New York

MOVES

Through Intelligent Transportation Systems

*M*obility

*O*perations

*V*ehicular System

*E*nvironment

*S*afety

ITS PROGRAM

STATUS REPORT

June, 2007

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
Eliot Spitzer, Governor   Astrid C. Glynn, Commissioner

Introduction

This report is updated semiannually to inform the Transportation community of the latest status of the various ITS projects that the New York State Department of Transportation (NYSDOT) has undertaken under New York MOVES. For further information or to obtain additional copies, contact the NYSDOT ITS Group by fax at (518) 457-1960, by e-mail at vsteele@dot.state.ny.us or by regular mail at NYSDOT, Vicky Steele, ITS Group, 50 Wolf Road Pod 4-2, Albany NY 12232-0467. This report is also available at www.dot.state.ny.us/traffic/its/moves.pdf.

Regional Programs

Overview: The Department consists of eleven Regions; each Regional office maintains a program of projects and is responsible for the day-to-day operations of the transportation system within that geographic area. The Regions are the primary implementers of Intelligent Transportation Systems.

ITS strategic plans have been completed for the Long Island, Lower Hudson Valley, Albany, Buffalo, New York City, Rochester and Syracuse urban areas. With the completion of the Syracuse study in the summer of 2003, the Department has achieved its objective of having developed ITS strategic plans for each of its Regions that have urban areas included in the top 75 major metropolitan areas of the country. Conceptual Plans have also been developed for the Department's four small urban and rural regions.

The Department, in partnership with local public and private organizations in the transportation sector, developed ITS Architectures for each urban area with substantial ITS deployments. Included in these are a Bi-National Architecture that was developed for the Buffalo Region and a Sub-Regional Architecture that was compiled for the New York City area. The Department plans to begin discussions with the major stakeholders of the published Architectures in order to establish a process for maintaining these Architectures into the future.

Capital Region ITS Program (NYSDOT Region 1; counties of Albany, Columbia, Essex, Greene, Rensselaer, Saratoga, Schenectady, Warren and Washington)

The Capital Region Transportation Management Center (TMC) is staffed full-time (24/7) by both the Department and the NY State Police. It is co-located in the NY State Police Headquarters on the State Office Campus in Albany. It controls 27 detector stations, 30 CCTV television cameras, more than 60 portable and permanent variable message signs and two highway advisory radio stations.

The Region operates a Highway Emergency Local Patrol (HELP) Program to assist motorists, utilizing the jointly-operated DOT / State Police Computer-Aided

Dispatch system that was installed during 2003 in the Lower Hudson Valley. NYSDOT recently partnered with the NYS Thruway to extend the HELP patrols on the Thruway system in the Albany / Schenectady area. The TMC also coordinates lane closure information for road work activities. State Police at the TMC receive wireless 911 calls and data on phase 1 / phase 2 compliant equipment, and dispatch State Police patrols in Albany and Rensselaer Counties.

NYSDOT, the NYS Thruway Authority and TRANSCOM have installed the TRANSMIT system in the Capital District Region. TRANSMIT travel time information is currently being integrated into the TMC's Advanced Traffic Management System to enhance the management of expressway corridors in the Capital District. The integration of TRANSMIT will also allow the agencies to provide motorists and other system users with accurate travel times.

Department personnel assigned to the TMC work cooperatively with State Police, the Thruway Authority Operations Center, local public safety, and transit personnel to preplan and manage traffic for a number of special events in the region each year.

The Region has also worked with Rensselaer Polytechnic Institute (RPI) on a variety of ITS-related projects such as Computer-Aided Dispatch / traffic management software integration, GPS-based route guidance and traveler information, portable TRANSMIT, and ITS educational software.

Utica Region ITS Program (NYSDOT Region 2; counties of Fulton, Hamilton, Herkimer, Madison, Montgomery and Oneida)

The Region is implementing closed loop signal systems on most of the arterial signal systems in the current 5-year program. The Region is also starting to install pedestrian count down signals at high pedestrian conflict locations on some of the state routes. A total of 16 portable Variable Message Signs (VMS) currently supports these efforts, with 10 to 12 new VMS expected.

Two Road Weather Information Systems (RWIS) installations currently exist, with plans to expand throughout the region. One Weigh-In-Motion (WIM) site is installed and in operation for data gathering. The region is gearing up for state-highway arterial camera installation and monitoring in five or six of the largest cities. Portable VMS / semipermanent siting initiatives are in the early planning stage.

The Region is in the process of converting space in an existing Department building to be used for emergency incident command, full-time (24/7) maintenance command and traffic management.

Syracuse Region ITS Program (NYSDOT Region 3: counties of Cayuga, Cortland, Onondaga, Oswego, Seneca and Tompkins)

The Syracuse Region is continuing to progress an overall interstate Freeway Incident Management System (FIMS) in the Syracuse metropolitan area in a phased construction approach. The Syracuse Region is also planning for the extension and expansion of the FIMS system along state routes within Onondaga County and into Cortland and Oswego Counties along the I-81 corridor. With this approach, eight project phases have been progressed or programmed to date. FIMS components include closed-circuit television (CCTV), speed sensors, dynamic message signs (DMS), and a wireless communication system.

Phases I and II are complete. Phase I monitors I-81 from the southern interchange with Route I-481 and continues north through the City of Syracuse to the northern interchange with Route I-481, including access to Carousel Mall (possible future site of DestiNY complex). Phase II monitors I-690 from the Van Vleck Blvd. Exit east through the City of Syracuse to the interchange with I-481. Construction for Phase III is scheduled to begin in 2007 and covers the northern half of I-481 from Route I-690 to Route I-81.

A Transportation Management Center (TMC) has been operating in the Syracuse State Office Building since October, 2004. The TMC is staffed by Department personnel and is operating on a full-time (24/7) basis. The TMC staff will continue with snow and ice operations for Onondaga County, operating the ITS devices in the Syracuse area, and keeping the CARS and SMARTNET databases current. Provisions for a backup TMC are underway at the Region 3 Operations Training Center, which is also the location of the Incident Command Center when the Incident Command System is activated. Building redundancy into the Region 3 ITS network is also included in the designs for the phased FIMS. The Region 3 ITS network is an Internet Protocol (IP) based wireless communication network consisting of both licensed and unlicensed radio frequencies.

Also, a Travel Information Center kiosk has been operational in the Preble Rest Area on I-81 northbound for the past two years. From this kiosk, travelers are able to obtain access to the various websites within the Travel Information Gateway (TIG).

Upstate Medical Center emergency room has been receiving video images from the Region 3 ITS network for over a year. The sharing of highway incident video assists emergency room physicians in preparing for incoming patients. Upstate is the largest of the five Syracuse hospitals and houses a Level 1 Trauma Center. Requested video includes a wireless feed of the overall crash scene showing number of vehicles involved, severity of vehicle damage, and initial Emergency Medical Services (EMS) treatment.

The sharing of video with the Onondaga County 911 Center via a direct fiber connection between the two networks is also underway. The fiber cable is in

place. Next is the acquisition and configuration of various network items such as firewalls, switches, and routers for the existing multicast video streams. The sharing of video with Upstate Medical Center and Onondaga County 911 is a win-win opportunity.

