A Framework for Active Transportation and Demand Management in New York State

Corridor Workshop
Summaries and Transportation Management Center Interviews

September 1, 2016
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Prepared for
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

Prepared by
ICF International
9300 Lee Highway
Fairfax, VA 22031
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Purpose

Active Transportation and Demand Management (ATDM) is an effective approach designed to take advantage of changing trends and emerging technology capabilities to solving transportation problems, built upon effective partnerships, coordination, and collaboration among transportation agencies.

New York State Department of Transportation (NYSDOT) has initiated a detailed assessment of how ATDM can be implemented in a realistic and context-specific manner throughout the State, taking advantage of existing programs and initiatives that are already underway.

A statewide framework for ATDM has been developed based on extensive input from stakeholders and partner agencies through a series of workshops and interviews. Interviews were conducted with Transportation Management Centers (TMCs), NYSDOT Regional Offices, metropolitan planning organizations (MPOs) and transit agencies throughout the state. A series of workshops were also held to define high-level views of essential ATDM elements for different corridors. During these corridor workshops, NYSDOT representatives, stakeholders, and partner agencies explored opportunities and challenges in deploying ATDM in diverse settings. The three corridors included:

- I-495 Long Island Expressway between Queens and Midtown, which experiences recurring congestion and highly saturated conditions from I-678 (Van Wyck Expressway) through the Queens Midtown Tunnel into Manhattan,
- I-190 from downtown Buffalo to the Peace Bridge, which experiences congestion associated with special events and the international border crossing, and
- SR 79/26 in Whitney Point Village, which is a stopping point for travelers along I-81 between New York City or Binghamton and Ithaca and will be experiencing travel disruptions associated with an upcoming bridge reconstruction project.

The information gleaned from the workshops and interviews directly contributed to the development of the overall ATDM Framework.

About the Stakeholder Outreach

Three workshops were held in summer 2014 to discuss ATDM in different contexts throughout the state. Over 75 participants were involved, representing more than 20 agencies. Agencies participating included cities, transit agencies, MPOs, and major employers. In addition to these workshops, interviews were held with nine TMCs.
Document Overview

This document provides an overview of the findings from three workshops and stakeholder outreach conducted in summer 2014. The findings from the workshops informed the development of the ATDM Framework, which outlines a vision for a dynamic, traveler-focused approach to transportation operations (Figure 1). A number of ideas and recommendations were also discussed in the workshops, which were used to develop an implementation plan. The implementation plan will serve as next steps for NYSDOT and its partner agencies to advance the ATDM Framework.

Figure 1. Stakeholder outreach and workshops informed the development of the ATDM framework and the implementation plan

The workshop summaries provide illustrations of how ATDM could be optimally deployed in a variety of contexts and settings, specific to New York State. No two corridors are the same, and as such the management approach used and strategies selected need to be tailored accordingly. Each of the workshops dealt with the different travel conditions. Discussions in each workshop highlighted the key challenges or problems to be addressed in the corridor, identified preliminary objectives for the corridor, as well as enumerated potential strategies (demand, traffic, and parking) that could be used. Information gathered in these workshops was also intended to provide examples to other municipalities and regions to consider how ATDM may be applied in their own community. Table 1 identifies the three workshops and the corridor of interest (columns) along with the respective travel context (rows).

Table 1. Travel contexts in each of the workshop corridors

<table>
<thead>
<tr>
<th>Travel Contexts</th>
<th>I-495 NYC</th>
<th>I-190 Buffalo</th>
<th>SR 79/26 Whitney Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex, Urban Congested Corridor</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Arterial Network</td>
<td>●</td>
<td>●</td>
<td></td>
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<tr>
<td>Bridges, Tunnels and Border Crossings</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Seasonal, Recurring Off-Peak Congestion</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Major Emergencies and Weather</td>
<td>●</td>
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<tr>
<td>Construction</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Special Events</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>
The document discusses the following:

- Common themes and motivations for ATDM across all the interviews and workshops
- Summaries of each workshop describing the corridor of interest and the ATDM applications of interest in each corridor
- Findings from the stakeholder interviews conducted as part of this project
- Short summary of this document

Appendix A lists the stakeholders involved and Appendix B provides a list of strategies identified during the workshops. This list informs the implementation plan and the framework.
Common Themes and Motivations

Many corridors in New York State, despite having different contexts, do still face a common set of challenges in providing safe, reliable travel. Like many transportation agencies around the country, NYSDOT and its partners are facing constrained finances and are expected to do more with less. Demands on the system continue to grow, from commuters and freight. Traveler expectations are growing as well, looking for more reliable travel options across different modes. The themes identified in the workshops were used to inform the development of the ATDM Framework. Highlights of these themes are described below.

Active collaboration

Participants in all three workshops agreed that multiagency coordination and collaboration beyond what exists today is needed to effectively deploy ATDM strategies. In many corridors, there are multiple agencies involved in operations and maintenance of transportation. Statewide and regionally, over 100 stakeholder agencies (public and private) are involved in some component of the transportation network. These agencies are all dealing with similar challenges in providing more reliable, safe travel choices – constrained finances, limited capacity, and changing demographics. Solving common problems in transportation will require a multiagency, collaborative approach, as well as new stakeholders.

Active collaboration is the simultaneous enhancement of management processes, multimodal systems capacity and related structures, products, resources, and system performance. Active collaboration will clearly identify existing transportation problems; required changes that redefine a desired future end-state that emphasizes traffic and transit evolution; new modal innovations; and traffic and travel management concepts, solutions, and other strategies that, if implemented, can optimize multimodal systems planning, operations, and integration.

Learning from the successes of the regional collaborative partnerships, such as Niagara International Transportation Technology Coalition (NITTEC) and Transportation Operations Coordination Committee (TRANSCOM), as well as more operational partnerships that exist in the State, the deployment of effective ATDM strategies involves strengthening existing partnerships and maturing the capability of relationships both within an agency as well as between agencies. Multiagency partnerships like New York City (NYC) DOT/Metropolitan Transportation Authority (MTA) Select Bus Service (SBS) implementation, management of Integrated Corridor Management (ICM) projects in New York/New Jersey I-495 Corridor and the I-190 Corridor connecting Buffalo and Canada, the partnerships supported by 511NY Rideshare program, and the region’s recent experiences in large-scale construction management and emergency management offer examples for how to bring together disparate agencies and groups to focus on system performance outcomes.

Participants also discussed bringing new partners to the table, including the private sector. There is strong interest in engaging the private industry in deploying technological solutions,
such as those that have been seen with Florida DOT’s partnership with Waze to gather incident information. The agencies also all described the value of bringing in universities and large employers such as medical campuses to test strategies and pilot programs. For example, the Buffalo Niagara Medical Campus has tested demand management strategies such as staggered start times, parking pricing, and compressed work weeks. Finally, building partnerships not only within regions but across regions were likewise seen as important for longer distance travel and addressing regional transportation issues. In all three workshop regions, long-distance travel is a key market to address, especially for freight and trans-border travel.

