STRAFFORD-ROCKINGHAM REGION
ITS STRATEGIC PLAN

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1. INTRODUCTION

This document presents an updated ten-year Intelligent Transportation Systems (ITS) Strategic Plan for the Strafford-Rockingham region. The original and the updated ITS Strategic Plan were prepared on behalf of the Strafford Regional Planning Commission (SRPC) and the Rockingham Planning Commission (RPC), in cooperation with local, regional, state, and federal transportation and emergency management stakeholders as part of the regional ITS architecture development and update process. An executive summary of this stand-alone document is included as a chapter in the *Strafford-Rockingham Region ITS Architecture*.

The ITS Strategic Plan recommends specific, project-based initiatives for implementing the *Strafford-Rockingham Region ITS Architecture*, which provides an overall logical framework for ITS implementation in the region. The ITS Strategic Plan and the *Strafford-Rockingham Region ITS Architecture* document, taken together, provide a roadmap for coordinated ITS deployment in the region.

This update to the ITS Strategic Plan takes into account new issues, needs, and opportunities that have arisen since the 2008 *Strafford-Rockingham Region ITS Architecture*; updates to important regional planning documents such as the Transportation Improvement Program (TIP) and Unified Planning Work Program (UPWP); changing institutional structures and interactions; as well as changes in the wider context of transportation legislation and funding at the state and national level.

1.1 Background

Intelligent Transportation Systems (ITS) are applications of advanced technology in the field of transportation, with the goals of increasing operational efficiency and capacity, improving safety, reducing environmental costs, and enhancing personal mobility. ITS projects can provide a variety of benefits, including: increased system capacity through more efficient use of existing infrastructure; improved system management, including incident management; better-informed travelers through the provision of real-time traveler and weather information; increased safety; and reduced environmental impacts. Intelligent Transportation Systems are a series of tools that can be applied, as needed, to address specific, identified regional transportation needs.

To achieve their full potential, ITS systems cannot exist independently. Rather, they must be integrated with one another, and with conventional transportation investments, in order to maximize the return on investment of the individual systems. Successful ITS deployments require an approach to planning, implementation, and operations that emphasizes collaboration between relevant entities and compatibility of individual systems. At the core of this process is a systems architecture that guides the coordination and integration of individual ITS deployment projects. This ITS architecture serves as a framework for regional ITS coordination; defining the component systems, their interconnections, and providing a tool for facilitating institutional relationships within a region.

The development of a regional ITS architecture is part of the Federal requirements meant to encourage regional integration of transportation systems. In January 2001, a FHWA Rule and a FTA Policy were published that included a requirement for ITS projects funded through the Highway Trust Fund (including the mass transit fund) to conform to the National ITS Architecture and applicable standards. The Rule/Policy defines conformance with the National ITS Architecture as adherence of ITS projects to a regional ITS architecture that is developed based on the National ITS Architecture.

The *Strafford-Rockingham Region ITS Architecture* has been developed to ensure that ITS projects in the region adhere to the FHWA Rule and the FTA Policy. Furthermore, it is hoped that the updated *Strafford-Rockingham Region ITS Architecture* will continue to promote increased interagency coordination of transportation technology in the region. An important part of this regional ITS architecture is the identification of specific ITS projects and initiatives planned for the region, as well as a prioritization or sequencing of these ITS projects. ITS projects are defined as any project which includes ITS elements. By recommending specific, project-based initiatives, this ITS Strategic Plan is intended to fulfill Federal requirements for project sequencing.

It is important to understand that, like the architecture, the ITS Strategic Plan is a "living document." This effort involved re-evaluating and updating the ITS Strategic Plan it so that it remains current with ITS deployment activities, evolving transportation needs in the region, and ITS developments at the agency, statewide, and national levels. It must continue to be periodically re-evaluated and (if necessary) updated to ensure that it remains relevant. It is envisioned that the ITS Strategic Plan will continue to be evaluated and updated as needed in coordination with the *Strafford-Rockingham Region ITS Architecture.* Additional information on the recommended process of using and maintaining the ITS Strategic Plan is detailed in Chapter 6.

1.2 Overall Architecture Mission Statement and Goals

Working with regional stakeholders in the original development of the regional ITS architecture, the following mission statement was developed to define the mission of the architecture:

> "In order to enhance the region's transportation safety, security, mobility, and performance; stakeholders in the Strafford-Rockingham region will apply advanced technologies and systems to improve interagency coordination and create opportunities for seamless integration of transportation services, both within the region and with adjacent regions."

Consistent with the region's transportation goals, the goals for the architecture are to:

- Improve safety.
- Improve security.
- Increase efficiency.
- Improve coordination.
- Improve mobility/ accessibility.
- Improve traveler information.
- Improve economic prosperity/livability.
- Reduce environmental impacts.
- Maximize investment value.

1.3 ITS Strategic Plan Objectives and Approach

The objective of the ITS Strategic Plan is to translate the recommendations of the completed logical architecture into specific short-, medium- and long-term projects that can be incorporated into the regional Transportation Improvement Program (TIP). The recommended projects must take into consideration the unique nature and attributes of the Strafford-Rockingham region and present an efficient, effective means of deploying ITS to achieve both early success and long-term integration with regional, state, and interstate advanced technology infrastructure.

The region's size and diverse project area and specific transportation needs require a tailored approach to ITS deployment. Project stakeholders also applied ITS "lessons learned" from other regions to the Strafford-Rockingham region. In addition, it is important that the deployment plan is realistic in terms of the scale and phasing of the deployment, ensuring free-standing operability of projects in the short-term.

Other key aspects of the approach include:

- **Consistency with the Regional ITS Architecture:** As previously mentioned, the *Strafford-Rockingham Region ITS Architecture* was created concurrently with the original ITS Strategic Plan, and the updates have also occurred concurrently. The architecture was built and updated based on a comprehensive study of local transportation needs, existing ITS systems, and planned ITS initiatives. It was developed to ensure that new ITS projects take interoperability and multidisciplinary needs into account; thereby maximizing the value for both existing and future ITS investments. Therefore all ITS projects suggested in this ITS Strategic Plan are consistent with the recommendations of the regional ITS architecture.

- **Responsiveness to Regional Needs:** ITS solutions typical in other regions are not necessarily relevant to the Strafford-Rockingham region. The types of ITS projects proposed in this ITS Strategic Plan directly relate to stakeholder-identified needs. For example, stakeholders emphasized that key concepts, such as congestion mitigation and safety, should be embedded in as many ITS projects as possible. Also, the scale and cost of the ITS projects proposed, as well as the deployment plan for those projects, are appropriate with regards to the region's size and available resources.

- **Multi-Functional ITS Technologies:** To maximize the value of ITS deployments in the region, the project concepts have been developed so that ITS equipment can serve more than one purpose whenever possible. Serving multiple purposes promotes the region's goals of improved interdisciplinary and interagency coordination. Multi-functionality also provides broader access to potential funding sources for regional ITS projects. This principle can be applied to traffic detectors, surveillance cameras, communications, and a host of other ITS infrastructure elements.

- **Communications Technologies:** Communications systems provide the backbone for the operation of and connections between ITS devices and operating entities. Adopting this as a long-term focus ensures that ITS can be deployed and coordinated more effectively.

- **Inter-Jurisdictional, Inter-Regional and Interstate Coordination:** Emphasizing inter-jurisdictional efforts within the region can lead to more effective and economical procurement and use of ITS technologies.

Coordination between jurisdictions can also ensure that compatible technologies are used and can therefore realize multi-agency and multi-functional ITS. In addition, while the boundaries of this project were limited to the boundaries of the SRPC and RPC (the Strafford-Rockingham region), regional ITS projects will be impacted by statewide and inter-state initiatives. Therefore, taking these initiatives into account is an important aspect of the ITS Strategic Plan.

- **Incremental Deployment Based Upon Early Success:** In developing and updating the ITS Strategic Plan, identifying early success projects was deemed important. Early success projects, i.e., low-cost deployments which demonstrate real benefits within a short timeframe, help build momentum and confidence for the ITS program. These projects address short-term needs while providing a basis for eventual region-wide deployments.

- **Environmental Benefits:** Stakeholders in the region are aware of the important benefits that ITS can provide towards reaching environmental goals such as congestion mitigation and emissions reductions, as well as the potential funding sources for efforts that meet these goals effectively. Project concepts in the ITS Strategic Plan take into account the strategic approach to realize goals effectively within the context of funding realities.

1.4 The ITS Project Update Process

The update of the ITS Strategic Plan included the following steps:

- Review and update local needs and ITS services (i.e., service packages) identified with project stakeholders during the update of the regional ITS architecture;
- Identification of discrete ITS projects that provide logical services within well-defined domains (e.g. by corridor, mode, region), taking into account projects that were included but not completed in the original Strategic Plan;
- Prioritization of those ITS services and needs based upon local, regional and statewide factors;
- Development of a prioritized list of projects based on early success opportunities, technological maturity, statewide ITS deployment initiatives, and the precedence and interdependence of projects, among other factors.

1.5 Organization of the ITS Strategic Plan

This ITS Strategic Plan is structured as follows:

- **Chapter 1 (Introduction):** This chapter provides introductory material; it describes the background of ITS architectures, outlines the objectives of the overall project and this ITS Strategic Plan, and describes the ITS project development and update process;
- **Chapter 2 (Stakeholder Involvement):** This chapter describes the stakeholder involvement process, including a list of participating agencies;
- **Chapter 3 (Needs and ITS Services):** This chapter summarizes regional transportation needs identified as part of the regional ITS architecture development process and maps these needs to specific ITS services identified in the National ITS Architecture;
- **Chapter 4 (Regional ITS Projects Overview):** This chapter contains detailed information on the proposed ITS projects, including key participating stakeholders, high-level cost estimates, and links to regional transportation needs and regional ITS architecture service packages;
- **Chapter 5 (Project Descriptions):** This chapter provides maps and a more detailed description of each of the regional ITS projects proposed as part of this ITS Strategic Plan; and
- **Chapter 6 (ITS Strategic Plan Maintenance):** This chapter discusses the use and maintenance of the ITS Strategic Plan, designed to ensure that the ITS Strategic Plan remains a “living” document.

2. STAKEHOLDER INVOLVEMENT

2.1 Identified Stakeholders

The same stakeholders who were invited to participate in the development of the update of the *Strafford-Rockingham Region ITS Architecture* were invited to participate in the development of this ITS Strategic Plan. Since both the architecture and this ITS Strategic Plan are designed to reflect regional transportation needs and priorities, wide-ranging stakeholder input was important in developing a truly comprehensive and accurate document.

Regional stakeholders were invited to participate in workshops and meetings, reviewed project deliverables (draft documents), and provided input at each stage of the development process. Stakeholders were also contacted directly to obtain updates and input, given that not all stakeholders could attend meetings.

The following comprehensive list of stakeholders was developed for the region:

Municipal Stakeholders (Public Works, Police, and Fire Departments)

All Cities, Towns, and communities within the geographic boundaries of the region, including:

Strafford Regional Planning Commission Communities

- Barrington
- Brookfield
- Dover
- Durham
- Farmington
- Lee
- Madbury
- Middleton
- Milton
- New Durham
- Newmarket
- Northwood
- Nottingham
- Rochester
- Rollinsford
- Somersworth
- Strafford
- Wakefield

Rockingham Planning Commission Communities

- Atkinson
- Brentwood
- Danville
- East Kingston
- Epping
- Exeter
- Fremont

- Greenland
- Hampstead
- Hampton
- Hampton Falls
- Kensington
- Kingston
- New Castle
- Newfields
- Newington
- Newton
- North Hampton
- Plaistow
- Portsmouth
- Rye
- Salem
- Sandown
- Seabrook
- South Hampton
- Stratham
- Windham

Regional Stakeholders (within the region and adjacent to the region)

- Strafford Regional Planning Commission
- Strafford County Sherriff's Office
- Rockingham Planning Commission
- Rockingham County Sherriff's Office
- Cooperative Alliance for Regional Transportation (CART)
- Cooperative Alliance for Seacoast Transportation (COAST)
- Northern New England Passenger Rail Authority (NNEPRA) - Downeaster Passenger Rail
- Alliance for Community Transportation (ACT)
- Nashua Regional Planning Commission (NRPC)
- Nashua Transit
- Southern New Hampshire Planning Commission (SNHPC)
- Lakes Region Planning Commission (Lakes RPC)
- Central New Hampshire Regional Planning Commission (CNHRPC)
- Southern Maine Regional Planning Commission (SMRPC)
- Merrimack Valley Planning Commission (MVPC)
- York County Emergency Management Agency

State Stakeholders (New Hampshire and adjoining states)

- New Hampshire Department of Transportation (NHDOT)
- New Hampshire Department of Safety (NHDOS)
- New Hampshire Homeland Security and Emergency Management
- New Hampshire Motor Transport Authority
- Maine Department of Transportation (MaineDOT)

- Maine State Police
- Maine Turnpike Authority (MTA)
- Massachusetts Department of Transportation – Office of Transportation Planning (MassDOT – OTP)
- MassDOT – Highway Division

Federal Stakeholders

- Federal Highway Administration (FHWA)
- Federal Transit Administration (FTA)
- Federal Motor Carrier Safety Administration (FMCSA)

Other Private/Institutional Stakeholders

- University of New Hampshire (UNH)
- Pease International Tradeport
- Portsmouth Naval Shipyard
- Seabrook Station
- Pan-Am Railways
- C&J
- Greyhound Buslines
- Flight Line
- Total Traffic Network

2.2 Workshops and Meetings

Regional stakeholders provided input on potential ITS opportunities at a Kickoff Meeting/Working Session on February 10, 2012 and a Stakeholder Input Meeting on March 15, 2012. Additional ITS opportunities were identified via email and telephone conversations with project stakeholders. Based on this input, and taking into account the updated regional transportation needs presented in the *Strafford-Rockingham Region Draft Updated Transportation Needs* memorandum, an initial list of ITS opportunities was developed. A group of project stakeholders were then invited to attend a workshop to discuss regional ITS projects, prioritization and sequencing, and the ITS Strategic Plan. The Strategic Plan Workshop was held on April 13, 2012 in Newington, New Hampshire. Workshop attendees identified potential ITS opportunities to address specific transportation needs, such as recurring congestion, high accident locations, lack of information/coordination along multi-modal corridors, lack of communications infrastructure, etc. Based on the outcomes of this workshop, a preliminary list of ITS projects was created and updates to the ITS Strategic Plan were recommended. These recommendations were summarized in the memorandum called *Recommended Updates to the Strafford-Rockingham Region ITS Strategic Plan*. The preliminary project list and recommended updates were presented at the Stakeholder Review Meeting on May 17, 2012 in Portsmouth, New Hampshire, where the list of projects and project prioritization were further refined for inclusion in this ITS Strategic Plan and its summary in the *Strafford-Rockingham Region ITS Architecture* document. Attendance at the workshops and weekends is included in Appendix D of the *Strafford-Rockingham Region ITS Architecture* document.

