

## CCRPC ITS Plan Update Steering Committee Meeting

*March 30, 2015*

Cambridge Systematics presented the proposed list of projects for the ITS architecture and plan update. The table below was presented to the Steering Committee and comments were provided on the various projects. Comments and changes made to the table are listed in italics.

There were also several general comments made on the project list:

- The ATMS will enable Vtrans to take information from the adaptive signal system and implement data gathering to improve performance.
- ATMS will be provided as a monitoring system to municipalities for state-owned signals. Municipalities can suggest timing plans with Vtrans having final approval. If emergency evacuation plan is implemented, however, pre-planned signals will be turned green. Both sides of roadway(s) may be used depending on situation.
- Vtrans is working on plans to extend green time during winter storms for plows on certain routes.
- CCRPC wants to incorporate Connected Vehicles, particularly V2I, into next long range plan. Any near-term deployments should in 5-year plans as well.

### **Task 2 – Update ITS System Architecture**

Task 2 of the Chittenden County ITS System Architecture update consists of three main activities, as presented in the project's kick-off presentation:

- Update stakeholder list
- Update ITS inventory
- Need and gap assessment

#### **Update stakeholder list**

The Chittenden County ITS System Architecture was revised to determine the stakeholders currently incorporated in the Architecture. There are 91 stakeholders registered in the Architecture, with 8 groups, representing the police and fire departments of Burlington, South Burlington, Winooski, Municipal Departments, Colchester, Essex, Milton, and Shelburne. The full list of current stakeholders can be seen in this document's 1<sup>st</sup> Appendix.

Additional stakeholders that could be added in this update are advocate groups, like bicycle and pedestrian groups, as well as new technology solution providers, such as probe vehicle data providers. If there are other stakeholders that need to be considered, the list can be updated upon request.

## **Update ITS inventory**

The inventory inside the current ITS Architecture consists of 185 elements, 127 existing elements and 58 planned. Each element consists of a name, a stakeholder, a status (whether it is an existing element or planned), and a brief description. The list will be updated upon feedback received during the project inventory phase. A full list of the current ITS inventory's elements can be seen in this document's 2<sup>nd</sup> Appendix.

## **Update Architecture's projects**

The current Chittenden ITS Architecture has no projects integrated. One of the main objectives of this report is to present projects in the region to incorporate the ITS Architecture. The projects will be assigned a stakeholder, the correspondent elements involved, and incorporated to a subsystem in the updated Turbo Architecture.

To develop a project list, previous studies and report were consulted (in particular the ITS Strategic Deployment Plan 2005). In addition, a number of proposed projects are presented, as a result of the November 6 focus groups and workshops. During these meeting, current needs and gaps were identified by the participants, and projects were proposed in response to these needs and gaps. The following list of projects were identified and are considered to be incorporated in the ITS Architecture Update:

*Projects to include in architecture and strategic plan*

Short term 0-3 years

Medium term 4-7 years

Long term 8+ years

Gap/Need	Proposed Action	Next Steps	Performance Measures	Architecture Packages
Lack of traffic coordination within region  <i>Short term</i>	Adopt the Vermont Advanced Transportation Management System (ATMS) to manage control system for the region. The ATMS can incorporate State and local signal systems and bike/pedestrian facilities.	Start dialogue with VTrans and different stakeholders to evaluate and determine how can local authorities be incorporated in the VTrans ATMS system.  <i>VTrans signalized corridors are being incorporated into the ATMS. Local signals can be incorporated as well. GIS files or other location data need to be supplied along with phasing and timing information.</i>	<ul style="list-style-type: none"> <li>• Travel Time</li> <li>• User delay</li> <li>• Volumes</li> <li>• Level of service</li> <li>• Vehicle Miles Traveled (VMT)</li> </ul>	ATMS01 – Network Surveillance ATMS07 – Regional Traffic Control ATMS08 – Traffic Incident Management System ATMS09 – Traffic Forecast and Demand Management ATIS6 – Integrated Transportation Management/Route Guidance
Corridors with recurrent congestion	Implement Adaptive Signal Control (ASC) on corridors with recurrent congestion. The process incorporates	Identify corridors and study traffic conditions to determine feasibility of ASC implementation	<ul style="list-style-type: none"> <li>• Travel Time</li> <li>• User delay</li> <li>• Volumes</li> <li>• Level of service</li> </ul>	ATMS01 – Network Surveillance ATMS03 – Surface Street Control ATMS04 – Freeway Control ATMS06 – Traffic Information Dissemination

