VERMONT AGENCY OF TRANSPORTATION

2018 FACT BOOK and Annual Report

Published January 15, 2018

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Welcome

Welcome to this year's edition of the VTrans Fact Book and Annual Report.

Inside you'll find a review of the Agency's progress this past year, as well as quick answers to many of the perennial questions we receive from the media, the public, and legislators.

This is the same tool that many of our staff uses internally when researching questions about our infrastructure. We hope you will appreciate the information it provides.

As we continue to develop more efficient ways to share our data directly, I encourage you to explore the VTrans website for even more up-to-date information about projects, maintenance activities, and the overall performance of our transportation system.

As always, your comments help us to improve this report each year and we look forward to hearing from you.

Sincerely,

Joe Flynn
Secretary of Transportation

VTrans Working to Get You There
Vermont Agency of Transportation

VERMONT

Contents

About the Agency

Mission: To provide for the safe and efficient movement of people and goods.

With oversight from the Vermont Legislature, the Vermont Agency of Transportation (VTrans) is responsible for planning, development, implementation, and maintenance of transportation infrastructure including roads, bridges, state-owned railroads, airports, park and ride facilities, bicycle facilities, pedestrian paths, public transportation facilities and services, and Department of Motor Vehicles operations and motor carrier enforcement. VTrans serves the entire population of the State of Vermont.

VTrans has more than 1,300 employees organized in one Department and three divisions: The Department of Motor Vehicles; Policy, Planning and Intermodal Development; Finance and Administration; and Highway.

VTrans interacts with all State agencies, the United States Department of Transportation and other federal agencies, numerous regional and state governments, international jurisdictions and cross-border organizations, local governments, transit agencies, airports, railroads, and other private and non-profit entities engaged in transportation-related activities.

The **Department of Motor Vehicles** oversees vehicle licensing, registration, tax, and titling; provides commercial licensing, permitting, and enforcement/inspection services; investigates fraud/violations; provides driver training programs; and collects motor fuel revenue.

The **Highway Division** handles year-round maintenance of the road network; provides oversight for construction projects; ensures the quality of materials; provides grants and technical support for municipal projects; procures and maintains the fleet of trucks; provides information to the traveling public on road conditions; and inspects and maintains bridges, culverts, signs, and signals.

MIDDLESEX. Governor Phil Scott and members of the Agency clean up roadsides in District 5 for Green Up Day.

The **Division of Policy, Planning and Intermodal Development** (PPAID) manages public transit, aviation, and rail programs, in addition to providing statewide planning, policy, research, mapping, development review, and public outreach. The division works with Vermont's eleven Regional Planning Commissions and, in the Burlington region, the Metropolitan Planning Organization, to develop regional transportation plans and generate input on prioritizing transportation projects in the regions. The division's work is supported by public input from the Rail Advisory Council, Aviation Advisory Council, and the Public Transit Advisory Council.

The **Division of Finance and Administration** provides services across the Agency, including contract administration, information technology, performance, accounting, budgeting, audit, civil rights, labor compliance, training, and recruitment. As in all aspects of our work, state and federal statutes provide the guidance and boundaries for Finance and Administration's work.

The transportation budget is composed of Federal, State, and Local funds. Federal fund sources come from the Federal Highway Administration, Federal Transit Administration, Federal Railroad Administration, Federal National Highway Traffic Safety Administration, and the Federal Aviation Administration. State funds are appropriated from the State Transportation Fund. The State Transportation revenues are derived primarily from three sources: the gas tax, the purchase and use tax, and Department of Motor Vehicle fees.

VTrans has established a set of five goals that act as guiding principles in everything the Agency does. These goals are:

- Provide a safe and resilient transportation system that supports the Vermont economy.
- Preserve, maintain, and operate the transportation system in a cost effective and environmentally responsible manner.
- Provide Vermonters energy efficient travel options.
- Cultivate and continually pursue innovation, excellence, and quality customer service.
- Develop a workforce to meet the strategic needs of the Agency.

The Year In Review

GOAL ONE

Provide a safe and resilient transportation system that supports the Vermont economy

Safety is the first consideration in everything that we do at the Agency. Although Vermont has seen over a 25% reduction in major crashes since 2004, the work of the Agency and our many partners in highway safety is never done. When there is a loss of just one life on our highways, it impacts families and communities throughout our state. In 2017 we suffered 69 lives lost.

At the heart of improving the safety of highways is our partnership with the Vermont Highway Safety Alliance. One effort of this partnership included a pilot Safety Corridor program throughout Vermont. In these corridors, a combination of high traffic volume, high speeds, and a high rate of crashes demanded an increased level of enforcement. Speeding, distracted and aggressive driving, impaired driving, and seat belt use were the focus of the enhanced enforcement effort.

The Agency concluded a project launched in 2015 to improve the resilience of the transportation network to damage and disruptions caused by flooding. The project provides tools that identify high risk locations and suggests solutions to mitigate flooding impacts. The project will also produce recommendations to help inform hazard mitigation and capital planning and will generate statewide metrics on highway flood vulnerability that will be incorporated into the Agency's project prioritization system.

Autonomous vehicle technology remains a major topic in transportation. As technology advances and cars get smarter, our infrastructure must keep pace. Through our ongoing planning and research efforts in this area, the Agency hosted a discussion on automated vehicles to hear from a variety of stakeholders about how they think automated vehicles will impact Vermont.

BRATTLEBORO. Standing 100 feet above the West River, the new Brattleboro I-91 bridge's 515-foot main span forms an open gateway anchored by curving, cathedral piers designed to complement the natural landscape. In addition to carrying motorists over the river, the bridge spans the busy Vermont Route 30 and the popular West River Trail. Although aesthetics were an important part of this project, safety is always the top consideration. The wider bridge deck provides shoulders that will improve the safety of the traveling public in the event of a breakdown or emergency, and provides a safe working area for Agency staff to maintain this large investment with minimal traffic disruption.

As part of a public private partnership, Public Transit staff are working with the Vermont Association of Business, Industry and Rehabilitation (VABIR) to help bridge transportation gaps for those seeking to enter or re-enter the workforce. Through mobility management and trip planning strategies, the program seeks to provide transportation assistance to those who would otherwise be unable to access a job opportunity. These efforts have resulted in dozens of low-income Vermonters gaining and sustaining successful employment throughout the state.

The Agency made significant progress on Vermont's Long-Range Transportation Plan with a series of regional visits to hear about local and regional issues, and focused stakeholder meetings. The Long-Range Transportation Plan serves as a blueprint for Vermont's transportation system looking forward two decades. The Agency engaged a broad range of partners including state agencies and departments, public transit and intercity bus operators, bicycle & pedestrian advocacy organizations, Vermont League of Cities and Towns, the Association of General Contractors, Vermont Truck & Bus Association, and representatives of Vermont's most vulnerable populations, including elders and persons with disabilities. These groups discussed current and future challenges and opportunities facing Vermont's transportation system. The process yielded a set of themes which will evolve into transportation goals, objectives, and strategies aligned with the Governor's three primary goals of economic growth, affordability, and protection of vulnerable populations.

GOAL TWO

Preserve, maintain, and operate the transportation system in a cost effective and environmentally responsible manner

Asset management resides at the core of our efforts to implement the right treatments at the right time to balance safety with the need to get the longest possible life out of the components of our system. Making decisions based on data and consistent standards ensures that our system is as strong as it can be with the limited funds available.

As part of our effort to keep and maintain an accurate inventory of the more than 60,000 small culverts on State highways through Vermont, and to be able to increase our ability to respond appropriately to potential emergency issues, the Agency has purchased a federally funded culvert inspection camera. Known as the "Culvert Crawler", this small remote-control camera can enter and explore culverts to monitor conditions and look for failures. Video is fed back to the operator so that proper decisions about the culvert can be made.

The Agency was busy in 2017 developing and coordinating strategies to address water quality issues related to transportation infrastructure. Act 64 of 2015, referred to as Vermont's Clean Water Act, set the stage for a coordinated statewide initiative to address water quality issues from a wide range of pollutant sources including stormwater runoff from roads. A separate Federal Environmental Protection Agency (EPA) action in 2016 requires Vermont to address unacceptably high phosphorous levels in Lake Champlain.

The Agency has multiple roles and responsibilities in the water quality arena, including the management of thousands of highway miles and other highway facilities subject to new requirements through the Statewide Transportation Separate Storm Sewer System (TS4) permit administered by the Vermont Agency of Natural Resources. Act 64 also requires municipalities to acquire and comply with a Municipal Roads General Permit by 2018. To assist municipalities with the planning and capital investments required for compliance, the Agency is providing state transportation funds through the Better Roads Grant Program and federal funds through the Transportation Alternatives Program, as well as robust technical assistance to understand and navigate the requirements and implementation of best management practices.

MANCHESTER. Stakeholders cut the ribbon for the grand opening ceremony for the Vermont Shires Connector Amtrak Thruway service between Albany, NY and Bennington County.

We continue to operate our New England Compass Traveler Information System, also known as 511, which is the publicly visible part of an Advanced Traffic Management System (ATMS). The ATMS makes it possible to remotely control signals, message boards, and other devices and allows other member states to provide operational backup for Vermont.

