent Count Stations and Roadway Temperature Sensors	ATMS01 Network Surveillance MC03 Road Weather Data Collection MC04 Weather Information Processing and Distribution (Arterial)
ATMS update	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System
ATMS expansion	ATMS03 Traffic Signal Control ATMS07 Regional Traffic Management (Regional) ATMS08 Traffic Incident Management System

3 RECOMMENDED ITS DEPLOYMENTS - REGIONAL DEPLOYMENTS

Although most agencies are actively deploying ITS within North Central Texas, stakeholders noted a strong need for the implementation of regional systems and programs to meet regional needs. Regional needs generally focused on traveler information, incident management, improved communications, and improved transit service.

Nine regional deployment areas of ITS have been identified for the Region. These nine areas do not encompass all of the regional ITS needs within North Central Texas, however stakeholders' local initiatives on routes of significance in these nine areas provide the greatest benefit to travelers. The nine areas are:

- Regional Traveler Information Improvements
- Traffic Incident Management Improvements
- Upgrade Traffic Signal Systems
- Center-to-Center Communications
- Network and Probe Surveillance
- Transit Interactive and Broadcast Traveler Information
- Archived Data Warehouse Implementation
- Severe Weather Information Systems
- Connected Vehicles

A summary of each of the nine regional deployment areas is provided below. For each, the following information is provided:

Basis of Need – Describes how the regional deployment project or program meets one of more of the regional ITS needs that were identified in the Regional ITS Architecture.

Stakeholders – Identifies the stakeholder agencies that would be involved in the implementation of projects related to each deployment area. If possible, a lead agency is identified.

Deployment Components – Describes the projects, programs, initiatives, or training that is required to fully implement the regional deployments.

Timeframe – Identifies whether a project is desired or needed in the short-, mid-, or long-term.

Regional ITS Architecture Conformance – Identifies the ITS service packages from the North Central Texas Regional ITS Architecture that are related to each of the regional deployment areas. Conformance of ITS projects with the Regional ITS Architecture is important in order for any ITS project or program to be eligible for federal funding.

3.1 Regional Traveler Information Improvements

Regional traveler information improvements for the North Central Texas Region include the ability to monitor travel conditions throughout the Region and provide a single consolidated location that can be used for providing information on travel conditions for freeways, arterials, and transit. The Dallas Integrated Corridor Management (ICM) Demonstration Project was implemented on US 75 with the goals to increase corridor throughput, improve incident management and response, reduce corridor delays, increase driver reliability and provide intermodal travel decisions. Although funding is not available to continue or expand the ICM project, one component that was developed as part of the ICM to provide traveler information that has received continued funding is a 511 system. The Region should evaluate the long-term investment of continuing and expanding the 511DFW system as a single location for traveler information including real time traffic data and route planning. This system should be evaluated against existing private products for providing real time traffic data and route planning that are used by travelers nationwide.

Basis of Need

Reliable real-time traffic information should be provided en route or pre-trip through dynamic message signs, media broadcasts, or websites. Key information regarding congestion due to construction lane closures or incidents allow motorists to make informed decisions prior to or during their trip. Travel time data provide essential information for regular commuters to inform them of changes in their daily commute times. Route times provide key information to motorists and transit users and provide valuable information allowing them to select a preferred route. The need to expand deployment of devices to provide accurate, real-time, and relevant traveler information was identified by all stakeholder agencies as a short-term deployment. Stakeholders identified the need for:

- Continued expansion of coverage;
- Continued expansion of systems to provide information to travelers;
- Method to consolidate all regional traveler information available from within the Region into a single location that is accessible to the public and private partners; and
- Collection and availability of additional travel time information along controlled access facilities and arterials.

Stakeholders

The primary stakeholders to disseminate traveler information are TxDOT, NTTA, DART, FTWA, DCTA and the larger municipalities in the North Central Texas Region. However, any agency that can provide traveler information such as road conditions, incidents, construction and maintenance information, dynamic toll rates or other relevant information should be considered a stakeholder. In the 511DFW Independent Evaluation, NCTCOG was recommended to be the lead agency to continue the 511DFW effort.

The above discussion of stakeholders is focused on public entities. There are other private, third-party providers that should be considered. An example of such entities include WAZE, Google, INRIX, HERE, and traffic.com.

Deployment Components

Traveler information needs to be accurate, reliable, and timely and can include congestion information, incident information, weather conditions, construction closure information, and transit vehicle arrival times. In order to provide real-time information that meet travelers' needs, the infrastructure and coordination efforts necessary to collect road network conditions data, locate transit vehicles, detect incidents, and broadcast the information to the public utilizing various outlets must be in place and continuously enhanced. Agencies must be able to collect travel time information, road weather conditions and view live video from CCTV cameras along major routes to understand how the network is performing. The CCTV cameras, travel time information, and coordination with emergency management agencies can aid in the detection of incidents. Automatic vehicle location equipment allows transit agencies to monitor the schedule adherence of transit vehicles. Websites, television, and dynamic message signs are all outlets by which information can be communicated to drivers and transit riders so that they can adjust their route if necessary. Dissemination of the information at the roadside will generally be the responsibility of public sector agencies, however dissemination of information through other means, such as mobile applications, may be from either public or private agencies.

Regional Traveler Information Improvements in the North Central Texas Region include the following components:

Increased Coverage of Detection Systems – Additional detection systems, including Bluetooth and Wi-Fi readers to determine travel times and individual detection sites to determine speed, volume, and occupancy are needed on freeways and arterials.

Improved Access to Data – Several privatized providers are able to provide traveler information data, such as INRIX and WAZE. Increasing the number of devices on the roadway benefits resellers by providing additional data points that can be aggregated and be available on personal devices or remote traveler systems to better inform customers of transportation conditions. These resellers rely on availability of reliable real-time transportation data from roadway instrumentation, transit, probe vehicles or other means. A traveler may input personal preferences and identification information to receive real-time updates and be notified of incidents or traffic conditions on selected routes. The Region may benefit from entering into a reciprocating relationship with private companies for the exchange of traffic data.

Regional Information Consolidation – Traveler information is currently available from many different public sources within the North Central Texas Region, such as TxDOT, DART, media traffic reports and 511DFW. A consolidated centralized traveler information system is needed that will pull in traveler information, including travel times, crash locations, and weather information into a single system that can be accessed by public agencies, media, as well as web and application developers. Enhancing and expanding the deployment of the 511DFW system could host this information. 511DFW currently provides traffic and transit conditions, transit

route-planning and carpooling information to users via a webpage (My511) and a mobile device application. This system could serve as the catalyst to encourage more privatized development of traveler information websites and other systems.

Deployment of Arterial DMS – DMS units located along arterial roadways to provide traveler information prior to vehicles entering freeways would be very beneficial to motorists by allowing them to consider and select an alternate route. This could help reduce the congestion along corridors and decrease congestion clearance times if motorists select alternate routes. A center-to-center module should be developed that would allow TxDOT's incident information to be pushed out to the local municipalities' arterial DMS systems. The cities of Dallas, Arlington, Frisco, Grand Prairie, Plano and McKinney all are considering deploying arterial DMS's to provide traveler information to motorists on arterial streets prior to them entering the freeway. DFW Airport also expressed a need to add arterial DMS's.

Interactive Traveler Information – DART is developing a prototype kiosk to provide travelers at the airport traveler information for the Region. The kiosk will allow unfamiliar travelers to view and select a method of travel to reach their intended destination. DART is also implementing devices on transit vehicles to enhance Wi-Fi for their customers to stay informed on any delays or changes on their routes and to ensure they are able to make necessary connections to complete their trip. The 511DFW system also has a trip-planning component that could be enhanced to provide traveler information for a wider geographical area.

The topic of centralized, or single-point, distribution of traveler information was not specifically identified by the Stakeholders. However, such a tactic would be consistent with public desires, provided the data is easily understood, accurate, and kept up to date.

Timeframe

The need for real-time regional traveler information was identified by numerous stakeholders in the Region and should be implemented in the short-term. A number of agencies are currently investing to expand their detection systems and TxDOT currently has access to a private data source. Arterial DMS's have been deployed by the cities of Dallas, Arlington and Grand Prairie. Several other municipalities propose to invest in arterial DMS in the short-term and note the benefit of using the arterial DMS to provide real time information on freeway conditions. The greatest challenge is consolidating regional information and developing and maintaining a regional traveler information network.

Regional ITS Architecture Conformance

Traveler information is identified in numerous ITS service areas in the Regional ITS Architecture, including the Public Transportation Management, Traveler Information, Traffic Management and Maintenance and Construction Management services. The ITS service packages that were identified in the Regional ITS Architecture related to Regional Traveler Information Improvements are listed below.

Regional ITS Architecture Conformance continued

- APTS01 Transit Vehicle Tracking
- APTS08 Transit Traveler Information
- ATIS01 Broadcast Traveler Information
- ATIS02 Interactive Traveler Information
- ATMS01 Network Surveillance
- ATMS02 Probe Surveillance
- ATMS06 Traffic Information Dissemination
- ATMS07 Regional Traffic Management
- ATMS17 Regional Parking ManagementMC03 Road Weather Data Collection
- MC04 Weather Information Processing and Distribution
- MC08 Work Zone Management

3.2 Regional Traffic Incident Management Improvements

Regional traffic incident management improvements in North Central Texas include the ability to identify incidents, provide appropriate emergency response, clear the incidents in a quick and safe manner, manage traffic during the incident, and provide accurate and timely traveler information about the incident to stakeholder agencies and the traveling public.

Basis of Need

Incidents have a major impact on congestion, particularly in the metropolitan areas of the North Central Texas Region where much of the network is operating at or beyond capacity throughout the day. Stakeholders identified a common need to improve the Region's ability to manage and clear incidents as quickly as possible, to reduce congestion and the chance of secondary crashes during incidents. A need also exists to improve coordination between freeway and arterial operations during incidents that require the partial or full closure of freeways and the diversion of vehicles onto arterials. Stakeholders noted the following needs:

- Improve communication and coordination between agencies for traffic operations and incident management; and
- Improve the accuracy, timeliness, and availability of regional travel information.

Stakeholders

Incident management has been primarily focused on freeways and tollways in the Region, which until recently were operated only by TxDOT and NTTA. With the addition of the Region's public-private partnership toll operators operating managed lane facilities, seamless coordination is essential where the traveling public is not aware of who the operator is for each facility. Close coordination is also necessary with municipal stakeholders during times when motorist divert onto non-controlled access roadways. Coordination with DART, FWTA and DCTA is also necessary during major incidents that close roadways so they can reroute transit vehicles appropriately.

Deployment Components

Regional traffic incident management improvements will consist of enhancing the ability to share incident information, improving coordination between agencies to respond to incidents, providing continual training to ensure agencies work together as efficiently as possible in both the field and dispatching centers, and deploying of real-time information regarding incidents and closures.

Regional traveler information improvements in the North Central Texas Region include the following components:

Center-to-Center Coordination – TxDOT, NTTA, DART and several municipalities noted the need for center-to-center coordination to share CCTV camera video feeds, incident data, travel conditions, and other information. The initial center-to-center deployments and future

implementation of center-to-center communications between all agencies will allow improved coordination during incidents.

Arterial Traffic Signal Timing Plan Implementation – Stakeholders noted the need to coordinate freeway and arterial operations during major incidents. The ability to quickly implement incident timing plans on frontage roads and arterials can reduce the impact of congestion on multiple lane and full freeway closures by improving the ability of frontage roads and arterials to handle unusually high capacity demands.

Freeway Service Patrol/Courtesy Patrol – There is a need to continue to operate the courtesy patrols or MAPP to assist with incident management by helping to move disabled vehicles out of travel lanes or from shoulders, and providing traffic control assistance during incidents. Currently, there are five agencies that operate these type of patrols: Dallas County Sherriff Department with TxDOT Dallas District oversight, Tarrant County Sherriff Department with TxDOT Fort Worth District oversight, NTTA, LBJ Express and NTE. A continuation of these programs is essential for regional incident management with a need for annual reviews of the routes and hours of operation by the operating agencies.

Traffic Incident Management (TIM) Training – NCTCOG has hosted for many years TIM workshops for transportation professionals and emergency responders to address the management of transportation for planned and unplanned events around the Region. Facilitators from the FHWA help create and develop relationships among transportation and public safety professionals, emergency responders, private sector responders (such as the towing industry) and non-governmental organizations. Stakeholders noted the need to continue providing training in the North Central Texas Region to train as many first responders, tow and recovery, and transportation professionals as possible.

Regional Traveler Information Improvements – A key component of incident management is to provide advanced information to travelers regarding lane closures and other incidents. Advanced information can reduce driver frustration, reduce the number of vehicles moving through an incident scene, and improve safety for travelers and first responders by alerting drivers that lanes may be blocked or closed ahead. Regional traveler information improvements are discussed in more detail in Section 3.1.

Timeframe

Each of the deployment components identified for traffic incident management improvements is currently being implemented in some capacity. Center-to-center coordination is being established between TxDOT Fort Worth and the NTE Express and the City of Grand Prairie; as well as TxDOT Dallas and the LBJ Express. Stakeholders expressed that center-to-center needs to be developed to allow direct connections from TxDOT and NTTA to the municipalities, and allow the municipalities to connect directly to one another. The North Central Texas Region has been rewarded for over 20 years with the benefits from freeway service patrols and the continuation and expansion of these programs is essential in a successful incident management program. North Central Texas Region stakeholders identified these projects to be implemented in the short-term and ideally, such systems should be completed within the next five years. TIM

training is on-going but stakeholders still noted the need to train as many first responders as possible. Regional traveler information improvements, which support the traffic incident management improvements, are discussed in Section 3.1 but should also be completed within the next five years.

Regional ITS Architecture Conformance

Regional traffic incident management is identified in numerous ITS service areas in the Regional ITS Architecture, including the Traveler Information, Traffic Management and Emergency Management services. The ITS service packages that were identified in the Regional ITS Architecture related to Regional Traffic Incident Management Improvements are listed below.

- ATIS01 Broadcast Traveler Information
- ATIS02 Interactive Traveler Information
- ATMS01 Network Surveillance
- ATMS06 Traveler Information Dissemination
- ATMS08 Regional Traffic Management
- ATMS21 Roadway Closure Management
- ATMS24 Dynamic Roadway Warning
- EM02 Emergency Routing
- EM04 Roadway Service Patrols

3.3 Upgrade Traffic Signal Systems

Upgrading existing traffic signal systems can optimize performance and reduce traffic congestion and delays. Installing new signal controllers and cabinets, field sensors, central control software and improving signal timing can make a significant impact to reduce travel times and congestion.

Basis of Need

Upgrading traffic signal systems directly supports two needs that were identified by North Central Texas Region stakeholders:

- Improve communication and coordination between agencies (State-Local, Local-Local) for traffic operations and incident management; and
- Improve data sharing among agencies for both operational and planning initiatives.

Improved traffic signal systems will support many other needs such as improving incident clearance times by responding with adjusted traffic signal timing to increase arterial throughput, allowing data sharing through center-to-center communications and interagency coordination.

Stakeholders

The stakeholders for traffic signal upgrades are the municipalities in the Region, DFW Airport and TxDOT. However, other stakeholders benefit from signal upgrades such as LBJ Express, NTE, NTTA, DART, DCTA and FWTA. These agencies benefit from improved signal operations on corridors that are parallel to or cross their facilities. A lead agency for this effort has not yet been identified, although a regional agency such as a large municipality or NCTCOG would be the most likely agency to lead such an effort to coordinate development of specifications, central control software for signal systems.

Deployment Components

Reliable traffic signal communication, software and hardware is essential for efficient operations during peak travel periods and inclement weather. Below are key deployments that multiple stakeholders expressed a need to implement.

