

## Transportation Systems Management & Operations (TSMO)

**Presented on:** January 12, 2016

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Technical Services

VTrans Maintenance & Operations Bureau

## FHWA Definition of TSMO:

An integrated program to optimize the performance of existing multimodal infrastructure through implementation of systems, services, and projects to preserve capacity and improve the security, safety, and reliability of our transportation system.

# VTrans Strategic Plan

## MISSION

Provide for the **safe and efficient** movement of people and goods.

## VISION

A **safe, efficient** and multimodal transportation system that promotes Vermont's **quality of life and economic wellbeing**

# TSMO Mission & Goals

## TSMO MISSION

VTrans will improve the reliability of the existing transportation system by managing delays and disruptions

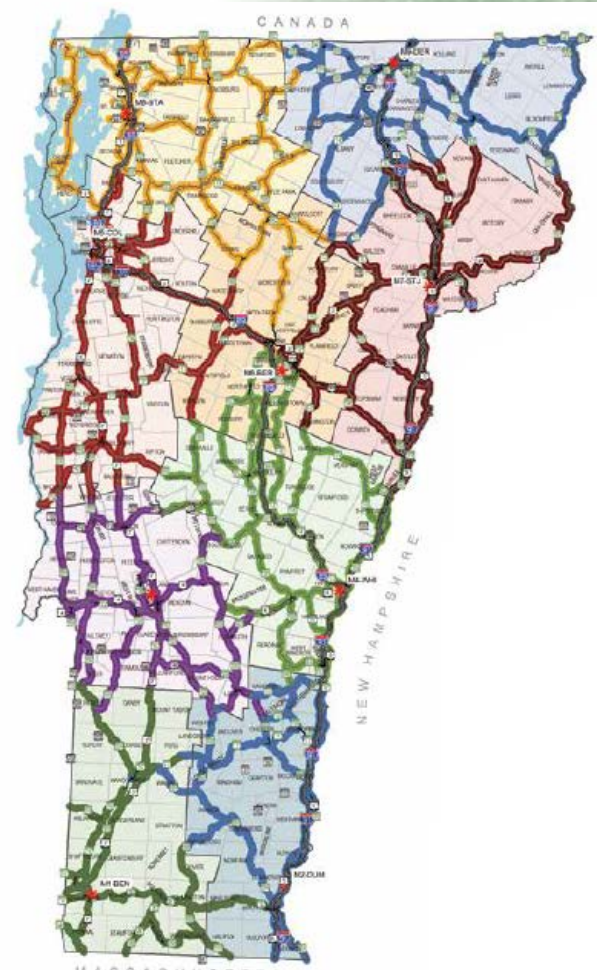
## GOALS

### Improve reliability:



- During **typical operating conditions** and **challenging weather**.
- For work zones, special events and other **planned disruptions**.
- For **unanticipated incidents** that cause short and long term disruptions

# Key TSMO Principles

- Customer focused
- Utilize existing foot print
  - Efficiency
  - Preserving capacity
- Balanced with Safety
- Multimodal
- Cross-jurisdictional



# Strategic Plan & TSMO

Vrans Strategic Plan Goal	Related Objective	TSMO Relationship	
<b>Goal 1:</b> Provide a safe and resilient transportation system that supports the Vermont economy.	Reduce the number of major crashes		Support
	No unplanned road closures or restrictions due to conditions within VTrans' control		Support
	Increase the resilience of the transportation network to floods and other extreme weather and events.		Support
<b>Goal 2:</b> Preserve, maintain and operate the transportation system in a cost effective and environmentally responsible manner.	Minimize the environmental impacts of the transportation system.		Support
	<b>Minimize traveler delay</b>		<b>PRIMARY</b>
<b>Goal 3:</b> Provide Vermonters energy efficient, travel options.	Increase use of walking, biking, transit, rail, and Travel Demand Management options		Support
	Increase use of State and Municipal Park & Ride facilities		Support
<b>Goal 4:</b> Cultivate and continually pursue innovation, excellence and quality customer service.	Information given to customers is accurate and comprehensive		Support
	Staff are competent, fair, polite and sympathetic to customers' needs		Support
	Staff deliver the outcome as promised and manage any problems		Support
<b>Goal 5:</b> Develop a workforce to meet the strategic needs of the Agency	Recruit excellent, qualified and diverse employees.		Dependent
	Retain and develop excellent and diverse employees		Dependent
	Implement succession planning		Dependent

# Objectives for Typical Operating Conditions

- **Every Day**

- Provide timely and accurate traveler information
- Optimize the operation of existing traffic controls (signals, signs, lines) to reduce delay
- Reduce single occupancy vehicle use through Transportation Demand Management



