New Hampshire DOT
Department of Transportation

5-year Strategic Plan

Transportation Systems, Management & Operations (TSM&O)

July 2014

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List of Acronyms

ATIS	Advanced Traveler Information System
ATMS	Advanced Traffic Management System
AVL	Automatic Vehicle Location
CAD	Computer Aided Dispatch
CCTV	Closed Circuit Television Cameras
DMS	Dynamic Message Sign
DOIT	Department of Information Technologies
DOS	Departments of Safety
DRED	Department of Resources and Economic Development
EOC	Emergency Operations Center
FHWA	Federal Highway Administration
ITS	Intelligent Transportation System
MDSS	Maintenance Decision Support System
MOU	Memorandum of Understanding
NHDOT	New Hampshire Department of Transportation
NHPTV	New Hampshire Public Television
ORT	Open Road Tolling
POTS	Plain Old Telephone Service
RPC	Regional Planning Commission
RWIS	Road Weather Information Systems
SMRPC	Southern Maine Regional Planning Commission
SOP	Standard Operating Procedure
SP	Service Patrols
TIM	Traffic Incident Management
TIS	Traveler Information System
TMC	Transportation Management Center
TSC	Technical Steering Committee (I-93)
TSM&O	Transportation Systems, Management & Operations
URL	Uniform Resource Locator
VSL	Variable Speed Limit

1. ACKNOWLEDGEMENTS

This Intelligent Transportation Systems Strategic Plan was led and completed by the NHDOT ITS Oversight Committee. The plan could not have been developed without the collaborative input from all stakeholders.

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2. INTRODUCTION AND BACKGROUND

New Hampshire's transportation system faces challenges from steady growth in population and trade. These increased demands threaten both safety and mobility for travelers throughout the state. Inefficient movement reduces productivity, wastes energy, increases emissions, compromises safety, and inevitably diminishes our quality of life as transportation is vital to the social and economic health of our state.

ITS (Intelligent Transportation Systems) is a strategy that can be used to address many of these issues. It can be defined as the application of advanced technologies to surface transportation problems, including traffic and transportation management, travel demand management, advanced public transportation management, electronic payment, commercial vehicle operations, emergency services management, and advanced vehicle control and safety systems.

The purpose of this ITS Strategic Implementation Plan is to provide guidance on the deployments and integrations of the ITS Program over the next five years (2014-2019). The time frame reflects a reasonable horizon that considers major advances in emerging technologies that may alter installation methods, costs, or delivery systems in the future. The sections of this plan include:

1. Introduction – discussions of background and purpose for ITS systems and their elements
2. Strategic Plan – general means and methods to focus on in the next 5 years to fulfill the desired vision of the ITS program
3. Implementation Plan – provides future initiatives for each of the categories on a year-by-year bases
4. Project Summary Sheets – information for each significant component listed in the strategic plan in terms of Project Description, Project Lead/Champion, Schedule, Budgetary Cost Estimate, and Performance Measures

2.1 ITS Program Vision

The New Hampshire Department of Transportation (NHDOT) has made significant investments in ITS to improve the operations of the state's transportation system, for both typical weekday conditions as well as unique events and holidays, such as races or summer weekend tourism demands. In February 2006, the NHDOT prepared a statewide ITS Architecture that served as guidance for integrating technologies into the state's transportation system.

The vision statement is the message that the NHDOT wants to deliver to the end users about what this program hopes to achieve. It is the belief of the NHDOT that ITS technologies and initiatives will create a more user-friendly experience for all travelers in New Hampshire. The NHDOT ITS Program Vision Statement:

The use of Intelligent Transportation Systems shall support the New Hampshire Department of Transportation in managing operations safely, seamlessly, and efficiently across multiple jurisdictional and agency boundaries as well as provide real-time road condition information the public.

Specific goals that support the Program Vision have been developed. These goals outline what will be accomplished by 2019. They are divided into internal (NHDOT) and external (travelers) goals. NHDOT is working to develop a proper culture internally which would lead to a better external product that, results in an improved traveler experience.