GPS Clocks and BBUs – These two items allow an individual signal controller to remain in coordination with adjacent signals in a coordinated system. In coordinated signal systems, a slight deviation in seconds by a drifting time clock will degrade the benefit of coordinated systems by altering progression of the green band or the arrival time of the traffic platoon. The Battery Backup Units (BBUs) will allow signals to remain in operation when there is an interruption in power due to a power surge or short-term loss of power in severe weather.

Adaptive Signal Systems - The technology of adaptive signal control allows sensors on the corridor and traffic signal controllers to adapt to real time traffic conditions. Signal systems will be aware of increases in vehicle volumes that may be diverting from their normal route due to an incident. These signal systems will allow changes in the green time if there is a lane closure due to short-term construction or an emergency repair.

Traffic Signal Timing - Maintaining and updating signal timing plans is essential in the North Central Texas due to the continued growth. Many corridors transverse multiple municipalities requiring coordinated systems between adjacent agencies.

Central Signal System Software – This integrated software provides one platform for the system operators to monitor and communicate with local controllers, review sensor information and monitor CCTV cameras. The need to develop central control software that can be utilized by multiple municipalities was identified by stakeholder agencies as a high priority. Municipalities that utilize a common vendor for their local signal controllers can benefit from working together to develop a central software used by multiple municipalities with the ability to expand to other agencies.

Transit Signal Priority – Coordinating signal systems on select corridors with at-grade light rail crossings is beneficial to give transit vehicles priority to ensure on-time performance without degrading the traffic signal operations.

Stakeholders agreed that maintaining the hardware, communication and software at signalized intersections and providing reliable signal operations would benefit travelers in the North Central Texas Region.

Timeframe

The need for upgrading traffic signal systems was identified by numerous stakeholders in the Region and should be implemented in the short-term. A number of agencies are currently investing to develop a central signal system software and to procure new traffic signal hardware. The transit agencies are currently investing in enhancing their systems to allow for transit signal priority.

Regional ITS Architecture Conformance

Upgrading Traffic Signal Systems is identified in service areas Public Transportation Management, Traffic Management, and Maintenance and Construction Management. The ITS service packages that were identified in the Regional ITS Architecture related to Upgrade of Traffic Signal Systems are listed below.

- ATMS01 Network Surveillance
- ATMS02 Probe Surveillance
- ATMS03 Traffic Signal Control
- ATMS07 Regional Traffic Management
- APTS01 Transit Vehicle Tracking
- APTS09 Transit Signal Priority
- MC03 Road Weather Data Collection
- MC08 Work Zone Management

3.4 Center-to-Center Communications

Center-to-center communications provide agencies with the ability to share data, improve coordination, and provide more seamless operations across jurisdictional borders. In North Central Texas, TxDOT Dallas and Fort Worth District TMCs currently have center-to-center capabilities with other TxDOT TMCs throughout the state. *DalTrans*, TxDOT Dallas District TMC, is implementing a center-to-center connection with the LBJ Express TMC. *TransVision*, TxDOT Fort Worth District TMC, has established a center-to-center connection with the NTE TMC and the City of Grand Prairie. TxDOT and several municipalities indicated the need to implement center-to-center connections.

Basis of Need

Center-to-center communication directly supports two needs that were identified by North Central Texas Region stakeholders:

- Improve communication and coordination between agencies (State-Local, Local-Local) for traffic operations and incident management; and
- Improve data sharing among agencies for both operational and planning initiatives.

Improved center-to-center communications will also support many other needs identified, such as the need to improve accuracy, timeliness, and availability of regional travel information and the need to implement strategies, which rely heavily on interagency coordination.

Stakeholders

TxDOT Dallas District and the LBJ Express TMCs were implementing center-to-center at the time the North Central Texas ITS Strategic Deployment Plan was being developed. Other Stakeholders indicated a need to implement center-to-center in the future with regional partners including TxDOT and NTTA.

Deployment Components

Center-to-center communications involves more than just connecting two agencies through a common platform with a fiber or wireless network. A key component is determining which information will be shared, what format it will use, and what (if any) control will be shared through center-to-center. Typical types of information that may be shared include video images, travel times, traffic incident locations, construction closures, weather closures, signal timing plans, and DMS messages. Some types of information may be for sharing only, while other types may include a level of control. For example, CCTV camera video may be shared with the non-owning agency only having the ability to watch streaming video by changing camera presets, or the non-owning agency may be given pan, tilt and zoom control of the cameras as well.

Typically, center-to-center communications will need to have a concept of operations developed to determine the type of information that is shared and the level of control.

The following agencies indicated a need for center-to-center communications in the North Central Texas Region:

- DART center-to-center connection with regional partners.
- Cities of Arlington, Coppell, Flower Mound, Frisco, Irving, Grapevine and Plano center-to-center connection with the regional partners and TxDOT.
- TxDOT center-to-center connection with DART, FWTA, DCTA and NTTA.
- Cities of Arlington, Coppell, Flower Mound, Frisco, Irving, Grand Prairie, Grapevine and Plano center-to-center connection with NTTA.

Timeframe

TxDOT is currently implementing center-to-center communications projects with the LBJ and NT Express. This effort will serve as a basis for extending TxDOT center-to-center communications with municipalities. Once TxDOT's center-to-center project is complete, TxDOT should move forward with implementing center-to-center communications with the municipalities in the next 2 to 3 years. Developing a center-to-center connection with DART and NTTA should be planned for the next 1 to 2 years.

Regional ITS Architecture Conformance

Center-to-center coordination is identified in multiple ITS series service areas in the Regional ITS Architecture, including the Archived Data Management, Public Transportation Management, Traveler Information, Traffic Management and Maintenance and Construction Management services. The ITS service packages that were identified in the Regional ITS Architecture related to Traffic Incident Management Improvements are listed below.

- AD2 ITS Data Warehouse
- APTS02 Transit Fixed-Route Operations
- APTS03 Demand Response Transit Operations
- APTS07 Multi-modal Coordination
- ATMS03 Traffic Signal Control
- ATMS06 Traffic Information Dissemination
- ATMS07 Regional Traffic Management
- ATMS08 Traffic Incident Management System
- MC04 Weather Information Processing and Distribution

3.5 Network and Probe Surveillance

Implementing network and probe surveillance can optimize performance of signal systems, improve incident management and regional traffic management.

Basis of Need

Upgrading and installing new network and probe surveillance systems directly supports two needs that were identified by North Central Texas Region stakeholders:

- Improve traffic incident management systems by increasing the number of devices in the Region; and
- Improve real time traffic incident dissemination.

Deploying additional surveillance devices will improve incident response and will support many other regional needs such as improving traffic signal operations, toll collection, vehicle occupancy parking management and accurate data archiving.

Stakeholders

Network and probe surveillance benefits regional stakeholders including municipalities, DFW Airport, NTTA and TxDOT. However, all stakeholders will benefit in some manner. These agencies benefit from improved signal operations, incident response and management, providing travel times, and parking management. A lead agency for this effort has not yet been identified, although a regional agency such as a large municipality, TxDOT or NCTCOG would be the most likely agency to lead such an effort to coordinate development of specifications, deploy center-to center systems to share and archive data.

Deployment Components

Network and probe surveillance deployment will allow stakeholders to obtain and share real time traffic data.

CCTV Cameras – Many municipalities expressed a need to install CCTV cameras on routes of significance for use in traffic management centers for incident management and signal operations. These images can be shared within the agencies for emergency management and across adjacent city boundaries through center-to-center deployment. TxDOT and NTTA expressed a need to install cameras for toll collection purposes. DART, DCTA and FTWA desire to install cameras on transit vehicles at the platforms to monitor operations and increase security.

Arterial Vehicle Detection – Municipalities expressed the need to deploy new non-invasive vehicle detection systems using video imaging vehicle detection systems (VIVDS) or radar detection units. In addition to optimizing daily signal operations, the technology of adaptive signal control allows sensors on the corridor and traffic signal controllers to adapt to real time traffic conditions. Signal systems will be aware of increases in traffic volumes and make adjustments to the signal operations.

Bluetooth and Wi-Fi readers- Deployment of Bluetooth and Wi-Fi readers will increase the ability to provide travel times along corridors. Travel times are an excellent method for travelers to select their routes and inform stakeholders of unusual traffic conditions. Deployment of this technology is beneficial on corridors without a communication infrastructure and in construction work zones.

Radar Vehicle Detection Systems (RVDS) – The NTTA and TxDOT intend to extend ITS systems to new corridors and/or to and enhance the detection along corridors with existing ITS components. These noninvasive devices installed along corridors have improved technology that detects vehicles at a greater distance across the travel lanes. Data received will provide real time traffic information used to detect incidents and provide travel times.

Timeframe

The need for upgrading and installing new surveillance and probe detection was identified as short-term projects for stakeholders and should be implemented within 1-3 years. The ability to share this data through center-to-center deployments and in data archives will benefit all stakeholders in the region.

Regional ITS Architecture Conformance

Surveillance and Probe Detection is included in numerous ITS service areas in the Regional ITS Architecture, including the Public Transportation Management, Traffic Management, Emergency Management and Maintenance and Construction Management. The ITS service packages that were identified in the Regional ITS Architecture related to Surveillance and Probe Detection are listed below.

- APTS01 Transit Vehicle Tracking
- ATMS01 Network Surveillance
- ATMS02 Probe Surveillance
- ATMS03 Traffic Signal Control
- ATMS07 Regional Traffic Management
- ATMS17 Regional Parking Management
- EMO4 Roadway Service Patrols
- MC03 Road Weather Data Collection
- MC08 Work Zone Management

3.6 Transit Interactive and Broadcast Traveler Information

Transit Interactive and Broadcast Traveler Information Systems provide real-time interactive information for travelers. Interactive information allows transit users to obtain current information regarding transit routes and schedules, traffic conditions, transit services, ride share/ride match, parking management, detours and pricing information. Broadcast information provides arrival information, traffic conditions, advisories, general public transportation, toll and parking information, incident information, or weather information through pre-trip or en route broadcasts to transit users.

Basis of Need

With the expansion of transit services in North Central Texas, it is essential that new and seasoned users of the system are provided real-time information that can be accessed through multiple methods. Enhancing and expanding traveler information services supports these needs of the North Central Texas regional stakeholders:

- Improve accuracy, timeliness, and availability of regional travel information; and,
- Improve data sharing among agencies for operation and planning initiatives.

Stakeholders

Transit Interactive and Broadcast Traveler Information benefits transit agencies and all regional stakeholders that have transit services in their geographic area. Providing accurate real-time information and security will allow travelers unfamiliar with transit to be more educated and comfortable riding transit. The DFW Airport, NTTA and TxDOT could benefit in some manner on transit routes that interface with their networks. A lead agency for this effort has not yet been identified, although DART or FTWA would be the most likely agency to lead such an effort to coordinate development of these services.

Deployment Components

Improving terminal station traveler information will allow passengers to easily navigate to departing train platforms and provide real time wait times for arriving trains. Providing Wi-Fi at terminal stations and on transit vehicles will allow travelers continuous access to real-time traveler information. Vehicle tracking and security systems will allow the stakeholders to accurately predict arrival times and stay informed of any issues that would cause the transit vehicles to deviate from their scheduled arrival or departures.

Interactive Kiosk – DART is developing a prototype kiosk to provide travelers at the airport traveler information for the Region. The kiosk will allow unfamiliar travelers to view and select the best method of travel to reach their intended destination.

Wi-Fi Readers – DART is also implementing devices on transit vehicles and at transit stations to allow customers to stay informed of any delays or changes to published routes. These devices will also be installed in areas such as the DART light rail tunnel to allow continuous communication with passengers and trains.

Automatic Voice Annunciation System – The FTWA and DART are planning for enhanced en route communication by implementing voice annunciation systems. These systems will allow communication with customers and provide next stop information. These systems will be integrated with other systems, will meet American with Disabilities (ADA) requirements, and may be bilingual to serve additional customer needs.

Transit Center Digital Signing– Digital signage is proposed at transit centers to provide real time bus arrival and departure information and safety messages.

Security Cameras- Cameras will be installed on buses, trains and at stations to allow agencies to monitor high volume locations and provide additional customer security.

Enhanced Customer Service – The DCTA expressed a need to provide real time mobility on demand to allow transit users to customize and request pick up services. DART expressed a need to implement a service to allow families of paratransit users detailed information and on board video while the paratransit user is in route.

These deployments will allow travelers to use a variety of interactive devices to access information prior to a trip or en route including web pages, mobile phone applications, 511DFW, and kiosks with the ability to receive real-time data or along customized routes.

Timeframe

The need for Transit Interactive and Broadcast Traveler Information was indicated as a high priority for the Region and should be implemented in the short-term. The ability to share this data through center-to-center deployments and 511DFW will benefit all stakeholders in the region.

Regional ITS Architecture Conformance

Transit Interactive and Broadcast Traveler Information is included in multiple ITS service areas in the Regional ITS Architecture, including the Public Transportation Management, Traveler Information, Traffic Management and Maintenance and Construction Management. The primary ITS service packages that were identified in the Regional ITS Architecture related to Transit Interactive and Broadcast Traveler Information are listed below.

- APTS01 Transit Vehicle Tracking
- APTS08 Transit Traveler Information
- ATIS01 Broadcast Traveler Information
- ATMS17 Regional Parking Management
- ATMS01 Network Surveillance
- ATMS02 Probe Surveillance
- ATMS07 Regional Traffic Management
- MC04 Weather Information Processing and Distribution
- MC08 Work Zone Management

3.7 Archived Data Warehouse Implementation

As stakeholders throughout North Central Texas implement various components of ITS, a need for archiving the data collected by ITS has been recognized. Archived data can include traffic volumes, vehicle travel speeds, roadway congestion, reliability, incidents, weather information, arterial performance, and other performance measures. The North Central Texas Region has not determined if the archived data should be archived in a single location or virtually, but implementation of an archived data warehouse was identified by numerous stakeholders as a common need in the Region.

Basis of Need

During the development of the North Central Texas ITS Strategic Deployment Plan, stakeholders noted the need to store historical data and to access data from other agencies, both for real-time operations as well as for planning purposes. Archived data can be utilized for research, transportation studies, and to predict future conditions. The following needs of the North Central Texas Region are supported by the implementation of an archived data warehouse:

- Improve data sharing among agencies for both operational and planning initiatives; and
- Improve communication and coordination between agencies (State-Local, Local-Local) for traffic operations and incident management.

Stakeholders

Stakeholders include all agencies within the North Central Texas Region that currently, or plan to have in the future, ITS components. The stakeholders in the region will need to develop a concept of operations for the achieved data to determine the type of data, public and/or private access, control, maintenance and time frame for storing data. The lead agency for the implementation of the archived data warehouse may be the NCTCOG as they serve as the regional planning agency for the North Central Texas Region.

Deployment Components

The need to archive accurate data has been discussed by the stakeholders. Agencies may collect data for multiple purposes. Detector data may be collected to monitor travel speed and conditions while another agency needs the data to determine the traffic volumes. The region's stakeholders must determine what data should be archived to ensure they do not store data that will not be needed in the future. The stakeholders should revisit the needs of the data warehouse on a regular basis to determine if additional data would be beneficial as additional ITS components are deployed.

Archived data warehouses can be developed as a warehouse, which consolidates all archived information into a single location, or as a virtual warehouse in which stakeholder agencies store their data within their own servers and the virtual data warehouse provides an interface to that data.

The most feasible system for the North Central Texas region archived data warehouse has not been determined. It is recommended that a feasibility study be completed prior to beginning the implementation of an archived data warehouse server to determine the system that would work best for North Central Texas.

Timeframe

Archived ITS data is currently being captured and stored by multiple North Central Texas region stakeholders. Stakeholders need to define performance measures and the type of data to be stored when evaluating methods and storage location for the archived data. Implementation of an archived data warehouse within the next five years would meet regional goals for the warehouse.

