Illinois Statewide Intelligent Transportation Systems (ITS) Strategic Plan

APPENDIX K

Statewide ITS – Detailed Project Descriptions

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Appendix K – Statewide ITS High Priority Project Descriptions

CAD Integration with Traffic Management

Description
Integration of computer-aided dispatch (CAD) information for traffic operations. This project would allow IDOT to view roadway related incidents currently being handled by Illinois State Police (ISP) and other law enforcement agencies electronically. Fiber-optic cable connections would facilitate this sharing of information and video between agencies.

Program areas addressed
- Data Management
- Traffic Management

ITS Solution Categories
- Computer Aided Dispatch
- Regional Communications Centers for Operations Interoperability

Potential Participating Agencies
- Illinois DOT
- Illinois State Patrol

Related Statewide ITS Needs
- 2 – Enhanced data collection and monitoring capabilities for traffic management agencies
- 6 – Enhanced incident management programs (includes construction and unplanned incidents)

Dependent projects/related efforts
- Fiber links between traffic management and law enforcement agencies

Implementation Timeframe
Years 1 through 5

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $400K
- Annual O&M Costs: $35K

Central Signal System Expansion

Description
Expansion of municipal, e.g., DuPage County, central signal system to connect to signal systems for adjacent jurisdictions. Project will incorporate 170 signals into the existing signal management system operated by DuPage County. Related to the Regional Arterial TMC project listed below.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Computer Aided Dispatch
- Regional Communications Centers for Operations Interoperability

Potential Participating Agencies
- DuPage County
- County and Local Transportation Agencies
- Illinois DOT

Related Statewide ITS Needs
- 1 – Enhanced interagency coordination and data sharing
- 2 – Enhanced data collection and monitoring capabilities for traffic management agencies
- 6 – Enhanced incident management programs (includes construction and unplanned incidents)

Dependent projects/related efforts
- Arterial Operations Center and Fiber

Implementation Timeframe
Years 2 through 4

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $5,000K
- Annual O&M Costs: $40K

Centralized CCTV Camera Monitoring and Control

Description
Project to install pan-tilt-zoom (PTZ) cameras for monitoring and control, e.g., at the IDOT District 5 office, along I-74 between Urbana and Danville.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Regional Traffic Signal Coordination

Potential Participating Agencies
- Illinois DOT
- Illinois Truckers Association
- Midwest Truckers Association
- Commercial vehicle operators

Related Statewide ITS Needs
- 2 – Enhanced data collection and monitoring capabilities for traffic management agencies
- 7 – Centralized operations for 24/7 traffic management

Dependent projects/related efforts
- None

Implementation Timeframe
Year 2

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $1,750K
- Annual O&M Costs: $35K

Dedicated & Higher-Bandwidth Links between Agencies (Non-Centralized)

Description
Ongoing efforts to expand the deployment fiber optic cable throughout the region to increase the bandwidth that allows for more users from other agencies to utilize the ATMS software package for information and video sharing purposes.

Program areas addressed
- Improved Communications

ITS Solution Categories
- Enabling Backbone Communications Infrastructure

Potential Participating Agencies
- Illinois DOT
- County and Local Transportation Agencies

Related Statewide ITS Needs
- 3 – Expanded communications infrastructure network

Dependent projects/related efforts
- None

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $500K
- Annual O&M Costs: $35K

District 1/District 3 Joint ITS Project along I-80 and I-55 Corridors

Description
Includes one DMS on I-80 (EB I-80 near MM 102.1) and two DMS on I-55 (NB I-55 near MM 214, SB I-55 near MM 223), along with a number of CCTV cameras for traffic monitoring. Server in District 1 hosts the ATMS software responsible for communicating with the DMS. Also includes installation of 31 Bluetooth detectors along I-55/I-80 for traffic detection to understand where congestion is forming.