Improved communications and messaging to travelers

In all three workshops, improved communication with travelers and across agencies was described as a key challenge, as well as an opportunity. Although there is a strong foundation for sharing travel information with the public and across agencies, stakeholders described that it is sometimes “stove-piped” across agencies and can be better coordinated. For instance, there is no one-stop-shop for real-time transit and traffic information in the NYC region, despite the existence of information across different platforms. Many participants agreed that there are some gaps in information on the real-time conditions of key arterials and alternate routes. Additionally, the participants discussed that while social media has proven to be a very successful means of communicating travel information, traditional media channels such as newspapers should still be used to ensure all audiences are engaged.

Managing facilities and corridors in a dynamic manner

New capabilities and strategies in managing facilities are now available through active traffic management, active parking management and active demand management. Building on a robust Intelligent Transportation System (ITS), approaches in this area support preparing for and responding in real-time to changing travel conditions. Facilities with high variability in operations, persistent congestion, and poor safety conditions, or those that are undergoing operational or physical changes are good starting points for ATDM. Changing weather conditions (e.g., snow, ice, and rain), planned construction, maintenance, and special events, and major incidents or emergencies can severely limit mobility, particularly on already congested corridors. These disruptions can vary in scale and frequency. With advances in technology and communications, real-time data on travel conditions are increasingly available to dynamically manage transportation systems and communicate with the traveling public. Dynamic management can help:

- Monitor actual conditions, identify bottleneck conditions, assess likely impacts, provide dynamic treatments, and share information on these conditions with transportation service providers (highway, transit, ridesharing organizations, and others) and with the traveling public.
- Implement a diverse array of strategies – dynamic management of lanes, ramps, shoulders, multi-modal priority treatments (highway/arterial); real-time parking information (park and ride facilities/destinations); dynamic ridesharing (providing real-time carpooling/transit
alternatives) or employment-site based applications for occasional rides during congested conditions – these can all help manage travel demand and traffic flow.

- As actions are implemented, evaluate how the system responds – this can lead to additional actions or strategies, as part of a cycle of dynamic response.

Matching solutions to specific travel markets

The workshop participants emphasized that different solutions will be needed for different regional contexts, especially in terms of mode shift. For example, Buffalo participants explained that telework is not always feasible for employers due to the nature of regional industry (tourism, medical field, manufacturing, etc.). All agreed that knowledge of market needs and concerns is helpful in tailoring strategies as well. For instance, younger populations are becoming less and less car-dependent, and so may be more interested in alternate mode options. In Buffalo and NYC, participants also agreed that transit can be better promoted and linked into traffic management plans, particularly as related to park and ride facilities. Both agreed though that some challenges remain in dynamic mode switches, for instance with “first-” and “last-mile” issues.

Performance measures and data-driven approach to management

Participants described that there is plenty of data available for many facilities, especially in NYC, but it still needs to be coordinated and leveraged to inform dynamic responses. Additionally, participants identified that core performance measures are needed, such as regional measures of travel time and reliability.

Moving beyond the commute to new travel contexts

While TDM traditionally responds to employer-based strategies, ATDM presents an opportunity for dynamic travel choices in new situations – such as construction and special events, parking management, incident management, and emergencies, as well as for new contexts – such as freight travel. Workshop participants discussed how ATDM could be used in these new situations, such as by encouraging drivers to try ridesharing or transit during construction projects. Emergency situations or unplanned incidents can also be test cases for dynamic responses to travel disruptions. In terms of new markets, participants agreed that truck drivers are a key resource that can be more engaged in dynamic traffic plans, even sharing travel disruptions with TMCs.
I-495 Corridor, Midtown Manhattan to Queens – Workshop Overview

Corridor snapshot – Setting the context

The Interstate 495 (I-495, Long Island Expressway/Queens-Midtown Expressway) corridor in New York City includes an eight-lane expressway with collector-distributor roads in both directions between Woodhaven Blvd and I-678 and a dense grid of streets traversing Midtown Manhattan. This corridor serves one of the most densely populated areas in the U.S. Severe congestion during peak commuting times makes multimodal travel time reliability unpredictable. Commuters, freight traffic, long distance travelers and airport traffic make up a large portion of the inbound traffic each day. Even with a dedicated AM peak bus/taxi contraflow lane (58th St – Midtown Tunnel), much of the corridor remains oversaturated, with bottlenecks and aggressive driving causing incidents and delays in the already congested network. This oversaturated corridor supports a high number of express buses traveling to Midtown Manhattan during the AM peak at a number of access ramps. For example, from 7 a.m. to 8 a.m., the highest (90%) number of express buses traveling to midtown Manhattan enters I-495 between Junction and Woodhaven Boulevards.

An extensive set of alternate modes and routes are available for travel. Regional and local commuter rail; local, express and private buses utilize the corridor. Planned SBS on Woodhaven Blvd, Main St, and Kissena Blvd will be intersecting I-495 with the Woodhaven Blvd SBS, anticipated to have the greatest impact on corridor travel. A regional rideshare program, 511NY Rideshare, is also available to provide travelers with information on travel choices, as well as ride matching, vanpool services, and locations of bike sharing and park and ride facilities.
Several transportation management centers are operated in the region, including the Joint Transportation Management Center (JTMC), which operates 24/7 with a range of dedicated positions to support the flow of information and coordination, including a construction coordinator and a special event/incident coordinator. NYC DOT (co-located with the JTMC), MTA Bridges and Tunnels, MTA transit operators and the Port Authority of New York and New Jersey (PA-NYNJ) each have their own TMC as well, in addition to the NYSDOT Region 10 TMC.

This extensive multi-agency set of services is supported in part by a regional forum – the Metropolitan Mobility Network (MMN), hosted by the New York Metropolitan Transportation Council (NYMTC). The MMN is a consortium of agencies in the NY-NJ-CT metropolitan area that is focused on addressing cross-jurisdictional and regional mobility and demand management issues. Data integration and communications are also supported regionally by TRANSCOM, a 16-member coalition of transportation and public safety agencies in NY, NJ, and CT.

Defining the problem – What are the challenges?

- **Congestion and Travel Time Reliability** – Due to heavy traffic demands and constrained capacity, the corridor experiences recurring delay in both the AM and PM peak periods and is ranked the 16th highest nationally in terms of congestion costs.¹ The heavy traffic demand impacts express and local bus operations greatly during both the AM and PM peak periods in the I-495 corridor in Queens. Midtown streets are congested all day, but especially during the afternoon and evening periods when they are affected by both heavy pedestrian volumes and spillbacks from bridges and tunnels leaving Manhattan. Traffic incidents, as well as frequent special events, add to the delay caused due to traffic volumes. The combination of recurring and nonrecurring sources of congestion makes travel time reliability poor.