Regional ITS Architecture Conformance

Regional Archived Data is included in the ITS service area Archived Data Management. The implementation of a regional archived data warehouse directly conforms to the two ITS service packages service packages that were identified in the Regional ITS Architecture are listed below.

- AD1 ITS Data Mart (Regional Info)
- AD2 ITS Data Warehouse

These two ITS service packages both show how an archived data warehouse could be used to archive data from stakeholders throughout North Central Texas.

3.8 Severe Weather Information Systems

Severe weather conditions can have a huge impact on the transportation system. The North Central Texas Region can be subjected to ice and snow, high winds, tornados and flooding. Keeping stakeholders aware of inclement weather developments and conditions and traffic information dissemination is essential for implementing operational strategies and traveler safety.

Basis of Need

North Central Texas regional stakeholders are all aware of the impacts that severe weather can have on a community. It is essential that stakeholders are able to prepare for inclement weather such as ice and snow events. In addition to the TMCs, many regional stakeholders operate Emergency Management Centers (EMCs) within their agency. During major weather events, these EMCs operate continuously with constant communication with other statewide and regional stakeholders. The expansion of weather sensors and stations in North Central Texas will allow real-time information to be shared among agencies. Enhancing and expanding severe weather information services supports the following needs of the North Central Texas regional stakeholders:

- Improve communication and coordination between agencies (State-Local, Local-Local) for traffic operations and incident management; and
- Improve data sharing among agencies for both operational and planning initiatives.

Stakeholders

All North Central Texas regional stakeholders have a need for severe weather information. Severe weather information benefits all regional stakeholders in making decisions for implementing emergency management operations and deployment of maintenance vehicles. A lead agency for this effort has not yet been identified, although TxDOT or NTTA would be the most likely agencies to lead such an effort to coordinate severe weather information.

Deployment Components

Stakeholders identified the need to deploy the following components to monitor weather situations and make maintenance and operational decisions.

Weather Stations and Sensors – TxDOT, DFW Airport and municipalities demonstrated the need to collect current road and weather conditions using data collected from environmental sensors deployed on and about the roadway or guideways in the case of transit related rail systems. The collected environmental data will be processed and used to make maintenance and operational decisions.

Traveler Information – TxDOT currently posts traveler advisory information on roadside DMS's. This information typically consists of warning messages regarding roadways and/or bridges with possible ice, standing water, and in some rare instances, limited visibility associated with dust and/or sand storms. Traveler information devices that support Severe Weather Information

Systems include DMS's, media, print, and use of third-party providers such as INRIX and others. A future ITS project could be a Center-to Center communication interface between flood detector systems, weather sensor systems, and the like, and TxDOT's Lonestar software. Such integration would allow automation between the detection and response component. The integration could include a decision support system (DSS) that would aide TMC operators in making informed decisions based upon real-time data collected from the field.

Flood Detection and Monitoring - Numerous North Central Texas Region stakeholders expressed the need to install flood detection systems to alert agencies when water is rising and may cover the roadways or pathways. Automated floodgates and/or other warning systems may be implemented as part of these detection systems preventing or warning motorists from entering the flooded area.

Ozone Detection and Monitoring – NCTCOG currently monitors ground-level ozone and notifies the North Central Texas Region of ozone levels and ozone action plans. *Weather Notifications* - Currently, *Lonestar* software receives notifications from the National Oceanic Atmospheric Administration (NOAA) of severe weather watch and warnings and sends a notification to the TMC operators. The operators will utilize the DMS's to notify the public of severe inclement weather conditions. Additional notifications could be provided through 511DFW or other web pages or mobile device applications based traveler information systems.

CASA - Center for Collaborative Adaptive Sensing of the Atmosphere, is a multi-sector partnership among academia, industry, and government dedicated to engineering revolutionary weather-sensing networks. These innovative networks will save lives and property by detecting the region of the lower atmosphere currently below conventional radar range - mapping storms, winds, rain, temperature, humidity, and the flow of airborne hazards. There are approximately eight radar coverage areas in the North Central Texas Region.

The deployment components described above will allow stakeholders to keep informed and prepare for inclement weather by treating pavement prior to freezing precipitation, activating floodgates, and closing lanes or roadways and notifying travelers of severe weather situations.

Timeframe

The need for improved Severe Weather Systems was indicated as a high priority for the region and should be implemented in the short-term. The ability to share this data with other stakeholders through center-to-center deployments and 511DFW will benefit North Central Texas region stakeholders and travelers.

Regional ITS Architecture Conformance

Severe Weather Systems is included in multiple ITS service areas in the Regional ITS Architecture, including Traffic Management, Emergency Management and Maintenance and Construction Management. The primary ITS service packages that were identified in the Regional ITS Architecture related to Severe Weather Systems are listed below.

- ATMS01 Network Surveillance

- ATMS02 Probe Surveillance
- ATMS07 Regional Traffic Management
- ATMS11 Emissions Monitoring and Management
- ATMS21 Roadway Closure Management
- EM04 Roadway Service Patrols
- MC03 Road Weather Data Collection
- MC04 Weather Information Processing and Distribution

3.9 Connected and Autonomous Vehicles

Transportation agencies are increasingly investing in the implementation of advanced strategies and associated technologies to improve daily operations. At the same time, these agencies have started preparing for the next generation of these strategies, with the anticipated introduction of connected and automated vehicles into the transportation system. Connected and automated vehicle (CV/AV) technologies are expected to have significant influence on agency investment decisions in ITS and with the anticipated timeframe for the introduction of these technologies, engineers and planners have to start considering them in their decision making process.

Basis of Need

The draft FHWA Vehicle to Infrastructure (V2I) Deployment Guidance (FHWA 2015) encourages V2I deployments, but it states that the United States Department of Transportation (USDOT) will not require agencies to implement V2I technology or applications, and recommends that this implementation should be done based on agency assessments.

The long-term deployment of V2I technology will provide traffic information dissemination to travelers from roadway devices and Vehicle to Vehicle (V2V) will provide traffic information from other vehicles, which will improve system operations by increasing safety and level of service on the transportation facilities.

In addition to safety and mobility benefits, the system of connected vehicles and infrastructure will provide a wealth of transportation data for planning, operations, and maintenance of roadway infrastructure.

Stakeholders

Many of the North Central Texas regional stakeholders expressed a desire to participate in the development and implementation of V2I and V2V technologies.

Deployment Components

Stakeholders identified the need to deploy V2I and V2V technologies as they are developed and to participate in the development of the connected vehicle infrastructure.

Roadside Units - The stakeholders in the region proposed to begin the initial deployment of roadside units that will be used to send and receive data from onboard vehicle units. Roadside units can be attached to existing utility and camera poles, dynamic message signs, and toll gantries and share a power source.

SPaT Data – The stakeholders in the North Central Texas region see a benefit to making signal-phase-and-timing (SPaT) data available as a regional step toward attracting application developers to the region. Providing a data stream to researchers and developers will yield safety and mobility benefits. There would be value to collecting the region's data and having a single data stream with the regions data for the researcher and developer. In addition, stakeholders

see a benefit to provide data via a third party to vehicle manufactures to encourage the development of the connected vehicle technology.

Test Deployments – The cities of Frisco, Plano and Richardson see a benefit to participating in a test deployment of V2I strategies in cooperation with local automotive manufactures and research institutes for construction warning and possible transit applications.

Timeframe

Planning for CA/AV starts now, but the realization of this technology in the normal traffic stream will take a long time to see market maturity. Estimates reveal the year 2040 as when 80% of the vehicle fleet and traffic signal devices will have the necessary equipment to communicate to vehicles. Until the system is fully developed, the region will need to rely upon traditional platforms for delivering traveler information, such as those previously identified in Section 3.1 Regional Traveler Information Improvements.

Regional ITS Architecture Conformance

Connected Vehicles are included in ITS service areas in the Regional ITS Architecture, including the Traffic Management and Vehicle Safety. The primary ITS service packages that were identified in the Regional ITS Architecture related to Connected Vehicles are listed below.

- ATMS01 Network Surveillance
- ATMS02 Probe Surveillance
- ATMS03 Traffic Signal Control
- ATMS06 Traffic Incident Dissemination
- ATMS07 Regional Traffic Management
- ATMS08 Traffic Incident Management System
- AVSS05 Intersection Safety Warning (Connected Vehicle)
- AVSS10 Intersection Collision Avoidance (Connected Vehicle)
- AVSS11 Automated Vehicle Operations (Connected Vehicle)

4 FUNDING AND PROJECT IMPLEMENTATION

The North Central Texas ITS Strategic Deployment Plan represents the vision of stakeholders in the North Central Texas Region for local and regional ITS deployment, integration, and operation. Funding for projects identified in this Plan will be determined using the Non-Competitive Project Selection Criteria for Traffic Signal and Intelligent Transportation System Projects developed by NCTCOG and located at http://www.nctcog.org/trans/its/.

Agencies interested in submitting an application for ITS funding should refer to the criteria established on the NCTCOG website. As a minimum, projects selected for funding must benefit the Region, be on routes of significance, receive a minimum of a 20% local match, and be consistent with the Regional ITS Architecture.

Agency staff requesting regional funding for specific projects will be required to compile and submit detailed data on each project (see Appendix A). The agency staff will meet with the NCTCOG's Project Management and TIP Teams. Projects will under-go an evaluation by the NCTCOG staff using the non-competitive project selection criteria. NCTCOG staff will screen the project data to ensure requirements are met. Funding sources and amounts will be determined by the TIP team. As the Metropolitan Planning Organization (MPO) for the region, NCTCOG and the Regional Transportation Council are responsible for programming projects and the NCTCOG TIP team will determine which funding sources and amount will be dedicated to funding ITS projects.

The selection criteria for traffic signal projects is also included in the Non-Competitive Project Selection Criteria for Traffic Signal and Intelligent Transportation System Projects. A percentage of total TIP funding may be separately allocated for Traffic Signals and ITS; funding for traffic signal projects may be approved separately from the ITS project funding. Project scopes for improved signal timing, signal pole hardware or LED upgrades, installation of BBUs will not be considered ITS funding. These projects are not included in **Table 2** as Recommended Local ITS Deployments and are identified as not meeting the ITS funding criteria in the Master Project List **- Appendix A**.

The stakeholders should develop their Project Scope with respect to their agency's ability to support the implementation, operation and maintenance of the project; provide local funding; and ensure staff support is in place for operation and maintenance of the project until expected end of life. Implementing a comprehensive ITS project may not be feasible for various reasons, however, smaller projects should be developed to ensure the stakeholder can obtain necessary agency support, funding and meet the proposed letting dates to ensure successful ITS deployments. Project sequencing needs to be considered to ensure all aspects of the project can be operational at the completion of the construction and not sit idle and unused until future projects can be funded and constructed. ITS projects will require a Statement of Architecture compliance to be submitted to NCTCOG. Refer to http://www.nctcog.org/trans/its/RegITSArch/index.asp.

5 MAINTAINING THE NORTH CENTRAL TEXAS ITS STRATEGIC DEPLOYMENT PLAN

The North Central Texas ITS Strategic Deployment Plan is considered a living document. This Plan represents the vision of stakeholders in the North Central Texas Region for ITS deployment, integration, and operation at the time the Plan was developed. However, stakeholder needs will change over time as systems are deployed, new capabilities are developed, and regional traveler needs change. The stakeholders demonstrated a need to determine and develop performance measures as a way to evaluate and maintain existing systems as well as determining the need for future ITS deployments. These changes will create new deployment opportunities and necessitate changes in existing deployments shown in the North Central Texas ITS Strategic Deployment Plan.

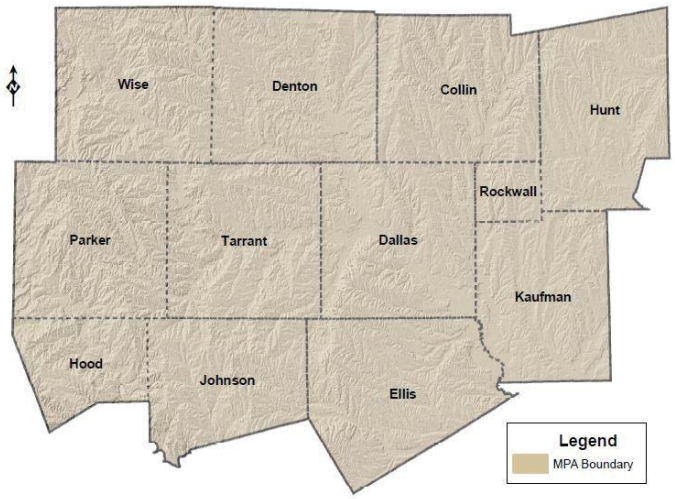
The North Central Texas ITS Strategic Deployment Plan should be reviewed on an annual basis. NCTCOG will lead the effort to maintain the Regional ITS Strategic Deployment Plan for the twelve county Region, which is comprised of Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise Counties. NCTCOG along with the ITS Stakeholder Task Force will review the current North Central Texas ITS Strategic Deployment Plan to identify, add or delete local or regional ITS projects and proposed deployments. As the ITS Regional Architecture is updated, the ITS Strategic Deployment Plan should be reviewed to determine if additional ITS Service Packages should be identified for stakeholder's projects and if updates are necessary to the listing of ITS Services Packages for the ITS regional deployments.

A very important aspect for future ITS projects deployed in the region will be demonstrating ITS architecture conformity. This is required by the FHWA and FTA for all transportation and transit projects that use federal funding. The projects identified in this ITS Strategic Deployment Plan have been carefully reviewed and compared to the current Regional ITS Architecture. If future projects are developed that do not conform to the Regional ITS Architecture, the stakeholder should determine if a modification to the Regional ITS Architecture is warranted to establish conformity. NCTCOG will serve as the maintainer of the Regional ITS Architecture; updates to the ITS Strategic Deployment Plan requiring ITS Services Packages that are not part of the regional architecture should be submitted to NCTCOG if the project is located within any of the twelve counties within the North Central Texas Region.

Stakeholders should document any changes to the Regional ITS Architecture that are necessary for project conformity, and provide those changes to the NCTCOG so they can retain a record of requested changes. The changes that are kept by NCTCOG will be incorporated into the Regional ITS Architecture and ITS Strategic Deployment Plan during the next complete update.

North Central Texas

Intelligent Transportation System (ITS) Strategic Deployment Plan



APPENDIX A

NCTCOG Regional ITS Deployment Plan Project Listing

Prepared by the North Central Texas Council of Governments in coordination with stakeholder agencies throughout the North Central Texas Region

May 2016

APPENDIX A

Background

The Consultant Team in conjunction with key Project Management staff from the NCTCOG organized and either met in person or communicated electronically with stakeholders within the North Central Texas Region to identify existing and future ITS projects within their respective agency. The following multi-page table summarizes the data collected from those agencies. To the extent possible, the Consultant Team has only listed projects that are purely focused on ITS. However, there are some instances where projects maybe subjective in judgement, and therefore shown on the list.

Explanation of the Data Fields

Appendix A table consists of 12 columns, which are:

- Agency
- Project
- Brief Description
- Potential Stakeholders
- Benefits
- Cost
- ITS Funding Criteria Met
- Funding Identified
- Timeframe
- Service Packages
- Service Packages
- Service Packages

Agency – This is the agency that identified the ITS project.

Project – This is the title of the project provided by the agency.

Brief Description – This is a brief description of the project.

Potential Stakeholders – This list of stakeholders was originally identified by the corresponding agency and augmented by the Consultant Team based upon knowledge of other projects and other agency interests.

Benefits – This is a brief description of the benefits identified by the agency expected to be gained by implementation of the project.

Cost – This is cost data provided by the agency. This figure is assumed to be total implementation cost from design through construction. In many cases, this is a rough order of magnitude

estimate and may change in the future. In some cases, no cost data was provided, and equally there are factors that remain unknown therefore the cell input was "TBD for To Be Determined."