In addition to providing input during each phase of the architecture update process, at the Strategic Plan Workshop, and at the Stakeholder Review Meeting; stakeholders were also able to provide

their input through one-on-one discussions with the project team. Stakeholders were also given the opportunity to comment on draft versions of the architecture and ITS Strategic Plan documents. Stakeholder comments were addressed prior to finalization of these documents and their presentation to the Metropolitan Planning Organizations (MPOs) for adoption.

3. NEEDS, CHALLENGES, AND ITS SERVICES

The purpose of the needs analysis is to review the existing conditions and status of ITS deployments initiated by agencies in the region. The analysis is based on a review of planning documents or studies and reports that identify regional ITS needs, as well as ITS efforts that have already been undertaken within the region. The needs analysis is also based on discussions with the agencies participating in the architecture update process, either through participation in stakeholder meetings and workshops or through one-on-one stakeholder interviews. This effort resulted in updated documentation of regional needs, which continued to evolve and be further refined over the course of the study, as well as identification of up-to-date regional challenges.

3.1 Regional Needs

Stakeholders identified and updated several inter-related issues as being the primary regional transportation needs, including:

- Traffic Management – With the region experiencing congestion growth, traffic management activities continue to take on increasing regional importance, particularly along key corridors. The region routinely must handle commuter congestion, seasonal and retail traffic peaks, roadway construction congestion and detours, and congestion caused by incidents, inclement weather, and large-scale planned events. Traffic signal coordination has been advantageous to the region, however, as more signals become coordinated, there is a growing need to identify funding and programs to continue to maintain these signal coordination timing patterns.

- Incident and Emergency Management – In addition to improving incident detection and response, the region is at risk of flooding, hurricanes, severe storms, and emergency evacuation related to the Seabrook Station. Greater coordination, provision of information, and improved communications are significant needs in the region to deal with both planned and unplanned events.

- Transit Management and Coordination – Population growth and the aging of the population contribute to an increased need for more public transit, improved transit operations, and improved coordination among transit agencies. There is a need to improve the information available to manage transit operations, as well as address corridor congestion to improve travel time reliability.

- Traveler Information Services – Improved traveler information is seen as a way to reduce traffic congestion, support public transit alternatives, improve public safety, and assist in other regional transportation goals. In addition to information for individual modes, intermodal and multimodal traveler information is a growing regional need.

- Economic Development – Attracting residents and businesses to the region is priority need. An efficient transportation network, for both freight (by air, boat, rail, and truck) and private vehicle travel, is essential to this goal.

- Data and Information Sharing – As more transportation data become available, there is increasing recognition of the benefits of that data. Increased coordination and sharing of available information is needed both between regional agencies and with the State.

- Infrastructure Maintenance and Preservation – The region has an ongoing need for preservation and maintenance of transportation infrastructure, especially the region's bridges. Maintenance practices should optimize use of resources and minimize negative impacts on the environment.

- Transportation Funding - An overarching transportation issue in the region, transportation funding remains extremely limited and should be used as efficiently as possible. Recent additional funding challenges include the loss of the $30 registration surcharge and the 3 cent betterment gas tax. Funds should be focused on projects that maximize the realization of goals that address regional needs.

3.2 Mapping Needs to ITS Services

In order to make both the *Strafford-Rockingham Region ITS Architecture* and this ITS Strategic Plan reflect the region's unique characteristics and conditions, mapping the stakeholder-identified needs to specific ITS services is necessary. In order to examine specific ITS services, the service packages identified in the National ITS Architecture were utilized. *Service Packages* are realistic, deployment-oriented representations of the physical elements required to implement ITS services. ITS entities (subsystems and terminators) and information flows are combined to form specific service packages. These service packages combine existing and future elements to provide guidance for ITS coordination over a 10-year horizon.

The most recent version of the National ITS Architecture (Version 7.0), there are ninety-seven (97) illustrative service packages defined in eight categories:

- Archived Data Management (AD)
- Advanced Public Transportation Systems (APTS)
- Advanced Traveler Information Systems (ATIS)
- Advanced Transportation Management Systems (ATMS)
- Advanced Vehicle Safety Systems (AVSS)
- Commercial Vehicle Operations (CVO)
- Emergency Management (EM)
- Maintenance and Construction Management (MC)

The needs identified the region's transportation stakeholders are mapped to these specific service packages in Exhibit 3-1 below:

Exhibit 3-1: Mapping Needs to Service Packages

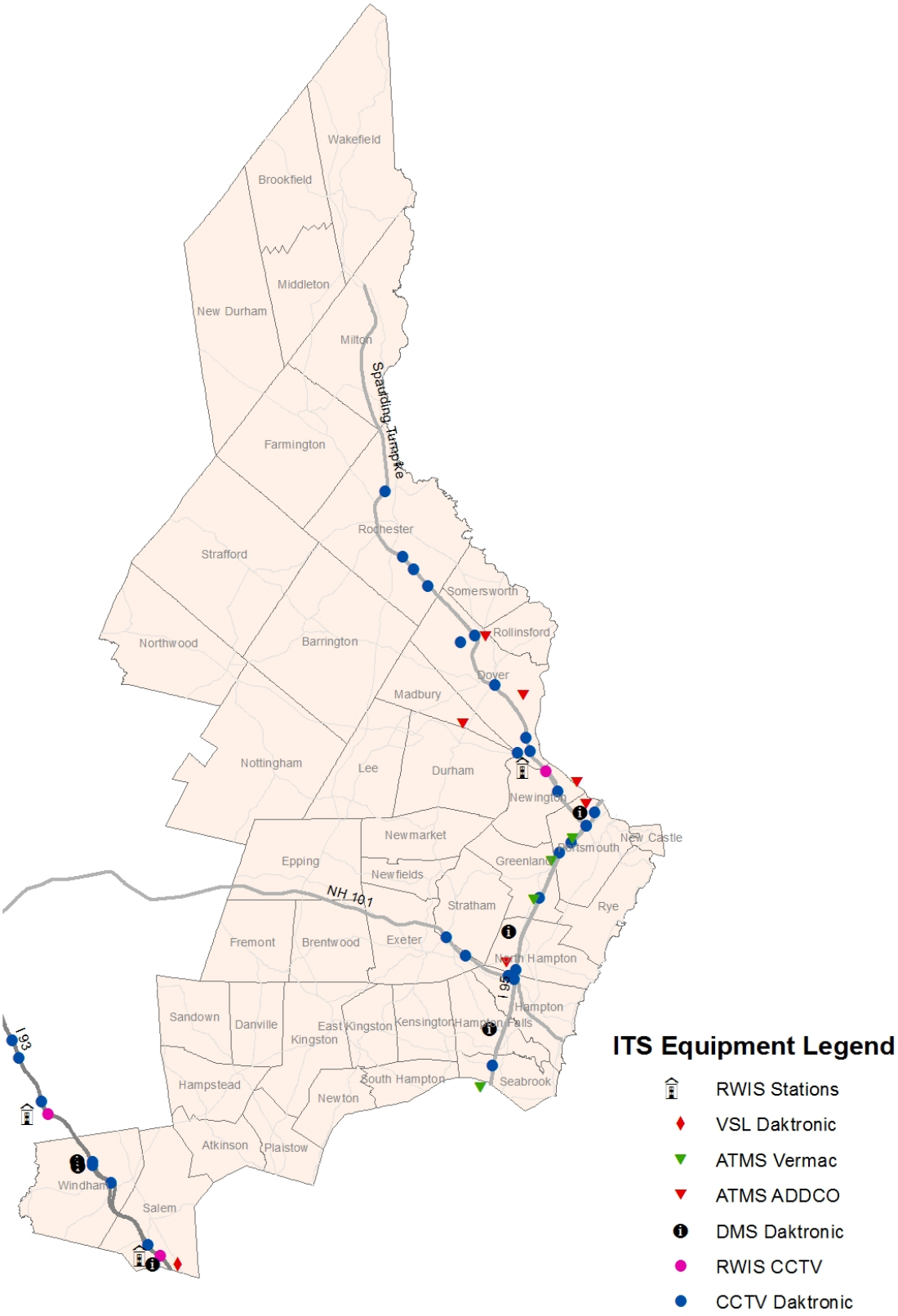
Regional Need	Service Packages
Traffic Management	ATMS01, ATMS03, ATMS04, ATMS06, ATMS07, ATMS08, ATMS10, ATMS13, ATMS18, ATMS20, ATMS22, CVO03, CVO04, CVO06, CVO07, EM08, EM09, MC03, MC04, MC05, MC06, MC07, MC10
Incident and Emergency Management	APTS07, ATMS01, ATMS03, ATMS04, ATMS06, ATMS07, ATMS08, EM01, EM02, EM03, EM04, EM05, EM06, EM07, EM08, EM09, EM10, MC03, MC04, MC08, MC10
Transit Management and Coordination	APTS01, APTS02, APTS03, APTS04, APTS05, APTS07, APTS08, APTS09, APTS10, EM08, EM09, MC04, MC06, MC07, MC10
Traveler Information Services	APTS08, ATIS01, ATIS02, ATMS06, EM06, EM10, MC10
Economic Development	While no ITS services packages address the issue of economic development directly, the implementation of all service packages should take into account possible effects on economic development.
Data and Information Sharing	AD1, AD2, AD3, APTS07, ATMS06, ATMS07, ATMS08, EM05, EM10, MC04, MC06, MC07, MC10
Infrastructure Maintenance and Preservation	APTS05, ATMS01, EM05, MC01, MC03, MC04, MC05, MC06, MC07, MC08, MC10, MC12
Transportation Funding	While no ITS services packages address the issue of transportation funding, the implementation of all service packages will face the challenge of securing funding in a fiscally-constrained environment.

Additional information on the National ITS Architecture, Version 7.0, and service packages in general can be found at: www.iteris.com/itsarch. Additional information on the service packages specific to the region can be found in Chapter 4 of the *Strafford-Rockingham Region ITS Architecture* document.

3.3 Existing ITS Devices

An important context to understand when considering the region's transportation needs is the location of existing ITS devices. This information identifies where ITS has been deployed and aids in understanding where gaps might exist. NHDOT also provided information regarding the location of its ITS devices, including dynamic message signs (DMS), variable speed limit (VSL) signs, CCTV cameras, and road weather information systems (RWIS). NHDOT is currently working to standardize these devices, along with signal controllers and vehicle detection devices.

Exhibit 3-2: Location of NHDOT Devices



3.4 Challenges in the Region

At the Strategic Plan Workshop, stakeholders also discussed the region's needs in the context of regional data on projected congestion as well as crash locations. The following exhibits show traffic congestion as projected by the region's transportation demand model for the years 2017 and 2021.[1] The maps show the volume to capacity ratios on the corridor, where red indicates corridors with the worst volume to capacity ratios, or severe congestion. In the model, a volume to capacity ration of 1.35 or greater is considered a 'failure condition'. Corridors of concern that were discussed included Route 125, US Route 4, Route 108 in Somersworth and Rochester, Route 9 in Somersworth, and Route 16. Route 1 and Route 1A were also identified by stakeholders as corridors of concern due to issues related to congestion, lack of transit service, parking, and emergency/evacuation routes.

[1] Data provided by SRPC.