- **Safety** – Traffic incidents are commonplace – partly due to the stop-and-go flow of traffic, as well as aggressive drivers weaving between service roads and the mainline. The existing recurring congestion in the corridor makes emergency and incident response times difficult, adding even more to the delays, and increasing the likelihood of secondary incidents. Incidents occurring at the tunnels are particularly difficult for emergency and incident response to clear efficiently.

- **Bus movement** – As noted above, this corridor supports a large number of express and local bus routes. Transit operators are constantly challenged to maintain trip reliability through this corridor. Due to the bottleneck conditions that occur both directions, drivers need to alter scheduled bus routes through the corridor in the attempt to minimize adverse impacts on person trip travel time and person trip reliability.

- **Freight movement** – Freight movement is impeded by the heavy congestion in the area, as well as contributing disproportionately to overall congestion levels. This corridor supports goods distribution to a variety of highly populated and commercial areas in the city,

¹ Texas Transportation Institute Congested Corridor Report, 2011.
Long Island City, Maspeth, Greenpoint, and Williamsburg. Freight traffic bound to and from these areas use the I-495 corridor to locations such as JFK International Airport, Long Island, points in northern NYC, and all points north and west.

- **Infrastructure condition** – On a heavily-used facility like I-495, road rehabilitation and reconstruction projects are frequent. Although there are efforts to schedule construction activities (e.g., lanes closures) during night time and to regionally coordinate construction to minimize delay, these projects remain disruptive due to the existence of the construction zones in tight highway geometries, emergency construction, and parallel construction/maintenance on the oversaturated local street network within the I-495 Corridor.

**Understanding the travel market**

Understanding the needs of the different users of the transportation system would be key to the development of successful corridor strategies. The travel markets for I-495 include:

- **Daily commuters** – On a typical weekday morning, the corridor serves commuters (either single-occupant, high-occupant or transit users) entering the Manhattan Business district on I-495 traveling east from Queens and west from New Jersey through the Lincoln Tunnel. As noted before, express buses and local buses are heavy users of the I-495 corridor from both directions.

- **Long distance travel** – Travelers from Long Island use I-495 as a connection to I-95 and NJ-495 to travel more regionally and longer distances.

- **Airport traffic** – Though some travelers use the JFK AirTrain to regional rail, others rely on the I-495 corridor.

- **Local and long-distance freight** – Local and long-distance freight uses the I-495 corridor to service several important regions of the city.

**Strengths and barriers to deploying ATDM**

The region benefits from a number of strengths that can support its advancement of ATDM. Some highlights include:

- **Extensive network of agency engagement and support** – Inter-agency forums such as the MMN and the inter-agency traffic data sharing TRANSCOM coalition establish a strong foundation for working across jurisdictional barriers.

- **High potential for dynamic management using existing ITS infrastructure** – The robust ITS infrastructure in the I-495 corridor permits the deployment of a range of dynamic management signs to alter the operation of lanes, shoulders, and ramps/intersections during peak periods of congestion. These strategies can help reduce congestion generated
by bottlenecks and provide priority treatments for multi-modal vehicles in order to improve person trip reliability. The deployment of adaptive traffic signal controllers within the I-495 corridor permits the opportunity of optimizing arterials and integration with dynamic ramp metering to improve travel reliability. The deployment of an integrated operations center (MTA Bus Operations Center connected with NYC DOT Traffic Management Center) permits transit signal prioritization for MTA buses equipped with AVL devices. This capability could also be used to enable priority treatment of buses on ramps and shoulder lanes on I-495 (LIE). The BusTime system developed by MTA was fully deployed in Queens in 2014. This system enables the MTA to track the location of all MTA buses every 30 seconds along a route (service/non-service).

- **Broad range of alternate transportation choices** – The availability of modal alternatives to single occupant vehicle (SOV) travel suggests potential for pre-trip and en route mode diversions, including potential dynamic mode and route changes, although limited capacity on some of these options is a constraint.

- **Integrated data and technology platforms** – The region continues to advance its data and technology functionality in an interagency communication network, most recently as noted above with the recent launch of BusTime, providing enhanced levels of dynamic multi-modal management. This capability is being enhanced through a special University Transportation Research Center (UTRC) project that is intended ultimately to permit the NYC DOT TMC/JTMC to be able to monitor bus movements through the heavily congested I-495 corridor with the potential of deploying enhanced dynamic management of critical bottlenecks providing priority treatments for buses. The development of TRANSCOM’s Data Fusion Engine will also support an enhanced sharing of travel information needed to support a robust Demand Management program.

The region also faces a number of challenges or barriers to overcome in effectively deploying ATDM. Some highlights include:

- **Constrained capacity for transit and parking** – Aside from the saturated conditions of the surface transportation (highway/arterial network), transit rail services along the corridor are heavily constrained. In addition, there are few park and ride lots in the I-495 corridor. Without adequate capacity, it is difficult to promote dynamic mode shifts to transit.

- **Institutional complexity and jurisdictional barriers** – The corridor consists of a variety of operating agencies with different operational goals and needs. Operational collaboration can prove difficult in some situations. For example, several agencies have independent marketing and branding approaches, despite the overlap in services.

- **Lack of coordinated dynamic management of bottlenecks** – Although the basic infrastructure exists to support dynamic management of the I-495, the necessary systems to make multi-agency dynamic management decisions will need to be developed.
Linking real-time transit and highway travel information – Although there is a robust system for monitoring and distributing real time highway and transit conditions, the information is not well linked, which makes it difficult for travelers to compare options and make informed choices. The TMCs also each operate somewhat independently, with the exception of the JTMC.

Opportunity for ATDM

The region has established a number of preliminary goals for the corridor, which will be developed more extensively through an ATDM Concept of Operations. Themes in the goals and objectives, as seen in the FHWA ICM Grant application, and through stakeholder engagement include:

- Optimize mobility, person and goods movement trip reliability, efficiency and safety
- Strengthen corridor level decision support
- Enhance reliable, real-time information to customers
- Promote multi-modal transportation system use and freight mobility

Building on these goals, workshop participants discussed strategies that could be considered under different scenarios for the I-495 corridor. The opportunity for ATDM was discussed in three categories – demand, surface transportation, and parking.

Demand Management

Traveler information is key to any active management approach. Predictive, personalized, and multimodal information that can be customized and is available in one place (such as an open source journey planner) can aid in travelers making pre-trip or dynamic route or mode diversions. Information on predicted future travel times can influence mode, route, and time of travel. Travelers may select a transit alternative based on the impact on one’s overall travel trip reliability. The region has an effective ridesharing resource, the 511NY Rideshare program. Dynamic ridesharing, such as through mobile apps, could help to allow new opportunities for riders to match for occasional rides during congested conditions.