Rochester Region ITS Program (NYSDOT Region 4; counties of Genesee, Livingston, Monroe, Ontario, Orleans, Wayne and Wyoming)

ITS has been a part of the Rochester area transportation network for decades. In years past, ITS consisted of a centrally monitored computerized signal system and the cooperative efforts of emergency response agencies when responding to major incidents on the highway. The signal system not only provided coordination for both county and state owned traffic signals, but it laid the groundwork for cooperative efforts between the two respective Departments of Transportation. Area-wide ITS Strategic Planning efforts culminated in 1996 with several implementation recommendations, many of which have been realized.

We started with a low cost, early win project - - the deployment of mile-marker signs along all expressways in Monroe County. This immediately received favorable feedback from the emergency services community, especially the 911 Center.

A Traffic Operations Center was identified as a basic need with multiple agencies housed in it to share resources and improve communications. We now operate out of the Regional Traffic Operations Center (RTOC).

The need for an early-win corridor was identified. The corridor, NY-104 in the vicinity of the Irondequoit Bay Bridge and the NY-590 interchange, was chosen because of its early success with the Road Weather Information System (RWIS), the needs arising from traffic and weather-related incidents and the ability to provide the motorist with useful information that would make a difference when an incident occurred. The Region constructed a $7 million stand-alone ITS project along this corridor.

We followed this with a $2.3 million dollar deployment on I-490 in and around downtown Rochester, with an eye toward significant use of the system during an upcoming major downtown expressway reconstruction project. The robust Monroe County 911 system and center were chosen as our primary source of incident detection.

The Region has identified that ITS must be mainstreamed into the project development process. We look for ITS opportunities within traditional highway construction projects, where it will be consistent with our strategic plan for deployment, but moreover, where it can help achieve project objectives.

Lastly, where financial constraints restrict ITS deployment but highway reconstruction is taking place, we have incorporated low-cost conduit installation intended to accommodate future ITS. Again, this is done only where consistent with the strategic plan.

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The centerpiece of the Region 4 ITS program is the Regional Traffic Operations Center (RTOC), which is co-located with the Monroe County DOT and the NY State Police. All ITS operations are performed out of this facility, as well as our Central Maintenance Dispatch.

The fundamental tools of our ITS are cameras for incident verification and detection, Dynamic Message Signs (DMS) for communicating with drivers, HELP trucks that assist in clearing incidents, and Highway Advisory Radio for communicating in more detail to drivers. Our Road Weather Information System (RWIS) assists in our monitoring pavement conditions and weather events. The Condition Acquisition and Reporting System (CARS) is the main information conduit through which we inform internal and external customers of ongoing incidents, events or construction and maintenance activities that affect travel in the Region.

The Monroe County 911 Center, the area's single Public Safety Answering Point, has provided the RTOC with a direct radio connection, letting us see their dispatchers' calls in near real time.

Our communication mode is primarily NYSDOT owned fiber optic cable, complimented with leased lines where deemed appropriate.

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It is expected that Region 4 will continue to deploy similar types of equipment to priority corridors, geared toward monitoring travel conditions and getting the word out to drivers both pre-trip via the web and en route. CARS allows us to make highway status information available via the Department web site for wide pre-trip distribution.

Buffalo Region ITS Program (NYSDOT Region 5; counties of Cattaraugus, Chautauqua, Erie and Niagara)

The Buffalo-Niagara region is in the early stages of deployment of its Intelligent Transportation Systems (ITS) program. The New York State Department of Transportation (NYSDOT), New York State Thruway Authority (NYSTA) and Peace Bridge Authority have installed variable message signs, closed circuit television, highway advisory radio, vehicle detection stations and a fiber optic communication system as part of the regional Freeway Traffic Management System (FTMS) on approximately twenty percent of the expressway system in

and around Buffalo.

There are three additional projects planned to extend the FTMS to all of the expressways. The first of these expansion projects is currently under construction. Projects are also being planned to augment the FTMS with additional capability specifically for improved operation of the international trade corridors that cross through western New York and southern Ontario. NYSDOT is working with NYSTA, Ministry of Transportation Ontario, Peace Bridge Authority and Niagara Falls Bridge Commission to develop an infrastructure to monitor and manage border traffic on these routes. The operation of the expressways is being further aided by the use of motorist service patrols. The NYSDOT Highway Emergency Local Patrol (HELP) program is being used on two expressways in the City of Buffalo. The region is planning to expand the program to additional expressway facilities.

The region is developing plans for improving the operation of its arterial highways through the use of closed loop traffic signals. These systems allow the traffic signal operation to be adjusted in real time to changing traffic patterns. The first deployments of this are scheduled to be placed on the arterial highways which serve as diversion routes for expressways during incidents and on the designated evacuation routes for the City of Buffalo. To this end, the region has developed a policy to include empty conduit on facilities that are being reconstructed in order to be ready for the installation of communication systems at a future date. The region is also negotiating an agreement with the City of Buffalo to provide for joint operation of traffic signal systems at the Niagara International Transportation Technology Coalition (NITTEC) Traffic Operations Center.

The region currently has seven Road Weather Information Stations that collect weather and road condition data. These sites are connected to the Traffic Operations Center at NITTEC. As experience is gained with the technology and through collaboration with the National Weather Service, the region expects to improve its response to weather conditions on the highway.

There are initiatives underway to improve the working relationships with police agencies and emergency responders to aid incident management. There is currently a consultant developing an automated electronic data transfer from the police dispatch center to the traffic operations center and vice versa. The NITTEC Incident Management Team has been involved in cooperative planning with emergency service agencies and is planning to develop specific protocols for response on various facilities and for events as well. The region is developing a Traffic Incident Management Policy to establish the Department of Transportation response protocols for these incidents.

Southern Tier West / Hornell Region ITS Program (NYSDOT Region 6; counties of Allegany, Chemung, Schuyler, Steuben, Tioga and Yates)

The Southern Tier West Region is one of the four Regions participating in the Small Urban and Rural ITS Project described below. The Region has also implemented a full-time (24/7) operations center for the Corning area housed in a building owned by the State Police. The Traffic Management Center (TMC) performs a variety of functions including the collection and integration of data for the Department's Condition Acquisition and Reporting System (CARS). The TMC also acts as the statewide TMC and duty officer, assisting in the coordinated response to a variety of emergencies and incidents throughout the state.

North Country/Watertown Region ITS Program (NYSDOT Region 7; counties of Clinton, Franklin, Jefferson, Lewis and St. Lawrence)

The North Country Region is one of the four Regions participating in the Small Urban and Rural ITS Project described below. The Region operates fixed Variable Message Signs (VMS) for roadway information at critical locations (including the Syracuse Region), and during summer 2003 installed an automated anti-icing system (automatically or manually activated) at four critical bridge locations on I-81 just outside of Watertown. The region also has Road Weather Information System (RWIS) equipment at various locations in the Region to monitor road conditions for snow and ice operations.