Exhibit 3-3: Projected Congestion 2017

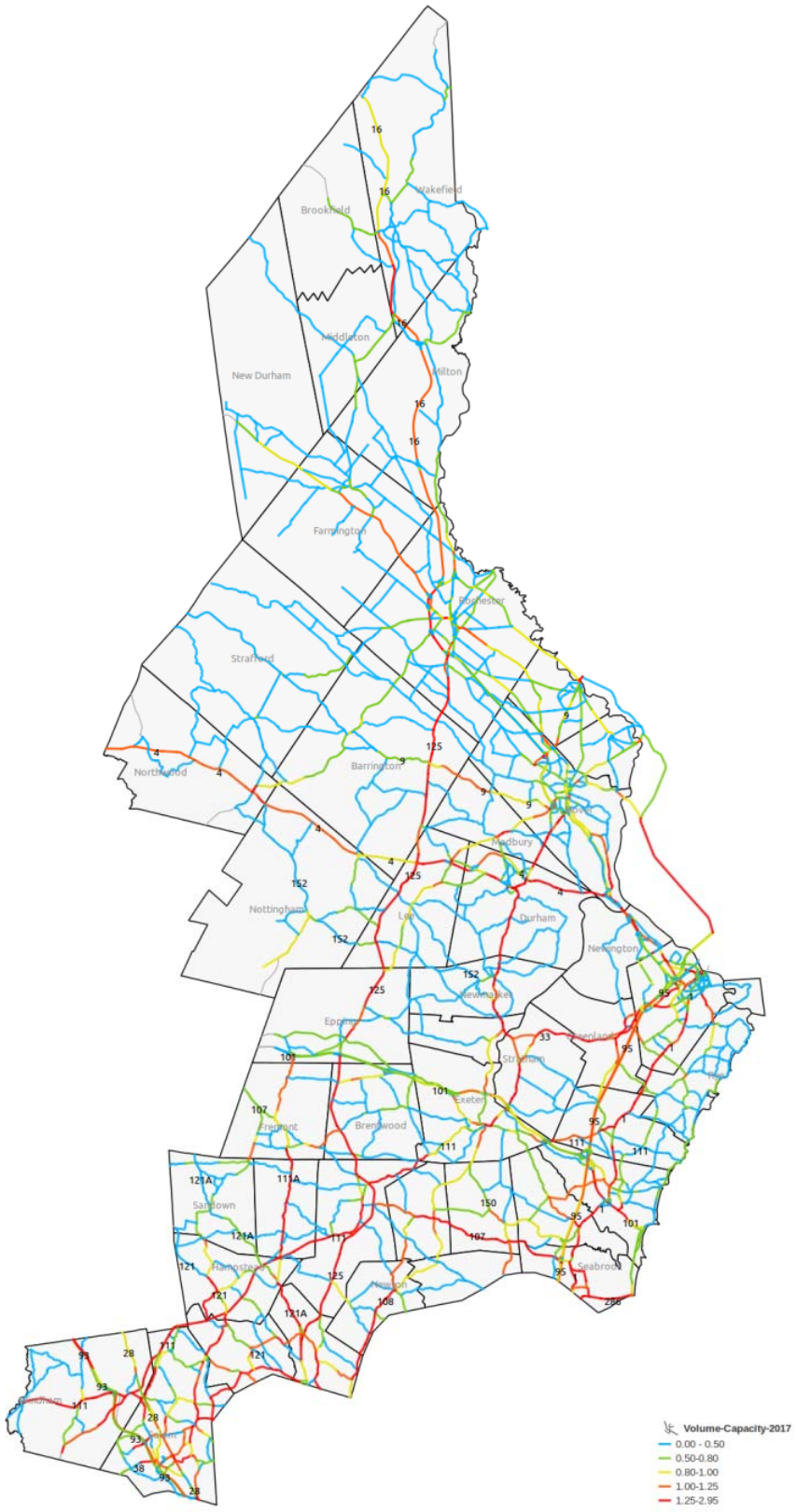
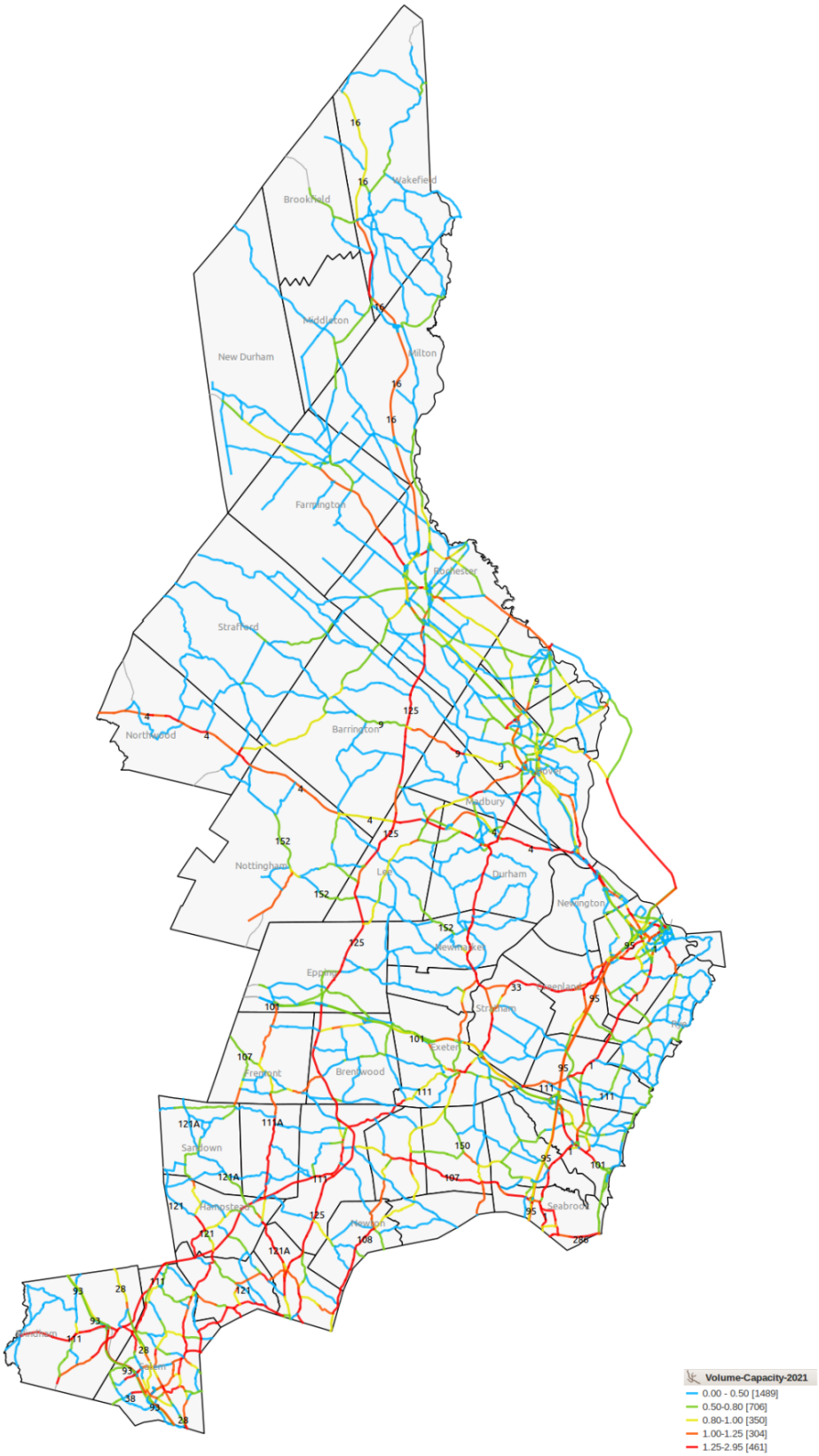
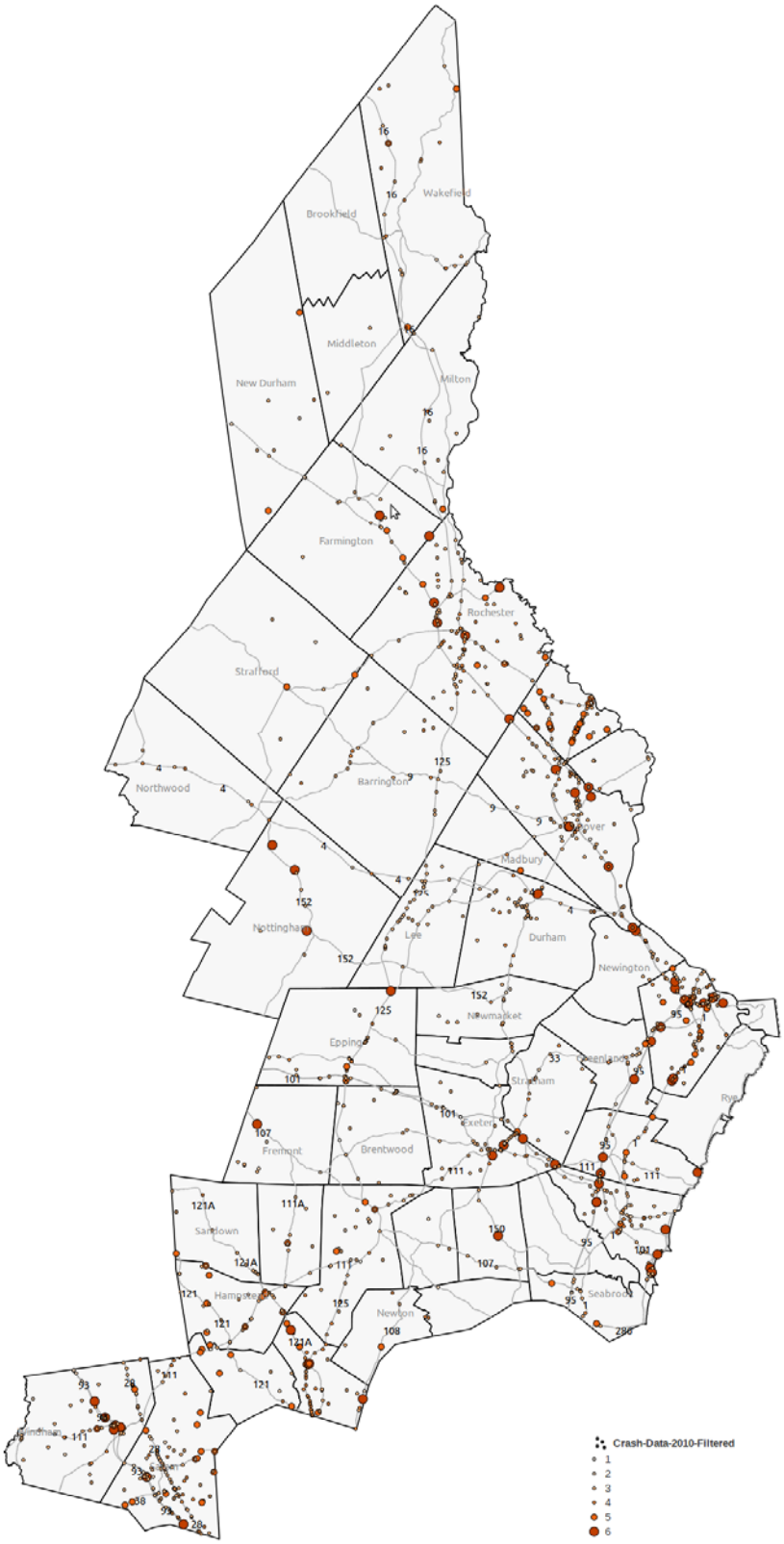


Exhibit 3-4: Projected Congestion 2021



In addition, at the Strategic Plan Workshop, stakeholders were shown a map of high crash locations in 2010 (shown in the exhibit below). Crash data provided by SRPC were filtered to show only crashes where injuries occurred. As the size of the dots on the map increase, the severity of injuries as a result of the crash increases. The map highlights clusters of crashes, as well as corridors of crashes. I-93 and I-95 had numerous crashes, though other smaller roads also had many crashes, such as 121A and 105. Stakeholders also identified Dover (particularly the Route 9/108 intersection), Lee Circle in Derry, and Route 111 between Rochester and Farmington as potentially dangerous areas.

Exhibit 3-5: Crash Data 2010



4. REGIONAL ITS PROJECTS OVERVIEW

4.1 Introduction

This chapter presents detailed descriptions for each project included in the updated ITS Strategic Plan. Through these projects, summarized in Exhibit 4-1, the functional elements of the *Strafford-Rockingham Region ITS Architecture* have been translated into project-based deployments that can be prioritized, programmed into the regional TIP, funded, and implemented strategically over time. A principal objective of the ITS Strategic Plan development process is to bring together a variety of transportation and emergency management stakeholders to foster a regional dialogue about the future of Intelligent Transportation Systems in the Strafford-Rockingham region.

For ease of reference, the projects have been arbitrarily divided into the following classifications:

- Traffic Management (TM)
- Transit Management (PT)
- Parking Management (PM)
- Multimodal Management (MM)
- Emergency Management (EM)
- Information Management and Communications (IMC)

Severity of Crashes

Exhibit 4-1: Summary of Regional ITS Projects

Ref. #	Project Title	Project Description	Project Location(s)	Planning Cost Estimate*	Service Packages	Timeframe	Lead Agency	Project Participants	Expected Benefits	Integration with Other Projects
TM-1	Signal Coordination and Maintenance Study	Study to develop an inventory of coordinated signal technology in use in the region and develop recommendations for an ongoing maintenance and coordination process.	Regional	$80,000	APTS09, ATMS03, ATMS08, EM02	Short-term	SRPC, RPC	NHDOT, Local Municipalities	Coordination of signal technology. Improve traffic flow, reduce congestion and emissions.	
TM-2	US Route 4 Corridor ITS	Signal coordination and implementation of ITS (such as DMS and CCTV).	US Route 4 (Madbury to Lee/Barrington)	$630,000 to $950,000	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	Medium-term	NHDOT	Local Municipalities	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	Coordinated with Route 125 ITS implementation.
TM-3	Route 125 Corridor ITS	Signal coordination and implementation of ITS (such as DMS and CCTV).	Route 125 (from Plaistow through Rochester)	$1.45 million to $1.57 million	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	Long-term	NHDOT	Local Municipalities	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	Coordinated with US Route 4 ITS implementation.
TM-4	Route 111 Corridor ITS	Signal coordination and implementation of ITS (such as DMS and CCTV).	Route 111 (Windham, Salem, Hampstead, Kingston)	$910,000 to $970,000	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	Long-term	NHDOT	Local Municipalities	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
TM-5	NH Route 9 Corridor ITS	Signal coordination and implementation of ITS (such as DMS and CCTV).	NH Route 9 from Exit 9 (Spaulding Turnpike) to Berwick	$740,000 to $770,000	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	Long-term	NHDOT	Local Municipalities	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
TM-6	Route 108 Corridor ITS	Signal coordination and implementation of ITS (such as DMS and CCTV).	Route 108 from Exeter to Rochester	$980,000 to $1.04 million	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	Medium-term	NHDOT	Local Municipalities	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
TM-7	Expansion of Open Road Tolling	Feasibility assessment of expanding open road tolling.	Dover, Hampton, and Rochester Toll Plazas	$100,000	ATMS10	Medium-term	NHDOT	Local Municipalities, RPC, SRPC	Relieve traffic congestion and reduce emissions at toll locations and reduce traffic divergence onto local arterials.	
PT-1	Regional Call/Coordination Center for Demand Response Services	Implementation of a regional call/coordination center for passenger transportation information management.	Strafford-Rockingham Region	$1.23 million	APTS03, APTS08	Short-term	COAST on behalf of ACT	COAST, UNH, Easter Seals NH, SRPC, RPC	Improve operating efficiency and reduce costs of transit operations.	Coordinated with regional ITS procurement coordination.
PT-2	Regional Transit ITS Procurement Coordination	Establish process to enable voluntary regional coordination of transit ITS procurements, e.g., Electronic Fare Collection equipment.	Strafford-Rockingham Region	$50,000	APTS01, APTS02, APTS03, APTS04, APTS05, APTS07, APTS08, APTS09, APTS10	Medium-term	CART, COAST	SRPC, RPC, UNH, Easter Seals NH, ACT, C&J, Amtrak, MVRTA	Improve interagency coordination and interoperability of ITS systems. Take advantage of economies of scale.	Coordinated with individual transit agency vehicle and equipment procurements.
PT-3	COAST Transit Signal Priority Implementation	Implement corridor level TSP.	Route 108, Local Municipalities	$190,000	APTS09	Medium-term	COAST	Local Municipalities	Improve operating efficiency. Increase travel time reliability.	Coordinated with signal technology procurements and coordination in municipalities, as well as with emergency vehicle preemption.
PT-4	Real-time Information for UNH Transit Users	Expansion of AVL capabilities to provide vehicle location information to the public.	UNH service area	$150,000	APTS08	Short-term	UNH	UNH	Improve traveler information and user experience.	Coordinated with other UNH vehicle procurements and ITS investments.
PT-5	Real-time Information for COAST Transit Users	Expansion of AVL capabilities to provide vehicle location information to the public.	COAST service area	$150,000	APTS08	Medium-term	COAST	COAST	Improve traveler information and user experience.	Coordinated with other COAST vehicle procurements and ITS investments.