Transportation agencies can also influence demand through a series of techniques. For instance, transit fares can be reduced or even eliminated in response to certain conditions, such as emergencies or weather events in order to keep traffic off the roads. Active re-routing or display of alternate routes could also help to move traffic to less congested facilities, including arterials. However, doing so would involve addressing concerns about not overloading arterials with additional traffic. Additionally, while pricing issues are politically sensitive, tolls for the Queens Midtown Tunnel could be adjusted according to real-time traffic conditions.
Surface Transportation Management

Dynamic management can be enhanced with priority treatments for HOVs and transit that allow high-occupancy vehicles (HOVs) to avoid bottlenecks. For instance, enhancing bus priority at the access ramps for I-495 at Woodhaven/Queens Blvd’s during AM and/or PM peak periods would significantly improve person trip reliability. Currently, there is a westbound bus/taxi lane into the Queens Midtown Tunnel in the AM peak period that starts at 58th St. just east of I-278 (Brooklyn – Queens Expressway). There is an ongoing preliminary design effort to evaluate the feasibility of converting this lane to HOV 3+ and extending it to the vicinity to 99th St. along with other associated ATDM strategies. This type of dynamic lane reversal has been used in the past during emergencies, and could be supported also by the tube configuration of the Lincoln Tunnel, which also allows for lane reversal.

Dynamic management of lanes, shoulders, ramps, and intersections (highway/arterials) can also help to reduce congested traffic conditions for general and/or multimodal traffic if the opportunity exists. Unlike fixed operations, dynamic management would allow for responsive lane control, such as part of incident clearance efforts to improve the flow of traffic according to real-time conditions. Queue warnings, using message signs, can be used in tandem with dynamic management of the surface transportation on the corridor, to indicate upcoming delays. Queue warning ultimately manages the traffic before approaching the areas of congestion to reduce the impact of the shock wave including reducing the formation of accidents.

Several adaptive treatments can also enhance reliability and safety in the corridor. Adaptive ramp meters could better support the flow of traffic with priority treatment for buses by controlling entry to I-495 at appropriate ramps if interconnected with the arterial traffic signal system according to real-time changing conditions. Additionally as noted above, the Midtown in Motion program, an adaptive traffic signal system has been successful and could be expanded into other arterial networks, especially those parallel to I-495, to better manage the flow of traffic. Finally, providing real-time information can support en-route mode or route changes. For instance, although message signs are used to offer information on incidents, construction, and travel time, additional information can be added on availability of park and ride lots, real-time transit information, and other alternatives, especially upstream of the most congested area.

Parking Management

Additional capabilities such as dynamic parking reservations and availability information could help to reduce idling while looking for parking spots. Dynamic parking reservation offers the ability to reserve parking remotely, and could even include preferential treatment for HOV 3+ vehicles. In tandem with parking reservations, dynamic pricing can help to turn over space at the curb. The city has been successful with its parking pricing pilots and could consider continuing to expand into other areas, including preferential treatment for HOV 3+ vehicles.
I-190 Corridor and Peace Bridge, Buffalo – Workshop Overview

Corridor snapshot – Setting the context

Interstate 190 (I-190) is a key north-south travel corridor that connects Buffalo with the Canadian border and runs through the downtown Buffalo area along the Niagara River and Lake Erie. It serves as a major travel route for daily commuters, weekend tourist travel, and freight traffic over the Peace Bridge into Canada. The Peace Bridge is one of four crossings over the Niagara River and handles over $30 billion in commerce annually between the US and Canada.\(^2\) Traffic to and from the Peace Bridge is currently directed through the local street system to access I-190, causing congestion in downtown, as well as impeding and delaying the flow of freight along the bridge. The City of Buffalo and NYSDOT Region 5 are currently leading a project to reconfigure existing ramps to provide direct access from the bridge to I-190. As part of the project, additional ITS components will be put in place to better manage traffic, including new CCTVs and dynamic message signs (DMS) to manage queues and traffic flow. Niagara Street, which is described as the gateway to downtown, is also a key arterial that serves as an alternate route for I-190 and runs parallel to the interstate. Current work is underway on Niagara Street, including transit signal priority lanes and bicycle/pedestrian facility improvements.

The city’s bus service and park and ride service operated by Niagara Frontier Transportation Authority (NFTA) includes routes along the corridor. A 6-mile light rail system also runs along Main Street, connecting downtown Buffalo and the University at Buffalo campus. The MPO, Greater Buffalo Niagara Regional Transportation Commission (GBNRTC), manages a rideshare program – Go Buffalo Niagara – for

\(^2\) NITTEC/Buffalo I-190 FHWA ICM Grant Application

Western New York, offering rideshare matching, as well as information on transit and biking. The NITTEC functions as the TMC for the region, providing real-time traffic and roadway information for the international region.

Defining the problem – What are the challenges?

- **Border crossing delays** – Significant freight traffic between the US and Canada occurs across the Peace Bridge, which currently utilizes local streets for access to and from I-190. High traffic volumes on the bridge can result in wait times of 30 – 120 minutes,\(^3\) causing bottlenecks that can extend to the bridge plaza and onto local arterials. There is additional recreational and tourist traffic on weekends for travelers going to Niagara Falls and other destinations, including sporting events.

- **Downtown congestion from daily commutes and special events** – There are recurring delays in the I-190 corridor through downtown Buffalo associated with commuter traffic. Mode splits for the region indicate that most drivers choose to drive alone, despite the presence of alternate mode choices such as transit and rideshare. Non-commuter related congestion is also associated with major special events such as NFL and NHL sporting events, as well as festivals and concerts. In addition to capacity constraints on I-190, there are limited or no shoulders in most areas, making incident management difficult.

- **Severe weather conditions** – Like many of the cities in upstate New York, Buffalo can experience winter storms with heavy snowfall and strong winds. These conditions can sometimes necessitate the closure of major roadways and the suspension of public transit service, causing disruptions to traffic flow if not managed effectively. Additionally, in extreme weather conditions, clear communication with the public is critical to keep travel safe. During storms, the TMCs share requests to stay off the roads, or provide information on safe travel options and roadway conditions.

Understanding the travel market

Travelers with different needs in the corridor include:\(^4\)

- **Tourists and international travelers** – such as those traveling to or from Niagara Falls and Canada, including drivers who may be less familiar with alternative routes and bridge crossings.

- **Daily commuters** – including those using Niagara Street as an alternate route to I-190.

- **Special event travelers** – such as to NFL and NHL sporting events; forty percent of season ticket holders for these games are actually from Canada and travel to Buffalo for these events.