In addition, a fog warning system was installed in the summer of 2003 on two bridges which carry I-81 over the Black River. This installation included warning signs with flashing beacons, guidance lighting along the bridge railing system, and six CCTV cameras. This equipment allows the Region to automatically detect fog conditions at these bridges and to alert motorists on I-81 that they will encounter heavy localized fog at these northbound and southbound bridge crossings. Guidance lighting installed on top of the bridge railings will provide motorists with a longitudinal visual target to guide them across these bridges during heavy fog episodes.

The Region also has installed CCTV cameras to provide surveillance capability on the I-87 and I-81 Canadian border approaches (Provinces of Quebec and Ontario), to monitor queuing at the respective Customs facilities which has increased due to additional security measures instituted after September 11, 2001. The initial installation of two CCTV cameras was made on I-87 at Champlain, New York, in May 2002, with viewing capability at various State Police facilities, DOT facilities, United States Customs, and will also be provided to Canadian Customs when requested.

In addition to the CCTV cameras at this location, the Region also installed two queue detection trailers June 2003, to automatically identify traffic backups at the Champlain border crossing. This equipment detects traffic backups at the border crossing and automatically activates Portable Variable Message Signs located

further south on I-87. This gives the Department the ability to alert motorists approaching this border crossing that they should be prepared to stop sooner than expected due to traffic backups further north. It also gives motorists the option of exiting I-87 to use alternate routes to travel to Canada.

The Region installed similar CCTV cameras and queue detection trailers at the I-81 border crossing to Canada (Province of Ontario) at Wellesley Island, New York. Two CCTV cameras were installed November 2002, and two queue detection trailers and associated Portable Variable Message Signs were installed June 2003.

The Region is in the process of replacing the limited equipment on I-87 at the Champlain Border Crossing. The new system is being designed to include updated detectors and cameras with permanent Variable Message Boards. The new equipment will allow for more accurate information to be received and disseminated and will allow delay times to be listed for motorists.

This effort is being coordinated with the Region 1 ITS Group and the Region 1 TMC. This project should be implemented in 2007 and is expected to help considerably with the I-87 Port of Entry project, which is rebuilding the U. S. Customs facilities.

The Region is progressing a contract at the I-81 Canadian Border Crossing, which will be built in 2008, that includes the placement of electronic overhead information signs. These accommodations are to reduce the driver confusion and delays at the Thousand Island US customs facility.

Hudson Valley/Poughkeepsie Region ITS Program (NYSDOT Region 8; counties of Dutchess, Orange, Putnam, Rockland, Ulster and Westchester)

The focus of the program is the Hudson Valley Transportation Management Center (HVTMC), a 60,000 square foot facility dedicated to Incident and Traffic Management based on interagency cooperation and coordination. The HVTMC has been fully operational since October 2004. The New York State Department of Transportation (NYSDOT) and the New York State Police (NYSP) work together in the HVTMC, where they are both co-managers of the facility. The HVTMC provides full-time operation (24 hours per day, 7 days per week).

Hudson Valley Traveler is the name of our Automated Traffic Management System (ATMS). The Hudson Valley Traveler software is integrated with several other regional systems, promoting a cohesive system of traffic and incident management within the region.

The Highway Emergency Local Patrol (HELP) minimizes motorist delay and increases safety by offering disabled vehicles free emergency road service during morning and evening peak travel periods. HELP provides disabled motorists with a push off the traveled way, a flat tire change, jump starts,

gasoline, coolant, and some minor repairs. Hudson Valley HELP is one of the largest service patrols in the nation. The program has expanded to cover 210 centerline miles of road including I-95, I-287 from I-95 across the Tappan Zee Bridge to the Garden State Parkway, and the Taconic State Parkway as far north as Route 55 in Poughkeepsie. The program is slated to expand north, up the New York State Thruway and along the newly-designated Interstate 86 (formerly NY-17) to the intersection of I-84, across the Newburgh-Beacon Bridge, and follow I-84 east to the Connecticut state line.

The HELP program has implemented a Computer Aided Dispatch (CAD) system to improve coordination. The HELP trucks use the New York State Police vehicle tracking system (Automatic Vehicle Location system, or AVL) to compliment the dispatching and management of the HELP program and integrates it with normal Police functions. HVTMC has developed a CAD to ATMS interface, that allows traffic and/or incident related information to flow between the Computer Aided Dispatch System and the Hudson Valley Traveler central software.

The Region is pursuing many initiatives that will promote better traffic flows, better interagency coordination and better incident response and management, including:

- Establishing an integrated, inter-operational coordinated signal system on arterial roadways paralleling Interstate Highways;
- Sharing traffic flow information, incident information, video and ITS equipment joint control between Westchester County and the HVTMC;
- Installing an Ethernet based fiber optic communications system between three NYSDOT regions, R-10, R-11 and R-8, and between the NYSDOT and the NYSTA, designed to provide redundant data feeds to both the HVTMC and to the NYSTA. This communication system will also complete communications between the NYSDOT / NYSTA and the NYSBA, allowing the sharing and coordination of traffic conditions, incident management and ITS related activities between these three Agencies in the Lower and Mid Hudson Valley;
- Creating a CARS to ATMS interface to allow incident related information to flow between the ITS Central Software (Hudson Valley Traveler), and the State's Information Exchange Network, thereby reducing the time needed to input information into various information systems;
- Developing a CAD to CAD system whereby several different agencies that use a CAD system to dispatch can interact and exchange information. Using the recently developed CAD to ATMS interface, the ITS Central Software (Hudson Valley Traveler) will capture this information flow between and among the various diverse CAD dispatchers;
- Developing an Integrated Regional Transit Data Base to coordinate travel in the NY Metropolitan Area;
- Creating partnerships for deployment of necessary ITS equipment with the NYS Bridge Authority, NYS Thruway Authority and others;
- Coordinating with TRANSCOM to deploy TRANSMIT (toll tag reader)

detection on area roadways, and with the Massachusetts Institute of Technology (MIT) ITS Lab to develop predictive models based on real time traffic flows;

- Coordinating with the State Emergency Management Office (SEMO) and other emergency managers for better and more accurate information transfer;
- Upgrading the ITS Regional Architecture once per year;
- Integrating field equipment maintenance into the systems operation functions at the Center;
- Continued development of the Traveler software to enhance operator use and interaction with the software, including the integration of data collection to support performance measures, and
- Development of performance measures, such as equipment operation and incident clearance time reduction, to support the planning and strategy efforts at the Center.

The Region believes that the HVTMC will provide the central leadership platform from which many more advances and improvements can grow, leading to safer roadways and improved traffic conditions for all travelers.

Long Island ITS Program (NYSDOT Region 10; counties of Nassau and Suffolk)

NYSDOT's Long Island Region utilizes state-of-the-art technology to operate its traffic management and information systems on Long Island. This system, known as INFORM (Information for Motorists), has been operational since 1987. The strategy is part of a coordinated plan with the Hudson Valley and New York City Regions to achieve a seamless and fully integrated transportation management system. The system includes traffic management on limited access highways (freeways), HELP (Highway Emergency Local Patrol) teams and traffic management on arterials.

A new Transportation Management Center (TMC) is currently under construction. It has been designed to incorporate the full build out of ITS systems as described in the Region's Strategic Plan and to act as the Region's Emergency Management Facility. The new TMC is scheduled to begin operations in 2007.