Ref. #	Project Title	Project Description	Project Location(s)	Planning Cost Estimate*	Service Packages	Timeframe	Lead Agency	Project Participants	Expected Benefits	Integration with Other Projects
PT-6	Mobile Data Terminal Deployment for COAST Vehicles	Deployment of MDTs with vehicle location and dispatching functionality on all fixed route and demand response COAST vehicles.	COAST service area	$135,000	APTS02, APTS03	Medium-term	COAST	COAST	Improve dispatching capabilities and operating efficiency.	Coordinated with other COAST vehicle procurements and ITS investments.
PM-1	Park-and-Ride ITS Improvements	Deploy surveillance, parking sensors, and signage at Park-and-Ride facilities.	Park-and-Ride Lots (Dover, Portsmouth, Windham, and Salem)	$900,000	APTS05, APTS08, ATMS01, ATMS16, ATIS01	Medium-term	NDHOT	CART, COAST, Easter Seals NH, ACT, C&J, SRPC, RPC, Local Municipalities	Improve security and surveillance at parking facilities. Improve traveler awareness of parking availability.	
MM-1	Route 1 and Route 1A Integrated Corridor Management Study	Study to determine appropriate use of ITS to achieve signal coordination, Transit Signal Priority, coordination related to emergency/evacuation management, and parking information and management.	Route 1 (particularly Seabrook and Hampton) and Route 1A	$150,000	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC08	Medium-term	RPC	NHDOT, SRPC, COAST, Local Municipalities	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	Coordination with transit technology procurements.
MM-2	Regional 511 Interface Study/Long-Range Plan	Study to identify how municipalities, transit agencies, and regional parking data should interface with the state-wide 511 system as it expands in the future.	Strafford-Rockingham Region	$100,000	ATIS02	Medium-term	NHDOT	SRPC, RPC, COAST, UNH, CART, Local Municipalities	Improve traveler information. Improve operations. Improve interagency coordination.	Coordination with NHDOT 511 Procurement Project.
EM-1	Evacuation ITS Improvements	Study to determine role of ITS in facilitating evacuation coordination and response.	Seacoast	$100,000	ATMS01, ATMS03, ATMS06, ATMS18, EM09	Short-term	NHDOT	NHDOS, Local Municipalities, Seabrook Station, COAST, UNH, MassDOT - Highway Division	Improve ability to respond in an emergency evacuation scenario.	Coordinated with statewide EOC, Seabrook Station emergency planning efforts, and local traffic and parking management plans.
EM-2	US Route 4 Incident Reporting	Deployment of static signage and marketing to promote reporting of incidents to coincide with state 511 improvements.	US Route 4	$100,000	ATIS01, ATMS06, ATMS08	Medium-term	NHDOT	NHDOS, Local Municipalities	Improve incident detection and verification.	Coordinated with statewide 511 efforts.
EM-3	Route 101 Corridor ITS	Corridor level implementation of ITS (such as DMS and CCTV) to support and promote incident detection and response.	Route 101	$1.5 million	ATIS01, ATMS06, ATMS08	Long-term	NHDOT	Local Municipalities	Improve incident detection and verification.	Coordinated with statewide 511 efforts.
IMC-1	SRPC Data Warehouse Study	Establish data format for the region's ITS data and procure system hardware.	SRPC Office (Dover, NH)	$40,000	AD2, AD3	Long-term	SRPC	Dover, Somersworth, COAST, UNH, NHDOT, Local Municipalities	Increase ease of ITS data exchange among agencies for planning/ research activities.	Coordinated with regional ITS data collection efforts.
IMC-2	RPC Data Warehouse Study	Establish data format for the region's ITS data and procure system hardware.	RPC Office (Exeter, NH)	$40,000	AD2, AD3	Long-term	RPC	Salem, Portsmouth, CART, COAST, NHDOT, Local Municipalities	Increase ease of ITS data exchange among agencies for planning/ research activities.	Coordinated with regional ITS data collection efforts.
IMC-3	Bridge Security Surveillance and Interagency Video Exchange	Establish a video distribution system to allow authorized municipal and transit organizations to view bridge conditions in real-time.	Regional bridges	$1.6 million	ATMS01, ATMS06	Medium-term	NHDOT	Local Municipalities, Transit agencies, MassDOT - Highway Division, Maine Turnpike, MaineDOT, Interstate Bridge Authority, NH Homeland Security and Emergency Management	Improve bridge security/surveillance. Allow transit and local transportation agencies to be aware of travel conditions (construction, congestion, incidents) at bridge locations.	Coordinated with ITS deployments along roads with bridges and with the NHDOT's existing video deployments.
IMC-4	Region-to-TMC Communications Backbone	Implement a robust communications backbone between the State's TMC in Concord and the seacoast region.	Strafford-Rockingham Region	$3 million	ATMS06	Long-term	NHDOT	Local Municipalities	Improve communications throughout the region back to central location, facilitating increased interagency coordination and supporting future ITS deployments.	Coordinated with ITS deployments region-wide.

* Cost estimates are high-level and preliminary.

4.2 Regional ITS Projects by Timeframe

The ITS Strategic Plan assumes a ten-year project deployment horizon. This period is sufficient in length to describe a vision for layered deployment and integration over time, yet it recognizes the inherent difficulties in long-term (e.g., 15-20 year) planning of rapidly-evolving transportation technologies.

Projects are divided into Short-, Medium-, and Long-term initiatives based upon the following ranges:

- Short-term (0-3 years)
- Medium-term (3-5 years)
- Long-term (5-10 years)

The following Exhibit shows the regional ITS projects by timeframe. In the ”Agencies Involved” column, the lead agency is shown in bold.

Exhibit 4-2: Regional ITS Projects by Timeframe

Ref #	Project Title	Agencies Involved (lead agency/ies in bold)
Short-Term		
TM-1	Signal Coordination and Maintenance Study	**SRPC**, **RPC**, NHDOT, Local Municipalities
PT-1	Regional Call/Coordination Center for Demand Response Services	**COAST, ACT**, UNH, Easter Seals NH, SRPC, RPC
PT-4	Real-time Information for UNH Transit Users	**UNH**
EM-1	Evacuation ITS Improvements	**NHDOT**, NHDOS, Local Municipalities, Seabrook Station, COAST, UNH, MassDOT - Highway Division
Medium-Term		
TM-2	US Route 4 Corridor ITS	**NHDOT,** Local Municipalities
TM-6	Route 108 Corridor ITS	**NHDOT,** Local Municipalities
TM-7	Expansion of Open Road Tolling	**NHDOT,** Local Municipalities, RPC, SRPC
PT-2	Regional Transit ITS Procurement Coordination	**CART, COAST,** SRPC, RPC, UNH, Easter Seals NH, ACT, C&J, Amtrak, MVRTA
PT-3	COAST Transit Signal Priority Implementation	**COAST,** Local Municipalities
PT-5	Real-time Information for COAST Transit Users	**COAST**
PT-6	Mobile Data Terminal Deployment for COAST Vehicles	**COAST**
PM-1	Park-and-Ride ITS Improvements	**NHDOT,** CART, COAST, Easter Seals NH, ACT, C&J, SRPC, RPC, Local Municipalities
MM-1	Route 1 and Route 1A Integrated Corridor Management Study	**RPC,** NHDOT, SRPC, COAST, Local Municipalities
MM-2	Regional 511 Interface Study/Long-Range Plan	**NHDOT,** SRPC, RPC, COAST, UNH, CART, Local Municipalities
EM-2	US Route 4 Incident Reporting	**NHDOT,** NHDOS, Local Municipalities
IMC-3	Bridge Security Surveillance and Interagency Video Exchange	**NHDOT,** Local Municipalities, Transit agencies, MassDOT - Highway Division, Maine Turnpike, MaineDOT, Interstate Bridge Authority, NH Homeland Security and Emergency Management
Long-Term		
TM-3	Route 125 Corridor ITS	**NHDOT**, Local Municipalities
TM-4	Route 111 Corridor ITS	**NHDOT**, Local Municipalities
TM-5	NH Route 9 Corridor ITS	**NHDOT**, Local Municipalities
EM-3	Route 101 Corridor ITS	**NHDOT**, Local Municipalities
IMC-1	SRPC Data Warehouse Study	**SRPC,** Dover, Somersworth, COAST, UNH, NHDOT, Local Municipalities
IMC-2	RPC Data Warehouse Study	**RPC,** Salem, Portsmouth, CART, COAST, NHDOT, Local Municipalities
IMC-4	Region-to-TMC Communications Backbone	**NHDOT**, Local Municipalities

4.3 Mapping Regional Needs to Regional ITS Projects

The regional ITS projects are mapped to the region's transportation needs in the exhibit below:

Exhibit 4-3: Mapping Needs to Regional ITS Projects

Regional Need	Regional ITS Project
Traffic Management	TM-1 through TM-7, MM-1
Incident and Emergency Management	TM-2 through TM-6, EM-1 through EM-3, MM-1
Transit Management and Coordination	PT-1 through PT-6, MM-1
Traveler Information Services	TM-2 through TM-6, PT-4, PT-5, PM-1, MM-1, MM-2
Economic Development	All
Data and Information Sharing	IMC-1 through IMC-4
Infrastructure Maintenance and Preservation	TM-1
Transportation Funding	N/A

5. PROJECT DESCRIPTIONS

5.1 Project Descriptions

This chapter contains full descriptions of each project included in this ITS Strategic Plan document. These descriptions are organized by functional subsystem, with an accompanying regional map showing approximate project locations. Each individual project description contains the following information:

- **Project Title and Description:** A general overview is given for each project, primarily focusing on the operational capabilities and functional scope of the project.
- **Project Location(s):** The approximate geographic extent of the project is described.
- **Planning Cost Estimate:** High-level, preliminary planning estimates are included for each project. Refer to Section 5.2 for further details.
- **Service Packages:** The relevant service packages from the updated *Strafford-Rockingham Region ITS Architecture* are identified. This illustrates the linkages between the project and the regional ITS architecture, which is necessary to apply federal funds toward the project.
- **Time Frame (Short-, Medium-, or Long-term):** The relative deployment priority for each project was identified as Short-term (0-3 years), Medium-term (3-5 years), or Long-term (5-10 years).
- **Lead Agency:** The public agency or agencies judged to be the most appropriate lead agency for each deployment are identified.
- **Project Participants:** Principal stakeholders and agencies whose cooperation and support is critical to the implementation and success of the project are also identified.
- **Expected Benefits:** Coordination activities or agreements between agencies that will be required to deploy and operate the ITS projects are identified.
- **Integration with Other Projects:** Other projects are identified that must be completed before or at the same time, to ensure the proper ordering and prioritization of projects to create a functional ITS system.

5.2 Project Cost Estimates

Planning-level cost estimates have been provided for each of the projects identified in this ITS Strategic Plan to facilitate decision-making related to project programming, prioritization, and funding. These cost estimates are high-level and preliminary.