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\(^3\) NITTEC/Buffalo I-190 FHWA ICM Grant Application

\(^4\) NITTEC/Buffalo I-190 FHWA ICM Grant Application
Freight shippers – many of whom are using the Peace Bridge to travel to and from the US and Canada at all times of the day and night; the bridge handles over $30 billion in commerce across the international border each year.

Strengths and barriers to deploying ATDM

The region benefits from a number of strengths that can support its advancement of ATDM. Some highlights include:

**Strong operational collaboration** – NITTEC, which is very consensus-oriented and collaborative, is also semi-independent and somewhat informal, reducing institutional barriers to coordination. Leadership of the coalition rotates every few years, which keeps ideas fresh and brings in new perspectives. NITTEC’s committees also incorporate a range of perspectives, including planners, policy makers, and operators, and involves a unique binational partnership with Ontario.

**Partner engagement and support** – The region benefits from strong local support, including major employers such as Buffalo Niagara Medical Campus (BNMC), and the University at Buffalo. Each is helping to pilot or support travel option programs, such as a parking management pilot at the hospital. The City of Buffalo has also coordinated with NYSDOT Region 5 and NFTA on Niagara Street improvements, including transit signal priority, enhanced pedestrian facilities, and reconfigured direct access to the Peace Bridge to reduce congestion on the local arterials.

**Integrated data and technology platforms** – Through NITTEC, the agencies all bring their data together into one clearinghouse to inform decisions, instead of keeping data somewhat isolated at individual agencies. NITTEC is also developing an advanced traffic management system for the region, instead of relying on individual, semi-independent systems for each agency.

The region also faces a number of challenges or barriers to overcome in effectively deploying ATDM. Some highlights include:

**Perceived ease of travel limits interest in alternate modes to driving alone** – The region generally only faces small windows of peak congestion periods, and traffic issues are more often associated with special events, sporting games, etc. This makes it difficult to build awareness of and use of alternate mode options, such as transit, ridesharing, and bicycling. Additionally, telecommuting is limited in the region, largely because of the types of industry that are prevalent (tourism, medicine and manufacturing).

**Lack of financial incentives for high-occupancy travel** – At one time, the Thruway Authority tolled drivers on the I-190 corridor, but the tolls are no longer in place. This limits driver interest in sharing rides or diverting to other routes, which was seen more during the
use of tolls. Additionally, many employers provide free or reduced price parking downtown – making it difficult to incentivize carpooling or actively manage parking.

- **Limited availability of real-time information on arterials and transit** – The TMC does not currently recommend alternate routes when congestion occurs, partly due to the difficulties in attaining real-time conditions for all other route options and arterials. Additionally, real-time transit information is not available, so only highway travel information is provided.

**Opportunity for ATDM**

The region has established a number of preliminary goals for actively managing traffic and travel options in the corridor, which will be developed more extensively through a Concept of Operations with the FHWA ICM Grant. Themes in the goals and objectives associated with the corridor, as seen in the application, and through stakeholder engagement include:

- Improve reliability of multimodal, real-time traveler information
- Extend multimodal choices, including transit, rideshare and park and ride
- Integrate weather, construction and alternate route information into real-time travel information
- Reduce border crossing delay
- Maximize traffic flow on key arterials
- Improve incident management protocols

Building on these goals, workshop participants discussed strategies that could be considered under different scenarios for the I-190 corridor. The opportunity for ATDM was discussed in three categories – demand, traffic, and parking.

**Demand Management**

Travel information can help to influence mode, time, and route choice, which is particularly useful in this region given the congestion associated with special events. Although NITTEC already provides real-time traveler information through its new mobile app, enhancements could be made, such as incorporating transit information, recommending alternate routes in the event of delays, and promoting pre-special event information on mode and route options to inform travel decisions. Ultimately, archived traffic data could be used to develop a predictive travel time app. To help alleviate congestion during special events, the rideshare program offered through GBNRTC could be expanded to support dynamic ridesharing. NITTEC’s mobile app could support this functionality.

Pricing strategies could also be considered to influence demand. For instance, the I-190 corridor previously had tolls, which influenced mode and route choice. Consideration of reinstituting tolls,
as well as reduced tolls for HOVs may be a useful strategy. For the border crossing, tolls could be adjusted dynamically according to time of day, as well as vehicle occupants, in order to influence demand. Finally, off-peak toll pricing discounts for trucks could be explored.

**Traffic Management**

Traffic treatments can complement the dynamic demand management described above. Especially given the nature of congestion in the Buffalo region as tied to special events and the border crossing, treatments can be deployed on an as-needed basis to influence the flow of traffic. For example, queue warnings, using variable message signs (VMS), can help to manage traffic before the congestion occurs at I-190. The Gateway Corridor project is installing new dynamic message signs to better support queue warning onto the Peace Bridge, but DMS could also be used during special events at key off-ramps and during snow emergencies to warn of upcoming back-ups. Using portable VMS signs, dynamic routing could also be effective in redirecting traffic onto parallel routes in the event of backups and delays sometimes associated with special events or extreme weather conditions.

To address traffic that occurs on arterials, adaptive signal control could be used to respond to changing conditions, as with special events, weather, etc. Similarly, traffic signal priority (TSP) can be utilized on arterials, such as the Niagara Street Corridor, to improve transit reliability. TSP could also be deployed during special events to give a travel time advantage to event shuttles. NFTA is currently working on TSP strategies for Niagara Street.

**Parking Management**

Although parking is not currently an issue in downtown, it is expected to become a challenge with continued growth in the central business district (CBD). A proactive approach to managing parking will help to prepare the region for expected challenges with parking supply and demand. A parking reservation system can be used for special events to show parking availability and reduce time spent idling and looking for a spot. To further reduce idling associated with looking for parking, the city could use of permanent or temporary electronic displays with parking availability at or near a venue, for instance during sporting and special events. Reduced parking prices could also be offered during special events based on availability and or occupancy to help assure that supply matches demand. Employers could continue piloting this strategy, building on efforts underway at the BNMC to reduce parking demand.
Bridge Reconstruction at NY Routes 79 and 26, Whitney Point – Workshop Overview

Corridor snapshot – Setting the context

The Village of Whitney Point is a small town in Broome County, 15 miles north of Binghamton, with a population of just under 1,000. Located off Interstate 81, the village is at the junction of New York State Routes 26 and 79, where a two-lane narrow bridge carries traffic over the Tioughnioga River. NY 26, located on the east side of the river, runs north past the Dorchester Park, while NY 79 runs east-west, leading to Ithaca. The Village of Whitney Point experiences significant through-traffic from I-81, with drivers exiting the interstate for NY Routes 26 and 79. Over 11,000 vehicles pass through each day, which helps to sustain the community’s local businesses along Main Street. However, the local bridge can no longer meet the needs of the volume of traffic, due in part to its narrow width, so the region is planning a construction project to replace the bridge. The project is in a preliminary design phase, which will include constructing a temporary bridge parallel to the existing structure to reduce disruptions to traffic. The new bridge, which is expected to be completed in 2017, will be built on an improved alignment, with intersection enhancements, including a turning lane, shoulder, and sidewalks.