INFORM is currently being expanded to include Long Island's Southern corridor. Construction has been completed from the NYC line to Sagtikos Parkway in Western Suffolk. The overall System actually involved a series of inter-related ITS projects. The projects, when taken together, involved over 60 miles of freeway and parallel / connecting arterials. Through these projects the Region will demonstrate and evaluate a variety of new ITS technologies, as well as new strategies and systems for improved area-wide transportation management and traveler information. Key elements of the project are summarized as follows:

-Incorporation of survivable system design and field device technologies;

-Demonstration of new hardware concepts including use of the Model 2070 controller as a standard field platform;

-System design and implementation based on open systems including National Transportation Communications for ITS Protocol (NTCIP) protocols, and compatibility with NYSDOT systems in New York City and the Lower Hudson Valley, as well as TRANSCOM and the I-95 Corridor Coalition;

-Improved real-time area-wide traveler information including establishment of an area-wide travel information network database; and

-Improvements in TMC operation and maintenance.

This corridor was fully on-line by October of 2006 and represents an investment of approximately $44 million.

Construction has begun on the Meadowbrook Parkway Corridor. This project will add 13 centerline miles of roadway to the INFORM System. It is expected to be on-line by late 2007.

Design has begun on the Wantagh Parkway Corridor. This project will add 14 centerline miles of roadway to the INFORM System. Construction is expected to begin by fall of 2008.

Additional projects for system expansion and the upgrade of the Legacy systems are contained in the Region's near and long range plans. The full build out of Long Island's ITS systems will require the instrumentation of an additional 160 centerline miles of roadway. This will bring the total upon completion to approximately 340 centerline miles.

New York City ITS Program (NYSDOT Region 11; counties of Bronx, Kings, New York, Queens and Richmond)

The NYSDOT Region 11 Office presently operates a Joint Traffic Operations Center (JTOC) in close working relationship with partner agencies including the New York City Department of Transportation (NYCDOT) and New York City Police Department (NYPD). JTOC is used to control ITS systems on several limited access state highways within NYC. The JTOC currently controls ITS systems on some of the most congested Interstate corridors in NYC including the Cross Bronx Expressway (I-95) Corridor, the Van Wyck and Whitestone Expressways (I-678) Corridor, the Gowanus and Prospect Expressways (I-278) Corridor and the Long Island Expressway (I-495) Corridor. The JTOC is currently operated full-time (7 days a week, 24 hours a day).

A new Joint Traffic Management Center (JTMC) program (consisting of 5 construction projects), which will increase the work area from 1,600 square feet to 12,000 square feet, were let in March 2003 and is expected to be completed by early 2008. A Memorandum of Understanding between the State and City for general ITS operations considerations has been executed.

In addition to the above State systems, other ITS programs implemented by TRANSCOM, such as TRANSMIT, IRVN and the Regional Architecture, have workstations installed at the JTOC which can access the systems. Another program is the "Integrated Incident Management System" (IIMS) designed to assist with traffic incidents throughout the region. Also, the State's Highway Emergency Local Patrol (HELP) Program, which involves the State contracting the services of NYPD to provide freeway service patrols on selected NYC highways, is administered at the JTOC.

Over the past several years, the Region has aggressively advanced the implementation of the ITS program. Construction of three of the five sub-regional systems is presently ongoing with early development of the remaining two underway. As portions of the ATMS are built, they will either be added to the JTOC operations (if completed within the next two years) or the JTMC operations (for those that are completed after two years). The following is an overview of the status of each sub-regional system:

Bronx and Manhattan: Construction of the Bruckner Expressway ITS was completed in early 2007 and the ATMS system is operational. Construction on the Major Deegan Expressway ITS was started in January 2004. The construction of the Cross Bronx Expressway ITS project started in May 2005. Both the Major Deegan Expressway and the Cross Bronx Expressway ITS projects are expected to be completed by late 2007. The Parkway ITS project will start in late 2007.

Western Queens: The upper Van Wyck Expressway ITS project was completed in March 2005. Construction of the Grand Central Parkway ITS project was completed in early 2007 and the ATMS is operational. The Brooklyn Queens Expressway ITS project started construction in January 2004 and is now expected to be completed in late 2007. The Long Island Expressway ITS project started in April 2005 and is expected to last at least two years.

Staten Island: A project to install five overhead VMSs on the Staten Island Expressway (SIE) is completed. These signs will be operated from the JTOC. Another project to install additional VMSs and a CCTV surveillance system on the SIE began in early 2003 and is now complete. The remaining project to complete the ATMS in Staten Island began in early 2004 and is now complete and operational.

Staten Island Travel Time Signs: The proposed two ground mounted travel time signs along the Staten Island Expressway (I-278, both bound) are under active construction. The system will use the Transmit data to provide the travel time to the motorist. The system is expected to start sometime in mid June 2007.

Brooklyn: Early development of the comprehensive ATMS project is underway. Preliminary Design (Design Phases I-IV) started in October 2003 and was completed in late 2006. Detail Design is now progressing, and Construction is expected to begin in 2008.

Eastern Queens: Early development of the comprehensive ATMS project is underway. Preliminary Design (Design Phases I-IV) started in October 2003 and was completed in late 2006. Detail Design is now progressing, and Construction is expected to begin in 2008.

Multi-Regional Programs

TRANSCOM

TRANSCOM is an eighteen agency consortium for coordination of construction and traffic management in the NYC metropolitan area of NY, NJ and CT. As a member of TRANSCOM, NYSDOT is participating in a number of regional ITS deployment projects.

ITS Model Deployment (TRIPS 1 2 3) is a project with four main elements:

1. Establish a link to the TRANSCOM Regional Architecture as the source of consolidated, multi-modal traveler information;

2. Implement a dial-in telephone system that will provide basic traveler information to the public for free;

3. Implement a fee-based personalized traveler information service that will deliver personalized traveler information to the public at home, en-route and at work via a variety of mechanisms such as telephone, pagers, and personal computers; and

4. Implement a Transit Itinerary Planning System (TRIPS) that will provide the public access to a regional system to plan their most direct and convenient transit route.

The project's public / private partnership vision includes the sharing of revenue in a manner that will build a self-sufficient traveler information business. The full range of features of the Model Deployment may be accessed at www.trips123.com.

TRANSMIT is a system that uses the EZ-Pass electronic toll collection tags as probes for traffic planning, monitoring and management. A TRANSMIT Phase 2 expansion is adding approximately 200 miles of coverage in NY and NJ.

Service Area Travelers Interactive Network (SATIN) is a project that will install a network of inter-active traveler information kiosks at service areas, truck stops and transit centers.

Interagency Remote Video Network (IRVN) is a project that has established a network through which member agencies are able to share video feeds from their various traffic surveillance cameras, facilitating regional traffic and transit management. When fully operational, the planned system design will link about 380 cameras from different agencies.

Regional Architecture (RA) is a project that builds upon existing TRANSCOM agency information connections and the I-95 Corridor Coalition Information Exchange Network (IEN) to establish a robust, multi-modal inter-agency RA that provides automated information flow for regional coordination of traffic management, traveler information and other coalition functions. The RA is a major source of traveler information data for the TRIPS 1 2 3 Model Deployment project. The NYSDOT State Transportation Information Coordination Center (STICC) uses its RA terminal to coordinate multi-county incidents.