GOAL THREE

Provide Vermonters energy efficient travel options

Growing a multi-modal and energy efficient transportation system involves anticipating demand and promoting ease of use, comfort, and reliability, while maintaining a commitment to mitigating our carbon footprint. The transportation sector is a major contributor to greenhouse gas emissions. To reduce our impact, the Agency is improving efficiencies in our fleet operations and buildings, as well as using appropriate sites on properties we control for generating renewable energy.

The Agency acquired the first fully electric vehicle in the statewide fleet – a small, but significant step toward the State of Vermont's goal of 10% of the vehicle fleet powered by electricity by 2025. To accommodate the new electric Chevrolet Bolt, and future state-owned electric vehicles, the Agency completed a new dual port Level 2 charging station at their Airport Road location in Berlin. An additional dual port Level 3 charging station is under development at the District 4 office in White River Junction, and is expected to be operational in summer 2018.

The Public Transit Program, with strong support from local stakeholders in Bennington and Manchester, established a new intercity bus service connecting with Albany, NY and the Rensselaer

ST. JOHNSBURY. The Route 2B bridge had quite the makeover. The previous bridge, built in 1936 was 129 feet long, with two tall exposed concrete piers. The new design, which is the first metal arch and wall system used in Vermont, shortens the bridge span to just 47 feet by using mechanically stabilized earth walls. These design changes will reduce the long-term maintenance costs, helping to reduce the overall cost of our transportation network, making Vermont more affordable. The Lamoille Valley Rail Trail, which runs beneath the bridge, is an important recreation and transportation corridor in Northern Vermont. Significant consideration was taken to minimize the impact to users of the trail and to motorists and residents on Route 2B.

Train Station. The new "Vermont Shires Connector" is an Amtrak Thruway connection providing single-ticket travel between New York City and Bennington County. This service provides Vermonters with easy access to the "Big Apple", and also presents a great travel and tourism opportunity for Vermont by seamlessly extending passenger train service via luxury coach into Manchester via Bennington.

The Agency was awarded a competitive "Low or No Emissions" grant by the Federal Transit Administration (FTA) to assist in the purchase of two electric buses to serve the Burlington area. This grant will advance our state goals of reducing transportation related greenhouse gas emissions and will aid in Vermont's transition toward increased use of renewable energy sources. Project implementation is made possible by a collaboration between Green Mountain Transit (GMT), Vermont Energy Investment Corporation (VEIC), and Burlington Electric.

The Capital Shuttle transit service, connecting the National Life Campus with the Statehouse and the Department of Labor (DOL), has graduated to year-round service. This convenient service is no longer limited to just the legislative session. While the service will continue as a critical link between many state agencies and the Statehouse during the legislative season, operating year-round will relieve parking pressure in Montpelier's downtown by providing a viable shuttle from the more plentiful parking area at the DOL office. The National Life Campus will also benefit from increased public transit options through a reduction in pressure on parking capacity and increased access for workers seeking to commute or complete mid-day appointments and errands in the downtown core.

The Agency continued developing the On-Road Bicycle Plan, completing the second of three project phases. The focus of Phase II is to identify gaps and safety concerns on state roadways, with specific emphasis on high priority bicycle corridors identified in the first phase of the project. This analysis will provide decision makers with more accurate information on the location and type of improvement or maintenance activity necessary to enhance the bicycling experience along state roads in Vermont.

Restoring passenger rail services to Montreal and to Burlington remains a priority of the Agency.

GOAL FOUR

Cultivate and continually pursue innovation, excellence, and quality customer service

The Department of Motor Vehicles (DMV) implemented a new customer queuing solution in all DMV locations. The tool has improved customer wait time by prioritizing customers, and improving forecasting of staff needs. Detailed reporting is now available for all offices from a central location.

DMV also implemented a new Point of Sale system in all locations. The new system has intuitive functionality across the DMV organization. This undertaking improves financial reporting, decreases errors, improves data, and provides a more efficient categorization of revenue and reduction of fraudulent activity.

In 2005 Congress passed the REAL ID ACT. The Act established minimum security standards for state-issued licenses and identification cards. DMV implemented these requirements for Vermont driver's license and identifications cards in January of 2014. By October of 2020 every traveler will need REAL ID compliant identification to fly within the United States. On December 31, 2017 all individuals issued a Vermont identification or license by the DMV had been processed under these standards.

The Agency celebrated the grand opening of the I-91 Brattleboro Bridge over the West River in Brattleboro. The $60 million 1,036-foot arching concrete bridge is the largest completed transportation project in Vermont since the construction of the Eisenhower Interstate System and is designed to last over 100 years. The use of innovative contracting and design-build methods allowed the Agency to move this project through the design and construction process more quickly and efficiently than is typical with traditional methods.

VTrans continues to work with the Agency of Digital Services (ADS) in the ongoing management of the Information Technology (IT) plan to guide IT investments. This plan includes information from ADS strategic direction, ongoing maintenance needs, as well as current and future anticipated business needs. This information is used to develop a five-year plan for IT investment and an annual work plan for ADS.

Through the creation of the Performance Section, the Agency has paired performance monitoring with continuous improvement, an initial step toward tying the analysis of how we are doing with the tools to improve. The performance monitoring section is working to centralize reporting for both internal and external partners. The continuous improvement section is supporting the Agency's Lean program, continuing the development of a Business Process Management System (BPMS) framework for our Right-of-Way section, and expanding the use of electronic signature in the organization.

Providing digital and mobile-friendly sources of information continues to be a focus area of the Agency. VTransparency, the Agency's information portal, received improvements this year to simplify how customers get to our information and expand the breadth of the tools that are available at this site. To improve motorist decision making in inclement winter weather, the Agency launched a plow truck location map that gives the history of each active plow truck for the previous hour, along with critical weather and road condition data.

Communicating with our customers as technology and expectations advance means embracing new tools for transparency, but resisting the temptation to abandon more traditional methods. Big data and social media can work wonders, but they are no substitute for knocking on a door or attending a selectboard meeting. VTrans will continue to work to maintain strong relationships with the communities we serve.

The Agency consolidated business office functions to increase efficiencies, ensure proper cross training, and create bench-depth in staffing, while eliminating redundancies in processes. The effort focused on core functions of financial management and reporting, project support, budgeting, invoice processing, payroll, and expenses. No jobs were eliminated due to this effort, although some job duties shifted to meet changing priorities and align with Agency goals. The consolidation has resulted in examining existing processes through such tools as process improvements, IT integrations, and elimination of failure points to better meet our customers' needs and utilize our staff's talent.

GOAL FIVE

Develop a workforce to meet the strategic needs of the Agency

Significant focus was placed on recruitment activities this past year. As in previous years, we lost many experienced employees to retirement. The Department of Human Resources and our Civil Rights team has continued to support the Agency in reaching a wider, more qualified, and more diverse pool of applicants. We can be found at job fairs, business events, and at school campuses seeking out the next generation of VTrans workers, while highlighting the value of public service.

The VTrans Training Center (VTTC) supports our employees by providing a variety of learning opportunities. Focused on employee productivity, development, and retention, employees can improve the skills they need for their current role and/or develop skills for future roles. Pathway to Supervision classes, safety classes, change management classes, welding classes, winter maintenance classes, computer classes, and other technical trainings are some of the course offerings. Training is focused to improve business outcomes. Trainings are offered in the classroom, at the job site, or online, and ensure compliance with Federal and State regulations and the Affirmative Action Plan (AAP). Mentoring and tools to assist in knowledge transfer in preparation for promotions or future retirements are a key priority. VTTC also launched an Emerging Leaders Program this year to prepare our future leaders for the challenges ahead.

Governor Phil Scott meets with students from the 2017 National Summer Transportation Institute (NSTI).

Emergency management training remains a focus for the Agency with all staff required to complete incident command training annually to ensure everyone speaks the same language should disaster strike. Managers and other critical staff train at even higher levels and stand ready to support other agencies through Vermont Emergency Management.

Quick Facts

Modes

- 16 Public-Use Airports
- 10 State-Owned Airports (Included in Total)
- 90+ Runway Lane Miles

- 6.7 Million Tons of Rail Freight Shipped Each Year
- 305 Miles of State-Owned Operating Rail
- 295 Miles of Privately-Owned Railroads
- 145 Miles of State-Owned Rail-Banked Trail Facilities

- 4.6 Million Public Transit Ridership in 2017
- 416 Public Transit Vehicles
- 30 State-Owned/Maintained Park-and-Ride Facilities
- 6 State-Owned/Maintained Park-and-Ride Facilities with EV Level 1 or 2 Charging
- 1,525 Parking Spaces at State-Owned/Maintained Park-and-Ride Facilities
- 66 Municipal Park-and-Ride Facilities Funded with State Grants
- 1,319 Parking Spaces at Municipal Owned/Maintained Park-and-Ride Facilities

Highways

- 25.7% Decrease in Major Crashes Reported since 2004

- 2,739 Inventoried Long Bridges (Over 20 FT. Long)
- 1,090 Inventoried Long Bridges on SHS (State-Owned/Maintained)
- 45 SHS Bridges Classified Structurally Deficient in 2017 (4.1%)

- 14,174 Total Miles of Local and State Roadway
- 806 Miles National Highway System (NHS)
- 2,709 Miles State Highway System (SHS)
- 139 Miles of Class 1 Town Highways
- 1,114 Miles of Guardrail
- 157 Traffic Signals
- 1,100 Roadway Lights