<p><i>Initial corridors = short</i></p> <p><i>Other corridors = short to medium</i></p>	<p>the timings to the ATMS system. <i>Corridors in process are:</i></p> <ul style="list-style-type: none"> <li>• <i>Route 15, from VT 289 to Essex/Jericho town line</i></li> <li>• <i>Route 2A south from Industrial Ave. to I-89 Exit 12</i></li> </ul>	<p>and incorporate to the ATMS system. <i>Corridors considered for future ASC implementation are:</i></p> <ul style="list-style-type: none"> <li>• <i>Route 7 (Shelburne Road).</i></li> <li>• <i>Route 2</i></li> <li>• <i>Champlain Parkway Corridor</i></li> <li>• <i>VT 127</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vehicle Miles Traveled (VMT)</i></li> </ul>	<p>APTS7 – Multi-modal Coordination  ATIS1 – Broadcast Traveler Information  AD2 – ITS Data Warehouse</p>
<p><i>Need for signal upgrades on local/regional corridors</i></p> <p><i>Short=plan</i></p> <p><i>Medium = implementation</i></p>	<p><i>Vtrans updates signals on a four-year cycle. Develop regional program that parallels Vtrans program.</i></p>	<p><i>Identify priority signal corridors for upgrade and develop 4-year plan to be updated annually.</i></p>	<ul style="list-style-type: none"> <li>• <i>Travel Time</i></li> <li>• <i>User Delays</i></li> <li>• <i>Intersection LOS</i></li> <li>• <i>Volumes (throughput)</i></li> </ul>	
<p>Lack of travel time data on key roadways</p> <p><i>Short</i></p>	<p>Implement the Bluetooth Monitoring System project. The project was submitted for the Accelerated Innovation Deployment (AID) Demonstration grant.</p>	<p>Mobilize the project by developing the System Structure, Specifications, and Deployment Plan.</p> <p><i>Initial installation on Adaptive Signal Corridors. Full deployment plans still in development.</i></p>	<ul style="list-style-type: none"> <li>• <i>Travel Time</i></li> </ul> <p><i>TOPS-BC analysis needs – Volumes, capacity and travel times on served routes</i>  <i>Capital and O&amp;M cost for blue tooth system</i></p>	<p>ATMS02 – Probe Surveillance  AD1 – ITS Data Mart</p>
<p>Delays at 5 Corners intersection due to railroad</p>	<p>ATMS will extend green phase for moves not blocked by train in order to</p>	<p>Incorporate the intersection’s control signal timings to the</p>	<ul style="list-style-type: none"> <li>• <i>Travel Time</i></li> <li>• <i>User delay</i></li> <li>• <i>Volumes</i></li> </ul>	<p>ATMS03 – Surface Street Control  APTS7 – Multi-modal Coordination</p>

traffic  <i>Short</i>	reduce delays	ATMS system.	(throughput) <ul style="list-style-type: none"> <li>Level of service</li> <li></li> </ul>	
<b>Have real-time information on transportation infrastructure</b>  <i>Study = short</i>  <i>Implement= medium</i>	<b>Evaluate the use of probe vehicle data sources.</b>	<b>Evaluate information from different sources (NPRMDS (Here), Inrix, TomTom, etc.)</b>  <i>Develop Request for Information (RFI) to help identify interested vendors, extent of probe vehicle coverage and potential cost parameters.</i>	<ul style="list-style-type: none"> <li><b>Travel Time</b></li> </ul>	<b>ATMS02 – Probe Surveillance</b> <b>ATMS12 – Virtual TMC and Smart Probe Data</b> <b>AD3 – ITS Virtual Data Warehouse</b>
<b>Increase CCTV coverage</b>  <i>Short to Medium</i>	<b>Look for opportunities to install planned and proposed CCTV cameras in the region. Currently there are 2 CCTV cameras planned and located on Marshall Ave.</b>	<b>Determine location of planned and proposed camera installation, including Exit 14, Route 15 Bridge, and Exits 10 (from workshops), 16 and 17.</b>  <i>Budget for two additional CCTV cameras at each location above.</i>	<ul style="list-style-type: none"> <li><b>Number of CCTV cameras installed.</b></li> </ul> <b>Capital and O&amp;M costs for cameras</b>	<b>ATMS01 – Network Surveillance</b> <b>ATMS08 – Traffic Incident Management System</b>
Lack of Variable Message Signs (VMS)	Look to implement permanent VMS to replace portable ones. Four new permanent VMS being deployed on I-89 to service upcoming construction near Waterbury. Two are just south of CCPRPC	Evaluate where portable VMS are currently implemented to determine opportunity places for permanent installation.  <i>Budget for 2 additional</i>	<ul style="list-style-type: none"> <li><b>Location of portable VMS installations</b></li> </ul>	<b>ATMS01 – Network Surveillance</b> <b>ATMS06 – Traffic Information Dissemination</b>

	region and two in Williston within CCRPC region.	<i>locations 4 more signs. Mounted on side of road.</i>		
Improve performance measure on roadways due to truck activity.  <i>Colchester =short</i>  <i>Others=long</i>	Look to implement portable Weigh-In-Motion (WIM) for DMV enforcement. Coordinate with enforcement.  Colchester	Evaluate commercial corridors of interest and determine possible location for ITS implementation.  <i>Initial installation - Colchester</i>	<ul style="list-style-type: none"> <li>• Truck VMT</li> <li>• IRI</li> </ul>	CVO02 – Freight Administration CVO06 – Weigh-In-Motion CVO10 – HAZMAT Management
Additional RWIS are needed in the region  <i>Two initial locations and regional study = short</i>  <i>Further locations = medium to long</i>	Deploy new Road Weather Information System (RWIS). Five mobile ESS are being deployed statewide, one in the CCRPC region, in Essex. Additional potential locations include  Automated tie to VMS for off-hours.	Evaluate funding opportunities to increase the coverage of mobile RWIS on desired corridors  <i>Budget South Burlington Route 7 and Southeast Route 116 as initial locations.</i>	<ul style="list-style-type: none"> <li>• Weather conditions</li> <li>• IRI</li> </ul>	MC03 – Road Weather Data Collection
Improve reliability of weather service alert  Short	Evaluate the incorporation of the National Weather Service and <i>Deep Thunder Weather</i> system to communicate with Emergency Managers and key transportation agency personnel. Forecast at 2km	Coordinate with National Weather Service, <i>Vtrans and Emergency Managers</i> to design the framework for <i>communicati Deep Thunder Weather information to</i>	<ul style="list-style-type: none"> <li>• Number of accidents due to weather conditions.</li> <li>• Weather prediction reliability index.</li> </ul>	EM07 – Early Warning System MC03 – Road Weather Data Collection MC04 – Weather Information Processing and Distribution. MC06 – Winter Maintenance MC07 – Roadway Maintenance and construction