Niagara International Transportation Technology Coalition (NITTEC)

The Niagara International Transportation Technology Coalition (NITTEC) is a consortium of 14 regional transportation system owners from the US and Canada who have joined together in a cooperative effort to improve transportation reliability and mobility in Western New York State and Southern Ontario. NITTEC manages traffic and transportation operations in the region through the coalition's multi-agency operation center located in Buffalo. NITTEC has full-time (24/7) operations, and supports technology deployment, standards development, incident management and information dissemination on behalf of its members and regional stakeholders.

Using a $5 million grant from the Federal Highway Administration as a base, NITTEC manages a Revolving Loan Fund (RLF) which is designed to expedite the implementation of ITS, operations and incident management programs in the region. The Niagara Frontier Transportation Authority (NFTA) serves as host to NITTEC and for the RLF. The New York State Thruway Authority used the RLF to expand the coverage of their system with ITS field elements integrated into the regional system. The City of Buffalo is using the RLF to build a central controlled signal system which will be operated at the coalition's Traffic Operations Center. These systems, as well as other initiatives like CAD to ATMS integration, web-based traveler information and cross border sharing are being used for local traffic management purposes. They also provide traveler information concerning international border crossings, regional construction and weather events.

Information Exchange Network (IEN) - CARS System

The Department established the Information Exchange Network as the core system to facilitate the collection and sharing of real-time data on the New York State highway and transportation network. NYSDOT works with its transportation partners to provide status information related to incidents and events on state roadways, such as accidents, maintenance and construction work zones, and disruptive weather conditions.

The Department and its partners have direct access to the statewide IEN system and supply data to the network via interfaces with their traffic management systems, or through the entry of information by operating staff using their individual computer work stations. The IEN has proven to be a valuable source of real-time information to transportation operating personnel statewide. It will continue to grow in its utility as the Department adds new capabilities to it (including an increased ability to incorporate multi-modal data) and develops interfaces to connect directly the IEN with additional traffic management and information systems.

The IEN is the principal source of real-time information to the Department's travel information website < http://www.travelinfony.com/ >. The Department developed this site to be a comprehensive source of static and real-time information about the state's multi-modal transportation system. The Department anticipates that as additional operational data becomes available through growth and expansion of the IEN, the information available on the travelinfony.com site will be enhanced and more useful.

Integrated Incident Management System (IIMS)

The early deployment of this project has shown that this system improves incident management and emergency response by enhancing communication of critical incident data among incident management and emergency response personnel, both on-scene and at multi-modal communications and operations centers. Real time incident data (including photographs, digital images, location descriptions on aerial photos, and responder information) can be collected, transmitted and stored for analysis.

Federal funding was made available which allowed additional incident response agencies, police vehicles and dispatch facilities within the field test area to become integrated with the system. It also supports USDOT's Standards Evaluation and Outreach efforts to: (1) deploy the current Common Incident Message Sets for use by Emergency Centers and design, develop and deploy new message sets for use by emergency response centers and vehicles; and (2) provide outreach to the public safety community including demonstrating the IIMS system at various workshops and conferences.

The current deployment involves NYPD vehicles and NYCDOT Emergency Response vehicles. Near term equipment deployment will add other NYC agencies (Sanitation, Environmental Protection, Eire / EMS, Transit, Emergency Management) and additional dispatch facilities, as well as twenty-three more vehicles. The system software currently captures images and other critical incident data such as location and aerial photos, through the use of Geographic Information Systems (GIS) and Automatic Vehicle Location (AVL).

Small Urban and Rural ITS

ITS Strategic Plans for the four rural Regions served by the Utica, Southern Tier West, North Country and Southern Tier East Regional offices were developed, and a Rural ITS "Toolbox" was developed. The "Toolbox" can be found at www.dot.state.ny.us/traffic/its/mov_toolbox.pdf on the Department's web site. The Rural Strategic Plan's draft final report has been reviewed, with small urban and rural architectures at a project level to be developed (see Regional Strategic Plans). ITS Architectures for several small urban areas were developed through this initiative.

Multi-Modal Programs

NY Metro Regional Schedule Data Profile Project

New York State Department of Transportation is leading this effort to provide an efficient, standards-based, framework to assist the public transit providers in the Downstate region with managing and exchanging schedule data. The project is designed to facilitate the exchange of schedule data among the agencies and to improve the communication of schedule information to the public. The effort is focused on collaboratively defining a framework, as well as tools for data development, conversion and exchange, to support regional multi-agency initiatives that use schedule data, including TRIPS123. The project is intended to support transit agency requirements for managing the definition, organization and exchange of schedule data.

The Schedule Data Profile will use industry standards, best practices, and software tools such as XML to describe and exchange transit schedule data in a standardized manner. In addition, the project will demonstrate a framework for managing and exchanging schedule data through the deployment of a prototype Transit Schedule Data Exchange Architecture.

The total project has a budget of approximately $1.2 million.

Commercial Vehicle Operations (CVO)

NYSDOT is a member of the New York State Interagency Motor Carrier Task Force which deals with all aspects of commercial vehicle regulation,

credentialing, compliance and enforcement. The task force also includes representatives from the state Departments of Motor Vehicles, Taxation and Finance, the Division of State Police, the NYS Thruway Authority and the New York State Motor Truck Association.

One of NYSDOT's key commercial vehicle responsibilities is managing and directing the Commercial Vehicle Information System and Networks program (CVISN). The CVISN program incorporates a variety of commercial vehicle related programs including New York State's highly successful e-credentialing OSCAR (One Stop Credentialing and Registration) website which allows customers to use the internet to apply for approximately 85% of the required credentials needed to operate a commercial vehicle in New York State. The credentials available include registrations (IRP), fuel tax permits (IFTA), single state registrations (SSRS) and highway user tax (HUT) credentials.

As part of the CVISN program, NYSDOT is managing a project to research and develop an automated roadside electronic screening system for commercial vehicles. The E-Screening Project will integrate and test automated vehicle identification, via 915 MHz transponders or license plates, and vehicle weigh-in-motion (WIM) devices at highway speeds. Once identified and weighed, a commercial vehicle's credentials will be instantaneously checked against the definitive, authoritative database developed by the Interagency Task to determine whether or not the vehicle is in compliance. If the vehicle meets all the screened requirements, it will not be stopped at the roadside inspection area.

The second phase of the E-Screening R & D Project has been started. The initial phase demonstrated the ability of the system's technology to identify a vehicle via solar powered mobile transponder readers, provide wireless communication with the CVISN database, check credentials, and transmit to the vehicle cab either a green light (authorized to bypass inspection area) or red light (must stop at inspection area). The second phase of the project focuses on the total integration of WIMs and license plate readers (LPR) with video recognition capabilities into the core system developed under Phase I.