- **Challenging Weather**

- Use technology to better manage snow and ice control



# Objectives for Anticipated Travel Disruptions

- **Work Zone & Special Events**
  - Provide timely and accurate traveler information
  - Minimize delay increase from a network/corridor perspective
  - Prevent crashes
  - Traffic Management Plans will accommodate bike, pedestrians, transit and commercial vehicles
- **Special Event Specific**
  - Plan for all events affecting state system
    - Minimize the cost to the public/VTrans



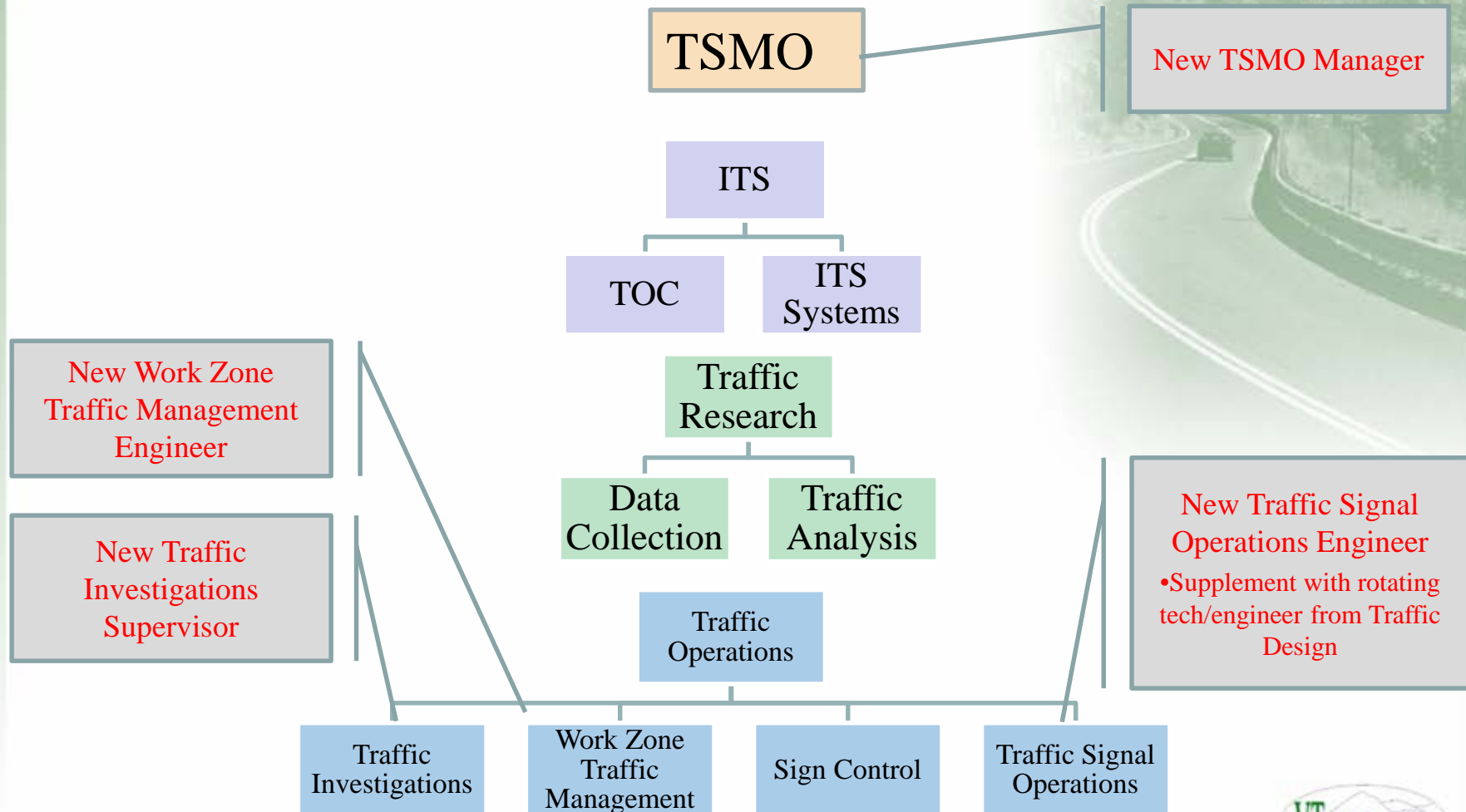


# Objectives for Unanticipated Travel Disruptions

- **Short Term and (crash, sink hole) & Long Term Incidents (flood, unexpected bridge closure, transit strike)**
  - Provide timely and accurate traveler information
  - Develop/improve situational awareness of real time operating conditions
  - Minimize time to deploy response/mitigation
  - Minimize duration of travel restrictions and closures
  - Reduce potential for secondary crashes