Internal Goals

- Culture That Represents Efficient ITS Operations
  - Capacity building within NHDOT on ITS applications, costs and benefits
  - Multimodal ITS initiatives
  - More efficient NHDOT ITS planning processes
- TMC Operations & Maintenance Capabilities
  - Improved operator recruiting and training
  - Improved network and device maintenance capabilities
- Adherence to established performance measurements

External Goals

- Safety & Security
  - Improved transportation network safety
  - Improved incident and emergency management activities
- Coordination
  - Improved traffic management
  - Effective dissemination of traffic information
- Mobility
  - Reduced recurring and non-recurring congestion
  - More efficient modal utilization

If projects and programs are moved forward in the next five years in support of these goals, here are some of the things that can be expected to occur within New Hampshire's transportation system:

Internal Objectives

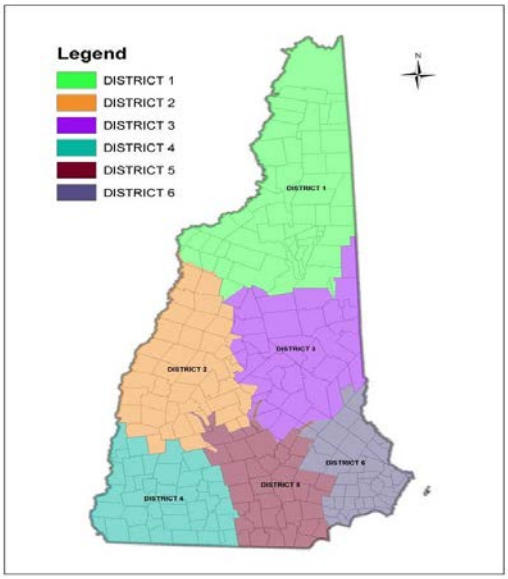
- NHDOT will implement ITS initiatives in a strategic and cost effective manner through mainstreaming and multimodal corridor deployments.
- NHDOT TMC operations and maintenance operations will show improvement as measured through established performance measures.

External Objectives

- Traveler delays on interstates and major arterial routes will be minimized through rapid detection, response, and clearance of incidents and debris.
- Travelers will be able to avoid delays on major routes through a significant amount of accurate pre-travel and en-route information regarding work zones, congested areas, and incident locations.
- Travelers will be able to make better informed decisions about trip modes, routes, and durations because they will have improved access to current traffic conditions and public transportation options.
- Work Zone strategies will reduce accidents in work zones, construction sites, and other high-accident locations through advance warnings and effective speed control during occurrences that typically increase accident rates.
- Traffic Management strategies will respond to changing traffic conditions in real time by operators who have full knowledge on the status of every transportation asset.

In summary, the Strategic Plan provides specific initiatives for projects, processes, and strategies needed to achieve the ITS Program goals. The initiatives outlined in this plan should be considered during the development of future contracts and program updates. The progress on individual initiatives will be tracked and evaluated on an annual basis to ensure they are being completed in accordance with this plan.

2.2 ITS Regions



NHDOT Districts

Because it is impractical to deploy ITS in the near future throughout the entire state's six (6) corridors, two (2) primary regions have been identified; the Southern/Urban Region, and the Northern/Rural Region. It is important to note that the two ITS Regions have differing ITS requirements as well as common ITS requirements. Many of the ITS inventory elements and services detailed in this Architecture span both regions. Generally, each region includes controlled access highways and adjacent arterial highways.

Southern Region

NHDOT is generally using a full ITS corridor approach to build out fiber or microwave backbones and then backfilling with a mainstreaming approach to add additional devices. Details on specific corridors include:

I-93 Southern Corridor

This corridor encompasses I-93 from the Massachusetts state line to Exit 20 north of Concord, the Everett Turnpike, and I-293 around Manchester. This corridor is a major artery for

commuter traffic from Manchester to Boston as well as a primary corridor for tourism-based traffic to northern New Hampshire. The route connects with the Everett Turnpike to the north of Manchester as well as with Route 101 on the east side of the city.

I-95 / Spaulding Turnpike Corridor

This eastern corridor serves as the major connecting road between the states of Massachusetts and Maine and encompasses I-95 from Massachusetts to Maine, the Spaulding Turnpike, and US Route 1. This turnpike facility also parallels the seacoast and, as such, is the major artery for tourism-based traffic to the New Hampshire coast. The route also connects with several major highways in NH, including NH 101 and US 4. Two toll plazas are located in Hampton, one for main line traffic and one for vehicles entering and leaving the I-95 corridor. The Hampton toll plaza currently operates in an Open Road Tolling (ORT) configuration.