In summer 2007, three different WIM technologies - - Piezo electric, Piezo quartz and single load cell - - will be installed along westbound I-90 in Schodack, NY, under a repaving project scheduled for letting in May, 2007. This site will be continuously monitored for WIM, pavement and LPR performance and the devices will be evaluated based on a statistical and engineering based evaluation process developed by NYSDOT's Research Bureau. It is anticipated that a comprehensive, fully integrated commercial vehicle electronic screening system will be designed, developed, tested and ready for operational deployment by the summer of 2008. The fully developed system will be installed in the new dedicated commercial vehicle inspection facility at the Champlain, NY, international border. This facility is presently under design.

NYSDOT is also part of a team headed by the New York State Energy Research and Development Authority (NYSERDA) that is progressing a research project with Calmar Telematics to develop a commercial vehicle communications system which will attempt to determine and/or predict real-time highway and traffic conditions along a given highway using telematics information from commercial vehicles. This first phase of this project was begun in April 2006, and is scheduled for completion in 2007.

A second phase is being negotiated that will use the information and systems developed under Phase 1 and apply the data to specific locations such as the international border at Champlain, New York. Visualization and performance measurement tools for real-time highway traffic operations will also be developed under this effort. Additionally, an idea for developing and testing an instrumented traffic cone with real-time GPS-based location data and speed monitoring capabilities would also be pursued.

NYSDOT is also partnering with the NYSTA, NYS Bridge Authority, I-95 Corridor Coalition and the Commercial Vehicle Safety Alliance (CVSA) to develop and test the software and hardware needed to integrate commercial vehicles into the ongoing USDOT Vehicle Infrastructure Integration (VII) program. To date, the national VII effort has focused primarily on passenger vehicles and has not included commercial or transit vehicles into the VII development efforts. NYSDOT is working with the NYSTA to deploy a 13 mile VII capable corridor along the Thruway's I-87 corridor from Suffern to the Tappan Zee Bridge. In addition, wireless transmission of key data to the roadside from the vehicle at mainline speeds will be tested including driver identification, driver verification through TWIC and biometrics and vehicle safety information such as brake status and tire pressure. It is anticipated that development and testing activities will be completed during the fall, 2008.

Road Weather Information Systems (RWIS)

NYSDOT has contracted with the New York State Technology Enterprise Corporation (NYSTEC) to assist with the development of a long range plan for utilizing RWIS technology. It is expected that they will help produce a Request for Proposals (RFP) by late fall 2007 aimed at hiring a contractor to design, construct and operate a statewide RWIS. A steering committee comprised of members from NYSDOT, the NYS Thruway Authority and the NYS Bridge Authority has been overseeing these efforts. Key components of the envisioned system are the leveraging of existing infrastructure sites with power and/or communications and the ability to efficiently share data with outside entities (e.g. the National Weather Service).

Aurora

NYSDOT continues to participate in Aurora, a consortium that brings together a number of public agencies from the United States, Canada and Europe. It is a program of collaborative research, development and deployment in the field of road and weather information systems (RWIS). When Aurora was formed in 1996, its goals included providing or improving the dissemination of RWIS information to transportation providers and users; improving the efficiency of maintenance operations, particularly winter maintenance; reducing congestion or delays that are caused by adverse weather-related conditions; working to develop seamless maintenance operations and information dissemination RWIS programs; and, assisting public agencies in deploying road and weather information systems technologies. In the last ten years, much has been learned from Aurora's collaborative research projects. For additional information about Aurora and sponsored projects, go to website: www.aurora-program.org.

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Automatic Vehicle Locator (AVL) and Maintenance Decision Support System (MDSS):

During the winter of 2006/2007, we conducted a pilot for AVL in Region 1 in Albany County. Sixteen trucks at the Latham shop and one truck from Voorheesville were outfitted with AVL equipment from Ameritrak, based out of Minneapolis, MN. In addition to transmitting vehicle location and speed, Ameritrak was able to create an interface with the DickeyJohn spreader controls to transmit material application rates. Also, plow up / plow down sensors had been installed with data being transmitted. Reports were created though the Ameritrak website where managers can select date, time, truck ID, etc.

During the winter of 2007/2008, we will expand the pilot to continue service with the Albany County trucks and with approximately 20 trucks based out of Allegany County in Region 6. The AVL features for Region 6 will be the same as in Region 1. The data collected through AVL will be incorporated into the Maintenance Decision Support System (MDSS) supplied by Meridian Environmental Technology. The MDSS will evaluate route-specific data from the trucks (plowing, spreading rates, location, etc) and make continually updated recommendations regarding treatment of the highways during winter storms.

To further our evaluation of MDSS and to provide input into its continued development, NYSDOT has joined Pooled Fund Study TPF-5(054). Participating states include California, Colorado, Indiana, Iowa, Kansas, Minnesota, New Hampshire, North Dakota, South Dakota and Wyoming.

Kiosks

The demand for the New York State Transportation Federation's Travel Information Gateway (www.travelinfony.com/tig/) and Trips 1 2 3

(www.trips123.com) shows how valuable the data routinely collected and used by NYSDOT and other transportation system operators is to personal and business travel planning. In an effort to make traveler information more available to travelers, NYSDOT is a partner in providing three kiosks (one indoor and two outdoor) at two large public hospitals in Brooklyn and one kiosk in a rest area on I-81 northbound in the Town of Preble (Cortland County). Individuals can use the kiosk at no charge to learn travel information or to find their way from place to place. The kiosks can also prominently display urgent information such as Amber Alerts. Additional kiosk locations are being considered at major rest areas throughout the state.

Statewide

HELP - Incident Management Patrol Program

As a successful part of the Department's freeway incident management program, the Highway Emergency Local Patrol (HELP) program minimizes motorist delay and increases safety by offering disabled vehicles free emergency road service during morning and evening peak travel periods. HELP provides disabled motorists with a push off the traveled way, a flat tire change, jump starts, gasoline, coolant, and some minor repairs. This motorist assistance is currently provided on limited access roadways on Long Island, in New York City, the Lower Hudson Valley, Buffalo, Rochester, and the Albany Capital District by over 70 service vehicles. Over 64,000 stops were made in the last annual reporting period on the 450+ centerline miles of roadway covered by HELP.

Each year the HELP program saves motorist millions of hours of vehicle delay, in addition to decreasing vehicle emissions, reducing the likelihood of accidents to all vehicles, and providing an increased sense of security to those motorists and passengers of the disabled vehicles serviced. Ninety percent of peak hour incidents are handled by the HELP patrols, thus freeing up law enforcement patrols for other roadway duties. Previous studies of the HELP program found that non-recurring vehicle hours of delay are reduced by up to 32 percent, which equates to an average benefit/cost ratio of greater than 8 to 1.

The Department published a "HELP Program Status Report" in October, 2002, which is available on the Internet at www.dot.state.ny.us/traffic/its/help.pdf.

Highway Data Services

During the development of the Region 1 ITS system in Albany, many existing traffic monitoring loop sites along the Capital District highways were converted to ITS loop sites. This included the entire length of I-787, the NYSDOT portion of I-90, NY-7 and I-87 from Western Avenue to Saratoga Springs. Initially only provisions to extract short count volume data (typically 72-hour duration) produced by these sites from the TMC database were made by the contractor.