Public Records

- 129 Total Public Records Requests Processed
  - 83% processed in 3 days
  - 17% processed in 10 days
- 673 Hours Spent on Public Records Requests
- 45,233 Pages of VTrans Records Delivered
- 227 Walk-in Requests Accommodated
- 13 Estimates Issued

Maintenance

- 274 Dump Trucks with Plows and Wings
- 72 Pickups with Plows
- 374 Licensed CDL Drivers
- 64 Garages Operated
- 280,000 Hours of Plowing in Winter 2016-2017
- 406 Tons of Trash Collected at a Cost of $1.4M
- 18,619 Acres Mowed at a Cost of $1.9M

Training

- 2,741 Total Trainings Completed
  - 882 Technical
  - 1,296 Safety and Health
  - 563 Employee Development
- 1,163 Users in Learning Management System

Water Quality

- 11,366 Tons of Material Applied to Protect Banks &Slopes
- 4,523 Culverts Maintained at a Cost of $691K
- 2,992 Drainage Structures Maintained at Cost of $338K
- 265,090 Linear Feet of Ditching at a Cost of $2M
- 3,231 Lane Miles of Sweeping

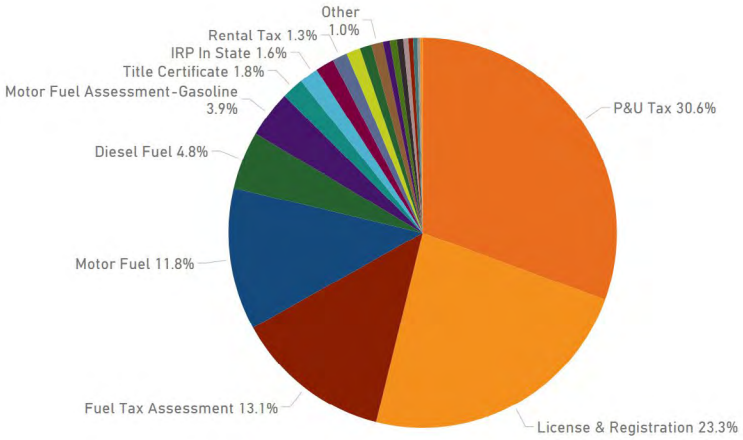
Department of Motor Vehicles

The Department of Motor Vehicles (DMV) is responsible for issuing driver licenses, permits, motor vehicle registrations (including snowmobile and motorboat registrations), driver license suspensions and reinstatements, enforcement of motor-vehicle-related laws, and collecting motor fuel revenue for the state of Vermont. The department also manages several safety programs, including vehicle inspections, motor carrier safety, school bus safety and those related to motorcycle training. The DMV serves Vermont's resident population of approximately 623,000, as well as a significant number of nonresidents.

Revenues FY2017 (fees, taxes and permits)

Purchase & Use Tax	$99,175,744
License & Registration	$75,588,546
Fuel Tax Assessment	$42,366,812
Motor Fuel	$38,238,071
Diesel Fuel	$15,614,223
Motor Fuel Assessment-Gasoline	$12,591,693
Title Certificate	$5,923,871
IRP In State	$5,111,848
IRP from Foreign	$5,017,317
Rental Tax	$4,062,096
Oversize Permits	$3,782,689
Gas Tax	$3,160,171
IFTA from foreign	$1,876,524
Motor Fuel Assessment-Diesel	$1,854,986
Inspection Stickers	$1,747,251
Sales Tax	$1,383,513
Emission Fees	$1,231,475
Motorboat Registrations	$1,172,668
IFTA to foreign	$778,936
Diesel Tax	$656,512
Other	$3,142,437
Total	$324,477,383

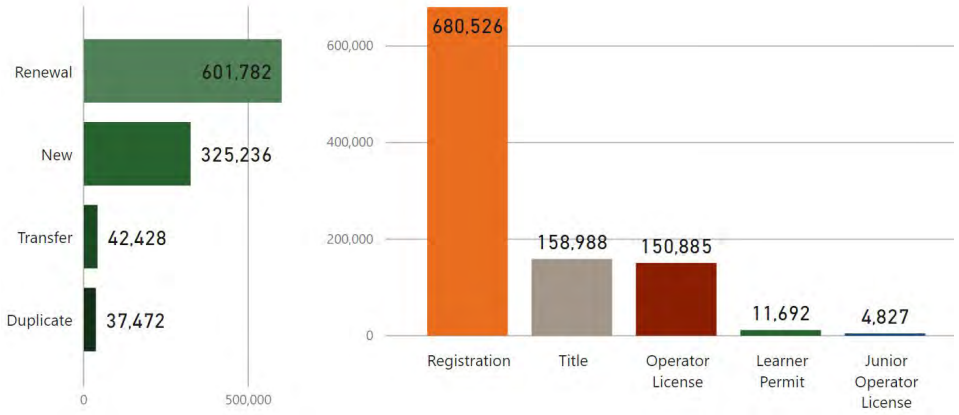
Revenues FY2017, as percent (fees, taxes and permits)



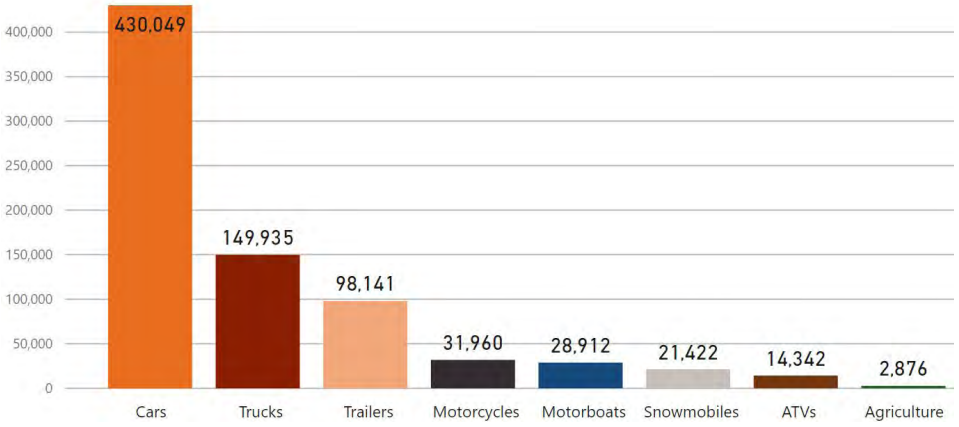
DMV Rates

Gas Tax, Assessments, and Clean Up Fee	$0.121 plus MFTIA plus MFTA plus $0.01 Clean Up Fee
Motor Fuel Transportation Infrastructure Assessment	$0.0396 per gallon or 2% of the adjusted retail price upon each gallon of motor fuel sold by the distributor, whichever is greater.
Motor Fuel Tax Assessment	$0.134 per gallon or 4% of the tax-adjusted retail price upon each gallon of motor fuel sold by the distributor not to exceed $0.18, whichever is greater
Diesel Tax, Clean Up Fee, and Infrastructure Fee	$0.28 and $0.01 and $0.03
Sales Tax, Purchase and Use Tax, Motor Homes, Trucks up to 10,099 lbs.	6%
Driver Training	$50 – $150
Clean Air Fund	$2/year
Conservation Plates	$26/pair, in addition to registration fee
Title Fees (Vehicle)	$35
Title Fees (ATV, Boats, Snowmobiles)	$22
Oversize Permits	$1 – $500
Survey Fee	$300 – $10,000

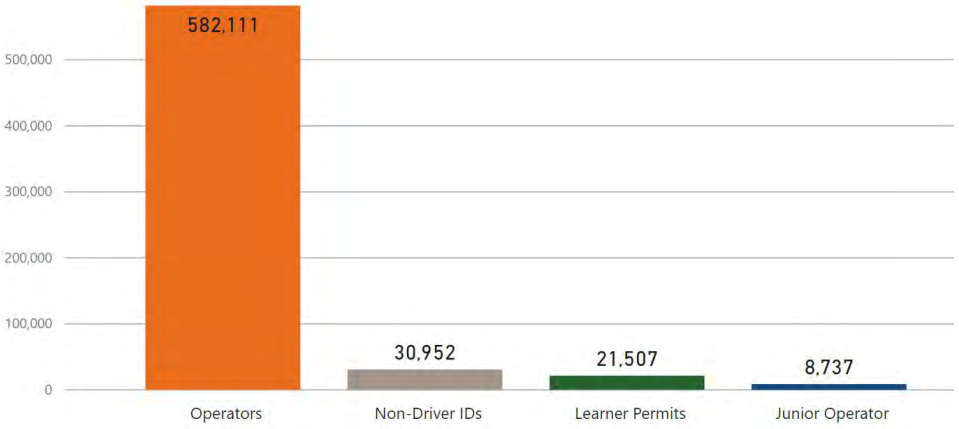
Transactions: 1,006,918



Vehicle Registrations: 777,637



Vehicle Licenses: 643,307



DMV Locations

Montpelier
Washington County - Main Office
120 State Street
802-828-2000, 888-998-3766

Bennington
Bennington County
530 Main Street

Dummerston
Windham County
870 US Route 5

Middlebury
Addison County
7 Addison County Courthouse
Mahady Court, 2nd floor

Newport
Orleans County
100 Main Street

Rutland
Rutland County
101 State Place

Saint Albans
Franklin County
27 Fisher Pond Road

Saint Johnsbury
Caledonia County
1998 Memorial Drive

South Burlington
Chittenden County
4 Market Street

Springfield
Windsor County
100 Mineral Street, Suite 103

White River Junction
Windsor County
226 Holiday Drive

Vermont Rider Education Program

104 Courses Offered	**8** Training Sites Available
1,063 Students Attending	**929** Students Passing the Program

Safety

Highway Safety Data Unit

The Highway Safety Data Unit collects and manages data related to highway system conditions, collects highway video, reports highway sufficiency rating data, manages the Crash, Fatality Analysis Reporting System (FARS), and the VT Highway Performance Monitoring System (HPMS) databases, and coordinates highway classification system reviews (both state and federal). Staff are actively involved in the Traffic Records Coordinating Committee and the Vermont Highway Safety Alliance and work closely with statewide law enforcement in the area of crash reporting.