The Spaulding Turnpike segment of the Turnpike System extends from Portsmouth to Exit 18 in Milton. This segment of the Turnpike System connects I-95 to NH 16 (the major roadway to northern New Hampshire in the eastern portion of the state), and it connects the major cities of eastern New Hampshire (Portsmouth, Dover and Rochester) as well as several major highways (NH 16, NH 125, and I-95). It has two toll plazas located at Dover and Rochester.

F.E. Everett Turnpike Central Corridor

This corridor extends from the Massachusetts state line in Nashua to Exit 14 in Concord. In part, it comprises a portion of U.S. Interstate Highways I-93 and I-293. The F. E. Everett Turnpike connects three New Hampshire urban centers: the cities of Concord, Manchester and Nashua. In addition, this corridor connects with three major East-West roads; NH 101, US 4 and I-89. F.E. Everett Turnpike is a toll road with two (2) mainline plazas (Bedford and Hooksett) and three (3) exit ramp plazas (Merrimack Exit 10, Bedford, Exit 12 and Hooksett Exit 11). The Hooksett toll plaza currently operates in an Open Road Tolling (ORT) configuration.

NH Route 101

NH Route 101 (East) -This portion of the corridor provides an east-west connection from the I-93 Corridor to the I-95 Corridor. This route experienced the largest growth in traffic volumes since its upgrade in the mid-1990's and connects the two largest metropolitan areas in the state, Manchester and Portsmouth.

NH Route 101 (West) - This portion of the corridor provides an east-west connection from the I-93 Corridor to the City of Keene. The corridor continues west of Keene to the Vermont State line as NH 9. NH 9 connects the City of Keene with I-91 in Vermont, north of Brattleboro.

Northern Region: NHDOT is generally using a mainstreaming approach with communications being provided by either wireless microwave via upgraded repeater towers (preferred) or using wireless cell modem technology.

I-89 Corridor

The north-south connection from I-93 in Concord to White River Junction in Vermont is a major corridor passing through the City of Lebanon, NH before crossing the Connecticut River at the Vermont State line and connecting to I-91.

I-93 Corridor

The I-93 portion of the Northern Corridor begins at Exit 20 in Tilton to the Town of Littleton near the Vermont State border and continues to the Town of St. Johnsbury, VT. This corridor passes through the White Mountain National Forest, from the Town of Lincoln to the Town of Franconia.

3. STRATEGIC PLAN

The Strategic Plan is presented in terms of existing conditions and future initiatives, keeping in mind the steps necessary to achieve desired capabilities of each key component of the ITS program over the 5-years. The specific components are broken into 8 distinct categories:

1. ITS Infrastructure and Device Deployment
2. Traffic Management Center (TMC) Operations
3. ITS Device Maintenance
4. ITS System/Network
5. Traveler Information
6. Traffic Incident Management
7. Public Outreach
8. Other Considerations

3.1 ITS Infrastructure and Device Deployment

NHDOT currently has the following ITS infrastructure and devices deployed:

- Closed Circuit Television (CCTV) cameras
- Dynamic Message Signs (DMS)
- Variable Speed Limit (VSL) signs
- Road Weather Information Systems (RWIS)
- Communications Infrastructure including fiber optic cable and wireless microwave.

Existing RWIS

The field devices serve as the primary method of collection/monitoring of roadway conditions (via CCTV and RWIS) and dissemination of information to travelers (via DMS and VSL). DMSs and VSLs are used to communicate messages and reduced speeds from TMC operators to the travelling public. The field devices also provide TMC operators with real-time information related on traffic and roadway conditions. The CCTV cameras and RWIS sensors provide operators a clear picture of traffic flow and weather conditions on major roadways. Appendix C contains information on the existing field devices by roadway.

ITS Infrastructure 'Needs'

The following 'need' areas were documented during the stakeholder workshop for ITS Infrastructure in descending priority:

- Improved implementation planning
- Leverage devices for multiple uses
- Scaled infrastructure deployments based on roadway characteristics
- Deployments closely tied to benefit-cost analysis
- Additional CCTV coverage
- Additional RWIS coverage
- Device and Communications Inventory / Asset Management

In the southern region, the current focus for the deployment of infrastructure is limited access highways and the four (4) bridges in Portsmouth. Communication infrastructure built along southern region roadways will use a 'corridor approach'. This means that typically ITS field devices and the associated communications infrastructure will be built as part of a single stand-alone project.