Program areas addressed
- Traffic Management

ITS Solution Categories
- ITS Data Collection Systems

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 2 – Enhanced data collection and monitoring capabilities for traffic management agencies

Dependent projects/related efforts
- I-55/I-80 Bluetooth Detection

Implementation Timeframe
Year 1

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $100K
- Annual O&M Costs: $20K

DoIT Smart State for ITS Projects

Description
Refers to the Illinois DoIT (Department of Innovation and Technology) office deployment of fiber communications infrastructure that support various functions, including links to ITS technologies, such as intelligent street lighting or centralized control of field-based ITS devices. DoIT supports state agencies in a turn-key type of operation with respect to communications infrastructure needs. This would include fiber cable deployments, connectivity to central offices, and other communications related needs.

Program areas addressed
- Improved Communications

ITS Solution Categories
- Enabling Backbone Communications Infrastructure

Potential Participating Agencies
- Illinois DOT
- Department of Innovation and Technology

Related Statewide ITS Needs
- 1 – Enhanced interagency coordination and data sharing
- 3 – Expanded communications infrastructure network

Dependent projects/related efforts
- Fiber Sharing (CMS, Private)

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $300K
- Annual O&M Costs: $25K

Education about ITS

Description
Development of outreach materials, videos, etc. to introduce ITS, describe benefits, and provide resources to the public.

Program areas addressed
- Outreach / Public Education

ITS Solution Categories
- Statewide ITS Teams

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 11 – Improved safety through use of ITS

Dependent projects/related efforts
- ITS Resource Library

Implementation Timeframe
Year 1

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $10K
- Annual O&M Costs: $10K

Emergency Traffic Patrol / Emergency Traffic Vehicle (ETP/ETV) Expansion

Description
Project refers to the expansion of two similar emergency traffic assistance programs to cover additional areas of the state. IDOT's Chicago area Emergency Traffic Patrol (ETP) and Metro-East area Emergency Patrol Vehicle (EPV) programs, respectively, dispatch teams of emergency patrol vehicles and drivers to traffic disruptions and potential safety problems caused by accidents, disabled vehicles or hazardous debris. The primary objective of the ETP/EPV workers, also referred to as "Minutemen," is to respond to all disruptive incidents on the state's busiest urban expressway systems and to take immediate corrective action to safely restore normal traffic flow. Minutemen then execute help that motorists need when breakdowns or mishaps occur.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Emergency Traffic Patrol Expansion

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 6 - Enhanced incident management programs (includes construction and unplanned incidents)
- 11 - Improved safety through use of ITS

Dependent projects/related efforts
- None

Implementation Timeframe
Years 2, 4, and 7

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $500K
- Annual O&M Costs: $50K

Expansion of Public-Private Data

Description

Expansion of an existing IDOT agreement with HERE as a private traffic data provider allows them to input real-time traffic data into the publicly accessible Illinois Gateway Traveler Information System (GTIS). The agreement would be modified to provide access to more traffic management agencies.

Program areas addressed

- Data Management

ITS Solution Categories

- Third Party Traveler Information Applications

Potential Participating Agencies

- Illinois DOT, ISTHA, Private Data Providers

Related Statewide ITS Needs

- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 15 - Increased capacity of the transportation system

Dependent projects/related efforts

- Gateway Traveler Information System/Travel Midwest Website Operations, Maintenance, and Enhancement

Implementation Timeframe

Year 1

Estimated deployment and annual O&M Costs (thousands)

- Deployment: $100K
- Annual O&M Costs: $25K

Fiber Connection Across State Boundaries

Description
High-bandwidth communication links with adjacent state DOTs, e.g. MoDOT is scheduled to be re-established.

Program areas addressed
- Asset Sharing and Control

ITS Solution Categories
- Enhanced Communication Links to Field Devices

Potential Participating Agencies
- Illinois DOT, Neighboring State DOTs

Related Statewide ITS Needs
- 3 - Expanded communications infrastructure network

Dependent projects/related efforts
- Education about ITS

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $100K
- Annual O&M Costs: $25K

Fiber Installation to Support ITS Expansion

Description
Fiber optic cable installation to improve traffic signal coordination and connections with other ITS field devices operated/maintained by IDOT.