	grid level.	transportation stakeholders		
Coordinate Vermont Alert with 511  Short  Medium= <i>coordination studies with local EMAs</i>	Design a framework for coordination and joint efforts between Vermont Alert and 511. Accomplished with ATMS.	Coordinate communication to design a framework for collaborative emergency responses	<ul style="list-style-type: none"> <li>• Number of reports registered.</li> <li>• Response rate</li> </ul>	ATMS08 – Traffic Incident Management System EM01 – Emergency Call-Taking and Dispatch EM02 – Emergency Routing EM03 – Mayday Support EM04 – Roadway Service Patrols EM06 – Wide-Area Alert EM07 – Early Warning System EM08 – Disaster Response and Recovery EM09 – Evacuation and Reentry Management EM10 – Disaster Traveler Information
Improve Chittenden’s data management  <i>Short=study of priorities for data warehouse inclusion and management plan</i>  <i>Medium to long = incorporation of additional datasets</i>	Develop the Chittenden Regional Data Warehouse. This would be a data repository for the region.	Develop a Data Management Plan for the region. Possible partnership with UVM could facilitate the process. Turning movement, AADT and crash data already underway. Expand existing map.	N/A	AD2 – ITS Data Warehouse
Develop web-based portal with archived	Promote the implementation of the Regional Integrated Transportation Information	Start communications with Vtrans to look for opportunities to incorporate RITIS in the	N/A	AD3 – ITS Virtual Data Management ATIS2 – Interactive Traveler Information

data	System (RITIS) for data archiving and diffusion	region.		
Improve transit service with the use of ITS technology on main transit corridors  <i>Short=study</i>  <i>Medium to long = implementation</i>	Implementation of Transit Signal Priority (TSP) on planned BRT lines upgrades on US 2 and VT 15, on Route 6 (Shelburne/Rt. 7), US 2/Willston Rd, and VT 15	Coordinate with ATMS and CCPT to evaluate the feasibility of implementing TSP on the routes mentioned	<ul style="list-style-type: none"> <li>• Transit delays</li> <li>• Transit ridership</li> </ul>	<p>APTS1 – Transit Vehicle Tracking  APTS2 – Transit Fixed-Route Operations  APTS7 – Multi-modal Coordination</p>
Improve transit service on tertiary corridors  Long	Implement TSP to transit tertiary corridors.	Develop a feasibility study for the project	<ul style="list-style-type: none"> <li>• Transit delays</li> <li>• Transit ridership</li> </ul>	<p>APTS1 – Transit Vehicle Tracking  APTS2 – Transit Fixed-Route Operations  APTS7 – Multi-modal Coordination</p>
Improve transit services through vehicle tracking  Short	Implement Automatic Vehicle Location (AVL) on transit buses.	Evaluate possible integration of AVL to CCPT transit services.	<ul style="list-style-type: none"> <li>• On-time performance</li> <li>• Transit reliability</li> <li>• Planning time index</li> </ul>	<p>APTS1 – Transit Vehicle Tracking  APTS2 – Transit Fixed-Route Operations</p>
Provide better quality information to transit users.  <i>Short =</i>	CCTA has planned the installment of 4 fixed bus arrival signs along the planned BRT route and a bus information screen in	Look for opportunities to implement real-time arrival and departures. This activity can incorporate prediction systems such as Next	<ul style="list-style-type: none"> <li>• On-time performance</li> <li>• Planning time index</li> </ul>	<p>APTS8 – Transit Traveler Information  ATIS2 – Interactive Traveler Information</p>



<i>programmed signs</i>  <i>Medium to long = additional signs</i>	Downtown Burlington.	Bus or innovative systems like UVM's TransLoc to locate UVM's shuttle buses.		
Improve fare collection methods across transit services  Medium to long	Implement stored value smart cards issued by CCTA. Location may be established to purchase/add value to the cards	Study the feasibility of implementing a smart card system for fare collection across CCTA and other transit services.	<ul style="list-style-type: none"> <li>• Number of passengers.</li> <li>• Net revenue</li> </ul>	APTS4 – Transit Passenger and Fare Payment
Improve the Paratransit service in the region  <i>Short = study</i>  <i>Long = implementation</i>	Demand response scheduling and dispatch management software paratransit contractors. Including equipping vehicles with Mobile Data Computers (MDC), and AVL/CAD.	Study costs and benefits associated to this improvement for paratransit service providers and users to consider	<ul style="list-style-type: none"> <li>• Number of passengers.</li> <li>• On-time performance</li> </ul>	APTS1 – Transit Vehicle Tracking APTS3 – Demand Response Operations APTS5 – Transit Security
Insufficient parking information  <i>Short to Medium</i>	Develop and implement a Parking Management System, including policies and technology use to improve parking conditions.	Study the possibilities to develop a Parking Management System, considering ITS to address parking issues.	<ul style="list-style-type: none"> <li>• Parking occupancies</li> <li>• Parking turn-over rates</li> </ul>	ATMS16 – Parking Facility Management ATMS17 – Regional Parking Management ATMS10 – Electronic Toll Collection
Provide real-time information to airport users	Evaluate the implementation of permanent signs with arrivals and departure information, flight changes and parking availability	Evaluate the implementation of permanent VMS to provide user information outside	N/A	ATMS06 – Traffic Information Dissemination ATMS16 – Parking Facility Management MC10 – Maintenance and Construction Activity Coordination