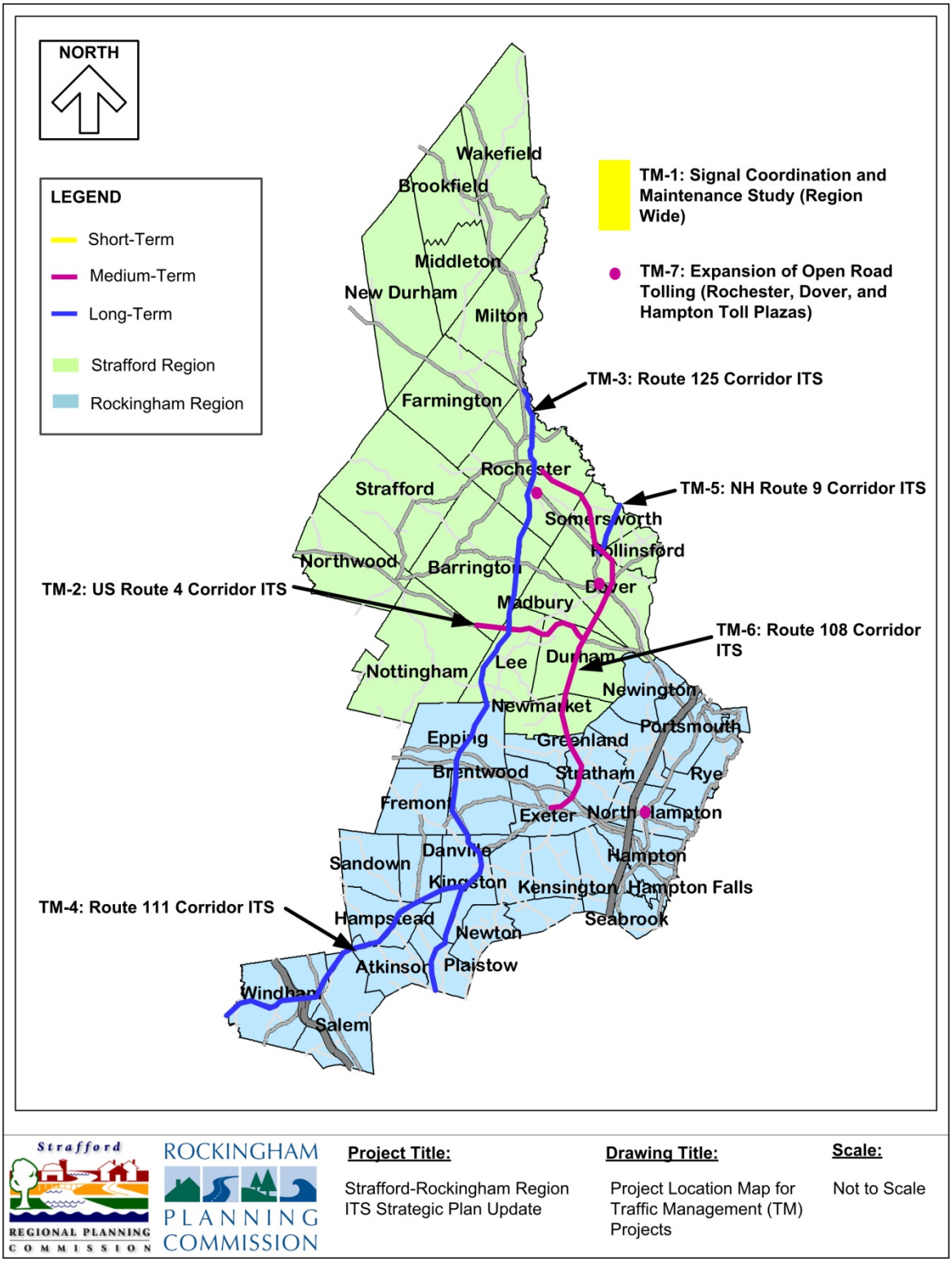
The planning cost estimates have been prepared based on approximated equipment quantities and installed unit costs for field and headend equipment. The costs for these technologies were estimated using the USDOT's ITS Cost Database, recent vendor price quotes, and past ITS deployment experience. For studies, costs of similar studies have been provided as an estimate; however, the ultimate definition of the study scope will largely determine the final cost. Cost estimates incorporate standardized technologies such as CCTV cameras and dynamic message signs (DMS). As projects develop, it may be found that in some locations it is appropriate to deploy

less of the proposed technology or less expensive technology. For example, dynamic message signs (DMS) are recommended for ITS deployments along corridors. However, the functionality of a DMS might be more than is needed and could be replaced with lower tech vehicle notification systems such as blank-out signs in certain locations. On corridors, a range is provided for the cost estimate to incorporate the possibility that lower cost technologies could be selected.

Costing for individual projects is dependent on a wide variety of factors, including: detailed project functional requirements; final quantities and specifications of equipment to be installed; existing field conditions; available communications infrastructure; coordination with other infrastructure construction or rehabilitation projects; and a host of other determinants that shall be investigated in the preliminary engineering phase of each project to produce refined engineering cost estimates.

5.3 Traffic Management (TM) Projects

Exhibit 5-1: Project Location Map for Traffic Management (TM) Projects



TM-1: Signal Coordination and Maintenance Study

Project Description	Many municipalities in the region, such as Salem, Dover, Kingston, and Plaistow, among others, have been implementing technology that allows for coordinating signals. This technology is beneficial in that it can help alleviate traffic congestion and improve traffic flow. However, over time and as traffic patterns change, the timing patterns can become out of synch, or simply out of date. This brings the additional challenge of maintaining effective signal coordination after it is implemented. This project would involve a study to inventory the coordinated signal technology that is in use across the entire region. The inventory would assist in keeping track of what has been done so far, help determine where additional signal coordination might be beneficial in the entire transportation network, and provide a map of where this technology is located so that it can be maintained. In addition to the inventory, the study would involve developing recommendations for how to effectively maintain this technology on an ongoing basis, as well as develop high level cost estimates for carrying out that maintenance.

		Notes
Cost Estimate	$80,000	
Project Location(s)	Regional	
Service Packages	APTS09, ATMS03, ATMS08, EM02	
Time Frame	Short-term	
Lead Agency	SRPC, RPC	
Project Participants	NHDOT, Local Municipalities	
Expected Benefits	Coordination of signal technology. Improve traffic flow, reduce congestion and emissions.	
Integration with Other Projects	N/A	

TM-2: US Route 4 Corridor ITS

Project Description	In stakeholder meetings, US Route 4 was identified as an important corridor with major challenges, such as congestion, which is projected to worsen in the regional transportation model. This project proposes the deployment of ITS technology along the US Route 4 corridor from the Spaulding Turnpike through Durham to Lee and Barrington to improve traffic flow, incident detection and response, and traveler information. This deployment would include technology to deploy DMS along the corridor at an estimated four (4) locations to provide travelers with information regarding incidents. Eight (8) CCTV cameras at four (4) locations would also be installed to assist in detecting and monitoring incidents (the Little Bay Bridge already has camera coverage). All of these data would be transmitted to the Traffic Management Center managed by NHDOT. For preliminary costing purposes, it was assumed that additional wireless communications nodes would be established to tie into the State's existing communications network.

		Notes
Cost Estimate	$630,000 - $950,000	$10,000 for central hardware integration $200,000 for communications $100,000 per permanent DMS or $20,000 per blank out sign (4) $85,000 per CCTV camera location (4)
Project Location(s)	US Route 4 (Madbury to Lee/Barrington)	
Service Packages	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
Integration with Other Projects	Coordinated with Route 125 ITS implementation.	

TM-3: Route 125 Corridor ITS

Project Description	In stakeholder meetings, Route 125 was identified as an important corridor with congestion that is projected to worsen in the regional transportation model. This long corridor includes dangerous areas, such as the Lee Traffic Circle, and intersects with other key corridors highlighted in projects, such as US Route 4. Exhibits 3-3 through 3-5 show significant congestion along the corridor, as well as crashes all along the corridor, and clustered around Rochester and near the Lee Traffic Circle. This project proposes the deployment of ITS technology along the Route 125 corridor from Plaistow through Rochester to improve traffic flow, incident detection and response, and traveler information. This deployment would include technology to implement signal coordination and emergency vehicle preemption at twenty (20) intersections, focusing on intersections between Plaistow and Kingston, near the Lee Traffic Circle, and near Rochester. In addition, DMS would be deployed along the corridor at an estimated four (4) locations to provide travelers with information regarding incidents. Eight (8) CCTV cameras would also be installed at four camera locations to assist in detecting and monitoring incidents. All of this data would be transmitted to the Traffic Management Center managed by NHDOT. For preliminary costing purposes, it was assumed that additional wireless communications nodes would be established to tie into the State's existing communications network.

		Notes
Cost Estimate	$1.45 to $1.57 million	$20,000 for central hardware integration $350,000 for communications $20,000 per intersection for controller upgrade (20) $5,000 per intersection for timing plans (20) $8,000 per intersection for preemption equipment (20) $50,000 per arterial DMS or $20,000 per blank out sign (4) $85,000 per CCTV camera location (4)
Project Location(s)	Route 125 from Plaistow through Rochester	
Service Packages	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	
Time Frame	Long-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
Integration with Other Projects	Coordinated with US Route 4 ITS implementation.	

TM-4: Route 111 Corridor ITS

Project Description	In stakeholder meetings, Route 111 was identified as an important corridor with major challenges, such as congestion and crashes, particularly in the western part of the region. This project proposes the deployment of ITS technology along the Route 111 corridor, from the western border of the region in Windham to Kingston, to improve traffic flow, incident detection and response, and traveler information. This deployment would include technology to implement signal coordination and emergency vehicle preemption at ten (10) intersections. In addition, DMS would be deployed along the corridor at an estimated two (2) locations to provide travelers with information regarding incidents. Four (4) CCTV cameras at two (2) locations would also be installed to assist in detecting and monitoring incidents. All of this data would be transmitted to the Traffic Management Center managed by NHDOT. For preliminary costing purposes, it was assumed that additional wireless communications nodes would be established to tie into the State's existing communications network.

		Notes
Cost Estimate	$910,000 to $970,000	$20,000 for central hardware integration $350,000 for communications $20,000 per intersection for controller upgrade (10) $5,000 per intersection for timing plans (10) $8,000 per intersection for preemption equipment (10) $50,000 per arterial DMS or $20,000 per blank out sign (2) $85,000 per CCTV camera location (2)
Project Location(s)	Route 111 (Windham, Salem, Hampstead, Kingston)	
Service Packages	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	
Time Frame	Long-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
Integration with Other Projects	N/A	

TM-5: NH Route 9 Corridor ITS

Project Description	In stakeholder meetings, NH Route 9 was identified as an important corridor with challenges, such as some congestion and a cluster of crashes, particularly as it passes through Somersworth towards the border with Maine. This project proposes the deployment of ITS technology along Route 9 between the Spaulding Turnpike to the border with Maine (passing through Dover and Somersworth) to improve traffic flow, incident detection and response, and traveler information. This deployment would include technology to implement signal coordination and emergency vehicle preemption at ten (10) intersections. These intersections would be clustered primarily closer to the Spaulding Turnpike. In addition, DMS would be deployed along the corridor at an estimated one (1) location to provide travelers with information regarding incidents. Four (4) CCTV cameras would also be installed at two (2) locations to assist in detecting and monitoring incidents. All of this data would be transmitted to the Traffic Management Center managed by NHDOT. For preliminary costing purposes, it was assumed that additional wireless communications nodes would be established to tie into the State's existing communications network.

		Notes
Cost Estimate	$740,000 to 770,000	$20,000 for central hardware integration $200,000 for communications $20,000 per intersection for controller upgrade (10) $5,000 per intersection for timing plans (10) $8,000 per intersection for preemption equipment (10) $50,000 per arterial DMS or $20,000 per blank out sign (1) $85,000 per CCTV camera location (2)
Project Location(s)	NH Route 9 from Exit 9 (Spaulding Turnpike) to Berwick, Maine	
Service Packages	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	
Time Frame	Long-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
Integration with Other Projects	N/A	

TM-6: Route 108 Corridor ITS

Project Description	In stakeholder meetings, NH Route 108 was identified as an important corridor with challenges, such as some congestion and clusters of crashes, as it passes through various municipalities. This project proposes the deployment of ITS technology along Route 108 from Exeter to Rochester to improve traffic flow, incident detection and response, and traveler information. This deployment would include technology to implement signal coordination and emergency vehicle preemption at ten (10) intersections. In addition, DMS would be deployed along the corridor at an estimated two (2) locations to provide travelers with information regarding incidents. Four (4) CCTV cameras would also be installed to assist in detecting and monitoring incidents. All of this data would be transmitted to the Traffic Management Center managed by NHDOT. For preliminary costing purposes, it was assumed that additional wireless communications nodes would be established to tie into the State's existing communications network.

		Notes
Cost Estimate	$980,000 to $1.04 million	$20,000 for central hardware integration $250,000 for communications $20,000 per intersection for controller upgrade (10) $5,000 per intersection for timing plans (10) $8,000 per intersection for preemption equipment (10) $50,000 per arterial DMS or $20,000 per blank out sign (2) $85,000 per CCTV camera location (4)
Project Location(s)	Route 108 from Exeter to Rochester	
Service Packages	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC09	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
Integration with Other Projects	N/A	