# TSMO Section Organization (Current)



# Implementation

- **TSMO Section officially created January 2015**
  - Up and running March 2015
- **Initiatives TSMO has focused on:**
  - Work Zone Traffic Control – Improving communication and project coordination (Waterbury projects)
  - Traffic signal operations – interconnectivity, improved timings, cross jurisdictional boundaries
  - Tri-state ATMS – Advanced Transportation Management System

## EXISTING

- **Highly labor intensive for operators – multiple sites required to gather data and make updates**
- **Map – visualization tool only**
- **Basic Dynamic Message Sign (DMS) control**

## NEW SYSTEM

- **Easier to operate**
- **Map interface**
- **Advanced DMS control**
- **Auto Response Plans**
- **Message queuing/prioritization**
- **Road cameras**
- **Weather**
- **RWIS alerts**
- **Texting capabilities**
- **WAZE integration**
- **Performance measurement reports**

# Existing 511 Site

Vermont 511 Online Map
Vermont.gov

[511 Map](#) | [Tabular Version](#) | [Road Weather Cameras](#) | [Toggle Weather Radar](#) | [Help](#) | [About](#) | [Traffic Information](#)

**511VT Twitter Feed**

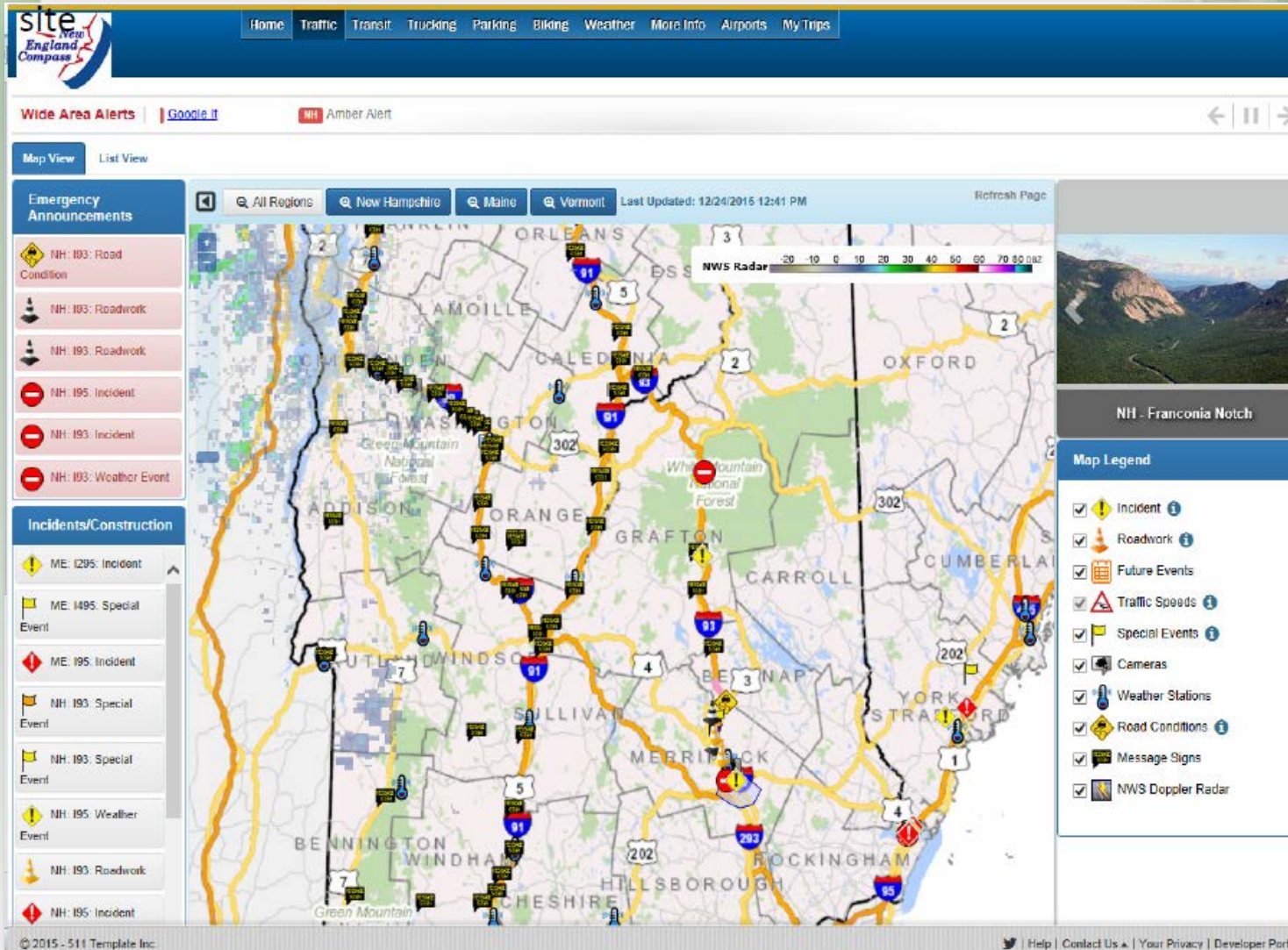
**Legend**

- County-wide Weather: Good
- County-wide Weather: Fair
- County-wide Weather: Difficult
- County-wide Weather: Hazardous
- County-wide Black Ice Warning
- Winter Driving Cond: Good
- Winter Driving Cond: Fair
- Winter Driving Cond: Difficult
- Winter Driving Cond: Hazardous
- Accident/Accident Segment
- Closure/Closure Segment
- Construction/Const. Segment