<i>Medium to long</i>	outside airport facilities	airport facilities		
Improve conditions on Fletcher Allen Hospital emergency vehicles  <i>Medium</i>	Look for opportunities to incorporate AVL to improve hospital's emergency vehicles trips.	Look to incorporate and use GPS tracking on emergency vehicles to study and determine windows of opportunity on their everyday performance and maintenance	<ul style="list-style-type: none"> <li>Emergency vehicles' performance measures</li> </ul>	EM01 – Emergency Call-Taking and Dispatch EM02 – Emergency Routing EM03 – Mayday Support
Improve conditions on plow truck for better service  <i>Medium to long = local plow implementation</i>	VTrans plows have AVL technology. Extend this technology to local plows and promote signal priority for plows  TSP for plows.	Evaluate plow truck services to determine feasibility of ITS technology implementation.	<ul style="list-style-type: none"> <li>Plow truck performance measures</li> </ul>	MC01 – Maintenance and Construction Vehicle and Equipment Tracking MC02 – Maintenance on Construction Vehicle MC03 – Road Weather Data Collection MC06 Winter Maintenance
Incorporate Connected Vehicle technology into transportation planning process. The region will want to capitalize on opportunities presented as this technology appears in vehicles.	Opportunities for Connected Vehicle technology including both DSRC and other technologies should be identified in new projects. Focus should be on Vehicle-to-Infrastructure deployments related to safety, emergency response and traveler information..	Develop a process for evaluating CV technology as part of planning products and processes. Material from both FHWA and AASHTO is available to support these efforts.	<ul style="list-style-type: none"> <li>Number of projects incorporating CV technologies.</li> </ul>	

<p><i>Short=study</i></p> <p><i>Implementation of DSRC = begin in medium</i></p>				
<p>Use of Unmanned Aerial Vehicles for transportation planning and operations.</p> <p><i>Underway at UVM</i></p>	<p>UAVs are being considered for use by transportation agencies for asset management and for visual access to remote facilities of condition evaluation in major emergencies.</p>	<p>Partner with UVM to evaluate potential UAV applications.</p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	

## Appendix 1 – Current Stakeholders list

Stakeholder	Associated Elements
Amtrak	Amtrak Operations
Archived Data Users	Archived Data Users
Campus Area Transportation Management Association (CATMA)	CATMA Dispatch
Capital West	Capital West Dispatch Center
Chittenden County Transportation Authority (CCTA)	CCTA Fixed Route Transit Vehicles, CCTA Fare Card, CCTA Fixed Route Dispatch, CCTA Website, CCTA Transfer Centers, CCTA Maintenance Garage, CCTA Data Repository, CCTA Demand Response Dispatch, CCTA Demand Response Transit Vehicles, CCTA Bus Stops.
Chittenden Regional Transportation Authority	Chittenden Regional TOC
City of Burlington Department of Public Works (DPW)	Burlington Traffic Signals, Burlington Parking Management, Burlington Data Repository, Burlington Traffic Monitoring Equipment, Burlington Traffic Management, Burlington DPW, Burlington DMS, Burlington Maintenance Vehicles, Burlington Parking Ban Warning Lights, Burlington Parking Status Signs
City of Burlington Fire Department and Rescue	
City of Burlington Police Department	Burlington Dispatch Center
City of Burlington Public Safety Department	Burlington Public Safety Vehicles
City of South Burlington	South Burlington Website
City of South Burlington Department of Public Works	South Burlington Traffic Signals, South Burlington Traffic Monitoring Equipment, South Burlington Traffic Management, South Burlington Data Repository, South Burlington DPW, South Burlington DMS, South

	Burlington Maintenance Vehicles
City of South Burlington Fire Department (SBFD)	
City of South Burlington Police Department	South Burlington Dispatch Center
City of South Burlington Public Safety Departments	South Burlington Public Safety Vehicles
City of Winooski	Winooski Website
City of Winooski	Winooski Traffic Signals, Winooski Traffic Monitoring Equipment, Winooski Traffic Management, Winooski Data Repository, Winooski DPW, Winooski DMS, Winooski Maintenance Vehicles
City of Winooski Fire Department	
City of Winooski Police Department	Winooski Dispatch Center
City of Winooski Public Safety Department	Winooski Public Safety Vehicles
Contact Communications	Contact Communication Dispatch Center
Fletcher Allen Health Care	Fletcher Allen Health Care
IBM	IBM Traffic Management, IBM Reversible Lane Equipment
Jericho-Underhill Fire Department	Jericho-Underhill Public Safety Vehicles
Lake Champlain Transportation Company	Lake Champlain Ferry Operators
Mallets Bay Fire Department	Mallets Bay Fire Department Public Safety Vehicles
Municipal Department of Public Works (DPW)	Municipal Traffic Monitoring Equipment, Municipal Traffic Signals, Municipal Maintenance Vehicles, Municipal DMS, Municipal Traffic Management, Municipal Data Repositories, Municipal DPW, Other Reversible Lane Equipment
Municipal/Other Fire and Rescue Department	