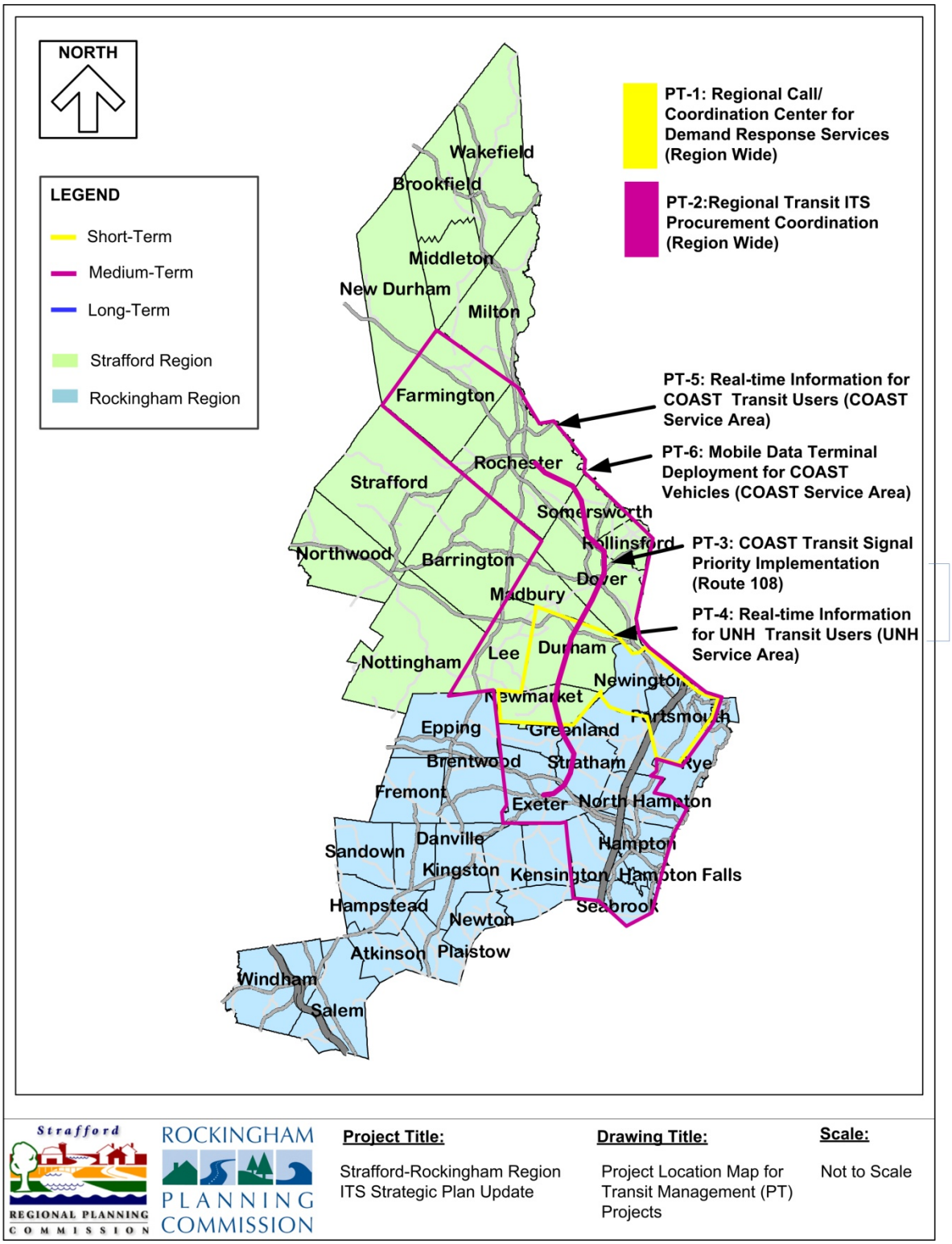
TM-7: Expansion of Open Road Tolling

Project Description	The traffic congestion at toll plazas led NHDOT to implement the first case of Open Road Tolling (ORT) in NH on I-95. This implementation has been considered a success in keeping traffic on I-95 instead of parallel arterials, as well as in reducing congestion on I-95 related to the toll booths. Given the success of the initial implementation, other locations may benefit from the expansion of ORT. This study would include a more detailed assessment of the success of the ORT already implemented on I-95, as well as an examination of the feasibility of implementing ORT at other toll locations. The study would examine the cost of implementing ORT and compare to the benefits at the existing location, and estimate the cost and benefits of doing so at other locations. It would also examine any unique constraints at these locations that might make implementation difficult. It will use this information to develop a prioritization and phasing for the expansion.

		Notes
Cost Estimate	$100,000	
Project Location(s)	Dover, Hampton, and Rochester Toll Plazas	
Service Packages	ATMS10	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities, RPC, SRPC	
Expected Benefits	Relieve traffic congestion and reduce emissions at toll locations and reduce traffic divergence onto local arterials.	
Integration with Other Projects	N/A	

5.4 Transit Management (PT) Projects

Exhibit 5-2: Project Location Map for Transit Management (PT) Projects



PT-1: Regional Call/Coordination Center for Demand Response Services

Project Description	There are currently multiple demand responsive service providers (both transit and human service) in the region. Stakeholders have recognized a need for efficient operation of these services given the cost of providing them. ITS can aid in the coordination and dispatching of such services. This project would involve the implementation of a Regional Call/Coordination Center to coordinate demand for demand responsive services. Customers would call the center, which will then help to link the customer with the appropriate services. This call/coordination center is envisioned as coordinating existing services by multiple agencies. In the future this may include a web-based opportunity to request demand response services through the Regional Call/Coordination Center.

		Notes
Cost Estimate	$1.23 million	
Project Location(s)	Strafford-Rockingham Region	
Service Packages	APTS03, APTS08	
Time Frame	Short-term	
Lead Agency	COAST on behalf of ACT	Alliance for Community Transportation (ACT) is an advisory group made up of representatives of many agencies, so the lead agency would be COAST on behalf of ACT.
Project Participants	COAST, UNH, Easter Seals NH, SRPC, RPC	
Expected Benefits	Improve operating efficiency and reduce costs of transit operations.	
Integration with Other Projects	Coordinated with regional ITS procurement coordination.	

PT-2: Regional Transit ITS Procurement Coordination

Project Description	The project would assist in establishing a process to enable regional coordination of transit ITS procurements. It is hoped that such a process would enable the different agencies to improve the coordination and interoperability of their services; providing greater flexibility in how they offer services to the general public. By coordinating individual agency ITS procurements, transit providers can ensure that their ITS investments are compatible with neighboring systems. This may allow for economies of scale in terms of both procurement costs and ongoing maintenance costs. Types of ITS efforts that could be coordinated include CAD/AVL systems, security/surveillance cameras on board vehicles or at transfer locations, fare collection technology, transit traveler information systems, transit signal priority systems, and automatic passenger counting technology. ITS coordination could also include coordination of emergency evacuation transit plans.

		Notes
Cost Estimate	$50,000	
Project Location(s)	Strafford-Rockingham Region	
Service Packages	APTS01, APTS02, APTS03, APTS04, APTS05, APTS07, APTS08, APTS09, APTS10	
Time Frame	Medium-term	
Lead Agency	CART, COAST	
Project Participants	SRPC, RPC, UNH, Easter Seals NH, ACT, C&J, Amtrak, MVRTA	
Expected Benefits	Improve interagency coordination and interoperability of ITS systems. Take advantage of economies of scale.	
Integration with Other Projects	Coordinated with individual transit agency vehicle and equipment procurements.	

PT-3: COAST Transit Signal Priority Implementation

Project Description	COAST buses must operate on congested corridors, such as Route 108, and in local municipalities where congestion regularly occurs. COAST has been working with municipalities to implement transit signal priority (TSP) in areas where congestion is a challenge. TSP can assist in improving travel time reliability. This project would involve enabling existing signal technology, or installing new technology, to allow for transit vehicles to signal their approach and request green lights at upcoming intersections. In order for TSP to be implemented in the region, necessary legislation must first be enacted. For preliminary costing, it is assumed that approximately fifteen (15) transit vehicles and twenty (20) intersections would be equipped with signal priority equipment. It is also assumed that these intersections would not require a new signal controller.

		Notes
Cost Estimate	$190,000	$2,000 per vehicle for signal priority equipment (15) $8,000 per intersection for signal priority equipment (20)
Project Location(s)	Route 108, Local Municipalities	
Service Packages	APTS09	
Time Frame	Medium-term	
Lead Agency	COAST	
Project Participants	Local Municipalities	
Expected Benefits	Improve operating efficiency. Increase travel time reliability.	
Integration with Other Projects	Coordinated with signal technology procurements and coordination in municipalities, as well as with emergency vehicle preemption.	

PT-4: Real-time Information for UNH Transit Users

Project Description	As UNH moves forward with implementing Automatic Vehicle Location (AVL) technology on its transit vehicles, it becomes increasingly possible to provide its riders with real-time transit traveler information. This real-time data has proven extremely popular with riders in other transit authorities as a method of communicating estimated vehicle arrival times and service delays to the general public. This type of real-time information has also been credited by some with increasing overall transit ridership. For preliminary costing purposes, it is assumed that this real-time information utilizes existing real-time data from UNH's AVL technology and provides real-time arrival times via a website or mobile phone application.

		Notes
Cost Estimate	$150,000	
Project Location(s)	UNH service area	
Service Packages	APTS08	
Time Frame	Short-term	
Lead Agency	UNH	
Project Participants	UNH	
Expected Benefits	Improve traveler information and user experience.	
Integration with Other Projects	Coordinated with other UNH vehicle procurements and ITS investments.	

PT-5: Real-time Information for COAST Transit Users

Project Description	As COAST also moves forward with implementing Automatic Vehicle Location (AVL) technology on its transit vehicles, it becomes increasingly possible to provide its riders with real-time transit traveler information. This real-time data has proven extremely popular with riders in other transit authorities as a method of communicating estimated vehicle arrival times and service delays to the general public. This type of real-time information has also been credited by some with increasing overall transit ridership. For preliminary costing purposes, it is assumed that this real-time information utilizes existing real-time data from COAST's AVL technology and provides real-time arrival times via a website or mobile phone application.

		Notes
Cost Estimate	$150,000	
Project Location(s)	COAST service area	
Service Packages	APTS08	
Time Frame	Medium-term	
Lead Agency	COAST	
Project Participants	COAST	
Expected Benefits	Improve traveler information and user experience.	
Integration with Other Projects	Coordinated with other COAST vehicle procurements and ITS investments.	

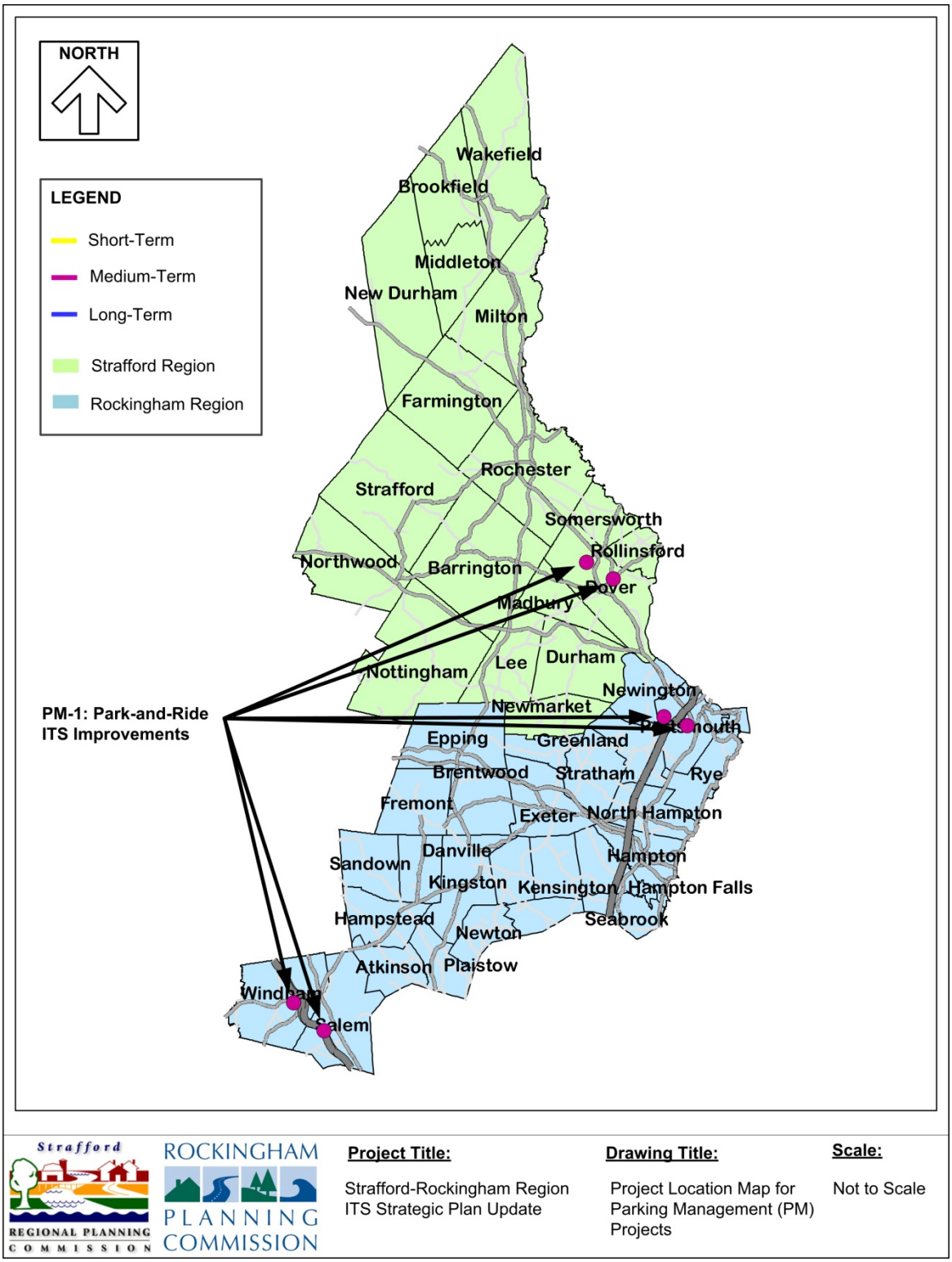
PT-6: Mobile Data Terminal Deployment for COAST Vehicles

Project Description	Equipping transit vehicles with Mobile Data Terminals allow transit agencies to improve operating efficiency by providing bus operators with additional operating information. The Mobile Data Terminal can typically send/receive canned messages, reducing the voice data communications needs for bus operators. Mobile Data Terminals often also interface with the on-board GPS and scheduling information to provide bus operators with schedule adherence information. Bus operators can also typically use the Mobile Data Terminals to communicate with dispatchers regarding maintenance or emergency situations as well. For preliminary costing, it is assumed that central software has already been procured and that the Mobile Data Terminal costs only encompass installation of on-board equipment.

		Notes
Cost Estimate	$135,000	$9,000 per vehicle (15)
Project Location(s)	COAST service area	
Service Packages	APTS02, APTS03	
Time Frame	Medium-term	
Lead Agency	COAST	
Project Participants	COAST	
Expected Benefits	Improve dispatching capabilities and operating efficiency.	
Integration with Other Projects	Coordinated with other COAST vehicle procurements and ITS investments.	