As a rural community, single occupant vehicles (SOVs) are the leading mode of travel in the area, and limited transit service available. During the construction project, efforts will be taken to reduce congestion and delays to travelers, in accordance with NYSDOT’s Drivers First initiative. A key component of Drivers First is to develop effective transportation management plans. Strategies can include phasing construction timing, traffic enforcement, incident management, and the use of social media to communicate with the public about the project (via Facebook, Twitter, etc.).
Defining the problem – What are the challenges?

Discussions about the bridge replacement began in 1991, and the replacement project to expand the now too-narrow structure was first slated in 1997. Considered by some to be long overdue, the bridge project supports other recent revitalization projects in Whitney Point. While well received by the local community, the primary challenge is to mitigate the impacts of the project without rerouting traffic and maintaining the steady traffic flows that are vital to the local economy.

- **Minimizing disruptions to regional commerce and the local economy** – This corridor is critical to the local businesses of Whitney Point as well as the economy of the broader region. Restaurants, gas stations, and other local businesses rely heavily on travelers from I-81 for business. The corridor also experiences a significant amount of freight traffic, generating from the area’s regional distribution centers for “big-box” stores. Maintaining accessibility to local businesses and minimizing traffic delays will be essential to regional commerce and the local economy.

- **Addressing mobility needs for long-distance travelers** – This construction project will impact the mobility of long-distance travelers and managing seasonal traffic. Though there are two possible shortcuts available to avoid the construction, the local streets cannot sustain the increased capacity. As a result, this corridor, which is the only river crossing for several miles, will remain a critical route for short- and long-distance commuters. The project will also need to manage the uptick in traffic experienced during the summer tourism season, for special events throughout the year (e.g. boat races, Broome County Fair, etc.), and when the colleges in Ithaca are in session or holding special events (e.g., commencement).

- **Monitoring and distributing reliable travel information** – Unlike larger cities, the Village does not have real-time information on its arterials, so one difficulty in the construction project will be providing precise and accurate information, as well as monitoring real-time traffic conditions. This will be complicated by the use of a temporary bridge, in which the traffic signal will not operate as efficiently during construction, making reliability for bridge travel also difficult.

Understanding the travel market

Travelers with different needs in the corridor include:

- **Long distance travelers for tourism** – such as those driving to the Finger Lakes Region and other recreational trips, including chartered buses.

- **College students** – due to the proximity to Cornell University and Ithaca College, the Village of Whitney Point is a through-point for college students, especially those visiting NYC. A shuttle runs from Cornell to NYC each weekend and runs through the Village.

- **Local traffic** – including school district traffic and daily commuting.

- **Regional distribution centers** – the region has a number of “big-box” stores, including a regional distribution center for Kohls, which depend on traffic reliability for deliveries.
Freight through-traffic – given its location along I-81, and its proximity to other transportation routes, the village serves as a pass through point on the way to Ithaca or stopping point for truck drivers and other freight traffic.

Medical trips and senior medical appointments – such as those into Binghamton (the closest access point for hospitals) as well as human services transportation trips.

Special event traffic – for instance for the Broome County Fair, Ithaca area graduations, and boat races.

Strengths and barriers to deploying ATDM

The region benefits from a number of strengths that can support the deployment of ATDM. Some highlights include:

Regional operational collaboration – Although the project began as a local project more directly impacting just the Village, its impact has become more widely recognized in the rest of the region, as well as Tompkins County. Partners from Ithaca will be valuable assets in disseminating information. There will likely be a role for the universities in Ithaca (Cornell University and Ithaca College), which generate traffic along the corridor. The Ithaca-Tompkins Transportation Council and other Ithaca-region partners, such as the Tompkins County Rideshare Coalition, Cornell Cooperative Extension’s Way2Go program, and Tompkins County Social Services are becoming involved.

Regional communication strategies – The region has already successfully deployed communication strategies for a construction project in nearby Prospect Mountain. Lessons learned from the use of social media can be applied to this project as well.

Existing rideshare programs – The region benefits from existing travel demand management programs, including ridesharing and carsharing. The Broome-Tioga Rideshare program is well established with 600 members and the service has the potential to reduce demand during the construction project and encourage long-term travel behavior change away from single occupancy vehicles. Ithaca Carshare also offers an opportunity for travelers in Tompkins County.

There are a few challenges or barriers to overcome in effectively deploying ATDM. Some highlights include:

Limited strategies applicable in rural contexts – Due to the project’s rural location, there are fewer ATDM strategies applicable. For example, dynamic rerouting is not a feasible option, and the limited transit availability limits diversions to alternative modes.

Communicating with non-local drivers and diverse audiences – Non-local through-travelers will be more difficult to communicate with about the construction project. Likewise, there are challenges in communicating with diverse audiences (for instance, those who use social media or internet versus those who rely more on traditional media such as newspapers).
Opportunity for ATDM

During the workshop, the region’s stakeholders discussed a number of preliminary goals for the bridge replacement project. These include:

- Effectively delivering the project with minimal disruptions
- Successfully applying Drivers First policies and protocols
- Operational partnerships and coordination across regions and jurisdictions
- Balancing local and regional needs with project needs
- Encouraging greater use of local ridesharing services

Building on these goals, workshop participants discussed strategies that could be considered under different scenarios for the Whitney point corridor. These strategies included demand, traffic, and parking.

Demand Management

Broome-Tioga Rideshare and Ithaca College’s Zimride already offer online ridematching – which can help manage travel during and after the bridge reconstruction project. This type of web-based ridematching service encourages shared rides for short- and long-distance trips, increasing occupancy during daily commutes, seasonal traffic, and special events. Expanding ridesharing for dynamic use, such as during seasonal traffic or special events, will be particularly useful during construction.

Traffic Management

Given Whitney Point’s proximity to I-81, several traffic treatments can be considered for through-traffic. For instance, temporary VMS devices can warn motorists on I-81 of upcoming and unexpected back-ups as they approach the exits for NY 79 (southbound) and NY 26 (northbound). Placing a sign at the Whitney Point rest area will provide notification to non-local southbound travelers, and could also help to keep local and regional drivers aware of construction schedules. In terms of treatments for the Village, signal control can help to manage traffic feeding into NY 79 and NY 26, particularly during peak traffic hours, changing conditions associated with daytime construction work, extreme weather conditions, and special event traffic (local events, Cornell and Ithaca graduations, etc.).