Municipal/Other Police Department	Municipal/Other Dispatch Center
Municipal/Other Public Safety Departments	Municipal/Other Public Safety Vehicles
Municipality	Municipal Websites
Other Parking Managers	Other Parking Management
Other Prepaid Stored Value Smart Card Distributors	Other Prepaid Stored Value Smart Cards
Other Transit Provider	Other Transit Provider Dispatch
Other Traveler Card Update Device Owners	Other Traveler Card Update Devices
Private Commercial Carriers	Commercial Vehicles, Fleet Management Systems
Private Taxi Service Providers	Private Taxi Services
Private Tow and Wrecker Company	Private Tow and Wrecker Dispatch, Private Tow and Wrecker Vehicles
Private Traveler Information Systems	Private Traveler Information Systems
Public and Private Utility Companies	Public and Private Utilities Dispatch
Railroad Operators	Railroad Operations Centers, Railroad Wayside Equipment
Regional Event Operators	Regional Event Operations
Service Agencies	Service Agency Cards
Special Services Transportation Agency (SSTA)	SSTA Demand Response Dispatch, SSTA Demand Response Transit Vehicles
St. Michaels Fire and Rescue	St. Michaels Dispatch Center, St. Michaels Public Safety Vehicles
Statewide Emergency Management Agencies	Statewide Mutual Aid and Incident Management Network
Town of Bolton Fire Department	Bolton Public Safety Vehicles
Town of Charlotte Fire-Rescue Squad	Charlotte Public Safety Vehicles
Town of Colchester	Colchester Website

Town of Colchester Department of Public Works (DPW)	Colchester Traffic Signals, Colchester Traffic Management, Colchester Traffic Monitoring Equipment, Colchester Data Repository, Colchester DPW, Colchester DMS, Colchester Maintenance Vehicles
Town of Colchester Fire Department/Rescue Squad	
Town of Colchester Police Department	Colchester Dispatch Center
Town of Colchester Public Safety Departments	Colchester Public Safety Vehicles
Town of Essex	Essex Website
Town of Essex Department of Public Works (DPW)	Essex Traffic Signals, Essex Traffic Monitoring Equipment, Essex Traffic Management, Essex Data Repository, Essex DPW, Essex DMS, Essex Maintenance Vehicles
Town of Essex Fire Department and Rescue	
Town of Essex Police Department	Essex Dispatch Center
Town of Essex Public Safety Departments	Essex Public Safety Vehicles
Town of Hinesburg/St. George Fire Department and First Response	Hinesburg Public Safety Vehicles
own of Huntington Fire Department/First Response	Huntington Public Safety Vehicles
Town of Milton Fire Department	
Town of Milton Police Department	Milton Police Vehicles, Milton Police Dispatch Center
Town of Milton Public Safety Departments	Milton Fire/Rescue Vehicles
Town of Milton Rescue Squad	
Town of Richmond Police Department	Richmond Police Vehicles
Town of Richmond Rescue	Richmond Rescue Vehicles
Town of Richmond Volunteer Fire Department	Richmond Fire Vehicles

Town of Shelburne	Shelburne Website
Town of Shelburne Department of Public Works (DPW)	Shelburne Traffic Signals, Shelburne Traffic Management, Shelburne Traffic Monitoring Equipment, Shelburne Data Repository, Shelburne DPW, Shelburne DMS, Shelburne Maintenance Vehicles
Town of Shelburne Police Department	Town of Shelburne Public Safety Departments
Town of Shelburne Volunteer Fire Department/Rescue Squad	
Town of Westford Fire Department	Williston Fire Vehicles
Town of Williston Police Department	Williston Police Dispatch Center, Williston Police Vehicles
Town of Williston Rescue	Williston Rescue Vehicles
Travel Service Providers	Travel Service Providers
Travelers	Traveler Information Device
TV and Radio Stations	TV and Radio Stations
University of Vermont (UVM)	UVM ID Card Administration, UVM Police Dispatch Center, UVM ID Card (CATCard), UVM Public Safety Vehicles
Vermont Agency of Transportation (VTrans)	CARS Server, VTrans Traffic Signals, VTrans Central Crash Records Database, VTrans State TOC, CARS Information System, VTrans District Maintenance Dispatch, VTrans RWIS Server, FORETELL Center Server, VTrans Maintenance Vehicles, VTrans Regional Construction Office, VTrans Data Warehouse
Vermont Department of Buildings and General Services	Rest Area Traveler Information Centers
Vermont Department of Health	CODES Database
Vermont Department of Motor Vehicles (DMV)	DMV Crash Records Archive
Vermont Department of Public Safety	VSP Public Safety Vehicles, Vermont Statewide EOC, VSP Headquarters, VSP



	Williston Communication Center, Vermont Emergency Management
Vermont Department of Tourism and Marketing	Vermont Travel Planner, Vermont Welcome Center Kiosks, Vermont Vacation Website
Vermont Enhanced 9-1-1 (E-911) Board	E-911 Board System, E-911 PSAP System
Vermont Transit Agencies	Vermont Smartcard, Vermont Smartcard Kiosks
Village of Essex Junction	Essex Junction Website
Village of Essex Junction Department of Public Works (DPW)	Essex Junction DMS, Essex Junction Data Repository, Essex Junction DPW, Essex Junction Maintenance Vehicles, Essex Junction Traffic Management, Essex Junction Traffic Monitoring Equipment, Essex Junction Traffic Signals
Village of Essex Junction Fire Department	Essex Junction Public Safety Vehicles
Weather Information Providers	Weather Services