Additional crash information is available at: app.vtrans.vermont.gov/CrashPublicQueryTool

2017-2021 Strategic Highway Safety Plan Critical Emphasis Areas

1. Improve Infrastructure
   a. Minimize Lane Departure
   b. Improve the Design and Operation of Highway Intersection

2. Reduce Speeding and Aggressive Driving

3. Increase Use of Occupant Protection

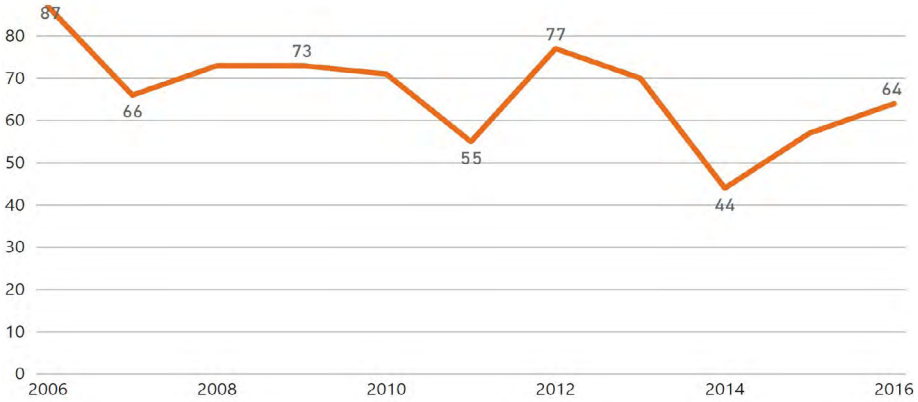
4. Vulnerable Users and Motorcyclists Safety
   a. Increase Pedestrian Safety
   b. Increase Bicyclist Safety
   c. Increase Motorcyclist Safety

5. Age Appropriate Solutions
   a. Improve Younger Driver Safety (Under 25)
   b. Improve Older Driver Safety (65 and Over)

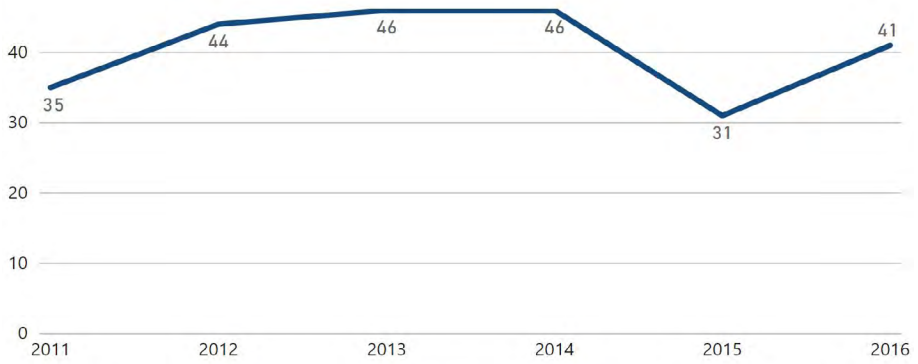
6. Reduce Impaired Driving

7. Curb Distracted and Inattentive Driving

Fatalities, by calendar year

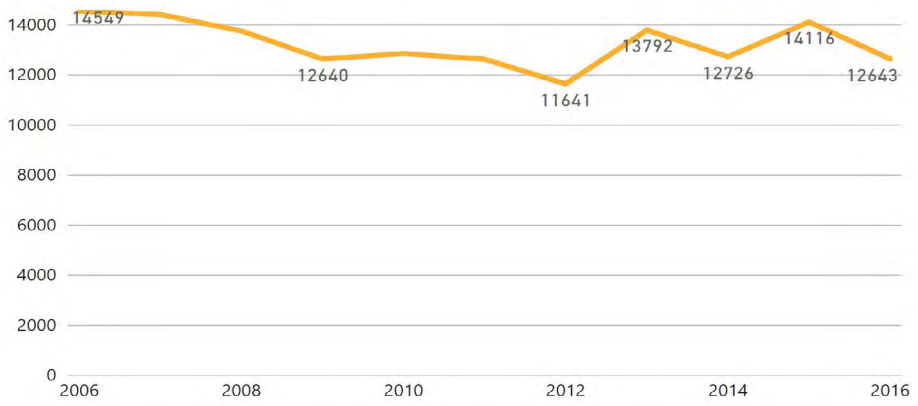


Occupant Fatalities with No or Improper Restraint, percent of total fatalities

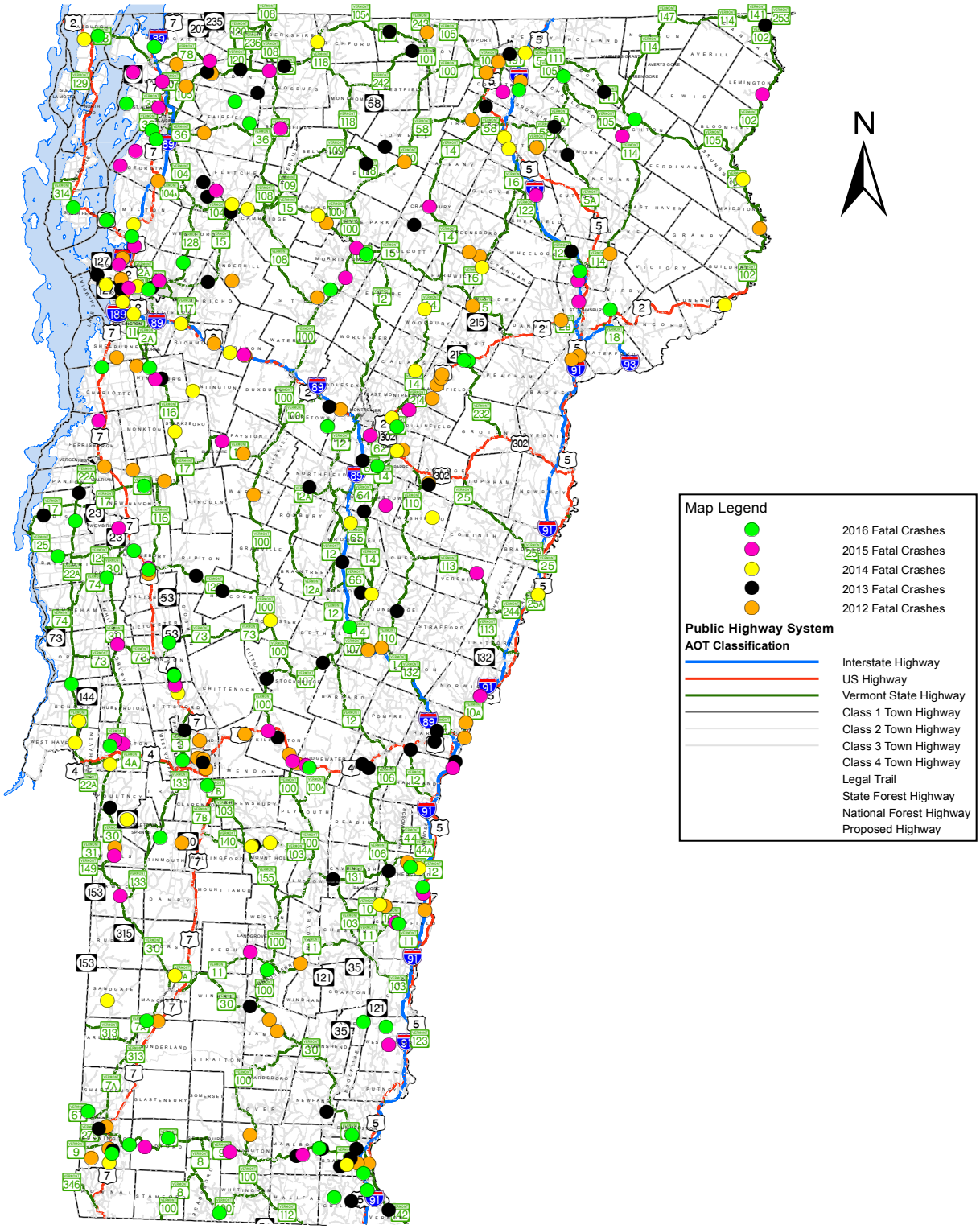


Source: VTrans in-house VCSG database or FARS. Data as submitted by law enforcement where restraint = "None Used" or "No". Includes "Improper Use" and "Non-DOT Compliant Helmet."