Zoom to Town:

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# New ATMS Site



The screenshot displays the 'New ATMS Site' web application. At the top, there is a navigation menu with links for Home, Traffic, Transit, Trucking, Parking, Biking, Weather, More Info, Airports, and My Trips. Below this is a 'Wide Area Alerts' section with a 'Google It' button and an 'NH Amber Alert' indicator. The main content area features a map of New Hampshire with various icons representing incidents, roadwork, and weather events. A sidebar on the left contains 'Emergency Announcements' and 'Incidents/Construction' lists. A 'Map Legend' on the right side of the map area lists various features like Incident, Roadwork, Future Events, Traffic Speeds, Special Events, Cameras, Weather Stations, Road Conditions, Message Signs, and NWS Doppler Radar. The bottom of the page includes a copyright notice for 2015-511 Template Inc. and a footer with links for Help, Contact Us, Your Privacy, and Developer Portal.

# ATMS Unplanned Event Response



Unplanned Event - CASH emps@ 12/31/2015 5:05:13 PM

Event Info | Weather | Info Page 2 | Response Plan | Event History | Current Owner: administrator@9971MCD49072711038 | jared@kbb.com labeled as blue

Event Location: Crash on RN 25 East of North Ashland Road

Event Type: **Crash**

Event Source: **CC/TV Camera**

Event Severity: **Medium**

Event Verified By: **CC/TV Camera**

Est. Duration: 30 min | Event Responder: 30 min |  Event is private

Selected Lanes:

Event State: **Unplanned** |  |  |  |  |  |

12/30/2015 5:05 PM | 12/30/2015 8:11 PM

Secondary Events: Primary Event: | Use | Secondary Events: | Use

Event Location: Location Type: **Point**

Location: Latitude: 43.727447° N | Longitude: 71.053017° W

Location Description: **RN 25 East of North Ashland Rd**

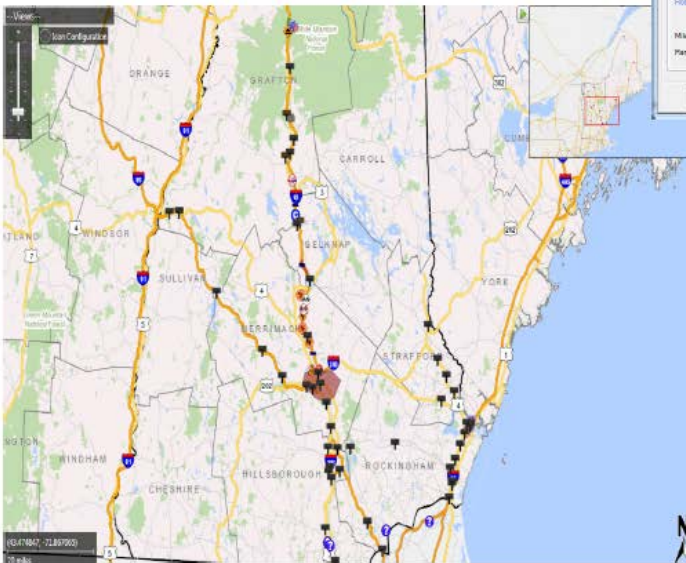
State: **New Hampshire** | County: **Mercur**

District: **District 3** | City: **Concord**

Roadside: **RN-25** | Division: **East**

Cross Street: **North Ashland Rd**

Mile Marker: | Before | After | Landmark: | Mile Marker: | Bridge ID:



Unplanned Event - CASH emps@ 12/30/2015 5:05:13 PM

Event Info | Weather | Info Page 2 | **Response Plan** | Event History | Current Owner: administrator@9971MCD49072711038 | jared@kbb.com labeled as blue

Current Response Plan: **183 North Response Plan**

Drop Response Plan Here

Message 1: DRS Message Info | Proposed Message | **TEST MESSAGE** | Cancel Message

Message 2: DRS Message Info | Proposed Message | **TEST MESSAGE** | Cancel Message

Response Plan Control:

Primary Camera: **No Press**

Suggested Response Plans:

Device state:  Merge Response Plan |   Override search range for response plans |  |  |