## Appendix 2 – Current Inventory list

Element Name	Stakeholder	Element Type	Element Status
Amtrak Operations	Amtrak	Normal	Existing
Archived Data Users	Archived Data Users	Normal	Existing
Bolton Public Safety Vehicles	Town of Bolton Fire Department	Normal	Existing
Burlington Data Repository	City of Burlington Department of Public Works (DPW)	Normal	Planned
Burlington Dispatch Center	City of Burlington Police Department	Normal	Existing
Burlington DMS	City of Burlington Department of Public Works (DPW)	Normal	Planned
Burlington DPW	City of Burlington Department of Public Works (DPW)	Normal	Existing
Burlington International Airport Operations	City of Burlington	Normal	Existing
Burlington Maintenance Vehicles	City of Burlington Department of Public Works (DPW)	Normal	Existing
Burlington Parking Ban Warning Lights	City of Burlington Department of Public Works (DPW)	Normal	Existing
Burlington Parking Management	City of Burlington Department of Public Works (DPW)	Normal	Planned
Burlington Parking Status Signs	City of Burlington Department of Public Works (DPW)	Normal	Planned
Burlington Public Safety Vehicles.	City of Burlington Public Safety Departments	Normal	Existing
Burlington Traffic Management	City of Burlington Department of Public Works (DPW)	Normal	Planned
Burlington Traffic Monitoring Equipment	City of Burlington Department of Public Works (DPW)	Normal	Existing

Burlington Traffic Signals	City of Burlington Department of Public Works (DPW)	Normal	Existing
Burlington Website	City of Burlington	Normal	Existing
Capital West Dispatch Center	Capital West	Normal	Existing
CARS Information System	Vermont Agency of Transportation (VTrans)	Normal	Existing
CARS Server	Vermont Agency of Transportation (VTrans)	Normal	Existing
CATMA Dispatch	Campus Area Transportation Management Association (CATMA)	Normal	Existing
CCMPO Data Warehouse	Chittenden County Metropolitan Planning Organization (CCMPO)	Normal	Existing
CCMPO Website	Chittenden County Metropolitan Planning Organization (CCMPO)	Normal	Existing
CCTA Bus Stops	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Data Repository	Chittenden County Transportation Authority (CCTA)	Normal	Planned
CCTA Demand Response Dispatch	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Demand Response Transit Vehicles	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Fare Card	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Fixed Route	Chittenden County Transportation Authority	Normal	Existing

Dispatch	(CCTA)		
CCTA Fixed Route Transit Vehicles	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Maintenance Garage	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Transfer Centers	Chittenden County Transportation Authority (CCTA)	Normal	Existing
CCTA Website	Chittenden County Transportation Authority (CCTA)	Normal	Existing
Charlotte Public Safety Vehicles	Town of Charlotte Fire-Rescue Squad	Normal	Existing
Chittenden Regional TOC	Chittenden Regional Transportation Authority	Normal	Planned
CODES Database	Vermont Department of Health	Normal	Existing
Colchester Data Repository	Town of Colchester Department of Public Works (DPW)	Normal	Planned
Colchester Dispatch Center	Town of Colchester Police Department	Normal	Existing
Colchester DMS	Town of Colchester Department of Public Works (DPW)	Normal	Planned
Colchester DPW	Town of Colchester Department of Public Works (DPW)	Normal	Existing
Colchester Maintenance Vehicles	Town of Colchester Department of Public Works (DPW)	Normal	Existing
Colchester Public Safety Vehicles	Town of Colchester Public Safety Departments	Normal	Existing
Colchester Traffic Management	Town of Colchester Department of Public Works (DPW)	Normal	Planned

Colchester Traffic Monitoring Equipment	Town of Colchester Department of Public Works (DPW)	Normal	Planned
Colchester Traffic Signals	Town of Colchester Department of Public Works (DPW)	Normal	Existing
Colchester Website	Town of Colchester	Normal	Existing
Commercial Vehicles	Private Commercial Carriers	Normal	Existing
Contact Communications Dispatch Center	Contact Communications	Normal	Existing
DMV Crash Records Archive	Vermont Department of Motor Vehicles (DMV)	Normal	Existing
E-911 Board System	Vermont Enhanced 9-1-1 (E-911) Board	Normal	Existing
E-911 PSAP System	Vermont Enhanced 9-1-1 (E-911) Board	Normal	Existing
Essex Data Repository	Town of Essex Department of Public Works (DPW)	Normal	Planned
Essex Dispatch Center	Town of Essex Police Department	Normal	Existing
Essex DMS	Town of Essex Department of Public Works (DPW)	Normal	Planned
Essex DPW	Town of Essex Department of Public Works (DPW)	Normal	Existing
Essex Junction Data Repository	Village of Essex Junction Department of Public Works (DPW)	Normal	Planned
Essex Junction DMS	Village of Essex Junction Department of Public Works (DPW)	Normal	Planned
Essex Junction DPW	Village of Essex Junction Department of Public Works (DPW)	Normal	Existing
Essex Junction	Village of Essex Junction Department of Public Works	Normal	Existing