Continuous Count (CC) capability was developed through further coordination between the Highway Data Services Bureau and Region 1 Traffic. Software written by the Region 1 TMC can extract count data from the TMC database in the same format produced by the Statewide Traffic Monitoring System's Automatic Traffic Recorders (ATRs). The files can then be processed using the same polling software used to process data produced by other CC sites.

During the development of the Region 6 ITS system in Corning, a sub-system was developed for data archiving. Interfaces exist at certain sites to link the ITS vendor's equipment with ATRs belonging to the Highway Data Services Bureau. Data is being continuously collected 24 hours a day at these sites to be accessed by both the Main Office Highway Data Services Bureau and Region 6 Data Services Group. At other locations, data can be accessed as 72 hour counts produced by the vendor's software for the short count program.

Recent Traffic Monitoring and ITS Integration Successes: Coordination has been conducted with the NITTEC Traffic Operations Center that paves the way for production of volume, speed and classification data by their system in the formats required by the Highway Data Services Bureau. NITTEC will also work with a consultant to develop a piezoelectric axle detector interface for their Advanced Traffic Controllers installed at existing and planned ITS sites that will produce accurate classification data on high volume, multi-lane facilities.

The Highway Data Services Bureau is currently working with the Hudson Valley Transportation Management Center to ensure that sites in the HVTMC system also produce data formats required by the Bureau. HVTMC is using the same acoustic sensors used with success in the Corning ITS system and the Highway Data Services Bureau. The HVTMC will also be integrating Bureau supplied hardware into other sites, similar to what was also accomplished in Corning, with the same intended results.

Opportunities for Further Integration: There are several approaches that will enable further integration between the traffic monitoring and ITS communities that will produce a more robust data set while reducing costly duplication of efforts. As illustrated previously, these approaches have been tested on a small scale with proven results. The possible approaches are:

1) Expand use of the Information Exchange Network to capture real-time data and archive the data in a format that can be manipulated to allow for analyzing the impact of incidents, events, and their corresponding responses.

2) Modify ITS software to produce and archive data in formats required by the NYSDOT Statewide Traffic Monitoring System.

3) Install additional hardware at ITS sites that will produce and enable access to the aforementioned data.

4) Establish a mechanism for coordination between Regional TMCs, Regional Planning and the Main Office Highway Data Services Bureau to conduct investigations of tentatively located sites for inclusion in the ITS system in a dual role as traffic monitoring sites.

Travel Information

The Department is undertaking a series of tasks to help bring current travel information to the public. The Department's statewide ITS consultant is assisting in this work, which will rely heavily on travel information available from New York's statewide Information Exchange Network (IEN).

Internet Web Pages: The Department has prepared an Internet website - the **Travel Information Gateway** (or **TIG**) - designed to provide the public with near real-time traffic and travel condition information about New York State's highway system. The TIG website also contains links to travel information regarding other transportation modes, facilities, and related services in New York and surrounding states. The site was designed with the assistance of the NYS Transportation Federation members; it can be reached at www.travelinfony.com. The real-time highway operating condition information comes from the statewide Information Exchange Network (IEN), while road weather information is provided by field crews of the NYS Transportation Federation.

The Department is working to expand the depth and breadth of information presented on the travel information website. This will include traffic camera video images and traffic speed maps for the state's major urban areas.

511: In 2000 the Federal Communications Commission (FCC) designated **511** as the nationwide telephone number for accessing traveler information. The right to use 511 for disseminating travel information was limited to government transportation agencies; however, adoption and use of 511 is not mandated by the FCC.

With the assistance of its statewide ITS consultant, the Department is examining the issues associated with its possible participation in 511 at three levels of involvement: as a supplier of travel information to a 511 system; as the owner or manager of a 511 system for New York State; and as the organization with administrative authority over all 511 services in the state. In addition, the Department will be working with other interested stakeholders to identify and evaluate alternate funding mechanisms for supporting a 511 service for New York. The results of these investigations will be summarized in a 511 "white paper" prepared to assist executive leadership in deciding the Department's next steps regarding 511. The Department has received early drafts of this white paper and is working with the consultant on its refinement.

The Department has secured and applied federal assistance moneys to help fund this 511 planning work.

ITS Borders and Corridors Projects.

Under the TEA-21 Corridors and Borders Programs (Sections 1118 and 1119), NYSDOT received funds for various ITS projects. Projects under way include:

- **International Border Crossings and Priority Corridors Strategic Plan** – The purpose of the plan is to identify intelligent transportation system (ITS) applications that will facilitate the multimodal flow of goods and people through New York's international border crossings and along approach corridors. This plan is a subpart of the broader Statewide ITS Strategic Plan effort, which is to bring a more effective, efficient and systematic means of implementing ITS within the State. The final plan will discuss the current status of ITS at the crossings and on corridors (including what improvements are already planned), the issues with how ITS is currently implemented, and make recommendations concerning what needs to change to make ITS implementations at border crossings and on corridors more effective.

   To develop the Plan, a series of outreach activities was undertaken, which included interviews with NYSDOT management, Canadian transportation officials, customs officials, and bridge operators (among others). Workshops with ITS-related employees of NYSDOT and other Federation agencies were also held. To date, a preliminary draft has been prepared by Gardner Engineering of New York (Siemens ITS). Gardner and NYSDOT are working to prepare another, more complete draft before disseminating it for broader review.

- **Lewiston-Queenston Bridge Early Warning System** - The Department is progressing deployment of a Freeway Traffic Management System (FTMS) along I-190 in the vicinity of the Lewiston-Queenston Bridge to provide queue-end warning and traveler information.

   The objective of this effort has five parts:

   a. Monitor conditions and warn the motorists of changing conditions;
   b. Provide alternative route directions and/or provide real time information on the expected delay;
   c. Monitor and record real time travel demand on the approaches to the crossing by time of day and day of week to assist the U.S. and Canadian Enforcement Agencies in determining appropriate staff levels to minimize the impacts on motorists (safety and delay);
   d. Build upon, supplement, and integrate a similar early warning system being installed on the Canadian Highway 405 approach to this crossing by the Ministry of Transportation, Ontario; and
   e. Connect and share real time information with the regional transportation technology network, Niagara International

Transportation Technology Coalition (NITTEC).

A <u>Scope Summary Memorandum / Final Design Report</u> was completed and transmitted to FHWA for design approval. Comments are still being resolved and design approval was expected by end of year.

Parsons Transportation Group is the designated design consultant for this project. Contract negotiations will begin after a Scope of Services, currently under development, is finalized and design approval is granted. An initial Scope of Services meeting between the Region, CMB, Contract Management, Audit Bureau and the consultant was held on August 24, 2006.

This project is currently on schedule to meet a mid-2007 letting date. Construction costs are estimated at $4.5 million.

- **I-87 Multimodal Corridor Study** - The goal of the study is to identify and assess initiatives and opportunities to improve transportation services for all users of the corridor, thereby providing an opportunity for the corridor and surrounding regions to realize the economic potential resulting from changing global and national economic forces and trends. A strategic plan is being created to identify actions for effectively and efficiently meeting the long-term needs of the corridor and its major travel markets. One general recommendation is to position I-87 as a "Smart Corridor" by using current and emerging ITS technologies to help meet these needs. A number of project concepts have been considered. A project is being advanced to address border crossing safety and information needs. The Final Report for the I-87 Multimodal Corridor Study was completed, and has been released. The Office of Corridor Management is coordinating with the Operations and Delivery Divisions on the best process for implementing the recommendations cited in the Final Report.