ITS Funding Criteria Met – The Consultant Team was asked to review the current version of the document entitled: "Non-Competitive Project Selection Criteria (for) Traffic Signal and Intelligent Transportation System Projects" which can be found here: http://www.nctcog.org/trans/its/. This cell was answered as "yes, no or partial" based on the Consultant Team's initial assessment as to the suitability of the project, using the project description submitted by the agency, to meeting the established criteria. The response provided herein should not be viewed as the final judgement of acceptability.

Funding Identified – This cell was answered as "yes, no or partial" based upon input from the agency.

Time Frame – This is the period of time that the agency foresees the project as being implemented. For the purposes of this table, and to be consistent with the Regional ITS Architecture, the following was assumed:

- "Near-term" for projects that may be deployed in the next 3 years.
- "Mid-term" for projects that may be deployed in 4 to 7 years.
- "Long-term" for projects that may be deployed in 8 to 12 years.

Service Packages – There are three columns titled "Service Packages" and these are the first three Services Packages also found in Table 3 of the body of the report. To provide a more concise report, the chart was limited to 3 Service Packages, although the project may meet additional Service Packages.

NCTCOG

North Central Texas Council of Governments

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
NCTCOG	Regional Network	Facilitate Development of Regional Network for Multi-Agency Communication, Data and Video Sharing	All regional agencies with ITS	Allows sharing of data and video using fiber and wireless network	TBD	Yes	No	Mid-Term	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System	ATMS07 Regional Traffic Management (Regional)
NCTCOG	511DFW	Regional Traveler Information System	Regional Agencies	Allows collection and public distribution of traffic and transit information	$4.31M	Yes	Yes	Short-Term	ATMS06 Traffic Information Dissemination	ATIS01 Broadcast Traveler Information	ATIS02 Interactive Traveler Information
NCTCOG	Concept of Operations	Develop Concept of Operations for a regional corridor	Regional Agencies appropriate to selected corridor	Provides a concept of operations document including identification of roles and responsibilities	TBD	No	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS09 Transportation Decision Support and Demand Management (Arterial Traffic Control)
NCTCOG	Center to Center	C2C Plug Ins for Traffic Signal Communications and Control	NCTCOG, Cities and TxDOT	Allows sharing of traffic signal timing plans and other information between agencies	TBD	Yes	Yes	Short-Term	ATMS03 Traffic Signal Control	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
NCTCOG	Connected Vehicles	Provide devices and communication to support Connected Vehicles	TxDOT, NTTA, CDAs, Cities and Counties	Allows collection, transmission and archiving of data	TBD	Yes	No	Mid-Term	AVSS05 Intersection Safety Warning (Connected Vehicle)	AVSS10 Intersection Collision Avoidance (Connected Vehicle)	AVSS11 Automated Vehicle Operations (Connected Vehicle)
NCTCOG	Protect Against Theft	Provide protection to copper wire and fiber to reduce theft and vandalism	TxDOT, NTTA, CDAs, Cities and Counties	Reduces device outages and cost of system maintenance	TBD	No	No	Short-Term	ATMS12 Roadside Lighting Control System		
NCTCOG	Regional Traffic Signal Retiming Program (RTSRP)	RTSRP provides data collection and analysis and timing plans	NCTCOG, Cities and TxDOT	Improves progression and air quality on selected arterials	TBD	No	$1M/year	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
NCTCOG	Minor Intersection Improvements	Low Cost Intersection Improvements such as restriping and GPS clocks	NCTCOG, Cities and TxDOT	Provides low cost improvements to intersections	TBD	No	$2.5 M total FY 17&18	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
NCTCOG	Major Intersection Improvements	Medium Cost Intersection Improvements	NCTCOG, Cities and TxDOT	Provides medium cost improvements to intersections	TBD	No	No	Mid-Term	ATMS03 Traffic Signal Control		
NCTCOG	ITS Security	Identify top 10 regional infrastructure components and develop countermeasures	NCTCOG, Cities and TxDOT	Recommends security measures to protect regionally significant resources	TBD	No	Yes	Short-Term	ATMS01 Network Surveillance	EM05 Transportation Infrastructure Protection	
NCTCOG	Critical Infrastructure/Key Resources (CIKR)	Analyzes risks from major catastrophic events and nominates resources to Homeland Security for evaluation	NCTCOG, Cities and TxDOT	May result in funding to protect resources	TBD	No	Yes	Short-Term	ATMS01 Network Surveillance	ATMS07 Regional Traffic Management (Regional)	EM05 Transportation Infrastructure Protection
NCTCOG	Severe Weather	Develop Process and mechanism to provide severe weather warnings	NCTCOG, National Weather Service and TxDOT	Provides warning to travelers about severe weather, including severe thunderstorms and tornadoes	TBD	Yes	Yes	Short-Term	ATMS01 Network Surveillance	MC03 Road Weather Data Collection	EM02 Emergency Routing
NCTCOG	Regional ITS Data Quality Implementation	Evaluates data and data collection devices and provides system for data sharing	NCTCOG and TxDOT	Ensures effective use of ITS devices, including for data collection, provides access or automated data feeds	TBD	Yes	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)	AD1 ITS Data Mart (Regional Info)	AD2 ITS Data Warehouse
NCTCOG	Wrong Way Driving	Wrong Way Driving Detection and Crash Reduction	NCTCOG, NTTA and TxDOT	Improves safety	TBD	Yes	Yes	Short-Term	ATMS01 Network Surveillance	ATMS02 Traffic Probe Surveillance	ATMS24 Dynamic Roadway Warning
NCTCOG	Automated Occupancy Verification Technology	Provides automated occupancy verification in vehicles	NCTCOG and TxDOT	Allows improved enforcement of HOV requirements	TBD	No	$2M/yr	Short-Term	ATMS05 HOV Lane Management, HOV Management (ICM)	ATMS18 Reversible Lane Management	
NCTCOG	Motorist Assist Patrol Program	Provides assistance to stranded motorists and assists first responders while responding to crashes	NCTCOG and TxDOT	Improves safety and reduces secondary crashes and associated congestion	TBD	Yes	Yes	Short-Term	EM04 Roadway Service Patrols	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System

City of Dallas

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Dallas	Upgrade to ATMS system	This project will upgrade the City's 24-year-old central system software	City, TxDOT, DART, NTTA, NCTCOG	Improved control of intersection operations, improve arterial mobility, and enhance the collection of performance metrics	$12M	Yes	partial	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Dallas	upgrade communications network	This project will install new telecommunications equipment to support the City's ATMS	City, TxDOT, DART, NTTA, NCTCOG	Reliable communications to all field devices	$5M	Yes	partial	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Dallas	upgrade dynamic message signs, Phase I	This project will replace 15 of the City's end-of-life dynamic message signs (DMS) and install in new locations DMS	City, DART	provide real-time traveler information, assist with incident response	$7M	Yes	no	short - Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Dallas	upgrade dynamic message signs, Phase II	This project will replace 15 of the City's end-of-life dynamic message signs (DMS) and install in new locations DMS	City, DART	provide real-time traveler information, assist with incident response	$7M	Yes	no	short to Mid Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Dallas	upgrade dynamic message signs, Phase III	This project will replace 15 of the City's end-of-life dynamic message signs (DMS) and install in new locations DMS	City, DART	provide real-time traveler information, assist with incident response	$7M	Yes	no	Mid Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Dallas	Upgrade local signal controllers, phase I	This project will replace 300 of the City's legacy local controllers	City	provide modern signal control and operations	$1M	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	ATMS07 Regional Traffic Management (Regional)
City of Dallas	Upgrade local signal controllers, phase II	This project will replace 300 of the City's legacy local controllers	City	provide modern signal control and operations	$1M	Yes	No	Mid-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	ATMS07 Regional Traffic Management (Regional)
City of Dallas	Upgrade local signal controllers, phase III	This project will replace 300 of the City's legacy local controllers	City	provide modern signal control and operations	$1M	Yes	No	Mid-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	ATMS07 Regional Traffic Management (Regional)
City of Dallas	Install new CCTV cameras, phase I	This project will install new CCTV cameras as 250 intersections	City, TxDOT, NCTCOG	Provide real-time surveillance of intersection operations, and support signal operations during special events and emergency response conditions	$2M	Yes	No	Short-term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Dallas	Install new CCTV cameras, phase II	This project will install new CCTV cameras as 250 intersections	City, TxDOT, NCTCOG	Provide real-time surveillance of intersection operations, and support signal operations during special events and emergency response conditions	$2M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Dallas	Install new CCTV cameras, phase III	This project will install new CCTV cameras as 250 intersections	City, TxDOT, NCTCOG	Provide real-time surveillance of intersection operations, and support signal operations during special events and emergency response conditions	$2M	Yes	No	Long-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Dallas	Install new CCTV cameras, phase IV	This project will install new CCTV cameras as 250 intersections	City, TxDOT, NCTCOG	Provide real-time surveillance of intersection operations, and support signal operations during special events and emergency response conditions	$2M	Yes	No	Long-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Dallas	Install new detectors at signalized intersections	This project will upgrade the vehicle detection at 500 signalized intersections	City	Provide tactical control of intersections	$8M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Dallas	Replace end-of-life signal poles, phase I	This project will reconstruct 200 signalized intersections with new poles, mast arms, cabinets, detection, and wiring	City	Replace 40-year old field equipment	$70M	No	No	Short-Term	ATMS03 Traffic Signal Control		
City of Dallas	Replace end-of-life signal poles, phase II	This project will reconstruct 200 signalized intersections with new poles, mast arms, cabinets, detection, and wiring	City	Replace 40-year old field equipment	$70M	No	No	Mid-Term	ATMS03 Traffic Signal Control		
City of Dallas	Replace end-of-life signal poles, phase III	This project will reconstruct 200 signalized intersections with new poles, mast arms, cabinets, detection, and wiring	City	Replace 40-year old field equipment	$70M	No	No	Long-Term	ATMS03 Traffic Signal Control		
City of Dallas	Implement transit signal priority	This project will support DART's efforts in promoting mobility in the region by provide preferential treatment at signalized intersections. This project will install equipment, identify and develop specialized signal timing plans	City, DART	Provide enhanced mobility, reduce congestion, reduce emissions, and reduce fuel use		Yes		Mid-Term	APTS09 Transit Signal Priority	ATMS03 Traffic Signal Control	
City of Dallas	Install battery backup units (BBU)	This project will install battery backup units at approximately 950 intersections	City	This project will maintain signal operations during emergency power outages.	$4M	No	No	Mid-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	

City of Fort Worth

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Fort Worth	Central System Software	Advanced Traffic Management System that enables staff remote monitoring and management of traffic, equipped with Adaptive Traffic Control, Transit Priority, Video Management, etc.	TxDOT, NTTA, City, DFW 511	Improved coordination to provide traveler information on interstate corridors	$2.5M	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS06 Traffic Information Dissemination
City of Fort Worth	Communication Network Expansion	Communication between TMC and signalized intersections	TxDOT, NTTA, City, DFW 511	ability to monitor and manage traffic in real-time and sharing of video and data with other agencies	$15M	Yes	partial	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Fort Worth	Signal Controller and Cabinet upgrade - CBD	upgrade signal controllers & cabinets to be compatible with new system	TxDOT, City, T	The new controllers and cabinets would be compatible with the new central system; capable of identifying signal failure	$2M	Yes	partial	Short-Term	ATMS03 Traffic Signal Control		
City of Fort Worth	Communication expantion to ITS field devices (ITS-5)	upgrading of traffic signal equipment and installation of communication between TMC and field devices	TxDOT, NTTA, City, T	Monitor and manage traffic in real-time, share video and data with other agencies	$3M	Yes	yes	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Fort Worth	Comminication and ITS Device Expansion along Rosedale (ITS-8)	implementation of communication between TMC and signals along Rosedale and deployment of ITS devices	TxDOT, NTTA, City	Monitor and manage traffic in real-time, share video and data with other agencies	$1M	Yes	yes	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Fort Worth	Signal Controller, Cabinet and Communication upgrade - Hulen project	building communication network to establish communication between the signals along Hulen road and TMC	TxDOT, NTTA, City, T, DFW 511	Monitor and management traffic in real-time. Special event management	$1M	Yes	partial	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Fort Worth	CCTV installation	Install PTZ cameras at locations to improve responsiveness to emergencies, events, and incidents	TxDOT, NTTA, City, T, DFW 511	Monitor and manage traffic in real-time, share video and data with other agencies	$1M	Yes	partial	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Fort Worth	Citywide Traffic Signal Upgrades	Bring existing traffic signals up to current standards; ADA compliant, latest technology compatible with upgraded signals in the City, be responsive to traffic fluctuation.	TxDOT, NTTA, City, T	The new controllers and cabinets would be compatible with the new central system; capable of identifying signal failure	$20	Yes	partial	Short-Term	ATMS03 Traffic Signal Control		
City of Fort Worth	LED Upgrade	To replace existing incandescent signal indications with new LED technology	TxDOT, City, T	Visibility and energy savings	$300K	No	No	Short-Term	ATMS03 Traffic Signal Control		
City of Fort Worth	Traffic Signal Detection Upgrade	upgrade locations lacking detections and/or on "re-call" mode enabling signals to operate in actuated mode enhancing signal operation	TxDOT, City, T	Minimized stops and delays, reduced fuel consumption, improved air quality, addressing public expectation, and minimizing or eliminating frustrated drivers running the Red light	$250K	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Fort Worth	Signal Controller and Cabinet upgrade - diamond interchanges	Replace and consolidate to one controller/cabinet at closely spaced signalized intersections.	TxDOT, City, T	The new controllers and cabinets would be compatible with the new central system; optimize signal timing	$1M	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	