Program areas addressed
- Improved Communication

ITS Solution Categories
- Enabling Backbone Communications Infrastructure

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 3 - Expanded communications infrastructure network

Dependent projects/related efforts
- Fiber links between traffic management and law enforcement agencies

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $1,000K
- Annual O&M Costs: $15K

Fiber Links Between Transportation and Law Enforcement

Description
Relates to the installation of fiber between IDOT communications/dispatch centers and nearby law enforcement agencies, e.g., city police and Illinois State Police. The fiber would allow for the sharing of CCTV camera video from IDOT offices with city police and ISP to improve emergency response to traffic incidents.

Program areas addressed
- Interagency Coordination

ITS Solution Categories
- Enhanced Communication Links to Field Devices

Potential Participating Agencies
- Illinois DOT
- Illinois State Patrol

Related Statewide ITS Needs
- 3 - Expanded communications infrastructure network

Dependent projects/related efforts
- CAD Integration with Traffic Management

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $500K
- Annual O&M Costs: $15K

Gateway Traveler Information System/Travel Midwest Website Enhancement

Description
Includes enhancements to existing Gateway Traveler Information System, and could include the display of more ITS field devices in various IDOT Districts, as well as agreements with private data providers that could add traffic detection data and incident information to the system where IDOT does not have communications links to field based ITS devices.

Program areas addressed
- Traveler Information

ITS Solution Categories
- Illinois Statewide Transportation Information Network

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 9 - Stronger partnerships with private industry
- 10 - Improved and expanded traveler information

Dependent projects/related efforts
- None

Implementation Timeframe
Years 1 and 2

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $100K
- Annual O&M Costs: $10K

I-290 Project (IDOT) Integrated Corridor

Description
Reconstruction of I-290 from Jane Byrne to Mannheim. ITS components may include traffic surveillance, traveler information, as well as a managed lane or congestion pricing on a managed lane. Integrated corridor components could also be incorporated along parallel arterial routes. Project is not funded at this time but has been identified in the CMAP ON TO 2050 plan.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Managed Lanes

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 15 - Increased capacity of the transportation system

Dependent projects/related efforts
- IL 64 / IL 56 Smart Arterial Corridors
- Integrated Corridor Management (ICM)

Implementation Timeframe
Years 4 through 6

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $3,000K
- Annual O&M Costs: $50K

I-55 Project Managed Lanes

Description
This project would add managed lanes from I-355 to the Dan Ryan. Because of the wide inside shoulder with full-depth pavement along part of the route, adding managed lanes can be relatively inexpensive, making it the most cost-effective congestion reduction project evaluated. IDOT currently anticipates adding two new lanes to assure travel time reliability.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Managed Lanes

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 15 - Increased capacity of the transportation system

Dependent projects/related efforts
- Fiber links between traffic management and law enforcement agencies

Implementation Timeframe
Years 4 through 6

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $5,000K
- Annual O&M Costs: $100K

IL 64 / IL 56 Smart Arterial Corridors

Description
Relates to IL Highways 64 and 56, which are parallel facilities to the I-290 corridor. ITS technologies, including traffic surveillance, road weather surveillance, communications infrastructure, DMS, incident detection, dynamic lane management and incident management systems would be deployed to support the project.

Program areas addressed
- Integrated Transportation Corridors

ITS Solution Categories
- Managed Lanes

Potential Participating Agencies
- Illinois DOT
- Illinois Truckers Association
- Midwest Truckers Association
- Commercial vehicle operators

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 15 - Increased capacity of the transportation system

Dependent projects/related efforts
- I-290 Project (IDOT) Integrated Corridor
- Integrated Corridor Management (ICM)

Implementation Timeframe
Years 1 through 3

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $2,500K
- Annual O&M Costs: $50K

Integrated Corridor Management (ICM)

Description
Interconnect traffic signals, DMS, CCTV and potential vehicle-to-infrastructure technology communications and other applicable system components to support traffic management along key travel corridors.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Integrated Transportation Corridors