In the northern region, ITS infrastructure will be added using a 'mainstreaming' approach. Mainstreaming is the systematic approach to consider ITS deployments during the project design phases of larger roadway and bridge infrastructure projects. This approach will allow for more efficient and cost effective deployments. For example, taking advantage on lower earth disturbance costs and lower concrete costs as higher quantities are purchased for the project will help reduce costs and inconvenience for travelers as two separate projects will not be required at the location. This approach to 'mainstream' ITS infrastructure is currently being utilized as the opportunities present themselves.

In addition to 'corridor' and 'mainstreaming' projects, the expansion of ITS devices can also be prioritized based on defined ITS warrants established by the ITS Oversight Committee (i.e. high crash locations, high levels of traffic congestions, and availability of fiber-optic or microwave communication networks). This approach allows flexibility in the deployment of ITS to meet emerging needs.

Proposed ITS Infrastructure Projects

I-1: Mainstreaming of I-93 CCTV
I-2: Additional I-93 CCTV coverage (north to Exit 20 – Tilton)
I-3: Everett Turnpike (Exit 1 to 15)/I-293 Corridor Deployment
I-4: RWIS – Strategic Locations statewide
I-5: NH 101 Corridor Deployment
I-6: I-89 Corridor Master Plan
I-7: I-93 Corridor (north of Concord) Master Plan
I-8: High Level Bridge CCTV
I-9: Turnpike Sensor (Speed, Volume, Occupancy) Deployments
I-10: Transit Master Plan Mainstreaming Development
I-11: Maintenance Decision Support System (MDSS) Request for Proposal Release
I-12: WorkZone ITS Deployments

3.2 TMC Operations

Operations at the TMC began in 2007. Since launch, the TMC places mobility and emergency response operators and managers in a single collaborative environment. The center operates 24 hours a day, 365 days a year. Operators manage traffic at the TMC by coordinating with incident responders, controlling ITS equipment, and developing and implementing response plans. TMC operations are primarily responsible for:

- *Traffic Incident Management* – TMC operators are responsible for detecting, verifying and responding to incident information. Operators document, activate, and update information in the Advanced Traffic Management System (ATMS) and Traveler Information System (TIS/511 through www.nhtmc.com). Operators notify emergency response and dispatch personnel if not already on scene, and provide updates to internal and external stakeholders. The TMC operator's role prior to, during, and after an incident varies based on the type and severity of the incident.

NHDOT Transportation Management Center

- *Recurring Traffic Management* – Regularly occurring congestion on high demand roadways or through work zones during construction and maintenance projects is managed by the TMC as planned events. Operators process event information through the same systems as singular traffic incidents, thereby promoting safety and increasing mobility for typical travel throughout the state.
- *Security Management* – Cameras used for security purposes, such as those located at the Portsmouth Bridges, or the Transit Centers throughout the state, are monitored by TMC operators.
- *Road and Weather Management* – TMC Operators are responsible for monitoring weather conditions via forecasted weather services, RWIS, and CCTV. Information is provided to motorists via DMS and TIS/511. NHDOT have AVL and MDSS that serve as data inputs to adverse weather operations. Operators monitor RWIS sites for rainfall accumulation and notify environmental consultants to activate turbidity monitoring when readings reach pre-determined levels.
- *Service Patrol Management* – Service Patrol Officers (SPOs) notify TMC operators when they are responding to incidents, break-downs, or road debris. TMC operators have a range of responses from documenting the incident to posting messages on a DMS as needed.
- *Emergency Operations* –TMC operators support EOC operations during events such as flooding or severe weather events. For example, during icy conditions the TMC post weather messaging.
- *Special Event Management* – TMC operators support special events by improving traffic flow in the areas to, from, and around the event by communicating through DMS boards, monitoring impacts, and posting information on social networks.
- *Equipment monitoring* – ITS equipment in the field is monitored by DOIT and NHDOT, and routinely evaluated for possible malfunction. This includes monitoring the image and video delivery of CCTVs, and ensuring messages are displayed on DMS boards correctly.
- *ATMS System Testing* - TMC operators work with the ITS design engineers to participate in acceptance testing of the ATMS system software used in TMC Operations.
- *Amber Alerts* – TMC operators are responsible for posting Amber Alerts in accordance with State policy.