Crashes Reported, by calendar year



Five Year Fatal Crash Map



Vermont Highway Safety Alliance

The Vermont Highway Safety Alliance (VHSA) is a network of like-minded private and public organizations working together to collect, share, and use data to develop highway safety strategies integrating: road engineering and infrastructure; law enforcement and emergency medical services; and education and outreach. The VHSA is tasked with developing and carrying out the Agency's Strategic Highway Safety Plan, which is updated every five years.

The VHSA continued to work with its many partners in outreach and education, attending fairs and conferences in Vermont to promote a road users safety pledge and display. Sixty-five businesses and entities committed to putting road safety displays in their facilities.

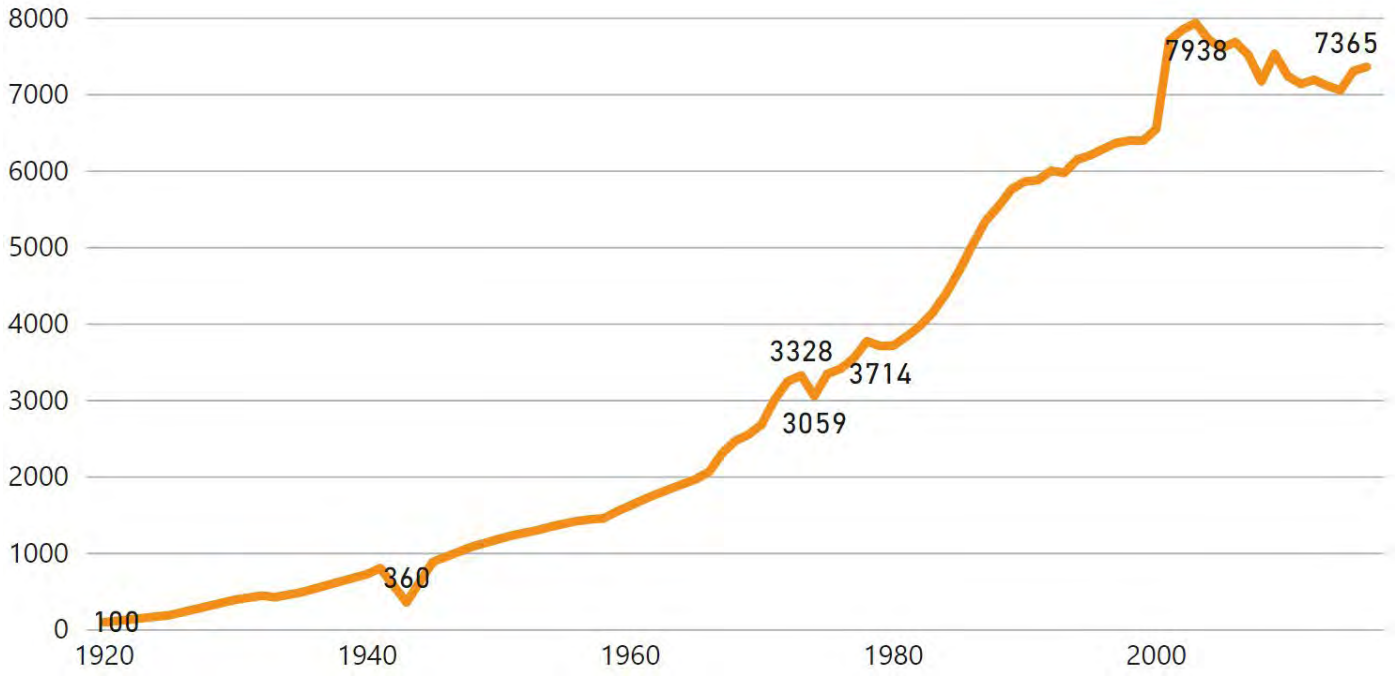
Young drivers were a focus for many initiatives in 2017. The Vermont Youth Safety Council completed the how-to manual for schools to host a driver safety fair with links to funding. A Vermont teen, Evan Hallstrom, from Hallstrom Motorsports, teamed up with Governor's Highway Safety Program and VHSA to produce posters and postcards with a Click it or Ticket message, and has participated in numerous events doing safety outreach, in particular with younger drivers.

The state was fortunate to host the Ford Driving Skills for Life, sponsored by the Ford Motor Company Fund and the Governor's Highway Safety Association, which brought a two-day program to Vermont to teach newly licensed teens necessary skills for safe driving. GLOBALFOUNDRIES hosted the event and 200 teens participated.

With support from the Governor's Highway Safety Program, work continues in the pilot for the data integration effort between Statewide Incident Reporting Network (SIREN) and Emergency Department Data with the University of Vermont Medical Center, Vermont's Trauma Center.

The Vermont Highway Safety Alliance hosted its 5th annual conference in November in Burlington with the theme of technology. Presentations included a talk on automated speed enforcement, the 24/7 sobriety program for DUI offenders, and autonomous vehicles. Following the conference, the Agency hosted a discussion on automated vehicles, related to Section 15 of the 2017 Transportation Bill (Act 38). VTrans was eager to hear from a variety of stakeholders about how they think automated vehicles will impact Vermont. A panel discussion and a web-based polling system was used to guide the discussion and garner feedback.

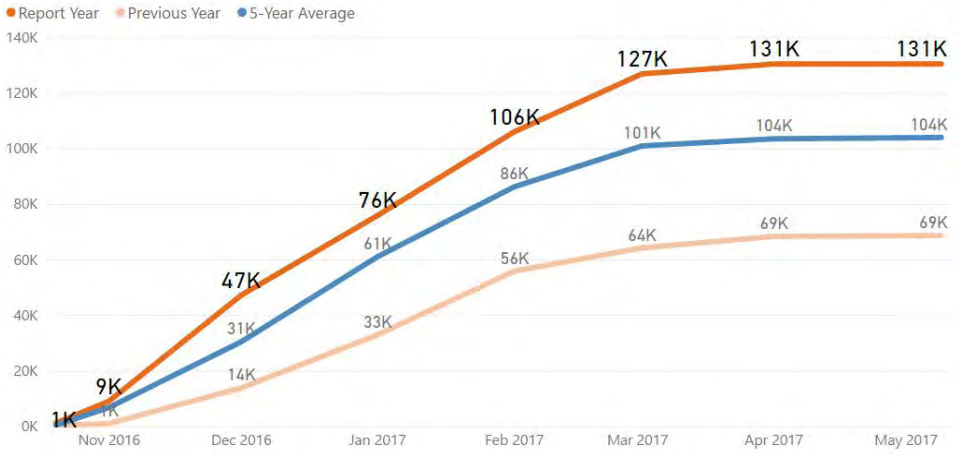
Annual Vehicle Miles of Travel (AVMT), Millions



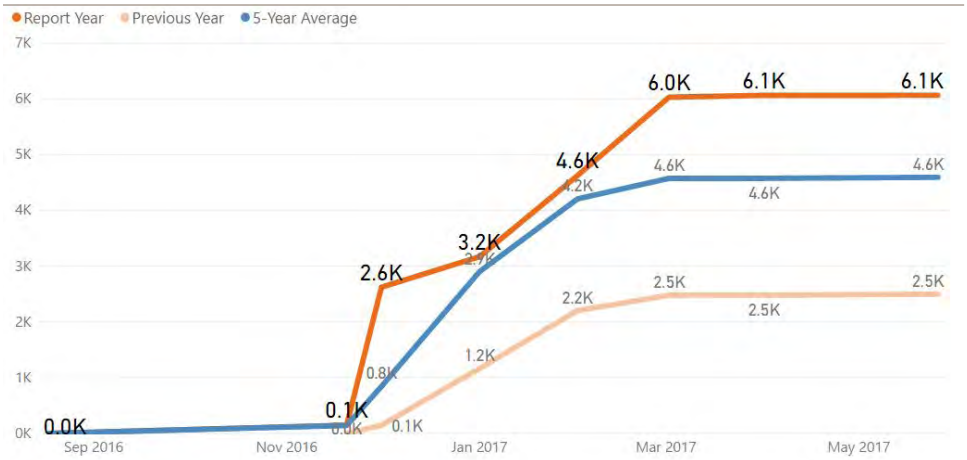
Winter Maintenance

2016–17 Data

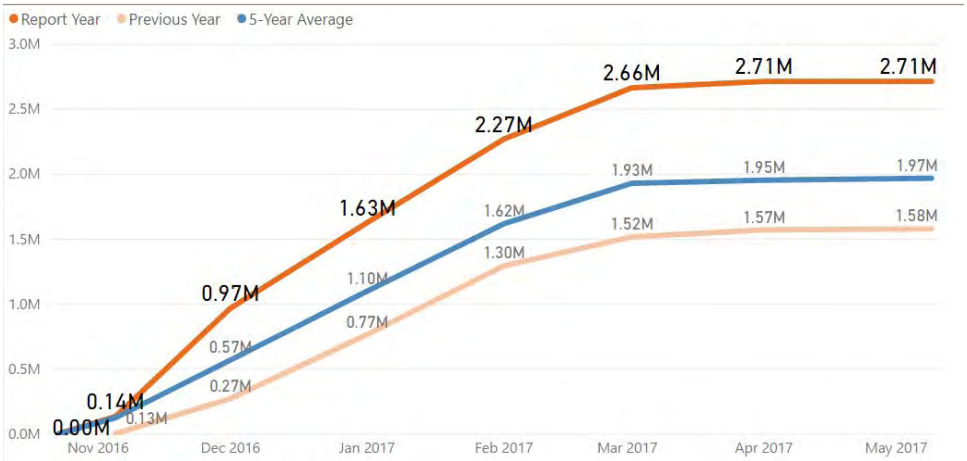
Salt Usage (in tons)