Maintenance Vehicles	(DPW)		
Essex Junction Public Safety Vehicles	Village of Essex Junction Fire Department	Normal	Existing
Essex Junction Traffic Management	Village of Essex Junction Department of Public Works (DPW)	Normal	Planned
Essex Junction Traffic Monitoring Equipment	Village of Essex Junction Department of Public Works (DPW)	Normal	Planned
Essex Junction Traffic Signals	Village of Essex Junction Department of Public Works (DPW)	Normal	Existing
Essex Junction Website	Village of Essex Junction	Normal	Existing
Essex Maintenance Vehicles	Town of Essex Department of Public Works (DPW)	Normal	Existing
Essex Public Safety Vehicles	Town of Essex Public Safety Departments	Normal	Existing
Essex Traffic Management	Town of Essex Department of Public Works (DPW)	Normal	Planned
Essex Traffic Monitoring Equipment	Town of Essex Department of Public Works (DPW)	Normal	Planned
Essex Traffic Signals	Town of Essex Department of Public Works (DPW)	Normal	Existing
Essex Website	Town of Essex	Normal	Planned
Fleet Management Systems	Private Commercial Carriers	Normal	Planned
Fletcher Allen Health Care	Fletcher Allen Health Care	Normal	Existing
FORETELL Center Server	Vermont Agency of Transportation (VTrans)	Normal	Existing
Hinesburg Public Safety Vehicles	Town of Hinesburg/St. George Fire Department and First Response	Normal	Existing

Huntington Public Safety Vehicles	Town of Huntington Fire Department/First Response	Normal	Existing
IBM Reversible Lane Equipment	IBM	Normal	Existing
IBM Traffic Management	IBM	Normal	Existing
Jericho-Underhill Public Safety Vehicles	Jericho-Underhill Fire Department	Normal	Existing
Lake Champlain Ferry Operations	Lake Champlain Transportation Company	Normal	Existing
Malletts Bay Fire Department Public Safety Vehicles	Malletts Bay Fire Department	Normal	Existing
Milton Fire/Rescue Vehicles	Town of Milton Public Safety Departments	Normal	Existing
Milton Police Dispatch Center	Town of Milton Police Department	Normal	Existing
Milton Police Vehicles	Town of Milton Police Department	Normal	Existing
Municipal Data Repositories	Municipal Department of Public Works (DPW)	Normal	Planned
Municipal DMS	Municipal Department of Public Works (DPW)	Normal	Planned
Municipal DPW	Municipal Department of Public Works (DPW)	Normal	Existing
Municipal Maintenance Vehicles	Municipal Department of Public Works (DPW)	Normal	Planned
Municipal Traffic Management	Municipal Department of Public Works (DPW)	Normal	Planned
Municipal Traffic Monitoring Equipment	Municipal Department of Public Works (DPW)	Normal	Planned
Municipal Traffic Signals	Municipal Department of Public Works (DPW)	Normal	Planned

Municipal Websites	Municipality	Normal	Planned
Municipal/Other Dispatch Center	Municipal/Other Police Department	Normal	Planned
Municipal/Other Public Safety Vehicles	Municipal/Other Public Safety Departments	Normal	Existing
Other Parking Management	Other Parking Managers	Normal	Existing
Other Prepaid Stored Value Smart Cards	Other Prepaid Stored Value Smart Card Distributors	Normal	Planned
Other Reversible Lane Equipment	Municipal Department of Public Works (DPW)	Normal	Planned
Other Transit Provider Dispatch	Other Transit Provider	Normal	Planned
Other Traveler Card Update Devices	Other Traveler Card Update Device Owners	Normal	Planned
Private Taxi Services	Private Taxi Service Providers	Normal	Existing
Private Tow and Wrecker Dispatch	Private Tow and Wrecker Company	Normal	Existing
Private Tow and Wrecker Vehicles	Private Tow and Wrecker Company	Normal	Existing
Private Traveler Information Systems	Private Traveler Information Systems	Normal	Planned
Public and Private Utilities Dispatch	Public and Private Utility Companies	Normal	Existing
Railroad Operations Centers	Railroad Operators	Normal	Existing
Railroad Wayside Equipment	Railroad Operators	Normal	Existing
Regional Event Operations	Regional Event Operators	Normal	Planned
Rest Area Traveler Information Centers	Vermont Department of Buildings and General Services	Normal	Existing



Richmond Fire Vehicles	Town of Richmond Volunteer Fire Department	Normal	Existing
Richmond Police Vehicles	Town of Richmond Police Department	Normal	Existing
Richmond Rescue Vehicles	Town of Richmond Rescue	Normal	Existing
Service Agency Cards	Service Agencies	Normal	Existing
Shelburne Communication Center	Town of Shelburne Police Department	Normal	Existing
Shelburne Data Repository	Town of Shelburne Department of Public Works (DPW)	Normal	Planned
Shelburne DMS	Town of Shelburne Department of Public Works (DPW)	Normal	Planned
Shelburne DPW	Town of Shelburne Department of Public Works (DPW)	Normal	Existing
Shelburne Maintenance Vehicles	Town of Shelburne Department of Public Works (DPW)	Normal	Existing
Shelburne Public Safety Vehicles	Town of Shelburne Public Safety Departments	Normal	Existing
Shelburne Traffic Management	Town of Shelburne Department of Public Works (DPW)	Normal	Planned
Shelburne Traffic Monitoring Equipment	Town of Shelburne Department of Public Works (DPW)	Normal	Planned
Shelburne Traffic Signals	Town of Shelburne Department of Public Works (DPW)	Normal	Existing
Shelburne Website	Town of Shelburne	Normal	Existing
South Burlington Data Repository	City of South Burlington Department of Public Works (DPW)	Normal	Planned
South Burlington Dispatch Center	City of South Burlington Police Department	Normal	Existing
South Burlington DMS	City of South Burlington Department of Public Works	Normal	Planned