5.5 Parking Management (PM) Projects

Exhibit 5-3: Project Location Map for Parking Management (PM) Projects



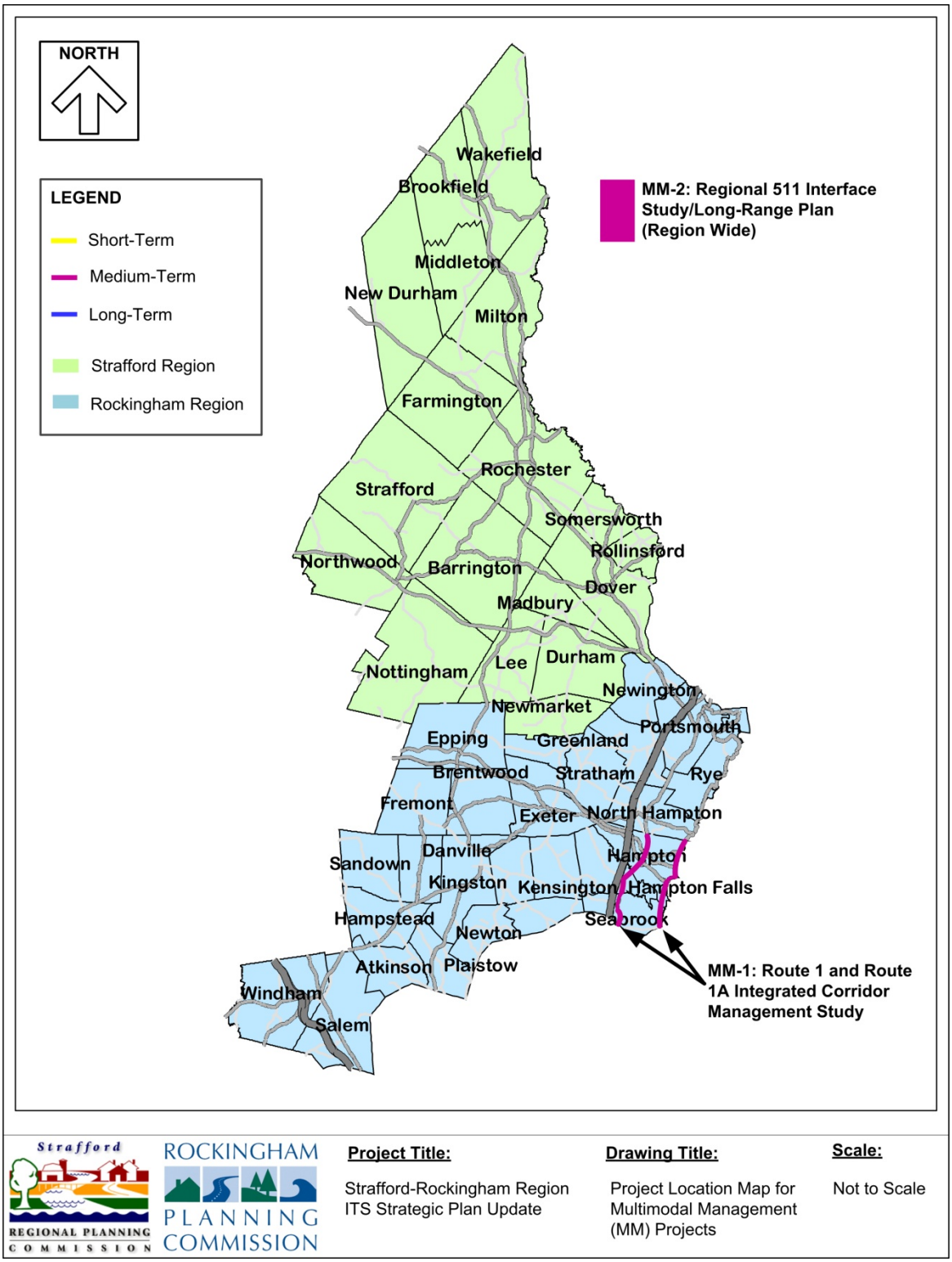
PM-1: Park-and-Ride ITS Improvements

Project Description	The region has invested in the development of Park-and-Ride lots. ITS technology offers the opportunity to improve the effectiveness and attractiveness of these Park-and-Ride lots. Security/surveillance cameras can improve the safety of the Park-and-Ride lots. Parking management technologies can be used to inform travelers of parking availability. The project would deploy surveillance cameras, entry/exit sensors, and parking availability signage at four Park-and-Ride facilities in the region – located in Windham, Dover, Portsmouth, and Salem. Where possible, the parking availability signage (Variable Message Signs, or VMS) would be located so that it would be visible from the highway. This would allow drivers to gauge the parking availability at the Park-and-Ride to determine if they want to exit the highway. Signage at the Park-and-Ride lot could also be used to inform travelers of upcoming departure times of buses.

		Notes
Cost Estimate	$900,000	$10,000 per surveillance camera (8) $10,000 per exit/entrance vehicle detector (16) $20,000 per communications improvements (4) $40,000 per parking management system (4) $40,000 per surveillance central system (4) $50,000 per permanent parking VMS (4) $15,000 per bus departure message boards (4)
Project Location(s)	Park-and-Ride Lots (Dover, Portsmouth, Windham, and Salem)	
Service Packages	APTS05, APTS08, ATMS01, ATMS16, ATIS01	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	CART, COAST, Easter Seals NH, ACT, C&J, SRPC, RPC, Local Municipalities	
Expected Benefits	Improve security and surveillance at parking facilities. Improve traveler awareness of parking availability.	
Integration with Other Projects		

5.6 Multimodal Management (MM) Projects

Exhibit 5-4: Project Location Map for Multimodal Management (MM) Projects



MM-1: Route 1 and Route 1A Integrated Corridor Management Study

Project Description	Route 1 and Route 1A make up a key corridor for tourist activity in the region that faces several challenges. It currently experiences recurring and seasonal congestion. There is currently no transit service on the corridor. There are reportedly issues related to parking availability along the corridor, especially along the beaches. It is also a strategic evacuation corridor in response to an emergency situation at Seabrook Station or natural disaster along the coast. Given these multiple corridor-level needs, stakeholders identified the corridor as a prime candidate for an Integrated Corridor Management Study to identify how ITS could be used to efficiently and proactively move people and goods along the corridor in a multi-modal fashion.

		Notes
Cost Estimate	$150,000	
Project Location(s)	Route 1 (particularly Seabrook and Hampton) and Route 1A	
Service Packages	APTS09, ATIS01, ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, EM02, MC08	
Time Frame	Medium-term	
Lead Agency	RPC	
Project Participants	NHDOT, SRPC, COAST, Local Municipalities	
Expected Benefits	Improve traffic flow, reduce congestion and emissions. Improve incident detection and response. Improve traveler information.	
Integration with Other Projects	Coordination with transit technology procurements.	

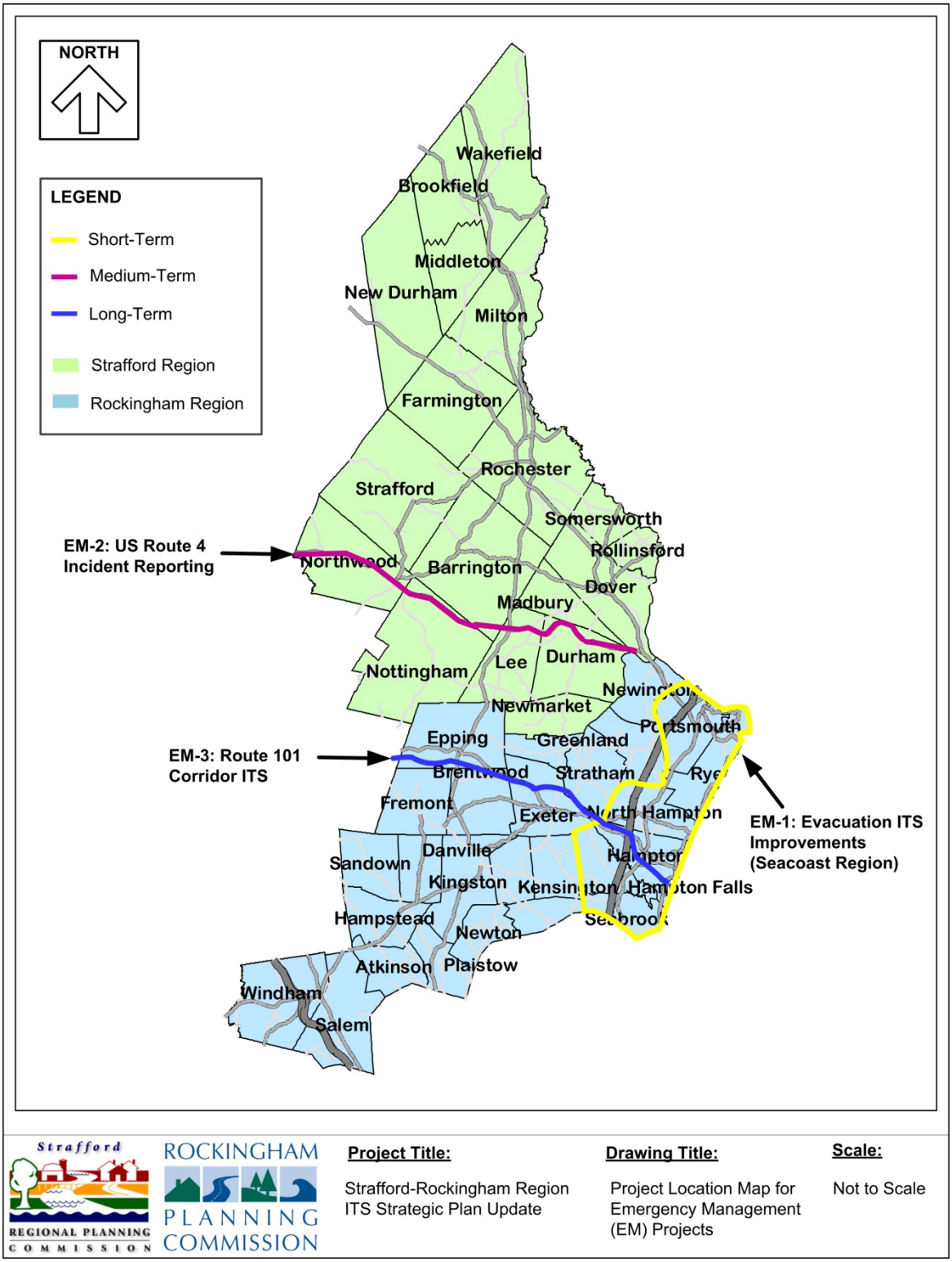
MM-2: Regional 511 Interface Study/Long-Range Plan

Project Description	NHDOT is currently in the process of procuring a new 511 system. This new 511 system is intended to provide traveler information to New Hampshire residents and visitors through a variety of means. At least initially, it is expected that the new 511 system will focus on providing real-time information on the condition of the state's major roadways. However, moving forward, the 511 system offers the potential to provide traveler information or at least links to traveler information offered by transit authorities, local municipalities, parking facilities, and other regional transportation stakeholders. This study/long-range plan would identify the preferred approach for the phased implementation of additional functionality to the 511 system. It would involve regional transportation stakeholders to identify the types of traveler information most useful to the agencies and the general public. The end result would be a series of recommendations and action items to guide future enhancements and expansion of the 511 system.

		Notes
Cost Estimate	$100,000	
Project Location(s)	Strafford-Rockingham Region	
Service Packages	ATIS02	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	SRPC, RPC, COAST, UNH, CART, Local Municipalities	
Expected Benefits	Improve traveler information. Improve operations. Improve interagency coordination.	
Integration with Other Projects	Coordination with NHDOT 511 procurement project.	

5.7 Emergency Management (EM) Projects

Exhibit 5-5: Project Location Map for Emergency Management (EM) Projects



EM-1: Evacuation ITS Improvements

Project Description	Given the Strafford-Rockingham region's proximity to both the coast and Seabrook Station, stakeholders are prudent to take evacuation planning seriously. Concurrent with the development of this ITS Strategic Plan, emergency planning stakeholders were engaged in updating the region's emergency/evacuation plans. It is unknown to what extent these plans recognize opportunities for ITS and communications technologies to aid in evacuation planning and disaster recovery efforts. The purpose of this study would be to identify potential ITS improvements for the region that would aid in emergency/evacuation and disaster recovery plans. It would bring together transportation, public safety, and emergency planning stakeholders to identify technology needs and institutional/interagency coordination efforts that may be needed for the region.

		Notes
Cost Estimate	$100,000	
Project Location(s)	Seacoast	
Service Packages	ATMS01, ATMS03, ATMS06, ATMS18, EM09	
Time Frame	Short-term	
Lead Agency	NHDOT	
Project Participants	NHDOS, Local Municipalities, Seabrook Station, COAST, UNH, MassDOT - Highway Division	
Expected Benefits	Improve ability to respond in an emergency evacuation scenario.	
Integration with Other Projects	Coordinated with statewide EOC, Seabrook Station emergency planning efforts, and local traffic and parking management plans.	

EM-2: US Route 4 Incident Reporting

Project Description	US Route 4 is a significant corridor in the region, accommodating travel between the New Hampshire coast and Concord. The corridor can experience traffic congestion, particularly when an incident occurs. In addition, instrumentation of this corridor would be costly. This project would encourage drivers along US Route 4 to quickly report incidents to the state. Drivers would be informed of best telephone number to use when reporting incidents on US Route 4. This project would also assess the feasibility of sending US Route 4 incident information to interested subscribers via email or text message. This incident reporting system would be coordinated with the state's 511 efforts. Static signs would be deployed at strategic locations along the corridor encouraging drivers to report incidents quickly. A marketing effort would also be undertaken to make drivers aware of the incident reporting system.

		Notes
Cost Estimate	$100,000	$60,000 for incident reporting system (coordinated with 511 efforts) $20,000 for static signs $20,000 for marketing efforts
Project Location(s)	US Route 4	
Service Packages	ATIS01, ATMS06, ATMS08	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	NHDOS, Local Municipalities	
Expected Benefits	Improve incident detection and verification.	
Integration with Other Projects	Coordinated with statewide 511 efforts.	