DART

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
DART	Advanced Traffic Controller	Upgrade of City of Dallas Traffic Controllers for DART Traffic Signal Priority in Dallas Central Business District. Creating controller peer to peer communication.	DART member cities	Ability to maintain 2.5 minutes headway for LRT trains in the CBD area	$1.0 M	Yes	Yes	Short-Term	APTS09 Transit Signal Priority	ATMS03 Traffic Signal Control	
DART	Love Field Interactive Kiosk	Installation of Kiosk for customer information at Love Field.	All travelers		$50K	Yes	Yes	Short-Term	APTS08 Transit Traveler Information	ATIS02 Interactive Traveler Information	
DART	Center to Center Communications	Create center to center communication system to share incident information among DART centers and regional centers	All regional agencies with ITS	Incident management, regional coordination		Yes			ATMS01 Network Surveillance	ATMS07 Regional Traffic Management (Regional)	
DART	Yard Wi-Fi	Design and implement a Wi-Fi network at Central Rail. Northwest Rail, and Parker road facilities to support LRT CCTV.	DART		$249K	Yes	Yes		APTS01 Transit Vehicle Tracking	APTS05 Transit Security	
DART	Yard Management	Add yard management system at three of DART Transportation bus yards.	DART	Provide location of buses at bus yards. Save time walking yard, provide better communication to driver in parking vehicle.	$1.3 M	Yes	No		APTS01 Transit Vehicle Tracking	APTS05 Transit Security	
DART	VBS Server Upgrade	Upgrade of our LRT/Commuter rail onboard system backend systems. Will provide secure OS platform, and update architecture to agency standards.	DART		$175K	No	No				
DART	Terminal stations Information system	Improve the customer information system at terminal stations to ease navigation to appropriate platforms	DART customers	Customers will not be confused about what train is leaving terminal stations next.		Yes	No		ATIS02 Interactive Traveler Information	APTS08 Transit Traveler Information	
DART	Light DART tunnel for Wi-Fi customer Information	Implement wireless and wireline communication in Dallas Light rail tunnel to provide customer Wi-Fi communication	DART customers	Wi-Fi in tunnel for customer safety. Continuous communication while vehicle is in tunnel to backend systems.	$4.5M	Yes	No		APTS05 Transit Security	ATIS01 Broadcast Traveler Information	ATIS02 Interactive Traveler Information
DART	Comprehensive payment system		DART customers		$22.5M	Yes	Yes		APTS04 Transit Fare Collection Management		
DART	Paratransit camera project	Provide live video stream to customers family during paratransit trip.	DART customers	Provide safety for customer and family.	$750K	Yes	No		APTS05 Transit Security	APTS08 Transit Traveler Information	
DART	Spanish/English translation project		DART customers		$1.9M	Yes	No		ATIS01 Broadcast Traveler Information	APTS08 Transit Traveler Information	
DART	Upgrade announcement system for TRE vehicles		DART customers	Would allow for better integration with other system to provide announcements.		Yes	No		APTS07 Multi-modal Coordination, Multi-modal Coordination (ICM)	APTS08 Transit Traveler Information	
DART	Northwest Plano Park and Ride	Assisted in design and equipment selection for sign to be used for bus PAVMB.	DART customers	phase 2 to add pvmb.	?	Yes	No		APTS01 Transit Vehicle Tracking		
DART	PTC next phase train location system	Positive Train Control for TRE required by Federal Government.	DART customers			Yes	No		APTS01 Transit Vehicle Tracking		
DART	Small cell at light rail stations	Initiative to provide cellular service at	DART customers			Yes	No		ATIS02 Interactive Traveler Information	APTS05 Transit Security	
DART	D2 TSP project and enhancement of phase I TSP	DART 2nd Downtown Corridor to enhance phase I TSP.				Yes	No		APTS09 Transit Signal Priority		
DART	TRE ten station platform cameras	Add security cameras to TRE Stations.	DART customers	Improve customer safety and security along the TRE.		Yes	No		APTS05 Transit Security		
DART	Populate all Light Rail Vehicles with a modern camera system.	Original funded project included 48 vehicles. Remaining 115 vehicles funding not identified		Improve customer safety and security.	$4.98M	Yes	Partial		APTS05 Transit Security		
DART	Future ITS Security project once Dell security recommendation is received	Add Security software and hardware, and upgrade existing system		Protect DART systems from cyber threats.		No	No		APTS05 Transit Security		
DART	Platform extension and impact of three car consist on downtown TSP	Update Downtown TSP system for future 3-car operations in all Red, Orange, Green and Blue line trains			$175K	No	Yes		APTS09 Transit Signal Priority		
DART	TRE Locomotive & Cab Car Cameras	Install forward and outward facing cameras on the TRE locomotives (9) and cab car (8) fleet.		Safety improvements related to employee operations, as well as claims support related to trespasser and grade crossing incidents.	$3.5M	No	No		APTS05 Transit Security		
DART	TRE Coaches Camera Installation	Install camera system on the coaches (17) and interior customer compartments of the cab cars (8)		Safety and security improvements for the customers and employees on board the TRE.	$5.0M	Yes	No		APTS05 Transit Security		
DART	Fiber Optic Line Installation on the TRE	Install a Fiber Optic Line along the TRE between Dallas and Fort Worth to support PTC, TVM, Station Cameras, Emergency Call Boxes and Passenger Information Systems at the TRE Platforms.		Improve passenger communications, safety and security along the TRE corridor.	$8.0M	Yes	No		APTS05 Transit Security	APTS08 Transit Traveler Information	ATIS01 Broadcast Traveler Information
DART	Enhanced Bus Shelter	Enhanced Bus Shelters will be installed as a 1 year pilot at Wheatland @ West Virginia, Beltline @ Northgate and Forest Lane @ Meadow Knoll. Shelter will be solar powered and include lighting, security cameras digital screens. Digital screens will display real-time information.		Security cameras will allow DART police to monitor high volume locations. It provides our customers with security. The digital screens will provide customers with real-time bus arrival information. Also, it will provide customers with disruption and safety messages.	$58,053 per shelter	Yes	Yes		APTS05 Transit Security	APTS08 Transit Traveler Information	
DART	Video analytic project for Rail crossings	Add security camera at Rail Crossing to recognize/identify vehicle/persons if any accident occurs		Improve incident management by identifying responsible parties		Yes	No		ATMS01 Network Surveillance	ATMS13 Standard Railroad Grade Crossing	

DART

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
DART	Streetcar DVM train matching and licensing project	Project to implement APC counts data to VBS system.			$47K	Yes	Yes		ATMS01 Network Surveillance	APTS10 Transit Passenger Counting	

NTTA

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
NTTA	Install additioinal CCTV	Surveillance camera infill – this will provide additional coverage to legacy sections of the	NTTA	Monitor tollways for incident management		Yes			ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	
NTTA	Install additional DMS/CMS	Additional DMS' and smaller CMS' to provide additional coverage.	TxDOT, NTTA, CDAs, Cities and Counties	Notify drivers of planned and unplanned congestion		Yes			ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System	
NTTA	Install RVDS –	installation of RVDS along existing corridors, focusing on SRT and then filling outwards.	NTTA	Montior tollway operating conditioins		Yes			ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	
NTTA	TMC Software Lonestar	expansion of deployment to utilize additional feature sets.	All regional agencies with ITS	Additional functionality to improve TMC operations		Yes			ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System

TxDOT-Dallas District

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
TxDOT-Dallas	US67 Wireless ITS Installation from IH20 to Ward Rd (16.25 mi)	Installation of CCTV, DMS, & Vehicle Detection Units all communicating over a wireless network	TxDOT, Regional Agencies appropriate to selected corridor	Improve incident response time and reduce congestion	$1.925M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Dallas	US287 Wireless ITS Installation from IH45 to Bus287 (west of Waxahachie (24.0 mi)	Installation of CCTV, DMS, & Vehicle Detection Units all communicating over a wireless network	TxDOT, Regional Agencies appropriate to selected corridor	Improve incident response time along corridor. Provide visual verification to manage traffic on corridor for hurricane evacuation.	$1.48M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Dallas	CCTV Installation Project	Installation of CCTV cameras at locations to fill in gaps in current ITS system	TxDOT, Regional Agencies appropriate to selected corridor	Monitor high accident and reoccurring congested areas Also could allow 100% coverage of toll rate equipment necessary for visual verification.	$0.6M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	
TxDOT-Dallas	DMS Installation Project	Installation of DMS's at locations to fill in gaps in current ITS system	TxDOT, Regional Agencies appropriate to selected corridor	installation of new DMS's on corridors that currently have longer than normal spacing between signs.	$0.8M	Yes	No	Short-Term	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System	
TxDOT-Dallas	DMS rehabilitation	Removal and replacement of existing DMS's that have reached end of life	TxDOT, Regional Agencies appropriate to selected corridor	Reliable Traffic Information and management	$1M	Yes	No	Short-Term	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System	
TxDOT-Dallas	Wrong Way Detection	Select a corridor to implement wrong way detection measures.	Safety	Dallas/Collin Counties	$500,000	Yes	No	Short Term	ATMS01 Network Surveillance	ATMS02 Traffic Probe Surveillance (Regional Drones)	
TxDOT-Dallas	US75 ITS fiber communication upgrade. Limits: from Exchange Pkwy to US380 (7.33 mi)	Upgrade TxDOT's current infrastructure from wireless transmission of video/data to transmission via fiber optic cable.	TxDOT, Regional Agencies appropriate to selected corridor	Video transmitted via fiber optic cable will be significantly clearer and downtime and during inclement weather will be greatly reduced along with maintenance costs.	$2.5M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
TxDOT-Dallas	IH45 ITS fiber communication upgrade. Limits: from IH30 to IH20 (8.83 mi)	Upgrade TxDOT's current infrastructure from wireless transmission of video/data to transmission via fiber optic cable.	TxDOT, Regional Agencies appropriate to selected corridor	Video transmitted via fiber optic cable will be significantly clearer and downtime and during inclement weather will be greatly reduced along with maintenance costs.	$2.775M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
TxDOT-Dallas	IH45 ITS fiber communication upgrade. Limits: from IH20 to Dallas/Ellis County Line (12.0 mi)	Upgrade TxDOT's current infrastructure from wireless transmission of video/data to transmission via fiber optic cable.	TxDOT, Regional Agencies appropriate to selected corridor	Video transmitted via fiber optic cable will be significantly clearer and downtime and during inclement weather will be greatly reduced along with maintenance costs.	$3.125M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
TxDOT-Dallas	US80 ITS fiber communication upgrade. Limits: from IH30 to IH635 (2.97 mi)	Upgrade TxDOT's current infrastructure from wireless transmission of video/data to transmission via fiber optic cable.	TxDOT, Regional Agencies appropriate to selected corridor	Video transmitted via fiber optic cable will be significantly clearer and downtime and during inclement weather will be greatly reduced along with maintenance costs.	$0.72M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
TxDOT-Dallas	Flashing Yellow Arrow Upgrade (Dallas & Ellis Counties)	The new traffic signals will use flashing yellow arrows to allow drivers to turn left after yielding to oncoming traffic.	TxDOT, Regional Agencies appropriate to selected corridor	Conforming to the 2011 Texas Manual on Uniform Traffic Control Devices (TMUTCD) guidelines.	$0.865M	No	No	Short-Term	ATMS03 Traffic Signal Control		
TxDOT-Dallas	Flashing Yellow Arrow Upgrade (Collin & Denton Counties)	The new traffic signals will use flashing yellow arrows to allow drivers to turn left after yielding to oncoming traffic.	TxDOT, Regional Agencies appropriate to selected corridor	Conforming to the 2011 Texas Manual on Uniform Traffic Control Devices (TMUTCD) guidelines.	$0.91M	No	No	Short-Term	ATMS03 Traffic Signal Control		
TxDOT-Dallas	HOV Lane operation	HOV lanes and Managed Lanes with reversible or time of day operations on multiple highways	TxDOT, Regional Agencies appropriate to selected corridor	Install Video, Communications, DMS's, Toll collection and detection to ensure lanes operate safely and efficiently		Yes	No	Short-Term	ATMS05 HOV Lane Management, HOV Management (ICM)	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Dallas	Toll Lane Operation	Managed Toll Lane Operations on multiple Highways	TxDOT, Regional Agencies appropriate to selected corridor	Install Video, Communications, DMS's, Toll collection and detection to ensure lanes operate safely and efficiently		Yes	No	Short-Term	ATMS10 Electronic Toll Collection	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination
TxDOT-Dallas	Dynamic Shoulder Use	Implement Dynamic Shoulder Use to reduce congestion	TxDOT, NCTCOG, NTTA, Regional Agencies appropriate to selected corridor	Install Video, Communications, DMS's and detection to ensure lanes operate safely and efficiently		Yes	No	Short-Term	ATMS08 Traffic Incident Management System	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination
TxDOT-Dallas	Motorist Assist Patrol Program	Provides assistance to stranded motorists and assists first responders while responding to	NCTCOG and TxDOT	Improves Safety and reduces secondary crashes and associated congestion	TBD	Yes	Yes	Short-Term	EM04 Roadway Service Patrols	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System

TxDOT-Fort Worth District

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
TxDOT-Fort Worth	Expand ITS Coverage Parker and Palo Pinto Co	Install CCTV, DMS, Sensors and weather stations	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$1.67M	No	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	Expand ITS Coverage Parker and Palo Pinto Co	Install CCTV, DMS, Sensors and weather stations	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$0.53M	No	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	Expand ITS Coverage Parker and Palo Pinto Co	Install CCTV, DMS, Sensors and weather stations	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$0.87M	No	No	Long-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	Expand ITS Coverage Johnson Co	Add CCTV and Sensors to expand coverage	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$0.69M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	Expand ITS Coverage Johnson Co	Add CCTV and Sensors to expand coverage	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$0.57M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	Expand ITS Coverage Johnson Co	Add CCTV and Sensorss to expand coverage	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$250K	Yes	No	Long-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	SH 121 Fiber Communicaiton	Install Fiber on SH 121 from Dart Rail to Bass Pro Blvd	TxDOT, Regional Agencies appropriate to selected corridor	Create redundant path and local agency connection		Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
TxDOT-Fort Worth	Toll Lane Operation	Managed Toll Lane Operations on multiple Highways	TxDOT, Regional Agencies appropriate to selected corridor	Install Video, Communications, DMS's, Toll collection and detection to ensure lanes operate safely and efficiently		Yes	No	Short-Term	ATMS10 Electronic Toll Collection	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination
TxDOT-Fort Worth	Fiber upgrade on IH 820 East Loop from IH 30 to BUS 287.	Upgrade existing wireless system to fiber (highest speed, highest capacity, and most reliable option)	TxDOT, Regional Agencies appropriate to selected corridor	Expansion of TxDOT fiber optic network to provide a redundant path.	$1.6M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	Fiber upgrade on IH 820 East Loop from IH 30 to SH 183	Upgrade existing wireless system to fiber (highest speed, highest capacity, and most reliable option)	TxDOT, Regional Agencies appropriate to selected corridor	Expansion of TxDOT fiber optic network to provide an alternate path.	$1.1M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	ITS deployment in Tarrant/Wise County on US 287 to Decatur area.	Install CCTV, DMS, Sensors and weather stations	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$1.6M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	ITS deployment in Parker, Wise, and Jack counties on SH 199 from FM 730 to Jacksboro.	Install CCTV, DMS, Sensors and weather stations	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$2.1M	Partial	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	ITS deployment in Johnson and Somervell counties on US 67 from IH 35W to Glen Rose.	Installation of CCTV, detection, DMS, and weather station.	TxDOT, Regional Agencies appropriate to selected corridor	Advanced traveler info and incident management	$1.5M	Partial	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System
TxDOT-Fort Worth	DMS replacement	DMS replacement through the District	TxDOT, Regional Agencies appropriate to selected corridor	Technology upgrade	No	Yes	No	Short-Term	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System	
TxDOT-Fort Worth	Road Weather Information System	Installation of road weather information systems throughout the District	TxDOT, Regional Agencies appropriate to selected corridor	Implementation of road weather information systems serves primarily to help maintenance personnel make timely and efficient winter maintenance decisions.	No	Yes	No	Short-Term	ATMS01 Network Surveillance	MC03 Road Weather Data Collection	EM02 Emergency Routing
TxDOT-Fort Worth	US 377 connected corridor	Upgrade the US 377 connected corridor (Haltom City, Fort Worth) to a smart connected corridor.	TxDOT, Regional Agencies appropriate to selected corridor	Real time traffic information to drivers	No	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)
TxDOT-Fort Worth	Motorist Assist Patrol Program	Provides assistance to stranded motorists and assists first responders while responding to crashes	NCTCOG and TxDOT	Improves Safety and reduces secondary crashes and associated congestion	TBD	Yes	Yes	Short-Term	EM04 Roadway Service Patrols	ATMS08 Traffic Incident Management System	ATMS07 Regional Traffic Management (Regional)