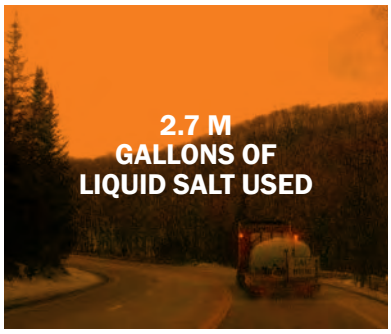


Sand Usage (in cubic yards)



Liquid Salt Usage (in gallons)



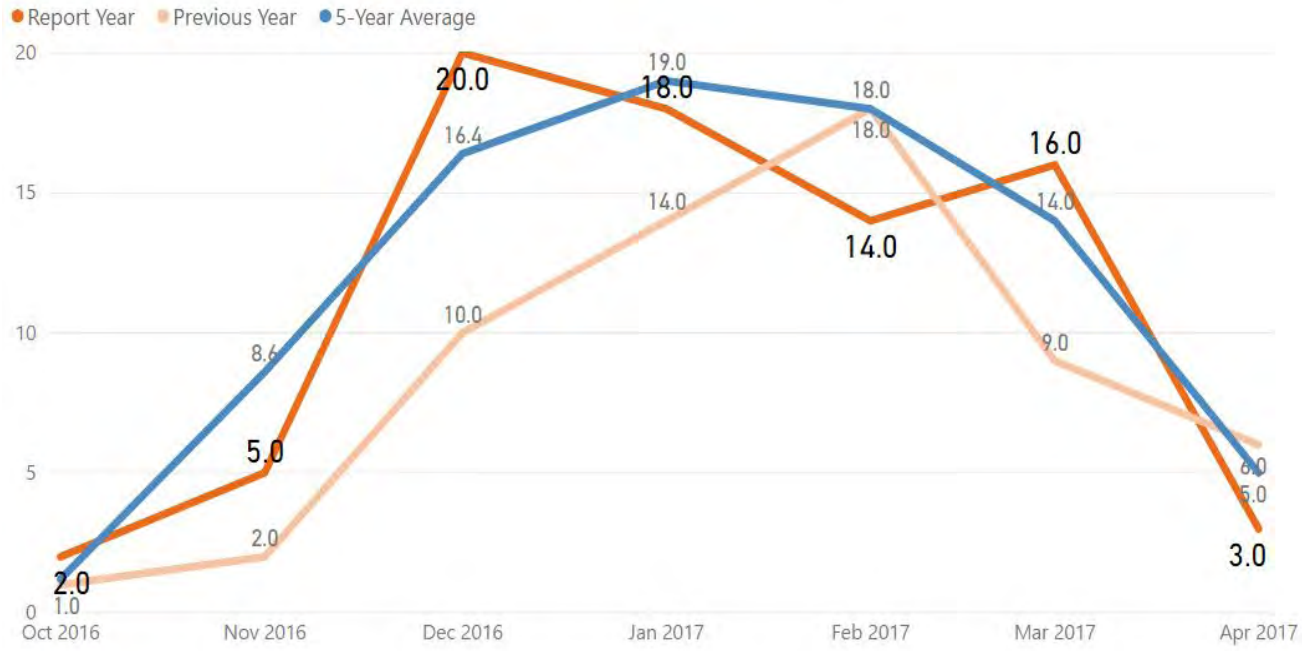


Winter Maintenance Events

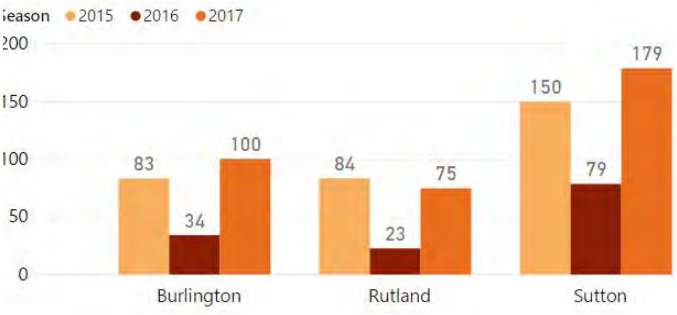
A Winter Maintenance Event is defined as one in which three or more districts are engaged in winter maintenance activities requiring snow plowing, salting, or sanding. These can last anywhere from a few hours to several days.

Total Winter Events, Three-Year Comparison

Average Winter Event Days, Three-Year Comparison



Total Snowfall, Three-Year Comparison (in inches)

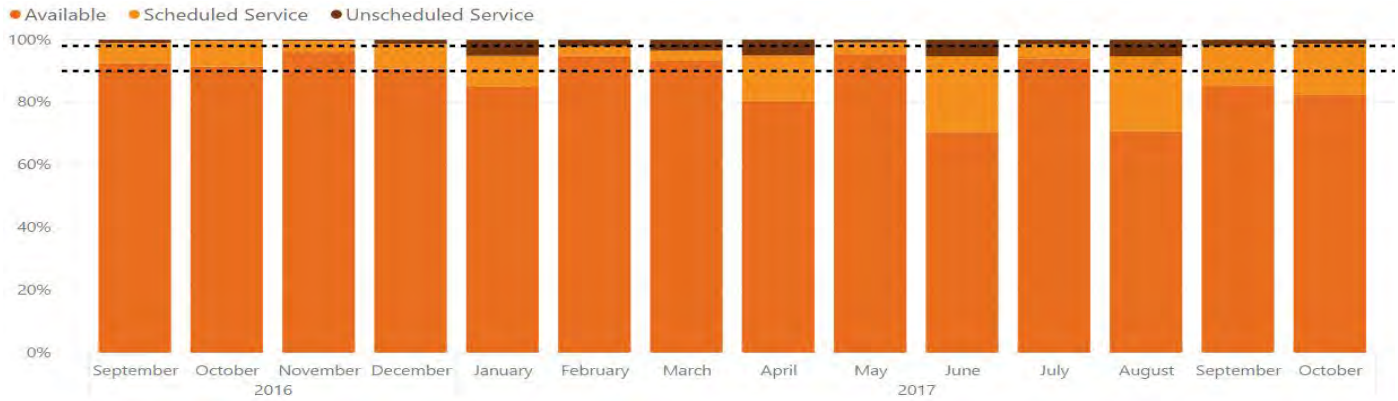


Five-Year Salt Price Comparison

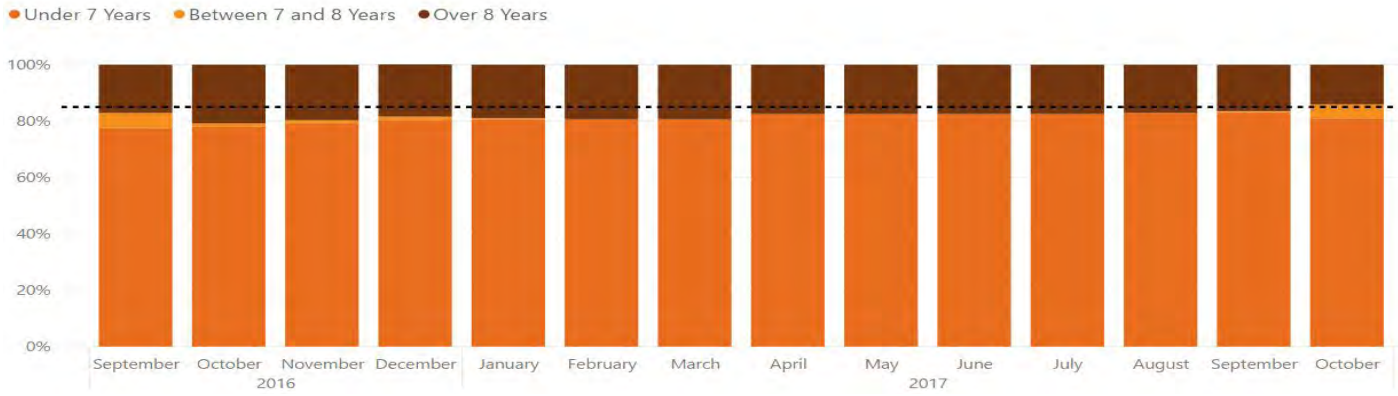
Location	FY2014	FY2015	FY2016	FY2017	FY2018
District 1	$53.79	$73.79	$76.74	$74.44	$74.49
District 2	$58.65	$78.65	$81.80	$79.35	$79.40
District 3	$54.02	$76.02	$79.06	$76.69	$76.74
District 4	$56.52	$75.52	$78.54	$76.18	$76.23
District 5	$58.73	$72.18	$74.35	$74.35	$74.40
District 7	$60.16	$76.76	$79.83	$77.44	$77.49
District 8	$61.67	$78.44	$80.79	$80.79	$80.84
District 9	$67.95	$82.26	$84.73	$84.73	$84.78