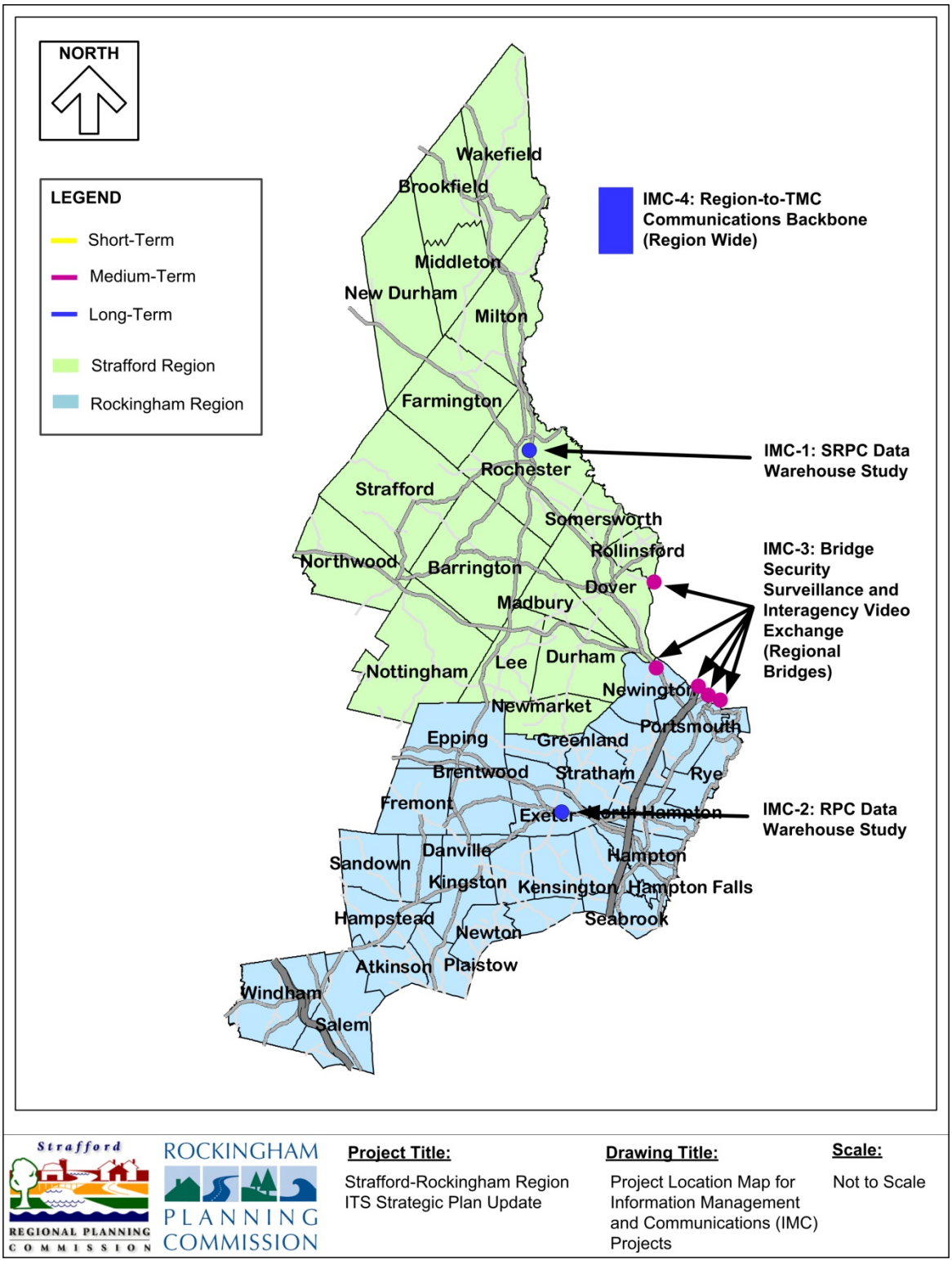
EM-3: Route 101 Corridor ITS

Project Description	The Route 101 corridor, as one of the region's primary east-west corridors, is vitally important to the region's transportation network. This corridor was identified by regional transportation stakeholders as needing improved incident/emergency detection and response. This project would include the installation of cameras, traffic flow sensors, and supporting communications infrastructure along the length of the corridor. For preliminary costing purposes, it is assumed that wireless microwave communications would be used and would tie into the state's existing wireless communications network.

		Notes
Cost Estimate	$1.5 million	This effort would include deploying traffic sensors, cameras, and communications.
Project Location(s)	Route 101	
Service Packages	ATIS01, ATMS06, ATMS08	
Time Frame	Long-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve incident detection and verification.	
Integration with Other Projects	Coordinated with NHDOT 511 efforts.	

5.8 Information Management and Communications (IMC) Projects

Exhibit 5-6: Project Location Map for Information Management and Communications (IMC) Projects



IMC-1: SRPC Data Warehouse Study

Project Description	As ITS technology continues to be deployed in the region, it will be beneficial to have a central repository of ITS data. This ITS data warehouse (a data archive for multiple agencies) can be used to assist agencies in the operations, planning, and research activities. It can also provide ITS data to the general public to illustrate the usefulness of ITS deployments and garner additional support for ITS and transportation investment. This project would establish data standards and formatting for the Strafford region's ITS data. Working with regional stakeholders, SRPC would lead the effort to adopt a regional data and metadata format to aid in data collection and archiving efforts for all agencies. The region would also determine quality controls for collected data, data archiving processes, and data access procedures. The project would also procure hardware for an initial data warehouse consisting of data collected by local traffic management systems' data repositories, the state's Archived Data Management System (where applicable), regional transit agencies' data repositories, and the SRPC. ITS data will be electronically submitted to the SRPC's data storage equipment (which may simply consist of a single PC or server). The hardware system will be designed to be scalable to allow for expansion as more ITS equipment is deployed in the region.

		Notes
Cost Estimate	$40,000	$30,000 study $10,000 hardware
Project Location(s)	SRPC Office (Dover, NH)	
Service Packages	AD2, AD3	
Time Frame	Long-term	
Lead Agency	SRPC	
Project Participants	Dover, Somersworth, COAST, UNH, NHDOT, Local Municipalities	
Expected Benefits	Increase ease of ITS data exchange among agencies for planning/research activities.	
Integration with Other Projects	Coordinated with regional ITS data collection efforts.	

IMC-2: RPC Data Warehouse Study

Project Description	As ITS technology continues to be deployed in the region, it will be beneficial to have a central repository of ITS data. This ITS data warehouse (a data archive for multiple agencies) can be used to assist agencies in the operations, planning, and research activities. It can also provide ITS data to the general public to illustrate the usefulness of ITS deployments and garner additional support for ITS and transportation investment. This project would establish data standards and formatting for the Rockingham region's ITS data. Working with regional stakeholders, RPC would lead the effort to adopt a regional data and metadata format to aid in data collection and archiving efforts for all agencies. The region would also determine quality controls for collected data, data archiving processes, and data access procedures. The project would also procure hardware for an initial data warehouse consisting of data collected by local traffic management systems' data repositories, the state's Archived Data Management System (where applicable), regional transit agencies' data repositories, and the RPC. ITS data will be electronically submitted to the RPC's data storage equipment (which may simply consist of a single PC or server). The hardware system will be designed to be scalable to allow for expansion as more ITS equipment is deployed in the region.

		Notes
Cost Estimate	$40,000	$30,000 study $10,000 hardware
Project Location(s)	RPC Office (Exeter, NH)	
Service Packages	AD2, AD3	
Time Frame	Long-term	
Lead Agency	RPC	
Project Participants	Salem, Portsmouth, CART, COAST, NHDOT, Local Municipalities	
Expected Benefits	Increase ease of ITS data exchange among agencies for planning/research activities.	
Integration with Other Projects	Coordinated with regional ITS data collection efforts.	

IMC-3: Bridge Security Surveillance and Interagency Video Exchange

Project Description	There are numerous bridges in the region, including the Piscataqua River Bridge, the Sarah Mildred Long Bridge, the Route 1 Memorial Bridge, the Little Bay Bridges, Eliot Bridge, and others. Traffic conditions on these bridges are extremely important to the region's overall transportation network. Additionally, preservation and protection of these bridges as strategic infrastructure is also important. This project would install fifteen (15) additional security/surveillance cameras on the region's bridges to supplement existing cameras. These cameras would be installed to increase security of the bridges, and to provide a clear overview of traffic conditions on these bridges. The project would also establish a video distribution network that would allow for interagency video exchange. Authorized agencies, such as local DPWs, local and state public safety personnel, and transit providers, would be able to access a protected website to view camera feeds in near real-time. Owners of the cameras would retain control over the camera positioning and feeds, but authorized agencies would be able to easily request camera views to aid them in their daily operations. It is intended that this project would increase the security of key infrastructure, while at the same time improve interagency coordination and dissemination of information regarding traffic conditions on these bridges.

		Notes
Cost Estimate	$1.6 million	$10,000 per camera (15) $950,000 communications $500,000 video distribution network hardware and software
Project Location(s)	Regional bridges	
Service Packages	ATMS01, ATMS06	
Time Frame	Medium-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities, Transit agencies, MassDOT - Highway Division, Maine Turnpike, MaineDOT, Interstate Bridge Authority, NH Homeland Security and Emergency Management	
Expected Benefits	Improve bridge security/surveillance. Allow transit and local transportation agencies to be aware of travel conditions (construction, congestion, incidents) at bridge locations.	
Integration with Other Projects	Coordinated with ITS deployments along roads with bridges and with the NHDOT's existing video deployments.	

IMC-4: Region-to-TMC Communications Backbone

Project Description	The state has established its statewide transportation management center (TMC) in Concord. The statewide TMC is co-located with the statewide EOC. Together these two centers allow for coordinated traffic management and incident/emergency detection, response, and management. In order to derive the most benefit from these statewide centers, it will be important to establish robust and reliable communications network to communicate information from the field back to the Concord, and vice versa. This project would install a dedicated broadband wireless or fiber-optic communications backbone from Concord to the Strafford-Rockingham region. Communications equipment would be installed along state right-of-way wherever possible. This work would be coordinated with local municipalities and regional transportation stakeholders in order to facilitate connections to local traffic management centers. It is hoped that having a dedicated communications backbone would allow for increased interagency coordination, improved regional traffic management, ITS data reporting and archiving, and providing support for future ITS deployments. This work may be designed as part of the State's statewide communications planning.

		Notes
Cost Estimate	$3 million	
Project Location(s)	Strafford-Rockingham Region	
Service Packages	ATMS06	
Time Frame	Long-term	
Lead Agency	NHDOT	
Project Participants	Local Municipalities	
Expected Benefits	Improve communications throughout the region back to central location, facilitating increased interagency coordination and supporting future ITS deployments.	
Integration with Other Projects	Coordinated with ITS deployments region-wide.	

5.9 Strategic Plan Agreements

The strategic plan projects, as proposed, would require additional agreements. For more information on agreements, refer to Chapter 6 in the *Strafford-Rockingham Region ITS Architecture* document. To implement the projects included in this strategic plan, the following agreements are recommended for consideration. In addition to those below, any agreements necessary to ensure privacy and data security for all of the projects should be considered.

Exhibit 5-7: Mapping Needs to Service Packages

Ref. #	Project Title	Type of Agreement	Description
TM-2 through TM-6	Corridor ITS Deployments	Share Information	The deployment of ITS along corridors that cross jurisdictions would benefit from agreements between the agency/ies that would own the equipment (NHDOT or individual municipalities), and agencies who would benefit from sharing information from those devices.
PT-1	Regional Call/Coordination Center for Demand Response Services	Coordinate Activity	This regional call/coordination center will require agreements between COAST on behalf of ACT and local transportation services providers, including public transit and human service agencies to coordinate transportation services.
PT-4	COAST Transit Signal Priority Implementation	Request/Perform Action	Transit agencies and municipalities would be required to coordinate to ensure compatible technology, and then agreements would guide when and how signal priority could be requested. In order for TSP to be implemented in the region, necessary legislation must first be enacted.
MM-2	Regional 511 Interface Study/Long-Range Plan	Share Information	A memorandum of understanding (MOU) may need to be created to guide the sharing of information between the region's different agencies and the 511 system.
IMC-3	Bridge Security Surveillance and Interagency Video Exchange	Share Information	An agreement may be required to determine the way in which video information would be shared.
IMC-4	Region-to-TMC Communications Backbone	Coordinate Activity	An agreement would help define the usage of the communications backbone to the TMC by multiple agencies.

6. ITS STRATEGIC PLAN MAINTENANCE

Like the *Strafford-Rockingham Region ITS Architecture*, this ITS Strategic Plan is a "living document" intended to evolve in step with the region's changing needs and ITS deployment progress. This update is part of this evolution as should regular updates going forward.

The ITS Strategic Plan and the regional ITS architecture provide a road map that can be used to guide the deployment of future ITS components in a manner that is complementary to existing and planned infrastructure and operational investments. The ITS Strategic Plan ensures that the ITS deployments are responsive to real transportation needs, functional requirements, and technological advances. The projects developed in this study are a snapshot of ITS opportunities based on current conditions in the region.

The ITS Strategic Plan presents an outlook and strategy for ITS deployment in the region. As needs change and as technology advances, the ITS Strategic Plan and the regional ITS projects should be modified and adapted as needed. In order to ensure responsiveness to regional needs, it is recommended that the ITS Strategic Plan be reassessed on a regular basis.

In updating the project list, the following factors were taken into consideration, and should continue to be taken into consideration:

- Reassessment of regional transportation needs, existing ITS elements, and institutional structure;
- Re-evaluation of the needed actions and associated functional requirements;
- Re-evaluation of the proposed system architecture strategies;
- Re-evaluation of the specific list of proposed projects and identification of specific pending funding sources; and
- The emergence of new technologies or ITS initiatives that may prove advantageous in meeting the needs of the region.

The Standing Regional ITS Coordination Committee, recommended as a maintenance and advisory group for the *Strafford-Rockingham Region ITS Architecture*, is well suited to address updates to the ITS Strategic Plan as well. Because the members of the Standing Regional ITS Coordination Committee make up the core interest group for the region, their continued involvement in the ITS planning and deployment process will expedite ITS development in the region and promote inter-agency dialogue and coordination on ITS issues.

It is recommended that when the Standing Regional ITS Coordination Committee evaluates the *Strafford-Rockingham Region ITS Architecture* for a periodic comprehensive review (typically once every four years following the development of a new Long-Range Transportation Plan, as was the case for this update), the Committee should also assess the ITS Strategic Plan and determine what, if any, modifications and updates should be included in the plan.