Other Agencies

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Allen	FYA project	install the FYA display at 38 intersections	City of Allen	Reduce fuel use, improve arterial operations and mobility	$300K	No	Partial	Short-Term	ATMS03 Traffic Signal Control		
City of Allen	Fiber Optic Communication Ring	Construct a fiber optic ring for communication	City of Allen	multi-City department use. Improve traffic operations and reliability.	$5M	Yes	No	Short-Term	ATIS06 Transportation Operations Data Sharing, Transportation Operations Data Sharing (ICM)		
City of Allen	upgrade wireless communication network	This project will replace the local controller communication to the backhaul network with modem equipment	City of Allen	This project will enhance the communication network to the local signal controllers and improve reliability to the system.	$200K	Yes	Partial	Short-Term	ATMS03 Traffic Signal Control		
City of Allen	upgrade traffic signal controller cabinet	This project will replace 50 intersections to TS-2 cabinets	City of Allen	This project will provide enhanced diagnostics, and will openly support the FYA display operation for improved traffic mobility.	$1 M	No	Partial	Short-Term	ATMS03 Traffic Signal Control		
City of Allen	CCTV camera	This project will construct up to 60 CCTV cameras at strategic locations. Priority will be on major arterials.	City of Allen	This project will enhance first response teams, traffic engineering, and regional incident management.	$400K	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Allen	BBU's	This project will replace 10 and install 20 battery backup units	City of Allen	provide real-time signal control during power outages. This will improve safety, increase operations, and keep mobility in tact during power outage or signal maintenance times.	$150K	No	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Allen	TMC construction	This project will update the traffic management center	City of Allen	This project will provide a central point for traffic management operations.	$0.5M	Yes	No	Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS06 Traffic Information Dissemination
City of Allen	Connection for sharing data with regional partners	This project will connect the City to TxDOT and other regional city's	City, TxDOT, McKinney, Plano	Share real-time data with regional agencies.	$300K	Yes	No	Long-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Arlington	Install PTZ Cameras	Install traffic monitoring cameras at 68 locations in the city as part of the City's advanced transportation management system for congestion/incident detection, verification and mitigation	City, TxDOT, NCTCOG	Improved congestion/incident verification and mitigation	$1M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Arlington	Install Arterial DMS	Install arterial dynamic message signs at 31 locations citywide as part of the City's advanced transportation management system	City, TxDOT, NCTCOG	Providing motorists information regarding congestion, roadway condition, construction or incidents before they encounter it would enable them make critical decisions that would reduce travel time and minimize congestion	$9.3M	Yes	No	Short-Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Arlington	Roadside Units for Connected Vehicles	Install roadside units for connected vehicles (V2X) at approximately 250 locations on selected corridors in the city	City, TxDOT, NCTCOG	Enables implementation of V2V and V2I in the city as the technology matures and becomes affordable. Motorists will derive the associated safety benefits from this implementation.	$1.5M	Yes	No	Mid-Term	AVSS10 Intersection Collision Avoidance (Connected Vehicle)	ATMS08 Traffic Incident Management System	
City of Carrolton	Install PTZ Cameras	Provide PTZ cameras on regionally significant arterials (Old Denton, Josey, Marsh, Midway, Hebron, Frankford, Trinity Mills, Belt Line)	City of Carrolton	Reduce fuel use, improve arterial operations and mobility		Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Carrolton	Communication to regional network (TxDOT)	This project will construct a wired or wireless communication link among several regional agencies, including TxDOT	City of Carrolton, TxDOT, Adjacent Cities	This project will enhance the communication network to the local and regional signal controllers and improve reliability to the system		Yes	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Carrolton	Communication to regional network (NTTA)	This project will construct a wired or wireless communication link among several regional agencies, including NTTA	City of Carrolton, NTTA, Adjacent Cities	This project will enhance the communication network to the local and regional signal controllers and improve reliability to the system		Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Carrolton	ATMS Upgrade	This project will upgrade communications with signals citywide for coordination of signals along regionally significant arterials	City of Carrolton	This project will enhance the communication network to the local signal controllers and improve reliability to the system		Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Carrollton	Intersection Vehicle Detection	This project identifies intersections on regionally significant arterials to upgrade video or radar detection with ability to remotely view intersection video and/or provide traffic count data	City of Carrollton	Reduce fuel use, improve arterial operations and mobility, provide traffic count information for improved signal timing and Arterial management	$350,000	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS01 Network Surveillance	
City of Carrollton	Central Traffic Management Software	This project will upgrade Carrollton's Central Traffic Management Software	City of Carrollton	Project improves abilities to remotely manage signal timing by replacing end of life Central Traffic Management software (Actra). Reduce fuel use, improve arterial operations and mobility.	$200,000	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS06 Traffic Information Dissemination

Other Agencies

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Carrollton	Signal Controller Battery Backup Units	Installation of Battery Backup Units for Signals along regionally signaificant artierials	City of Carrollton	Increased reliability of local signals. Provide power during storms and/or power loss situations	$150,000	No	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Carrollton	Adaptive Signal Control	Installation of an Adaptive Sginal Control System along one regionally significant arterial section	City of Carrollton	Reduce fuel use, improve arterial operations and mobility	$200,000	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Coppell	Regional data sharing	This project will provide center-to-center communications between regional agencies for the purpose of sharing data between TMC's	TxDOT, NTTA, Coppell, Lewisville, Irving, Grapevine, Carrollton, Dallas	Improved coordination to provide traveler information on local corridors	$0.5M	Yes	No	Long-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Coppell	Conversion of Traffic Signals to new standard	This project will convert the City's existing NEMA TS1 120V cabinets to ATC 48V for the purposes of reduced power consumption and enhanced safety.	City of Coppell	Power savings	$0.7M	No	No	Long-Term	ATMS03 Traffic Signal Control		
City of Coppell	Enhance traffic operations on strategic regional facilities	This project will provide regional traffic management along the Denton Tap/ S. Belt Line Corridor, Freeport Parkway, MacArthur, and Sandy Lake roadways. This project will include enhanced traffic operations strategies to reduce congestion, enhance mobility, reduce emissions, and reduce fuel usage.	Coppell, Lewisville, Irving, Dallas	Improved coordination along corridor	$2.5M	No	Partial	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Coppell	Local Traffic Signal Control Upgrade	This project will upgrade 35 traffic signal controllers, central management software, and network communication hardware	City of Coppell	This project will include performance metrics and the ability to provide data for regional data sharing.	$.5M	Yes	Partial	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Coppell	Construct CCTV cameras at strategic locations along routes of regional significance	Install approximately 20 CCTV Cameras along IH 635, SRT (Hwy 121) Beltline and other similar routes	Coppell, TxDOT, City of Irving	This project will provide real-time surveillance	$.150M	Yes	No	Mid-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Coppell	Hazardous weather traffic management	This project will install RWIS throughout the city for the purpose of collecting real-time weather data	City of Coppell	This project will provide coordinate with the City's snow removal staff	$300K	Yes	No	Long-Term	MC03 Road Weather Data Collection	MC04 Weather Information Processing and Distribution (Arterial)	
DCTA	Enhanced PTC (Grade Crossing)	Add monitoring of at grade crossings to improve safety, monitor status of crossing and detect vehicles stuck/present on crossing	FRA, FTA, Cities (Denton, Lewisville, Highland Village)	Improve safety at grade crossings; meet future mandates; 41 crossings represent key risk area to DCTA	$5M	Yes	No	Mid-Term	ATMS13 Standard Railroad Grade Crossing	ATMS01 Network Surveillance	APTS05 Transit Security
DCTA	Bus Cameras & Security Equipment	Complete bus camera system throughout fleet	FTA, Cities (Denton, Lewisville, Highland Village)	Improve driver and passenger safety through installation of on-board security equipment	TBD	No	No	Mid-Term	APTS05 Transit Security		
DCTA	Rail Station Cameras & Security Equipment	Complete camera based security system for rail stations and parking lots	FRA, FTA, Cities (Denton, Lewisville, Highland Village)	Provide ability to perform forensic review of incidents at stations; provide ability to poll system and check status of facilities real-time from a remote location	TBD	No	No	Short-Term	ATMS01 Network Surveillance	APTS05 Transit Security	
DCTA	Real-Time Mobility On Demand Technology	Technology application supporting real-time transit services to passengers. (Uber-like service)	FTA, Cities (Denton, Lewisville, Highland Village)	Improves passenger travel by providing a convenient real-time service type.	TBD	No	No	Short-Term	APTS03 Demand Response Transit Operations	ATIS02 Interactive Traveler Information	APTS07 Multi-modal Coordination, Multi-modal Coordination (ICM)
DCTA	Positive Train Control (PTC)	Implementation of Enhanced Automatic Train Control System (E-ATC). The project is expected to be completed in late 2017	DCTA	Safety Benefits. Avoidance of potential train to train collisions	12 M	Yes	Yes	Short-Term	APTS01 Transit Vehicle Tracking		
City of Denton	Fiber Optic ITS Deployment Phase 1	Construction of fiber optic based ITS communication network	City, TxDOT, NCTCOG	Phase 1 deployment to connect 36 of the City's 116 existing traffic signals, video to TMC, TxDOT fiber and participate in NCTCOG's fiber sharing framework. TMC to traffic signal communications with video will enhance the safety of the public, streamline incident response, and assist responders.	$1.57M	Yes	Yes (TIP project NP-IT036)	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Denton	Fiber Optic ITS Deployment Phase 2	Construction of fiber optic based ITS communication network	City, TxDOT, NCTCOG	Fills in network gaps after Phase 1 ITS system completion, connecting to additional traffic signals, enhanced management capability, and allowing video, detector, travel time, and other data to be transferred to City's TMC. Phase 2 is considered a medium-term deployment and will consist of approximately 37 miles of fiber optic cable which will connect most of Denton's urban arterial network to the ITS network.	$6M (preliminary estimate)	Yes	No	Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
DFW Airport	Dynamic Message Signs (DMS)	DMS Boards located near both International Parkway Plaza exits. Compatible technology, equipment w/ TxDOT's ATMS. Software link to DFW 511 and DFW website and mobile apps.	NCTCOG, TxDOT, NTTA, DFW Airport	Provides traveler information: traffic conditions, travel time, weather and emergency events on highway routes from Airport exits to travelers.	$2M	Yes	No	Short-Term	ATMS06 Traffic Information Dissemination	ATMS08 Traffic Incident Management System	

Other Agencies

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
DFW Airport	Permanent Count Stations and Roadway Temperature Sensors	Systematic collection of traffic and temperature data utilizing automatic traffic recorders located on various roadways throughout DFW Airport with focus on thoroughfares with connections to state highways.	NCTCOG, DFW Airport, TxDOT, NTTA	Data collected will be used in planning for capacity improvements and assessing pavement and bridge conditions. Vehicle type classification will assist pavement design and environmental analyses.	$600K; $20K per 24 locations plus $100K software	Yes	No	Short-Term	ATMS01 Network Surveillance	MC03 Road Weather Data Collection	MC04 Weather Information Processing and Distribution (Arterial)
DFW Airport	ATMS update	Add components to Airport's ATMS (CSJ: 0918-45-692) to include (1) OptiCom signal pre-emption and (2) radio antenna upgrades for bandwidth increase.(3) Update signal timing to optimize efficiency)	NCTCOG, DFW Airport, TxDOT, NTTA	Provides critical incident management response and increased communication speed and reliability.	$1M	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
DFW Airport	ATMS expansion	Current ATMS coverage is 21 intersections. Expansion will add 7 existing intersections.	NCTCOG, DFW Airport, TxDOT, NTTA, 511	Additional intersections will complete DFW Airport's traffic signal system and provide a link to DFW Regional 511 allowing travelers access to roadway congestion and detour routes.	$1M	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
Town of Flower Mound	Center-to-Center Communications	Communications between TMC's	TxDOT, Town	Improved coordination to provide traveler information on system roadways within the Towr	TBD	Yes	No	Mid-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
Town of Flower Mound	ATC Controller Upgrade	Replace/Upgrade 65 Controllers to latest technology	Town	Latest technology, better performance, ability to use unique phasing and timing techniques	$162.5K	Yes	Yes	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
Town of Flower Mound	MMU Communication	Replace 35 MMU's	Town	Real Time Comm switch MMU's. Ability to pull history logs instantly from central location	$42k	No	Yes	Short-Term	ATMS03 Traffic Signal Control		
Town of Flower Mound	Fiber Backbone Installation	Install initial Fiber Backbone along Major Streets and connect into the Town Network and connection to some major intersections/corridor	Town (Public Works and PD), Real Time Traveler Information Network	Set the ground work for Increase Bandwidth, Provide ability for PD to monitor for Incidents and pass along to Regional Traveler Information System	$0.6M	Yes	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
Town of Flower Mound	Fiber Links to all Intersections		Town (Public Works and PD), Real Time Traveler Information Network	Same as backbone with the ability to add more equipment to monitor traffic and roadway conditions in real time	TBD	Yes	No	Long-Term	ATMS01 Network Surveillance	ATMS07 Regional Traffic Management (Regional)	
Town of Flower Mound	PTZ Cameras	Install PTZ Cameras at 40 locations	Town (Public Works and PD), Real Time Traveler Information Network	Increase the ability of the Police Department and Public Works for Traffic Incident Management and then be able to pass along that information to the Regional Traveler Information System	$125K	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
Town of Flower Mound	ATMS Video Wall and TMC	Install Video Display Wall and software at TMC	TxDOT, Town	Increase the ability to monitor and identify problem areas in traffic flow and incidents. Potentially integrated into C2C for regional information sharing	$200K	Partial	No	Short-term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
Town of Flower Mound	ATMS Video Wall at PD	Install Video Display Wall and software at Police Department	TxDOT, Town	Increase the ability to monitor for traffic incidents. Provide information to Regional Traveler Information System. Funding assumes that TMC already has video management software purchased	$150K	Partial	No	Mid-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
Town of Flower Mound	ATMS Video Wall at New EOC (part of New building construction)	Install Video Display Wall and software at new EOC	TxDOT, Town	Increase the ability to monitor for traffic incidents. Provide information to Regional Traveler Information System. Funding assumes that TMC already has video management software purchased. Keep top management aware in case of emergencies including FD	$200K	Partial	Yes	Mid-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
Town of Flower Mound	Video connection and/or AVL for the EMS between accident scene and surrounding hospitals	Allow for a system integration between emergency services and participating hospitals to provide advance knowledge to hospital to reduce amount of time spent between arrival of EMS and treatment	Town, Emergency Services, Participating Hospitals	Provide on scene video information to attending emergency room prior to arrival of EMS to the hospital, preparations for better care can begin prior to patient arriving at the ER. AVL would provide a visual on how far out EMS is before arriving at the hospital. Could be used with CareFlight as well	TBD	No	No	Long-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
Town of Flower Mound	Road Weather Sensors at critical bridges	Provide communication and equipment to provide road weather information, especially icy conditions, back to TMC and provide alerts to PW staff and traveling public	TxDOT, Town	Provide information through C2C to update Road conditions. Provide near real time pavement conditions to Public Works for deployment of sanding and other response vehicles	TBD	Yes	No	Long-Term	MC03 Road Weather Data Collection	MC04 Weather Information Processing and Distribution (Arterial)	
Town of Flower Mound	Portable Dynamic Message Boards with wireless communication capabilities	Provide communication to the traveling public on roadway hazards such as road closures etc.	TxDOT, Town, Other Communities	Provide communication to the traveling public of road hazards. Could be used by other communities when not in use by the Town for emergency situations, i.e. flooding situation elsewhere	$60K	Yes	No	Mid-Term	ATMS06 Traffic Information Dissemination	ATMS21 Roadway Closure Management	
Town of Flower Mound	Travel Time Vehicle Probe Data	Allow for travel time data collection	TxDOT, Town	Provide a way to monitor travel time information for performance measures and incident management	TBD	Yes	No	Long-Term	ATMS01 Network Surveillance	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS03 Traffic Signal Control