Parking Management

While parking is not regularly an issue, it can become so during special events. Permanent or temporary electronic displays provide information about parking availability at or near a venue, during special events such as Broome County Fair, boat races, etc., can reduce delays for travelers.
Transportation Management Center Interviews

In developing the ATDM Framework, NYSDOT conducted an inventory of resources and capabilities within the state that can support ATDM. There is great potential for the application of ATDM through the TMCs that are responsible for administering much of the State’s ITS program. The TMCs are responsible for ITS deployment and address real-time conditions on the road network. As such, New York’s TMCs will need to play a key role in the deployment of ATDM. While the high-level functions of all the TMCs in New York State are similar, there is a range of conditions to which they respond. As a result, the services the TMCs offer or the activities that are prioritized vary from region to region.

Sometimes these differences are due to external factors such as weather conditions or geography, other times due to internal factors such as staffing capacity, availability of field assets, nature of transportation assets in the region or financial resources. For example, lake effect wind and snow heavily impact some of the regions upstate, requiring them to dynamically manage road closures depending on weather conditions, while heavy recurring traffic in the downstate regions require more focus on travel demand management. In addition, some of the TMCs have more robust funding and staffing structures that allow them to deploy, monitor, and act upon a broad network of ITS infrastructure, while others focus efforts only on individual corridors or emergency situations.

Interviews were conducted with the TMCs to better understand their roles, responsibilities, needs, and opportunities related to ATDM. The table below summarizes some of the key characteristics and issues associated with each of the TMCs interviewed (note, interviews with NYSDOT Region 6 and 7 were not conducted).

Table 2. TMCs at a Glance – Key Characteristics and Issues

<table>
<thead>
<tr>
<th>NYSDOT Region</th>
<th>Summary</th>
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</thead>
</table>
| 1 Albany      | Experiences less recurring congestion than more populous regions  
                | Aims to preserve roadway capacity primarily through incident management  
                | Updates on real-time conditions are posted on VMS to encourage motorists to make real time travel decisions about route choice and departure time  
                | Facility operated with a close partnership with the NYS Police |
| 2 Utica       | Does not operate freeway ATMS; activities centered on signalized arterials  
                | Nearly all of the region’s ITS is deployed on the arterials  
                | TMC is highly advanced in traffic signal coordination, primarily through preset plans and also dynamic, remote management |
| 3 Syracuse    | Main function is incident management on the freeways  
                | Supports incident management for neighboring regions  
                | Posts dynamic messages on VMS to notify motorists of incidents  
<pre><code>            | Highly engaged in dynamic system management during weather events |
</code></pre>
<table>
<thead>
<tr>
<th>NYSDOT Region</th>
<th>Summary</th>
</tr>
</thead>
</table>
| 4 Rochester   | - Region experiences limited through-traffic, and relatively consistent travel times  
                  - TMC focuses on maintaining system consistency  
                  - TMC co-located with State Police and Monroe County Traffic Engineering/Signals |
| 5 Buffalo     | - NITTEC serves as the primary TMC; also includes a NYSDOT operations center  
                  - Demand management is primarily focused on international border crossings and special events  
                  - Currently exploring ATDM through FHWA workshops |
| 8 Hudson Valley| - Coordination between agencies formed the basis of the TMC in its early development  
                   - The TMC still operates a highly coordinated and cooperative center  
                   - Uses ITS, media outreach, and other methods to make motorists aware of travel delays ahead of time, and to encourage the use of alternative modes or travel schedules  
                   - Operated with NYS Police |
| 9 Binghamton  | - Region experiences almost no recurring congestion  
                  - TMC’s main function is incident management on specific corridors  
                  - Prospect Mountain construction project (a key focus for the TMC) utilizes social media to alert motorists of daily construction activities and anticipated delays |
| 10 Long Island| - Region experiences heavy traffic patterns due to close proximity to NYC  
                  - Significant deployment of roadway detectors to gather data on current conditions  
                  - Utilizes data for dynamic management, including signal timing plans and travel times  
                  - Responsibilities extend into Eastern Queens  
                  - Operation includes freeways and state signalized arterials |
| 11 New York City| - JTMC facility is jointly operated with NYCDOT – handles transportation operations for five counties in greater NYC metro area; JTMC includes construction coordinator and special incident coordinator  
                     - NYC DOT TMC located in same building, and focuses on traffic signal management; MTA Bridges and Tunnels, Port Authority, and transit agencies each have their own operations centers  
                     - Region regularly experiences oversaturation on its facilities, including transit – significant coordination is required across operators  
                     - Coordination with TRANSCOM |
Strengths and Challenges

The TMCs are well positioned to advance ATDM by building on their current partnerships and a growing interest in ATDM concepts. While the TMCs have all embraced ITS deployment and many are exploring Active Traffic Management (ATM), fully integrated ATDM appears to still largely be a new framework for much of the state. There are some varying degrees of awareness and interest in ATDM, which can be attributed partly to the different conditions and values associated with managing demand throughout the state. More specifically, TMC consideration of dynamic demand management is one of the major gaps that will need to be addressed when moving forward with statewide integration of ATDM.

Key strengths and opportunities include:
- Upcoming statewide Advanced Traffic Management System (ATMS) deployment (and the accompanying opportunity to advance real-time travel information),
- Potential for other technology integration across states (and private sector investment),
- Demonstrated positive impacts of the Drivers First Initiative on active work zone management and the potential for other advancement with the Surface Transportation Controller role,
- Broad interest across the state’s TMCs in developing/maintaining partnerships and sharing resources across regions,
- Strong regional operational partnerships and coalitions, such as NITTEC and TRANS-COM, and
- Potential for new data collection strategies, such as bus probes for collecting travel-time data.

Key barriers and challenges include:
- Instances of outdated or aging technology,
- Need for additional decision support tools and a feedback loop (including some training),
- Challenges addressing the “demand” aspect of ATDM,
- Need for and interest in developing protocols and procedures for incident management,
- Limited day-to-day real-time coordination relationships with mass transit centers,
- Staffing capacity and resource limitations,
- Lack of confidence in real-time data and its availability, and
- Some cases of too much data but challenges with analysis and processing.
Summary

The themes identified in the workshops and stakeholder engagement activities informed the development of the ATDM framework. As seen in the workshops, NYSDOT’s ATDM vision focuses on operational collaboration to solve common problems – travel reliability and safety within a fiscally constrained context. Using operational collaboration, ATDM improves communication with travelers and allows TMCs to more dynamically manage facilities and corridors. Through this approach, travelers are able to more seamlessly utilize a safe, reliable system. Operating together, NYSDOT and its partners can leverage capabilities to more effectively and efficiently manage travel and provide more transportation choices.
Appendix A. Stakeholder List

- 511NY Rideshare
- Buffalo Niagara Medical Center
- Broome County
- City of Buffalo
- Federal Highway Administration
- Greater Buffalo Niagara Regional Transportation Council
- Genesee Transportation Council
- Ithaca Carshare (phone)
- Ithaca-Tompkins County Transportation Council (phone)
- Metropolitan Transportation Authority
- MTA Bus Company
- Niagara Frontier Transportation Authority
- Niagara International Transportation Technology Coalition
- New York City Department of Transportation
- New York State Department of Transportation Regions and Main Office
- New York State Thruway Authority
- Port Authority of New York and New Jersey
- Tompkins County Social Services
- TRANSCOM
- Village of Whitney Point
- Way2Go
Appendix B. Additional Opportunities

During the workshop discussions, a number of specific opportunities were identified by stakeholders that can help to more fully advance ATDM in New York. These opportunities are compiled here across the various workshops and interviews and support the development of the statewide framework and the implementation plan.