<u>TMC Operations 'Needs'</u>

The following 'need' areas were documented during the stakeholder workshop for ITS Infrastructure in descending priority:

- Enhanced Weather Situational Awareness
- TMC Operations staffing
- TMC Operator training
- Transit coordination
- Remote control of signal systems
- Replacement of Access Database Dispatch Log

<u>Proposed TMC Operations Projects</u>

TMC1: Develop TMC Standard Operating Procedures (SOPs)

CCTV Routine Maintenance

TMC2: Develop TMC Operator Training
TMC3: Continued Enhanced Weather Situational Awareness Training
TMC4: Continued Development of the TMC Academy
TMC5: 'Smart' Snow Plows/MDSS Operations
TMC6: Replacement of Access Dispatch Log
TMC7: ATMS System Testing for Operational Functionality

These projects will continue to improve TMC Operations and enhance the traveler experience by reducing the overall delays related to incident, construction activities, everyday congestion or weather related activities.

3.3 ITS Device Maintenance

Although the current focus of the ITS program is physical deployment, there will be a shift in focus required to maintain existing equipment as the system is built out. It is anticipated that the shift will be reflected in the amount of funding and resources assigned to maintenance versus installation.

ITS Device Maintenance 'Needs'

The following 'need' areas were documented during the stakeholder workshop for ITS Maintenance in descending priority:

- Improved Personnel/Training
- Additional Funding
- Consideration of Lifecycle Costs
- Tracking Device Uptime

Proposed ITS Maintenance Projects

The following initiatives are proposed to improve the efficiency of ITS maintenance activities. Efficiency will be necessary to continue the reliability of ITS systems as they grow through deployments.

M1: ITS Infrastructure Maintenance Plan
M2: Semi-Permanent to Permanent DMS Conversions
M3: Device Maintenance Cost Database
M4: Personnel Training
M5: As-Built Documentation/Warranty Management
M6: Asset Mapping

These projects will result in higher ITS availability through improved reliability and reduced costs through rational ITS equipment replacement. In the future a strategy will be developed to replace outdated equipment with better and more cost effective equipment. Strategies that control the increasing annual cost of maintaining and replacing legacy ITS equipment will be needed.

3.4 ITS System / Communications Network

TMC Server Room

The current ITS communications network supports the field devices by collecting information and delivering it to the Transportation Management Systems (ATMS and TIS). The supporting system is comprised of the following 5 components:

- Supporting Hardware – ITS hardware includes workstations, the video wall at the TMC, and other equipment used as part of the ITS system that are not considered ITS devices, such as repair equipment and headsets.
- TMC Specific Software – TMC operators utilize a central Advanced Traffic Management Software (ATMS) platform as well as device specific vendor software. A new ATMS software is currently being deployed that will streamline TMC Operations by condensing the various vendor software packages to a single platform.
- Communications Network – The communication system facilitates data exchange between the ITS field devices, the TMC network and its software systems. The current network is comprised of a mix of fiber optic cable, microwave and wireless cell modem infrastructure.
- Data Archive - Data collected by various systems or derived from TMC operator logs, and other static data is stored locally at the TMC.
- ITS Systems Standards Development – ITS Standard Details and Specifications allows for standardized procurements, allows for seamless integration of devices and software and creates consistent system requirements.