Other Agencies

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Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
Town of Flower Mound	FYA project	install the FYA display at 40 intersections	Town of Flower Mound	Reduce fuel use, improve arterial operations and mobility	$320K	No	Partial	Mid-Term	ATMS03 Traffic Signal Control		
Town of Flower Mound	Preemption	GPS based preemption for emergency services.		System will better clear queued traffic reducing response times. Also can improve traffic operations by adjusting the traffic signal's response to an emergency vehicles based on the route of the emergency vehicle.	$400K	No	Partial	Mid-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	
City of Frisco / City of Plano	Network Connection	Install communication link and infrastructure to allow the exchange of video and traffic data.		Video sharing to emergency services to identify the location of an incident along SH 121; identify traffic backups in neighboring City; center-to-center information exchange. Cities can verify the operation of the neighboring traffic signals.	$300K	Yes		Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Frisco / City of McKinney	Network Connection	Install communication link and infrastructure to allow the exchange of video and traffic data.		Video sharing to emergency services to identify the location of an incident; identify traffic backups in neighboring City; center-to-center information exchange. Cities can verify the operation of the neighboring traffic signals.	$300K	Yes		Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Frisco / City of Little Elm	Network Connection	Install communication link and infrastructure to allow the exchange of video.		Sharing video allows emergency services to identify the location of an incident. Sharing video allows Little Elm to view traffic monitoring video cameras installed on traffic signals within their city, but operated by another agencies.	$300K	Yes		Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Frisco / City of Prosper	Network Connection	Install communication link and infrastructure to allow the exchange of video and traffic data.		Video sharing to emergency services to identify the location of an incident; identify traffic backups in neighboring City; center-to-center information exchange. Cities can verify the operation of the neighboring traffic signals.	$300K	Yes		Medium-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Frisco / TxDOT	Network Connection	Install communication link and infrastructure to allow the exchange of video and traffic data.		Video sharing to emergency services to identify the location of an incident along US 380; identify traffic backups in neighboring City; center-to-center information exchange. Cities can verify the operation of the neighboring traffic signals.	$0.5M	Yes		Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Frisco / City of Plano	Bicycle App	Work with an existing bicycle app (i.e. Kimley-Horn KITS) to exchange information with the traffic signal system. The rider receives feedback when detected. The app places a call and extensions to the traffic signal controller. App could also be used to know the routes bicyclists are using.		Bicycles are detected at traffic signal and given feedback so riders do not run red lights. Bicyclist can receive extended green light. Information about bicyclist routes will provide great benefit as investments in bicycle facilities are considered.	$400K	No		Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Frisco / City of Plano	Performance Measures/Adaptive Control	Install software and traffic signal infrastructure required for adaptive control.		Infrastructure allows for the expansion of performance based traffic signal system management. Fills gaps between and expands planned adaptive control systems.	$600K	Yes		Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Frisco	Performance Measures	Upgrade controller and traffic signal detection required to collect performance measurement data.		Allows for the expansion of performance based traffic signal system management. Allows staff to maintain a high level of signal system performance instead of letting the performance decay and then optimizing the signals system performance every 3 to 5 years.	$500K	Yes		Short-Term	ATMS03 Traffic Signal Control	ATMS01 Network Surveillance	ATMS07 Regional Traffic Management (Regional)
City of Frisco	Performance Measures	Provide support for the installation of the UDOT performance measures application (the UDOT application is a central system agnostic program that processes performance measurement data). Provide funding for the purchase of servers and other hardware so agencies can begin collecting and utilizing high-resolution traffic signal data.	All (Regional)	Allows for the expansion of performance based traffic signal system management. Allows staff to maintain a high level of signal system performance instead of letting the performance decay and then optimizing the signals system performance every 3 to 5 years.	$2.5M	Yes		Short-Term	ATMS03 Traffic Signal Control	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS07 Regional Traffic Management (Regional)

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Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Frisco	Connected Vehicle	Provide SPaT data to application developers	All (Regional)	Regional step toward attracting application developers to the region. Providing a data stream to researchers and developers will yield safety and mobility benefits. May be able to monetize getting the data - perhaps a flat fee. There would be value to collecting the regions data and having a single data stream with the regions data for the researcher and developer.	$5M	Yes		Mid-Term	AVSS05 Intersection Safety Warning (Connected Vehicle)	AVSS10 Intersection Collision Avoidance (Connected Vehicle)	
City of Frisco	Connected Vehicle	Provide SPaT data to the automotive manufacturers via a third party developer.	All (Regional)	Regional step towards building a connected vehicle environment. Provides traffic signal information to the driver establishing a foundation for additional connected vehicle technology	TBD	Yes		Short-Term	AVSS05 Intersection Safety Warning (Connected Vehicle)	AVSS10 Intersection Collision Avoidance (Connected Vehicle)	
City of Frisco	Adaptive Lane Control	Dynamic lane control signs		Install dynamic lane control signs to add capacity to certain movements during high traffic hours.	$300K	Yes		Short-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	ATMS23 Dynamic Lane Management and Shoulder Use
City of Frisco	Dynamic Message Signs	Install dynamic message signs around Frisco at strategic locations.		Provide traffic messages/alerts and travel times to motorists.	$2.4M	Yes		Mid-Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Frisco	Dynamic Message Signs	Install dynamic message signs around the Cowboys training facility and Toyota Stadium to facilitate the smooth flow of traffic to and from events.		Unfamiliar roadway users are provided clear direction improving safety and traffic flow.	$2.4M	Yes		Short-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	ATMS23 Dynamic Lane Management and Shoulder Use
City of Frisco	Adaptive Control	Install adaptive software at overcapacity intersections that allows the traffic signal controller to dynamically adjust the splits based on real-time traffic conditions.		Provides a more equitable distribution of green time. Reduces accidents and delay by reducing traffic backups.	$100K	Yes		Short-Term	APTS09 Transit Signal Priority	ATMS03 Traffic Signal Control	
City of Frisco	Public Facing Traffic Webpage	Provide webpage for visitors and residents to view traffic video, see traffic conditions, and see construction/event notices.		Provides residents and visitors information needed to make good route choices. Will result in reduced congestion by disturbing trips throughout the network.	$200K	No		Mid-Term	ATIS01 Broadcast Traveler Information		
City of Frisco	Automated Travel Time Data	Purchase equipment to read Wi-Fi or Bluetooth signals to obtain continuous real-time travel time and origin-destination data.		Allow performance based corridor management. Detect changes in travel times and travel time reliability allowing staff to proactively adjust the traffic signals.	$100K	Yes		Short-Term	ATMS01 Network Surveillance	AD1 ITS Data Mart (Regional Info)	AD2 ITS Data Warehouse
City of Frisco	Car Share	Provide cars that can be shared by many.		People could take transit to a destination and then use car share for short trips around the area.	$5M	No		Mid-Term	ATIS08 Dynamic Ridesharing		
City of Frisco	Railroad Crossing	Know when the gates are down at a railroad crossing.		Provide notification to emergency services so drivers take an alternate route. Modify the operation of near-by traffic signals.	$100K	Yes		Short-Term	ATMS08 Traffic Incident Management System	ATMS13 Standard Railroad Grade Crossing	
City of Frisco	Transit Priority	Provide partial and/or full priority to transit vehicles		Provide varying levels of priority based on occupancy and schedule adherence. Integrate with the transit authority's vehicle information system.	$500K	Yes		Long-Term	APTS09 Transit Signal Priority	ATMS03 Traffic Signal Control	
City of Frisco	Freight Priority	Connect trucks to the traffic signal infrastructure.		Provide early green and extended green for trucks. Reduce truck stops which improves the flow of commerce, improves traffic flow, and increases roadway safety. Development of a data exchange between the truck, central system, and intersection controller.	$500K	No		Long-Term	ATMS03 Traffic Signal Control	AVSS05 Intersection Safety Warning (Connected Vehicle)	
City of Frisco	Pedestrian Signals	Pedestrian Hybrid Beacons (HAWK) or Rectangular Rapid Flashing Beacon (FFRB)		Provide supplemental warning for drivers of a pedestrian crosswalk. Increases multimodal trips and pedestrian safety.	$150K	No		Short-Term	ATMS03 Traffic Signal Control		
City of Frisco	Preemption	GPS based preemption for emergency services.		System will better clear queued traffic reducing response times. Also can improve traffic operations by adjusting the traffic signal's response to an emergency vehicles based on the route of the emergency vehicle.	$400K	No		Mid-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	EM02 Emergency Routing
City of Frisco	Pedestrian App	Provide pedestrians real time information about the traffic signal. The pedestrian would get information as to how long she would have to wait for the WALK.		Improve mobility, increase pedestrian trips. Provide better mobility for disabled. Improve safety by increasing compliance with pedestrian signals.	$400K	No		Mid-Term	ATMS03 Traffic Signal Control	ATMS06 Traffic Information Dissemination	
City of Frisco	Pedestrian - Traffic Signal Controller Software	Provide funds to develop traffic signal controller software to provide better accommodation for pedestrians. Early WALK, use multiple phases for the pedestrian phase, and modify flashing yellow arrow overlap to protect pedestrians. Item maybe needed to purchase software licensees for traffic signal controller software modules.		Improving the traffic signal controller software would improve how pedestrians are treated and how well pedestrians are protected from motor vehicles.	$250K	No		Short-Term	ATMS03 Traffic Signal Control	ATMS01 Network Surveillance	

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Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Frisco	Asset Management	Asset management system for the traffic signal system infrastructure		Track traffic signal system assets. Support performance measures. Better positioned to keep traffic signal equipment running well and safe.	$350K	No		Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Frisco	Traffic Signal System	Server and equipment upgrades		Upgrade application servers, database servers, and network storage to provide the performance needed to utilize performance management data.	$150K	No		Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Frisco	Video Equipment for Emergency Management Center	Switcher and video wall upgrades		Upgrade video wall and video switcher in Frisco's emergency management center and/or traffic management center. Provide for better video distribution and management.	$0.5M	Partial		Short-Term	ATMS01 Network Surveillance	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Frisco	Traffic Data	Automate traffic data reporting		Install detection systems to collect traffic volume data. Data from different intersections is aggregated. Then develop a automated system to transmit that data to the NCTCOG.	$0.5M	Yes		Mid-Term	ATMS01 Network Surveillance	AD1 ITS Data Mart (Regional Info)	
City of Frisco	Crash Data	Use MS2 regionally to collect and evaluate crash data.	All (Regional)	Automate the data exchange from the TxDOT system and the MS2 system. Work with TxDOT to add additional fields to the statewide crash report. Provide software maintenance.	$1M	No		Mid-Term	ATMS07 Regional Traffic Management (Regional)	AD1 ITS Data Mart (Regional Info)	AD2 ITS Data Warehouse
City of Frisco	School Flashers	upgrade school flasher controllers		Purchase flashers that have two-way communication and provide detailed maintenance data. Allow staff to verify when a school flasher is on and proactively maintain the equipment before problems occur.	$400K	No		Short-Term	ATMS03 Traffic Signal Control		
City of Frisco/NTTA	Dynamic Freeway Lanes	Install lane control signs upstream of tollway on-ramps		Implement system of dynamic signs over tollway lanes before on-ramps. Signs would display a green arrow when the lane was open and a red X when the lane is closed. The right lane on the DNT could be closed after an event at Toyota Stadium providing on-ramp traffic an exclusive lane. Event traffic would not have to yield to traffic already on the DNT.	$0.75M	No		Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS23 Dynamic Lane Management and Shoulder Use
City of Frisco	Traffic Signal Cabinet	Purchase and install ATC traffic signal cabinets (pilot project first and then program change out)		Convert traffic signal from AC to DC power. Minimize the traffic signal's power consumption and improve traffic signal technician safety. Increases the hours a batter backup system can run the traffic signal. Explore powering a traffic signal with solar panels.	$500K	No		Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Frisco	Training	Provide training opportunities for agency staff to gain the expertise required to maintain ITS assets. Include in projects or provide subsidies for stand alone trips. Training would need to occur beyond a project as equipment and staff change.	All (Regional)	Cities need expertise on Staff to maintain ITS equipment. This would prevent regional/agency investments in ITS from becoming unusable. The NCTCOG could play a key role in providing subsidies to agencies for staff training.	$100K	No		Short-Term			
City of Garland	Traffic and incident monitoring on ROS.	Expansion of current CCTV system from 17 intersections to 120 intersections	TxDOT, City and adjacent cities	Improve arterial traffic flow, congestion management and incident management.	$300K	Yes	Yes	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Garland	Central system and local controller hardware/software upgrade.	Replace central traffic control system and local controller software/hardware due to equipment and software end of life. Current system is no longer supported by vendor.	TxDOT, City and adjacent cities	Improve arterial signal timing and coordination.	$.75M - $1M	Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Garland	Roadway flood warning syste	Install remote sensors to identify upstream rising creek levels and predict possible roadway flooding.	City and possibly adjacent cities	Monitor water level of flood prone areas to identify flooding possibility and to determine advance need for road closures, thereby increasing motorists safety.	$250K - $350K	Yes	No	Short-Term	MC03 Road Weather Data Collection	MC04 Weather Information Processing and Distribution (Arterial)	
City of Grand Prairie	Re-establish video and data exchange with TXDOT FTW, establish new video & data sharing with TXDOT Dallas and NTTA via C2C.	This project will facilitate video and data exchange between City of Grand Prairie (TMC) and TXDOT (FTW and Dallas) including NTTA.	TXDOT, NTTA, City	It would provide the capability for the city to monitor freeway segments (IH20,IH30, SH360, and SH161) which passes through the City and adjust timing plans of traffic signals along arterial system parallel to the freeway in case of a freeway incident to mitigate congestion.	$413K	Yes	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	

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Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Grand Prairie	Local / incident traffic and railroad crossings monitoring and alert motoring public of traffic conditions	This project will provide the infrastructure necessary for monitoring of local and traffic diverted from IH 30 during incident or freeway construction including Rail road crossings monitoring by installation of 7 CCTV cameras and alert motoring public of traffic conditions by installation of 3 DMS at strategic locations along SH 180 (Main St.) from SH 180 at MacArthur St. to SH 180 at NW 23rd St. within the City of Grand Prairie.	TXDOT, City	This project improves traffic flow monitoring and incident detection and response. Also, it provides real time congestion related and traffic condition information to road users.	$0.525M	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS06 Traffic Information Dissemination	ATMS13 Standard Railroad Grade Crossing
City of Grand Prairie	Install CCTV cameras	Project will install CCTV cameras at 50 major intersections.	TXDOT, City	Provides real-time monitoring of traffic signal operations and facilitate timing adjustment during event and incidents.	$400K	Yes	No	Mid-term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Grand Prairie	Arterial DMS installation	Install 20 Arterial DMS at critical locations city wide.	TXDOT, City	DMS will be used to inform motoring public of roadway constructions, traffic conditions, and incidents.	$750K	Yes	No	Mid-term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Grand Prairie	Travel time vehicle probe	Install Blue toad at critical intersections along major arterials to obtain real time travel time and origin-destination data.	TXDOT, City	Provides travel time information for performance measure and incident management.	TBD	Yes	No	Long-term	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Grand Prairie	Adaptive control	Install software and traffic signal infrastructure required for adaptive control at critical and saturated intersections.	TXDOT, City	Improve efficiency & operations at traffic signal intersections. Also, reduces accidents and delay by reducing traffic backups.	$100K	Yes	No	Mid-term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Grand Prairie	Install battery backups	This project will install Battery backup unit at critical intersections.	TXDOT, City	Provides real time command and control during power outages. This will improve safety, and operations during power outages.	TBD	No	No	Mid-term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Grand Prairie	Upgrade vehicle detections	Replace existing loop detectors at signalized intersections with advanced vehicle detection technologies.	TXDOT, City	Improves vehicle detections by capability of monitoring the performance of vehicle detection, adjustment of detection zones and ability to conduct vehicle and turning movement counts.	TBD	No	No	Mid-term	ATMS01 Network Surveillance	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Grapevine	Center-to-Center Communications	Communications between TMC's	TxDOT, DART, The T, City of Grapevine	Improved coordination to provide traveler information on freeway corridors	$0.5M	Yes	Partial	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Grapevine	TMC Construction	Construction of TMC and purchase of hardware and software	TxDOT, DART, The T, City of Grapevine	Improved coordination to provide traveler information on freeway corridors	$0.75M	Partial	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Grapevine	Frontage Road Timing Plans	Incident Management Timing Plans for freeway lane closures	TxDOT, City of Grapevine	Coordinated frontage road timing plans to minimize freeway congestion interstate corridors	$250K	No	Yes	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Grapevine	TexRail Fiber	Install Fiber Optic cable in TexRail Corridor	TxDOT, DART, The T, City of Grapevine, Grapevine / Colleyville ISD	Traffic management via CCTV and coordinated timing plans along SH 26	$0.5M	Yes	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)		
City of Grapevine	Northwest Hwy Fiber	Install Fiber optic cable in Northwest Hwy corridor from Main to SH 114 and along SH 114 frt rd to SH 26	TxDOT, City of Grapevine	Traffic management via CCTV and coordinated timing plans along NW Hwy	$0.75M	Yes	Yes	Mid-Term	ATMS07 Regional Traffic Management (Regional)		
City of Grapevine	SH 26 / FM 2499 Fiber	Install Fiber optic cable in SH 26 / FM 2499 corridor from Main to Riverwalk.	TxDOT, City of Grapevine, Town of Flower Mound	Traffic management via CCTV and coordinated timing plans along SH 26 / FM 2499	$1.5M	Yes	Yes	Mid-Term	ATMS07 Regional Traffic Management (Regional)		
City of Irving	ATMS upgrade	This project will upgrade the central system software, replace legacy controllers, and upgrade the communications network	City of Irving, TxDOT, NCTCOG	This project will advance the level of control of intersection operations, collect performance measures, and improve arterial mobility	$4.1M	Yes	Yes	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Irving	TMC construction	This project will relocate the city's traffic management center from above the city's signal shop to a dedicate space within traffic engineering. This project will finish out the space, procure consoles, install a video wall, and provide other materials/equipment to make the TMC operational	City of Irving	This project will serve as the central communication hub for arterial operations.	$.6M	Partial	Yes	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Irving	Deploy CCTV cameras, phase I	This project will construct and install approximately 25 CCTV cameras at strategic locations within the city	City of Irving, EOC, TxDOT, DART	This project will provide surveillance of arterial operations, assist in incident management, and provide valuable data to first response teams	$.2M	Yes	yes	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Irving	Deploy CCTV cameras, phase II	This project will construct and install approximately 25 CCTV cameras at strategic locations within the city	City of Irving, EOC, TxDOT, DART	This project will provide surveillance of arterial operations, assist in incident management, and provide valuable data to first response teams	$.2M	Yes	No	Mid-term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Irving	Install battery backup units (BBU)	This project will install battery backup units at approximately 205 intersections	City of Irving	This project will maintain signal operations during emergency power outages.	$1M	No	No	Mid-term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Irving	regional interconnectivity	This project will install the necessary communication linkage and field network gear with neighboring city of Coppell	City of Irving, City of Coppell	This project will enhance regional signal operations and mobility by sharing valuable data		Yes		Mid-term	ATMS07 Regional Traffic Management (Regional)		