	(DPW)		
South Burlington DPW	City of South Burlington Department of Public Works (DPW)	Normal	Existing
South Burlington Maintenance Vehicles	City of South Burlington Department of Public Works (DPW)	Normal	Existing
South Burlington Public Safety Vehicles	City of South Burlington Public Safety Departments	Normal	Existing
South Burlington Traffic Management	City of South Burlington Department of Public Works (DPW)	Normal	Planned
South Burlington Traffic Monitoring Equipment	City of South Burlington Department of Public Works (DPW)	Normal	Planned
South Burlington Traffic Signals	City of South Burlington Department of Public Works (DPW)	Normal	Existing
South Burlington Website	City of South Burlington	Normal	Existing
SSTA Demand Response Dispatch	Special Services Transportation Agency (SSTA)	Normal	Existing
SSTA Demand Response Transit Vehicles	Special Services Transportation Agency (SSTA)	Normal	Existing
St. Michaels Dispatch Center	St. Michaels Fire and Rescue	Normal	Existing
St. Michaels Public Safety Vehicles	St. Michaels Fire and Rescue	Normal	Existing
Statewide Mutual Aid and Incident Management Network	Statewide Emergency Management Agencies	Normal	Planned
Travel Service Providers	Travel Service Providers	Normal	Existing
Traveler Information Device	Travelers	Normal	Existing

TV and Radio Stations	TV and Radio Stations	Normal	Existing
UVM ID Card (CATCard)	University of Vermont (UVM)	Normal	Existing
UVM ID Card Administration	University of Vermont (UVM)	Normal	Existing
UVM Police Dispatch Center	University of Vermont (UVM)	Normal	Existing
UVM Public Safety Vehicles	University of Vermont (UVM)	Normal	Existing
Vermont Emergency Management	Vermont Department of Public Safety	Normal	Existing
Vermont Smartcard	Vermont Transit Agencies	Normal	Planned
Vermont Smartcard Kiosks	Vermont Transit Agencies	Normal	Planned
Vermont Statewide EOC	Vermont Department of Public Safety	Normal	Existing
Vermont Travel Planner	Vermont Department of Tourism and Marketing	Normal	Existing
Vermont Vacation Website	Vermont Department of Tourism and Marketing	Normal	Existing
Vermont Welcome Center Kiosks	Vermont Department of Tourism and Marketing	Normal	Existing
VSP Headquarters	Vermont Department of Public Safety	Normal	Existing
VSP Public Safety Vehicles	Vermont Department of Public Safety	Normal	Existing
VSP Williston Communication Center	Vermont Department of Public Safety	Normal	Existing
VTrans Central Crash Records Database	Vermont Agency of Transportation (VTrans)	Normal	Planned
VTrans Data Warehouse	Vermont Agency of Transportation (VTrans)	Normal	Planned

VTrans District Maintenance Dispatch	Vermont Agency of Transportation (VTrans)	Normal	Existing
VTrans Maintenance Vehicles	Vermont Agency of Transportation (VTrans)	Normal	Existing
VTrans Regional Construction Office	Vermont Agency of Transportation (VTrans)	Normal	Existing
VTrans RWIS Server	Vermont Agency of Transportation (VTrans)	Normal	Existing
VTrans State TOC	Vermont Agency of Transportation (VTrans)	Normal	Planned
VTrans Traffic Signals	Vermont Agency of Transportation (VTrans)	Normal	Existing
Weather Services	Weather Information Providers	Normal	Existing
Westford Public Safety Vehicles	Town of Westford Fire Department	Normal	Planned
Williston Data Repository	Town of Williston Department of Public Works (DPW)	Normal	Planned
Williston DMS	Town of Williston Department of Public Works (DPW)	Normal	Planned
Williston DPW	Town of Williston Department of Public Works (DPW)	Normal	Existing
Williston Fire Vehicles	Town of Williston Fire Department	Normal	Existing
Williston Maintenance Vehicles	Town of Williston Department of Public Works (DPW)	Normal	Existing
Williston Police Dispatch Center	Town of Williston Police Department	Normal	Existing
Williston Police Vehicles	Town of Williston Police Department	Normal	Existing
Williston Rescue Vehicles	Town of Williston Rescue	Normal	Existing
Williston Traffic	Town of Williston Department	Normal	Planned

Management	of Public Works (DPW)		
Williston Traffic Monitoring Equipment	Town of Williston Department of Public Works (DPW)	Normal	Planned
Williston Traffic Signals	Town of Williston Department of Public Works (DPW)	Normal	Existing
Williston Website	Town of Williston	Normal	Existing
Winooski Data Repository	City of Winooski Department of Public Works (DPW)	Normal	Planned
Winooski Dispatch Center	City of Winooski Police Department	Normal	Existing
Winooski DMS	City of Winooski Department of Public Works (DPW)	Normal	Planned
Winooski DPW	City of Winooski Department of Public Works (DPW)	Normal	Existing
Winooski Maintenance Vehicles	City of Winooski Department of Public Works (DPW)	Normal	Existing
Winooski Public Safety Vehicles	City of Winooski Public Safety Departments	Normal	Existing
Winooski Traffic Management	City of Winooski Department of Public Works (DPW)	Normal	Planned
Winooski Traffic Monitoring Equipment	City of Winooski Department of Public Works (DPW)	Normal	Planned
Winooski Traffic Signals	City of Winooski Department of Public Works (DPW)	Normal	Existing
Winooski Website	City of Winooski	Normal	Existing