Equipment Performance Measures

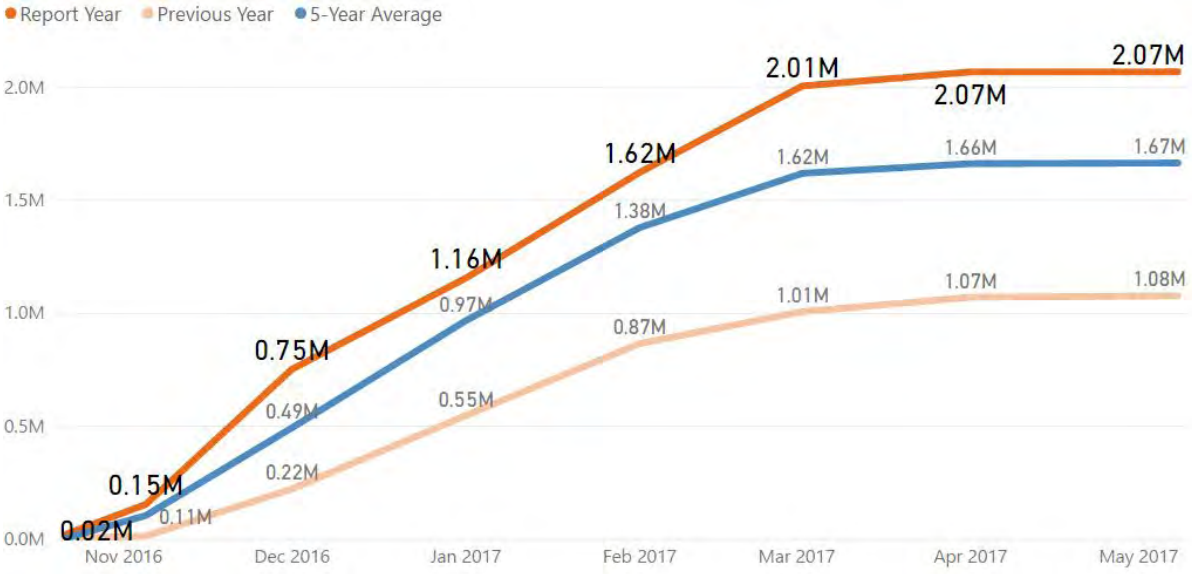
Plow/Dump Truck Availability, Target: ≥ 90% Available; ≤ 2% Breakdowns



Plow/Dump Truck Age, Target: ≤ 15% Older than 8 years

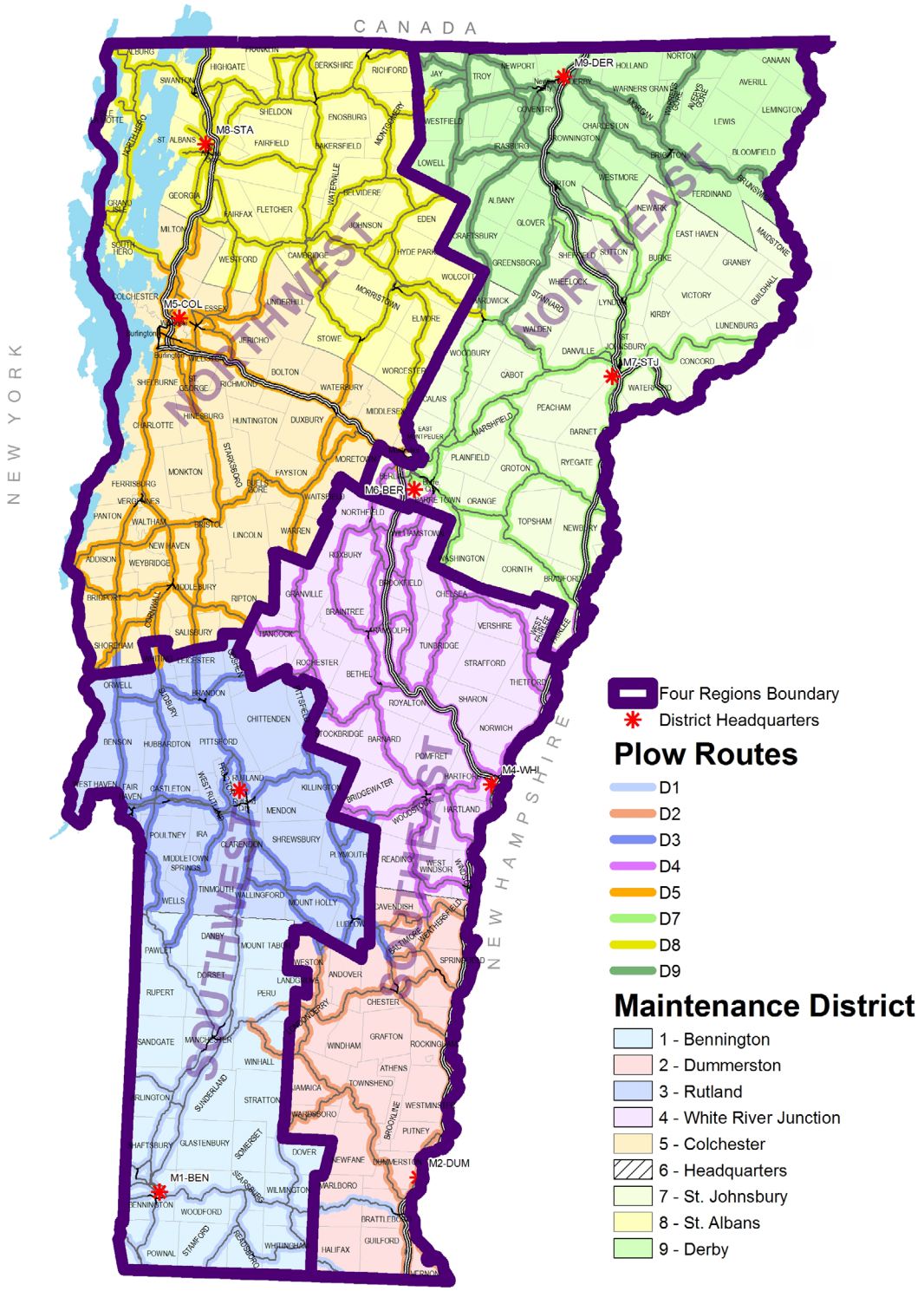


Total Lane Miles Plowed



Operations Statistics

BY DISTRICT



Southwest Region

District 1

359 Bowen Road
Bennington, VT 05201
(802) 447-2791

507 Lane Miles

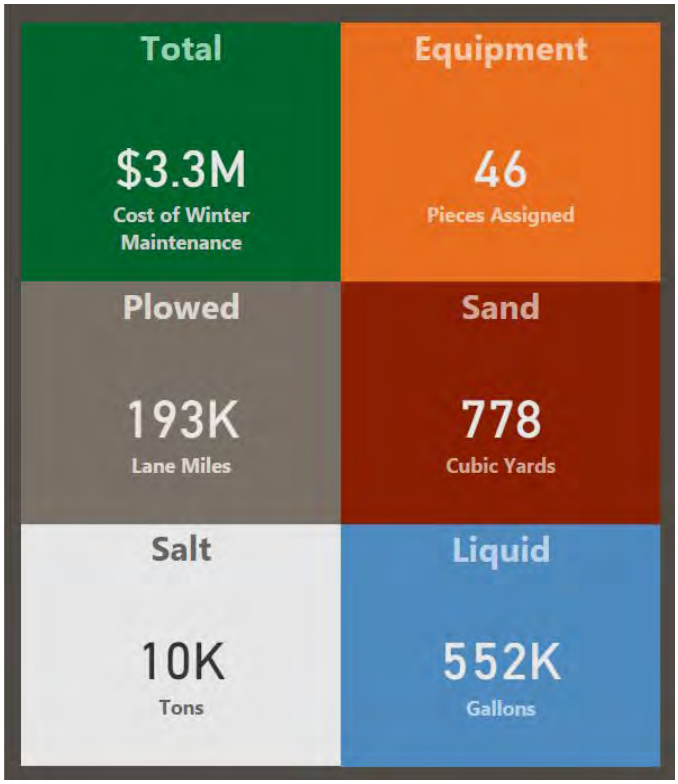
Facility Locations
Bennington
East Dorset
Readsboro
Wilmington
Marlboro