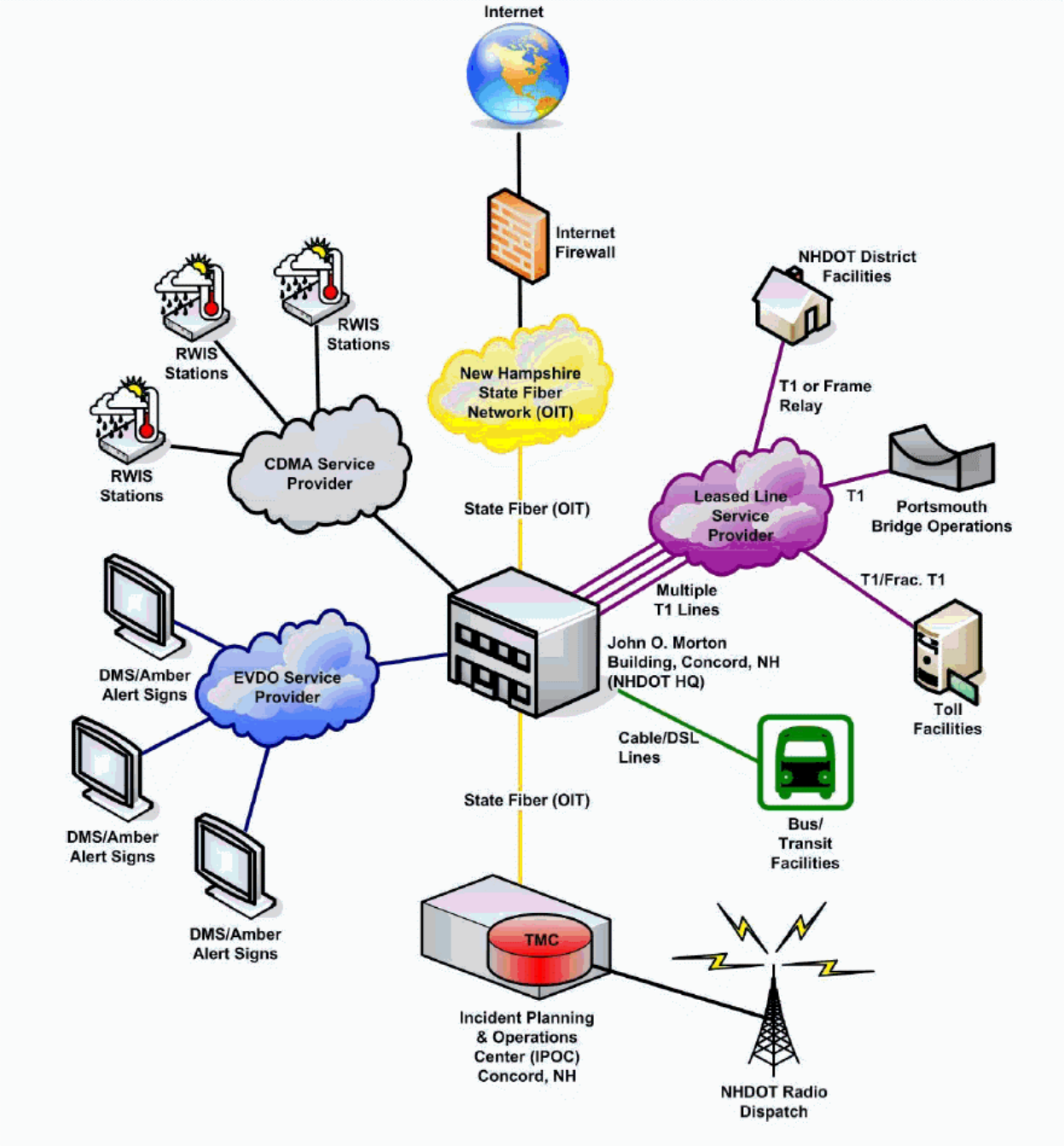
For NHDOT the primary communications infrastructure types available for ITS uses are:

- Fiber optic cable
- Wireless Microwave Radio
- Various Plain Old Telephone Service (POTS), Cellular and Satellite data services.

Existing fiber-optic cable and microwave infrastructure is State owned, but possibilities exist in leasing of communications capacity involving each communications infrastructure option. The February 2009 NHDOT Statewide Communications Study stated that for a 30-mile link, the investment and recurring (annual) costs for microwave radio is less than fiber optic cable and leased data services. This would suggest that microwave be used as the primary long-haul communication option moving forward unless fiber optic cable can be deployed through a Shared Resources Public-Private Partnership.

It should be noted for that microwave is preferable for long-range Center-to-Center (C2C) 'back-bone' cases that would be used for corridor type deployments, but for short-distance connections, the leased land-line based and cellular based data services deserve consideration. Each deployment must be considered on a case-by-case basis due to the mountainous terrains, proper

radio Line-of-Sight may not be easily attainable without linking to antenna towers of extreme heights.



NHDOT Communication Diagram (Statewide Communications Study)

For video distribution, NHDOT established a public-private partnership between the TMC and TrafficLand to provide real-time viewing access to the NHDOT's highway cameras. The public is able to go to www.Trafficland.com to view traffic and road conditions using NHDOT cameras in ten regions of the state. This agreement was established in December of 2012.

The camera locations on TrafficLand will be tied to interactive Google maps, which display travel speeds over the road corridors as color-coded lines, so the viewers can quickly determine where a traffic slow-down may be occurring, and bring up real-time video from nearby cameras to confirm travel conditions. The ability to see several cameras along a corridor will now give travelers real-time views of what is happening on particular roadways, allowing them to plan their travel routes and times accordingly.