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Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Mansfield	Traffic Management Center	City wide operation of traffic signal system	City of Mansfield	City wide communication between traffic signals and the ability to monitor and adjust remotely also will have the ability to see video.	$0.95M	Yes	Yes	Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of McKinney	Traffic Signal Controller Upgrade	Update Traffic Signal Controllers and central system software.	City of McKinney, NTTA, TxDOT	This project will enhance intersection operations, collect performance measures, and improve arterial mobility	$0.5M	Yes	Yes	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of McKinney	Upgrade Battery Backup Units	This project will upgrade the battery back units at approximately 40 intersections	City of McKinney, NTTA, TxDOT	This project improve the reliability of signal operations during emergency power outages.		No	No	Short-Term	ATMS03 Traffic Signal Control		
City of McKinney	PTZ Deployment	Install PTZ cameras at intersections in order to monitor traffic congestion and incidents near intersections.	City of McKinney, NTTA, TxDOT	Improve traffic flow and responses to incidents	$0.6M	No	Yes	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of McKinney	Expand Fiber Ring	Installation of Fiber	City of McKinney, NTTA, TxDOT	Expand the existing fiber ring to enhance communications to the signal system. Create redundancy		Yes	No	Mid-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	
City of McKinney	DMS for Corridor Management	Install DMS signs on key corridors to provide motorists real time traffic information.	City of McKinney, NTTA, TxDOT	Improve traffic flow		Yes	No	Long-Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of McKinney	Public Facing Traffic Webpage	Provide webpage for visitors and residents to view traffic video, see traffic conditions, and see construction/event notices.		Provides residents and visitors information needed to make good route choices. Will result in reduced congestion by disturbing trips throughout the network.	$200K	No		Mid-Term	ATIS01 Broadcast Traveler Information		
City of McKinney	Automated Travel Time Data	Purchase equipment to read Wi-Fi or Bluetooth signals to obtain continuous real-time travel time and origin-destination data.		Allow performance based corridor management. Detect changes in travel times and travel time reliability allowing staff to proactively adjust the traffic signals.	$100K	Yes		Short-Term	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of McKinney	Bicycle App	Work with an existing bicycle app (i.e. Kimley-Horn KITS) to exchange information with the traffic signal system. The rider receives feedback when detected. The app places a call and extensions to the traffic signal controller. App could also be used to know the routes bicyclists are using.		Bicycles are detected at traffic signal and given feedback so riders do not run red lights. Bicyclist can receive extended green light. Information about bicyclist routes will provide great benefit as investments in bicycle facilities are considered.	$400K	No		Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Mesquite	Video detection and PTZ Cameras on Belt Line Road between South City Limits and Northwest Drive	Replace loop detectors with VIVDS; install incident cameras with PTZ ability and bring back to the TMC.	City of Mesquite, adjacent cities	Coordinated traffic flow between south City limits of Mesquite to IH 30 and Broadway in Garland, and Sunnyvale'	$240K	Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Mesquite	Installation of UPS battery back-up systems	installation of UPS battery back-up systems at three signals on TxDOT ROW, near UPRR crossings, along SH 352 at Florence, Galloway, and at Gross.	City of Mesquite, TxDOT, UPRR	Required due to implementation of Quiet Zone at all its UPRR crossings.	$21K	Yes	No	Short-term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
LBJ Express	Communications between TMCs	This project will construct a wired or wireless communication link among several regional agencies	TxDOT, NTTA, City	Improved coordination to provide traveler information on interstate corridors	$1M	Yes	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	
LBJ Express	DriveOn TEXpress	Expand DriveOn TEXpress to support I-30, 35W, 183 and other TxDOT projects.	TxDOT, LBJ, NCTCOG	Wide use and acceptance of the DriveOn APP	TBD	No	No	Short-Term	ATMS05 HOV Lane Management, HOV Management (ICM)	ATMS07 Regional Traffic Management (Regional)	ATMS06 Traffic Information Dissemination
City of Richardson	Wi-Fi Traffic Monitoring	Local Wi-Fi based speed, delay and O-D collection . Minimal deployment at 50 locations, full deployment at 90 locations.	City, TxDOT, NCTCOG	Data on Arterial speeds, delays, and origin-destination along regionally significant routes.	$250K - $450K	Yes	No	Short-Term	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Richardson	Automated Turning Movement Counts	Collection of 24/7/365 turning movement counts at strategic intersections. $18,000 per location, maximum of 50 locations	City, TxDOT, NCTCOG	Fully automated, always on, turning movement and volume counts at regionally significant t intersections.	Up to $900,000	No	No	Short-term	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control
City of Richardson	Signal Retiming	Retiming of traffic signals in response to major traffic demand shifts along the northern portions of the City. 52 locations, Campbell Rd., Renner Rd., associated signals.	City, TxDOT, NTTA, Plano, Dallas	Reduce congestion due to freeway reconfiguration and major developments along PGBT Tollway	$300K	No	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Richardson	Advanced Signal Controllers	Collection of High Resolution Data and ability to implement advanced signal timing strategies. 130 locations.	City, NCTCOG	The ability to implement advanced traffic signal timing methodologies, including adaptive signal timing. The ability to collect high resolution data on each approach to enable signal timing analysis and optimization in an on-going and rapid manner.	$0.52M	Yes	Partial	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Richardson	Advanced Central Traffic Management Software	Collection and integration of all available data sources to produce reports leading to actionable items to reduce both recurring and incident related congestion	City, NCTCOG, Dallas, Fort Worth, Irving	The ability to consolidate and integrate multiple data sources to produce reports of regional significance on traffic patterns, incident response, congestion, and maintenance.	$5M	Yes	Partial	Short-Term	ATMS08 Traffic Incident Management System	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control
City of Richardson	Advanced Traffic Signal Cabinets	Upgrade traffic signal cabinets to take full advantage of new advanced traffic signal controllers. 130 locations.	City, TxDOT, NCTCOG	Provide a larger number of detector inputs and greater flexibility on outputs, as well as Uninterruptable Power Supply and advanced communications	$1.56M	Yes	Partial	Short-Term	ATMS03 Traffic Signal Control		

Other Agencies

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
City of Richardson	V2I Test Deployment	Implement a test deployment of V2I strategies in cooperation with Research Institutes for construction warning and possible Transit applications	City, DART, TxDOT	Provide advance warning to V2I equipped vehicles of construction ahead. Provide an interface to Transit to enhance Bus operations, passenger information, and V2I information at light-rail crossings.	$100K	No	No	Mid-Term	AVSS11 Automated Vehicle Operations (Connected Vehicle)	ATMS06 Traffic Information Dissemination	
City of Richardson	Advanced modelling and adaptive signal timing	Work with UTD researchers to develop a local advanced traffic model with the goal of providing real-time adaptive signal timing.	City, NCTCOG, UT-Dallas	Reduce congestion and provide guidance on future planning efforts.	$100K	No	No	Mid-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Rowlett	ATMS system software	This project will upgrade the central system software and upgrade the communications to local controllers	City of Rowlett, adjacent cities	Improve arterial signal timing and coordination.		Yes	Partial	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Rowlett	Install CCTV cameras	This project will construct and install CCTV PTZ cameras at strategic locations within the city	City of Rowlett, EOC, TxDOT, DART	This project will provide surveillance of arterial operations, assist in incident management, and provide valuable data to first response teams		Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Rowlett	Traffic Signal Upgrade	Upgrade controllers, cabinets and detection to provide latest technology and communicaiton with ATMS system - 26 locations	City of Rowlett	Enhance signal operations, improve corridor progression		Yes	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Rowlett	Center to center communication and agency data sharing	Install communication link and infrastructure to allow the exchange of video and traffic data.	TxDOT, NTTA, Adjacent Ciities	Allow sharing of data and video		Yes	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System
City of Rowlett	Install Fiber Optics	Connect to city network and adjoining agencies	City of Rowlett, TxDOT, adjacent cities	Provide reliable communication system		Yes	No	Short-Term	ATMS07 Regional Traffic Management (Regional)		
City of Rowlett	Traffic Signal Retiming	Retime signals and prepare alternate timing plans for incident management	TxDOT, NTTA, Adjacent Ciities	optimze traffic flow along SH 66 as alternate route when IH 30 is congested	$300k	No	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	
City of Plano	TMC	Provide real time information to motorist and make adjustments to traffic signals in order to mitigate incidents	TxDOT, NTTA, City	Improved driver awareness of traffic conditions and alternatives		Partial	No	Short-Term	ATMS07 Regional Traffic Management (Regional)	ATMS03 Traffic Signal Control	ATMS06 Traffic Information Dissemination
City of Plano	Adaptive Signal Control - Legacy	Provide real time traffic signal adjustments throughout the day to maximize the traffic throughput	CITY, STATE, NTTA	Improve traffic flow		Yes	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	
City of Plano	Traffic Signal Upgrade - citywide	Upgrade controllers to provide performance measures and reports in order to improve traffic flow	CITY, STATE, NTTA	Improve traffic flow		Yes	No	Short-Term	ATMS03 Traffic Signal Control		
City of Plano	Automated Traffic Management Center Software	Software will enable to determine traffic signals performance measures and required modifications	City of Plano	Improve traffic flow		Yes	No	Short-Term	ATMS03 Traffic Signal Control		
City of Plano	Install PTZ Cameras	Install PTZ cameras at intersections to monitor traffic congestion and incidents near intersections	City of Plano	Improve traffic flow		Yes	No	Short-Term	ATMS01 Network Surveillance	ATMS08 Traffic Incident Management System	ATMS03 Traffic Signal Control
City of Plano	Incident Corridor Management New Timing Plans and System Expansion	Enhance and expand the existing ICM timing plans and develop new plans	TXDOT, NCTCOG, City	Improve traffic flow		No	No	Short-Term	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Plano	Install dynamic message signs	Install DMS's at selected locations to provide motorists real time information regarding congestion and incidents	City of Plano	Improve traffic flow and driver notification		Yes	No	Short-Term	ATMS06 Traffic Information Dissemination	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System
City of Plano	Emergency NOW module for traffic signal priority	Install traffic signal rerouting system for emergency vehicle preemption within the city and across city boundaries	City of Plano and adjacent cities	improve emergency vehicle response times		No	No	Short-Term	ATMS03 Traffic Signal Control	ATMS08 Traffic Incident Management System	EM02 Emergency Routing
City of Plano	Wi-Fi readers at intersections to determine vehicle travel times	Install readers at intersections to measure travel times	City of Plano	Improve traffic flow		Yes	No	Short-Term	ATMS02 Traffic Probe Surveillance (Regional Drones)	ATMS03 Traffic Signal Control	ATMS07 Regional Traffic Management (Regional)
City of Plano	Automated vehicle notification of traffic signal status	Install computer systems within the signal to provide information to vehicles equipped with automated notification systems	City and Vehicle manufacturers	Improve driver information		Yes	No	Short-Term	AVSS11 Automated Vehicle Operations (Connected Vehicle)		
City of Plano	Center to center communication and agency data sharing	Share information and data amongst agencies to improve traffic flow	CITY, NCTCOG, TXDOT NTTA, OTHER CITIES	Improve traffic flow		Yes	No	Long-Term	ATMS07 Regional Traffic Management (Regional)	ATMS08 Traffic Incident Management System	ATMS06 Traffic Information Dissemination
City of Plano	Parking management systems	Install displays to inform traffic of parking availability and enforcement	City of Plano	Improve parking management		Yes	No	Long-Term	ATMS16 Parking Facility Management	ATMS17 Regional Parking Management	
FWTA	Traffic Signal Prioritization	Implement TSP to provide better traffic flow for transit and emergency vehicles	FWTA, City of Fort Worth	Increased on-time performance for transit, better response time for emergency vehicles	$280 K	Yes	No	Short-Term	APTS09 Transit Signal Priority		
FWTA	Passenger Counters	Implement passenger counters on FWTA transit vehicle to record boarding and alighting's.	FWTA	Improved data collection; reliable data for route planning	$0.74M	Yes	Yes	Short-Term	APTS10 Transit Passenger Counting		
FWTA	Voice Annunciation	Implement Automatic Voice Annunciation System on our transit vehicles	FWTA	Improved ADA Compliance	$1.47 M	Yes	Yes	Short-Term	APTS08 Transit Traveler Information		
FWTA	Revenue Collection System	Replace back-office support, onboard fare collections, and TVMs	FWTA, TRE, TexRail	Improved and cost effective fare collection, increased payment options and availability to customers	$4 M	Yes	Yes	Short-Term	APTS04 Transit Fare Collection Management		

Other Agencies

NCTCOG Regional ITS Deployment Plan Project Listing

Agency	Project	Brief Description	Potential Stakeholders	Benefits	Cost	ITS Funding Criteria Met	Funding Identified	Timeframe	Service Packages	Service Packages	Service Packages
FWTA	New Buses	Replace aged and obsolete fixed route buses; buses will be preinstalled with APCs, AVAS, RTPIS hardware and security cameras	FWTA	Reduced maintenance costs, increased reliability, and increased passenger capacity	$9.5 M	No	Partial	Short-Term			
FWTA	Transfer Center Communications	Implementation of real-time communication with on-site security camera system	FWTA	Increased security and safety for customers and drivers	$150 K	Yes	No	Short-Term	APTS05 Transit Security		