I-495 Corridor

- Operational Collaboration
  - Leverage agency relationships, and engage private sector and public-private partnerships, including the MMN.

- Dynamic Management
  - Expand coverage of Highway Emergency Local Patrol (HELP) to off-peak hours and weekends especially around highway construction and planned special events.
  - Pre-stage HELP resources based on weather forecasts for support during adverse weather.
  - Broaden use of statewide improved incident detection and verification based on reporting incidents through mobile devices such as smart phones and pads interconnected with traffic managers/incident responders via workstations, laptops and mobile devices, etc. within the web environment.
  - Support integration of dynamic ramp metering and arterial adaptive signal timing on service/access roads with emphasis of priority treatment for multi-occupant vehicles.
  - Investigate the feasibility of queue warning and variable speed warning/and or limits in response to observed conditions such as incidents, work zones.
  - Investigate and pilot dynamic merge applications using lane/shoulder control signs that move traffic from rightmost lanes to the middle lanes upstream of ramps with heavy traffic (M).
  - Dynamic use of shoulders lanes (highway/arterial streets) including access lanes and ramps by general traffic and/or HOVs/buses during periods/sub periods of peak congestion.
  - Implement congestion-based speed limits on select facilities especially on segments that lead to chokepoints like tunnels and bridges.
  - Explore potential of reversible lanes operations where feasible to support additional capacity or during emergencies to support evacuations.
Demand Management and Parking
- Address first and last mile needs, particularly as related to access to transit. Enhance bikesharing at park and ride lots.
- Extend priority lanes to be bidirectional, including dedicated bus lanes.
- Provide additional pre-trip information and notifications to support pre-trip diversions.
- Enhance customizable, personalized multiagency platform for traveler information.
- Advance customer incentives and rewards, including gamification.
- Offer EZ pass discounts for 3+ carpools and vanpools.
- Continue to make real time bus information more accessible.
- Expand employer portals for ridesharing and alternate mode information.
- Advance targeted marketing campaigns such as Smart Choice.
- Use real-time data for en-route diversion to rail transit and park and ride lots.

Emergencies and Incidents
- Expand HELP services to improve incident clearance.
- Additional traffic enforcement to address aggressive driving, late merging, etc.
- More proactive approaches to incident management and clearance.
- Get information out early through call centers.
- Extend HOV lane/restrictions further along the facility (or for other facilities).
- Resource sharing for additional temporary bus service (including private carriers).
- Ensure a back-up system for signal control, including options for dedicated lanes.
- Identify informal park and ride lots to use during emergencies.

Construction and Special Events
- Get information out early through call centers.
- Set up web pages to share information and posting traveler information.
- Share information through VMS to help travelers make decisions en-route.
- Develop traffic management plans for construction projects.

Freight
- Support parking enforcement for faster turnover at the curb, and faster turnover of freight deliveries.
- Promote off-hours delivery for freight (extending pilot programs).
- Incorporate freight into more regional planning activities.
- Establish an approach to allow freight to contribute real-time travel information back to TMCs.
- Provide freight with more real-time information on incidents, construction, etc. for regional and through-travel.

**Performance Measures**
- Use performance measures at a regional scale, including for person and goods throughput.

**I-190 Corridor**

**Demand Management**
- Consider ways to work with employers to move travel to off-peak; for example, build on Medical Center strategies to stagger start times for employees, and use compressed work week.
- Explore use of financial incentives and build awareness of the guaranteed ride home program.
- Expand use of express buses, including those to and from the medical campus.
- Consider a universal fare pass for the medical center (for transit).
- Raise awareness of bike racks on transit vehicles to promote “bike and ride” options.
- Build on the Green Code, which will require new developments to have a TDM Plan.
- Explore formation of a Transportation Management Association to work with employers on targeted demand and parking strategies that can be implemented in a focus geographic area.
- Expand rideshare program to include vanpool options, including bi-national commuting.
- Consider a ramp metering pilot.

**Partnerships**
- Increase coordination with developers in the central business district to consider how to ensure adequate alternate travel options will be available, coupled with sound parking management.
- Establish a “TDM Committee” within NITTEC.

**Freight**
- Continue coordinating and sharing information with freight and commerce industry.

**Special Events and Incidents**
- Prepare a traffic management plan/template for special and sporting events, building on what is already being used in the region, but incorporating more dynamic, real-time options.
- Consider ways to offer transit passes as part of Bills tickets or other sporting events.
- Expand HELP service patrol to this corridor – to assist with incident management and clearance.

Parking
- Build on the Medical Center’s use of parking pricing and preferential parking for carpoolers. Consider a parking reservation system for the central business district.
- Move towards preferential parking for carpoolers – as employment increases in the central business district, parking will likely become less.

SR 79/26

Demand Management
- Take advantage of demand management strategies available in the region (rideshare, carsharing and car/vanpool) to introduce travelers to these options for use during and after the project.
- Focus on time shift rather than directing people away from the area.
- Work with major employers (especially schools), universities and municipalities, as well as local media on sharing information and rebroadcasting travel messages.

Technology
- Use ITS to monitor traffic movement (queue length, speed, etc.) to provide dynamic information on actual conditions. Consider deploying portable cameras to Drivers First projects to help monitor projects in real-time. Use Bluetooth or speed sensors to monitor speeds and queues.

Communications
- Build on successful social media tools (as done with Prospect Mountain) – especially for younger commuters and college students - while still using traditional media channels. Use social media to link regional Twitter feed, photos, travel advisories etc.
- Create a project-specific website that can be linked to by the town, county parks, and other partners that can share information with audiences. Leverage 511NY to provide information.
- Develop a collaborative web portal to share project info among stakeholders.

Travel Markets
- Create a template that NYSDOT can use for Drivers First projects that would include considering the different markets that would be impacted, the partners needed, etc. to ensure multiagency coordination and collaboration during projects that will disrupt traffic.