ITS System/Communications Network 'Needs'

The following 'need' areas were documented during the stakeholder workshop for ITS System/Communications Network in descending priority:

- Considerations for Connected Vehicle
- Availability of 24/7 Support

Proposed ITS System/Communications Network Projects

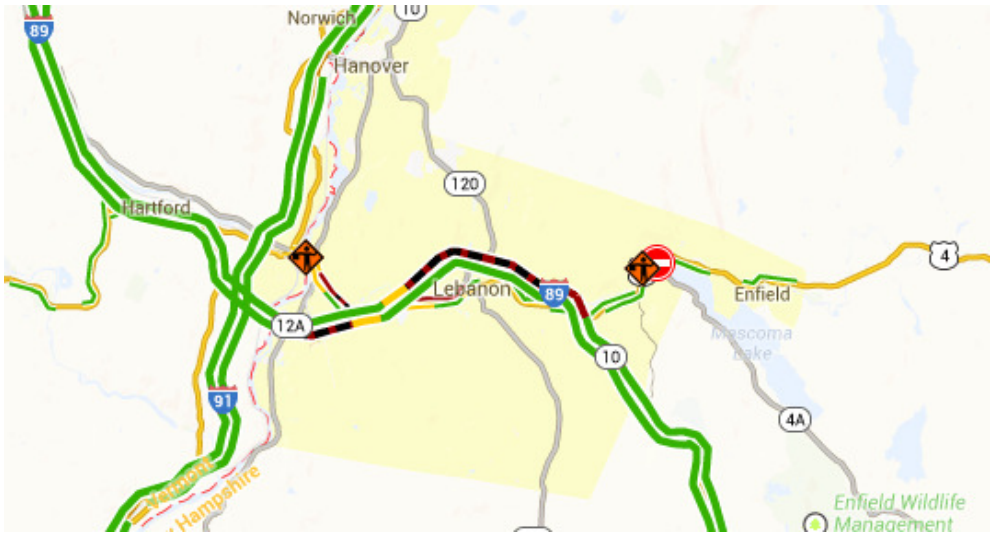
The network is incomplete from a statewide perspective. Several projects currently underway are attempting to close some of the gaps and expand data sharing. Additional projects that should be moved forward in the next 5 years include:

N-1: Communications Asset Mapping Plan
N-2: Shared Resource Program
N-3: ITS Standards Program
N-4: Video Distribution Management System

These projects will improve the existing communications networks as well as enhance future initiatives. They will provide a continuing consistent roadmap of system used/needed to support the ITS infrastructure.

3.5 Traveler information

Traveler information dissemination is a significant component of an effective traffic management program. By informing travelers of incident or delay information, efficiencies could result in improved emergency response times, alternative routing, a reduced number of secondary accidents, and reduced delays for commuters and freight traffic. The TMC uses an array of tools to communicate traffic considerations to travelers throughout the state which include:



Current New Hampshire 511 Webpage showing Google Travel Speed during Incident Response

- DMS – Message boards are used to display incident, construction work zone information or expected delays. VSLs communicate reduced speed limits when necessary.
- Social Media – Twitter is used to communicate updates to travelers that subscribe to specific feeds associated with the following corridors: I-89, I-93, I-95, NH 101 between Manchester and Hampton, F.E. Everett Turnpike, and the Spaulding Turnpike. The messages update travelers on corridor-related information such as poor weather, events, and traffic delays.
- Google Transit – Provides transit information including schedules and connection as well as navigation and detour services.
- Traveler Information Web Services – TMC operators update a 511 website that displays to travelers real time traffic information throughout the state. This website is accessed through the www.nhtmc.com portal. Examples include construction projects, road closures such as parades, and traffic congestion levels.

Traveler Information 'Needs'

The following 'need' areas were documented during the stakeholder workshop for ITS Traveler Information in descending priority:

- Private Sector Coordination
- Efficient Information Gathering & Dissemination

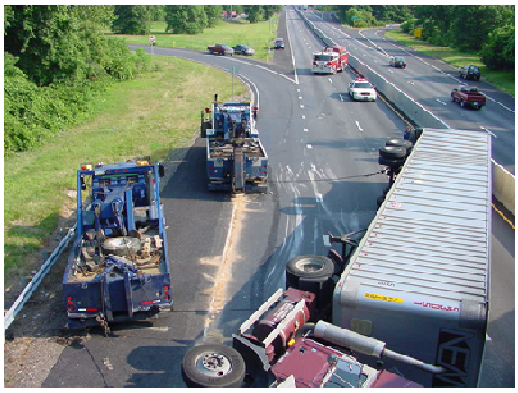
Proposed Traveler Information Projects

Traveler information is constantly evolving and thereby creating new opportunities to share data and information with stakeholders and the traveling public. Some areas of focus for the next 5 years include:

T-1: ATIS Deployment
T-2: Hands Free Eyes Free Mobile Application
T-3: Improved Web Services/511
T-4: Travel Times on DMS
T-5: GTFS Feeds for Transit

3.6 Traffic Incident Management

Managing traffic involves both responding to incidents and operational scenarios. Traffic management is an important tool in lessening the impact of congestion as well as providing for a safer environment for drivers. It is a coordination process to detect, respond to, and remove traffic incidents and restore traffic capacity as safely and quickly as possible. The coordination process can include a range of public and private sector response partners from local and state law enforcement to television and radio media companies.



On-scene TIM Coordination

Several tools are utilized during a traffic incident, depending on the type and severity of incident. These include:

- Through Traveler Information via DMS, social networks, and on the www.nhtmc.com website, travelers are advised of approaching conditions and can make informed decisions regarding alternatives routes.
- Service Patrols currently serve the I-93 Salem to Manchester Corridor (Exit 1 through 5), the I-95 Corridor from the Massachusetts to Maine border, .the Spaulding Turnpike from Exit 1 through 9 (Portsmouth to Dover) and the Everett Turnpike from Nashua to Concord (Exit 1 through 15) borders. The SPO often serve as the first or only responders to incidents on those roadways.
- Diversion plans are a means to divert traffic when incidents result in serious congestion, or lane or road closures. These plans are being developed in collaboration with local planning agencies (TSC, TIM, SMRPC) and responders such as police and fire to ensure that routes have adequate capacity should the need arise.
- State and local response agencies directly communicate with TMC operators via radio, phone, or email for traffic management efforts so that TMC operators can dispatch and deploy DOT personnel and resources.

Traffic Incident Management 'Needs'

The following 'need' area was documented during the stakeholder workshop for Traffic Incident Management in descending priority:

- Coordination of Freeway and Arterial Operations

Proposed Traffic Incident Management Projects

Effective Traffic Incident Management activities rely on both the appropriate use of technology and inter-agency coordination. The strategies that were developed are a mix of both 'technology' projects and 'people-focused' projects. Recommended initiatives include:

TIM-1: Secure Web Services Video Sharing with Partners
TIM-2: After Action Review & Table Top Exercise Program
TIM-3: Interagency Agreements & MOUs
TIM-4: Diversion & Alternate Route Planning
TIM-5: Computer Aided Dispatch Integration

3.7 Partnering and Public Outreach

The full potential of the ITS program will be realized by how well the TMC partners with other NHDOT sections as well as private and public organizations. Currently the TMC is co-located with the Department of Safety and the Department of Homeland Security, which provides more effective agency integration.

Current ongoing efforts involve coordinating with 5 partners to share a private public microwave communications network. Those partners, including NHDOT, are New Hampshire Departments of Safety (DOS), Department of Resources and Economic Development (DRED), National Guard and New Hampshire Public Television (NHPTV). This sharing expands communications by sharing radio capabilities, microwave communications towers, and high speed fiber optic lines.

Other efforts include educating the public about the presence and benefits of ITS in New Hampshire. Continued public outreach will demonstrate to the public that sound investments are being made in transportation technology.

Partnering and Public Outreach 'Needs'

The following 'need' areas were documented during the stakeholder workshop for Partnering and Public Outreach in descending priority:

- Cross training of departments/agencies
- Communicate 'Benefits of ITS'

Proposed Partnering/Public Outreach Projects

Continued stakeholder partnering and public outreach will demonstrate that sound investments are being made in transportation technology. The coordination and exchange of information to both partners and the public is an essential part of a successful ITS program. Some projects for consideration in this arena include:

P-1: Establish Public Outreach Committee
P-2: ITS Awareness Campaign

3.8 Performance Measures

The full potential of the ITS and TMC operational programs will be captured through a three phase performance measurement reporting program that provide the following:
PM-1: Monthly Activity Measures
PM-2: Dashboard Measures
PM-3: Corporate Measures

A monthly activity report (PM-1) captures TMC activity measures and this report is distributed internally to stakeholders. It will be published externally on the TMC dashboard (PM-2) carried on the www.nhtmc.com webpage. A report that provides overall activity and outcome measures that are geared to internal department stakeholders will be published quarterly.