- **I-87/Champlain-87/ Champlain Border Crossing Queue Detection and Wait Time Project** - This project will provide for the installation of a queue detection system and traveler information system on the I-87 Northbound mainline approach to the Champlain/ Lacolle border plaza to warn motorists of impending queues ahead (reducing accidents, fatalities and injuries), and to provide real-time information on delays at the border crossing. Post 9/11 inspection activities have lead to increased security related delays on I-87, with backups extending up to three miles from the border plaza.

The proposed project would include the installation of a permanent queue detection system (using microwave radar detectors and flashing beacon warning signs), a traveler information system (using TRANSMIT probe detectors, variable message signs and delay information boards) and a traffic surveillance system (using CCTV cameras). The traveler information system will provide real-time

delay information separately to trucks and passenger vehicles and will have a data archiving and analysis capability. There will also be the capability to port the real-time conditions to the Internet and to a 511 telephone system. A complementary traveler information system will also be implemented along the southbound approach of Autoroute 15 to the U.S. Customs & Border Protection processing area.

The Department is currently negotiating a contract for design phases 1-6 services. It is anticipated that this design contract will cost $300,000 to $500,000, and will be completed by fall 2007. Construction cost is estimated at $3.0 million. This cost will be refined as the preliminary design phase progresses.

- **Champlain / I-87 ITS/CVO Safety Inspection Facility** - Work continues on plans to incorporate an ITS/CVO Truck Safety Inspection Station and other ITS strategies within the plan for the modernization of the I-87/Champlain Border Crossing Plaza. Also, the Department is working closely with the Quebec Ministry of Transportation (MTQ) on coordinating and integrating our Truck Safety Inspection Facility with a complementary facility to be constructed on Autoroute 15 in Quebec. A contract has been entered into with Clough Harbor Associates for the design of a fully ITS/CVO integrated truck inspection facility in the southbound direction of I-87 south of and adjacent to the I-87/Champlain Port of Excellence property. NYSDOT's regional office has begun the process of purchasing the necessary property and an evaluation of wetlands mitigation has begun.

There are a number of other project underway involving the use of ITS at international border crossings:

- **Bi-National Transportation Strategy for the Niagara Frontier** - The Strategy presents an integrated view of border crossing and approach corridor needs from the standpoint of policy, procedural, infrastructure and ITS initiatives. The Final Report has been released and is available on both the NYSDOT and MTO (Ontario) websites.

  A key recommendation of the Strategy was the establishment of a Transportation Coordinating Group. A Steering Committee has been organized and has conducted meetings to establish its work plan and operating procedures for implementation of the Strategy. This effort is being led by NYSDOT and MTO, with participation of Transport Canada, the Federal Highway Administration, the Greater Buffalo-Niagara Regional Transportation council, the Regional Municipality of Niagara, the New York State Thruway Authority, and the Niagara International Transportation Technology Coalition (NITTEC). Efforts will include various forums to reach out to industry stakeholders, partner agencies, and customers for input and support as the effort progresses.

- **Border Information Flow Architecture (BIFA)** - NYSDOT participated in an effort led by Transport Canada and the Federal Highway Administration to develop a template of information flows within the bi-national border region. This architecture template rationalized differences between the US and Canadian national ITS architectures and encompassed new entities and functions that involve our border crossings. The border architecture is intended to be used for the creation and updates of ITS architectures to help ensure that they are bi-national in nature. A meeting of the "*Border Information Flow Architecture Working Group"* was held on December 8, 2005, and BIFA will be an agenda item at the June TBWG meeting to be held in Bellingham, WA**.** A final report was issued in January 2006.

- **International Border Crossing Traveler Information System** - This project would add ITS elements to the trade corridors that lead to the international border crossings in Western New York. These installations would supplement and complement the existing and planned ITS deployments of the New York State DOT, Thruway Authority, Peace Bridge Authority and Niagara Falls Bridge Commission to provide real time border crossing information to the traveling public and commercial carriers.

- **Future Plans** - For the future, NYSDOT is continuing to work closely with its ITS/CVO counterparts in Quebec and Ontario on developing strategies for ITS border crossing pre-clearance of low risk commercial and auto travelers, safety, security and shared information systems.

Speed Data Collection at the I-87 Champlain Border Crossing

The Department engaged Baker Engineering to investigate the use of TRANSMIT technology to collect speed data at the I-87 border crossing. TRANSMIT uses roadside sensors to read signals from EZ-pass transponders to collect and process travel time information. Recommendations will be made regarding the use of this technology on both the US and Canadian side of this border crossing to monitor traffic levels and crossing transit time.

ITS Scoping Procedures Development

The consultant, Dunn Engineering, completed work on the development of the Task D Technical Memorandum, "Methodologies for Scoping ITS", for the development effort. The consultant is testing the ITS scoping procedures, methodologies, and application factors using a Region 8 project to represent ITS standalone projects and a Region 9 project to represent combined ITS/non-ITS projects. The consultant has been identifying and documenting existing project area conditions, developing future conditions forecasts, identifying project area needs, and formulating project objectives. Preliminary draft project objectives for the Region 8 project were recently provided for information and review.

Statewide ITS Consultant

The Department has selected an ITS consultant team to provide support on technical and policy matters related to Statewide ITS planning and deployment. The team is headed by Gardner Engineering of New York, and includes Consensus Systems Technologies, Stantec, Bergmann Associates, and Howard/Stein-Hudson. This effort will facilitate the progress of the Statewide ITS program in an integrated, cost effective manner that is tailored to NYS needs and issues and is consistent with national standards and architecture.

Work continued on the following tasks:
- Development of an integrated ITS statewide strategic plan
- Development of a borders and corridors strategic plan
- Development of a statewide transportation management system standardization plan
- Provide technical support and training on national ITS standards and development activities
- Development of a white paper to guide the deployment of **511** traveler information services

Statewide ITS Strategic Plan

Early in 2003 NYSDOT began work on a project to develop an integrated ITS Statewide Strategic Plan. The purpose of this effort is to set a vision, goals, objectives, and an approach to guide the development of ITS based technologies and strategies. The plan will provide an integrated framework on where, what, when and how ITS solutions should be considered from a statewide perspective. This effort addresses the following:

1. Status of ITS programs

2. Roles and responsibilities, partnerships, and institutional and organizational issues and opportunities

3. ITS deployment priorities and strategies -- where the Department should be heading with future ITS efforts including recommendations on enhancements to NYSDOT'S existing efforts

4. Statewide approaches for funding and procurement

5. Integration of ITS in transportation policies, planning and project development processes

6. The role of ITS within the broader context of "operating and managing" the transportation network, and facilitating the movement of goods and people at border crossings and along trade corridors

7. Enhancement of infrastructure security and emergency evacuation

8. Strategic direction for the use of ITS data for planning, operations, security, traveler information and other needs

9. Other strategic and process recommendations for achieving statewide objectives and requirements

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