Potential Participating Agencies
- Illinois DOT
- County and Local Transportation Agencies

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 6 - Enhanced incident management programs (includes construction and unplanned incidents)

Dependent projects/related efforts
- IL 64 / IL 56 Smart Arterial Corridors
- I-290 Project (IDOT) Integrated Corridor

Implementation Timeframe
Years 7 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $6,250K
- Annual O&M Costs: $125K

Managed Lanes (IDOT)

Description
Several managed lanes projects have been identified in the CMAP ON TO 2050 plan. IDOT plans to implement managed lanes along several key interstates (i.e., I-55, I-290, I-80) to address traffic congestion. Management could include congestion pricing during periods of heavy congestion.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Managed Lanes

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 15 - Increased capacity of the transportation system

Dependent projects/related efforts
- Smart Arterial Corridors
- Integrated Corridor Management

Implementation Timeframe
Years 7 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $5,000K
- Annual O&M Costs: $100K

Regional Arterial TMC

Description
Development of regional arterial TMC for communicating with ITS equipment operated by counties and municipalities in IDOT District 1.

Program areas addressed
- Traffic Management

ITS Solution Categories
- TMC Interoperability

Potential Participating Agencies
- Illinois DOT
- County and Local Transportation Agencies

Related Statewide ITS Needs
- 1 - Enhanced interagency coordination and data sharing
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 6 - Enhanced incident management programs (includes construction and unplanned incidents)

Dependent projects/related efforts
- Central Signal System Expansion

Implementation Timeframe
Year 5

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $6,000 K
- Annual O&M Costs: $500K

Replacement of Obsolete Field Devices

Description
Replacement of obsolete ITS field devices that serve traffic management, incident management, or traveler information purposes. Includes an ongoing project in District 2 to replace older DMS that were installed in 1999 to provide information to traffic approaching the aging I-74 bridge over the Mississippi River, as well as for traffic on I-80 and I-88.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Localized ITS Warning Systems

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 4 - Additional funding for ITS deployment, operations, and maintenance

Dependent projects/related efforts
- Statewide Deployment of Additional ITS Field Devices

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $2,500K
- Annual O&M Costs: $50K

Smart Highway Deployments

Description
Relates to the use of ITS technologies like traffic surveillance, road weather surveillance, communications infrastructure, DMS, incident detection, dynamic lane management and incident management systems along interstate routes. In particular, corridors like I-94 and US 41, which are parallel facilities. I-94 is operated by the Tollway, while US 41 is operated by IDOT, requiring high levels of cooperation and coordination to implement and operate the project.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Integrated Transportation Corridors

Potential Participating Agencies
- Illinois DOT
- Illinois Truckers Association
- Midwest Truckers Association
- Commercial vehicle operators

Related Statewide ITS Needs
- 1 - Enhanced interagency coordination and data sharing
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies

Dependent projects/related efforts
- Smart Arterial Corridors
- Integrated Corridor Management

Implementation Timeframe
Years 2 through 4

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $7,000K
- Annual O&M Costs: $75K

Smart Work Zones

Description
Smart Work Zone technology can be built into the work zone contract and required of the contractor to provide speed detection for display of actual vehicle speeds in work zones. Other types of applications could also be requested where needed.

Program areas addressed
- Construction and Maintenance

ITS Solution Categories
- Work Zone Enhancements

Potential Participating Agencies
- Illinois DOT
- ISTHA

Related Statewide ITS Needs
- 6 - Enhanced incident management programs (includes construction and unplanned incidents)

Dependent projects/related efforts
- None

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $500K
- Annual O&M Costs: $10K

Statewide Advanced Traffic Management System (ATMS)

Description
Deployment and operation of a central IDOT ATMS to communicate with and control field ITS devices, potentially across IDOT district boundaries.

Program areas addressed
- TMC Interoperability

ITS Solution Categories
- Traffic Management

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 7 - Centralized operations for 24/7 traffic management

Dependent projects/related efforts
- Statewide Communications Center/Station One Upgrade

Implementation Timeframe
Years 3 through 4

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $2,500K
- Annual O&M Costs: $125K

Statewide Communications Center/Station One Upgrade

Description
Upgrades of IDOT's existing emergency radio/phone service, Station One, can be implemented to have it serve as a Central Office Communications Center. Data from a statewide traveler information system would be available for viewing at the center. The center would also be connected with the State Emergency Operations Center (SEOC) to provide transportation information and support in case of emergencies. Additional communication devices can be used to make the Station One system more robust and ensure that it operates at peek effectiveness.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Statewide Communications Center/Station One Upgrade

Potential Participating Agencies
- Illinois DOT

Related Statewide ITS Needs
- 1 - Enhanced interagency coordination and data sharing
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 7 - Centralized operations for 24/7 traffic management

Dependent projects/related efforts
- Statewide Advanced Traffic Management System (ATMS)

Implementation Timeframe
Year 2

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $6,250K
- Annual O&M Costs: $125K

Statewide Deployment of Additional ITS Field Devices

Description
Additional ITS field devices can be deployed to serve traffic management, incident management, or traveler information purposes. Deployment can include Dynamic Message Signs, CCTV cameras, and traffic detection equipment to expand the ITS coverage of existing metro areas.

Program areas addressed
- Traffic Management

ITS Solution Categories
- Localized ITS Warning Systems

Potential Participating Agencies
- Illinois DOT
- ISTHA

Related Statewide ITS Needs
- 2 - Enhanced data collection and monitoring capabilities for traffic management agencies
- 4 - Additional funding for ITS deployment, operations, and maintenance

Dependent projects/related efforts
- Replacement of Obsolete Field Devices

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $2,500K
- Annual O&M Costs: $50K

Traffic Incident Management Training

Description

Establishment of a training program that meets on a regular basis to conduct training, debrief incident response, conduct tabletop exercises, and develop a TIM training plan, e.g., TIMTAC.

Program areas addressed

- Incident Management

ITS Solution Categories

- Statewide ITS Teams

Potential Participating Agencies

- Illinois DOT

Related Statewide ITS Needs

- 6 - Enhanced incident management programs (includes construction and unplanned incidents)
- 11 - Improved safety through use of ITS

Dependent projects/related efforts

- None

Implementation Timeframe

Year 1

Estimated deployment and annual O&M Costs (thousands)

- Deployment: $25K
- Annual O&M Costs: $25K

Traffic Signal Modernization

Description
Ongoing projects to modernize traffic signal controllers in municipalities across the state.

Program areas addressed
- TrafficManagement

ITS Solution Categories
- Traffic Signal System Upgrades

Potential Participating Agencies
- Illinois DOT
- County and Local Transportation Agencies

Related Statewide ITS Needs
- 4 - Additional funding for ITS deployment, operations, and maintenance
- 8 - Preparations for connected vehicles
- 14 - Advanced traffic signal systems

Dependent projects/related efforts
- City of Springfield Traffic Signal Modernization

Implementation Timeframe
Years 1 through 10

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $5,000K
- Annual O&M Costs: $50K

Truck Parking Management Systems (IDOT)

Description
Project is modeled after a MAASTO-led initiative that will install cameras to measure real-time parking commercial vehicle parking space availability at IDOT rest areas and provide that information to truckers through a mobile application. Purpose is to provide truckers with information on where they can park for longer periods to be in compliance with hours of service requirements. Project will also include installation of kiosks at rest areas to provide traveler information.

Program areas addressed
- Commercial Vehicle Operations

ITS Solution Categories
- High Volume Rest Area Truck Parking Management

Potential Participating Agencies
- Illinois DOT
- ISTHA

Related Statewide ITS Needs
- 9 - Stronger partnerships with private industry
- 10 - Improved and expanded traveler information
- 13 - Improved commercial vehicle administration

Dependent projects/related efforts
- None

Implementation Timeframe
Years 1 through 3

Estimated deployment and annual O&M Costs (thousands)
- Deployment: $3,500K
- Annual O&M Costs: $35K