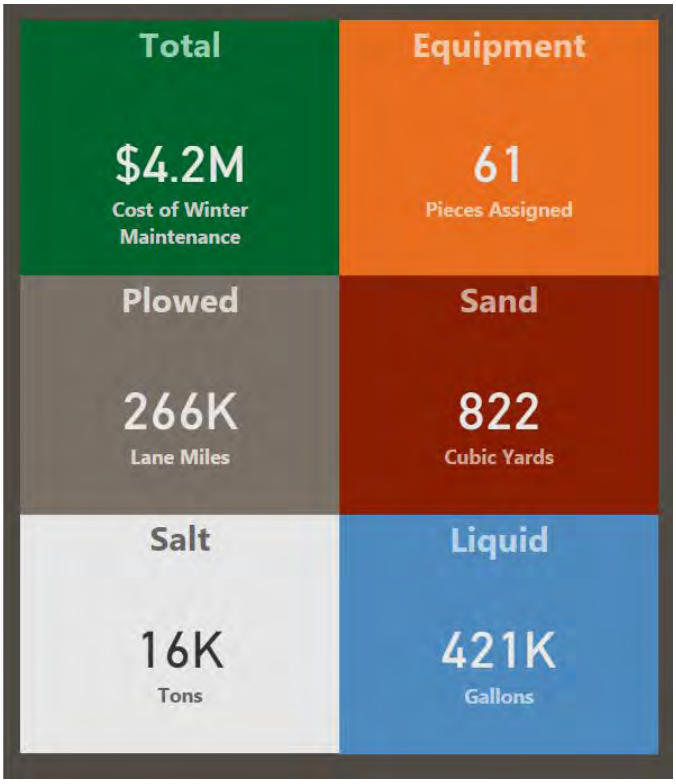
District 3

61 Valley View, Suite 2
Mendon, VT 05701
(802) 786-5826

637 Lane Miles

Facility Locations
Brandon
Castleton
Clarendon
Ludlow
Mendon
Rutland
Sudbury





Southeast Region

District 2

870 US 5
Dummerston, VT 05301
(802) 254-5011

658 Lane Miles

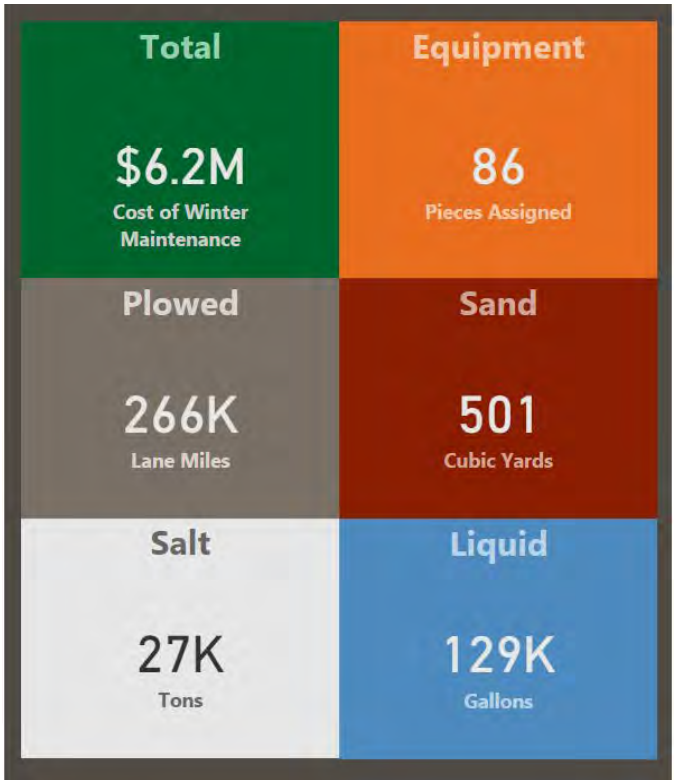
Facility Locations
Ascutney
Chester
Dummerston
Jamaica
Londonderry
Rockingham
Springfield

District 4

221 Beswick Drive
White River Jct., VT 05002
(802) 295-8888

1,126 Lane Miles

Facility Locations
Fairlee
Randolph
Reading
Rochester
Royalton
Sharon
Thetford
Tunbridge
White River Jct.
Windsor
Williamstown
Woodstock



Northwest Region

District 5

PO Box 168
Essex Jct., VT 05453
(802) 655-1580

952 Lane Miles

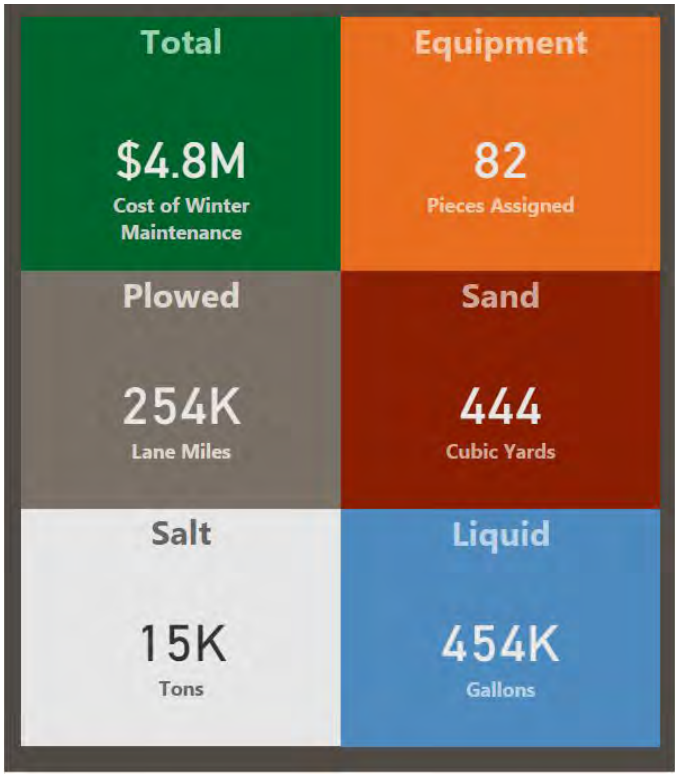
Facility Locations
Chimney Corners
Colchester
Essex
Middlebury
New Haven
Waitsfield
Middlesex

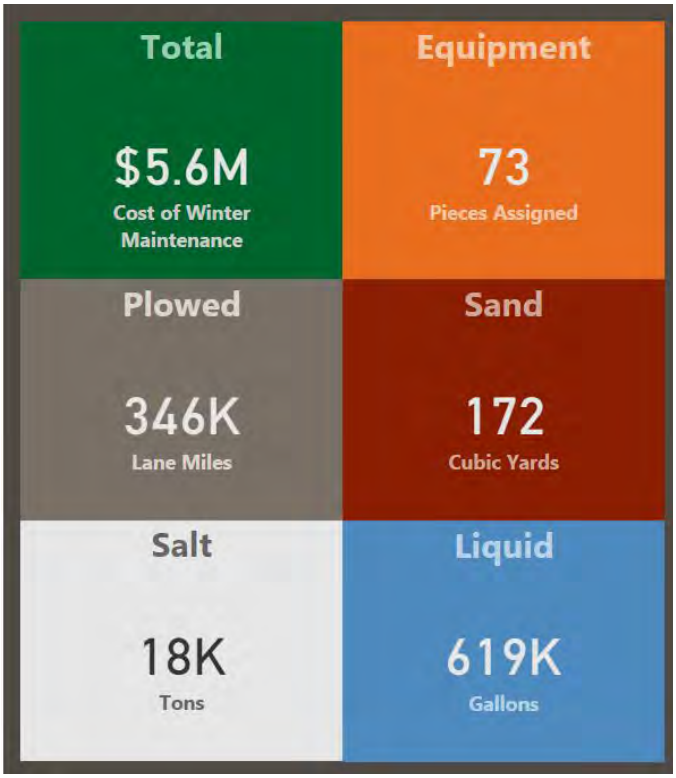
District 8

680 Lower Newton Road
St. Albans, VT 05478
(802) 524-7927

939 Lane Miles

Facility Locations
Cambridge
Eden
Enosburg
Georgia
N. Hero
Highgate
Montgomery
Morrisville
St. Albans





Northeast Region

District 7

1068 US 5, Suite 2
St. Johnsbury, VT 05819
(802) 748-6670

967 Lane Miles

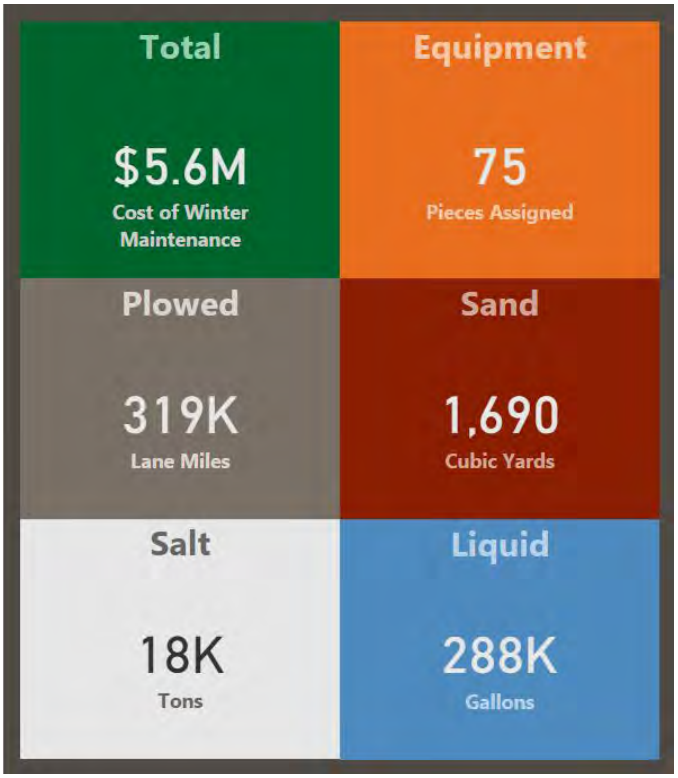
Facility Locations
Bradford
W. Danville
Lunenburg
Lyndon
Newbury
North Montpelier
Orange
St. Johnsbury

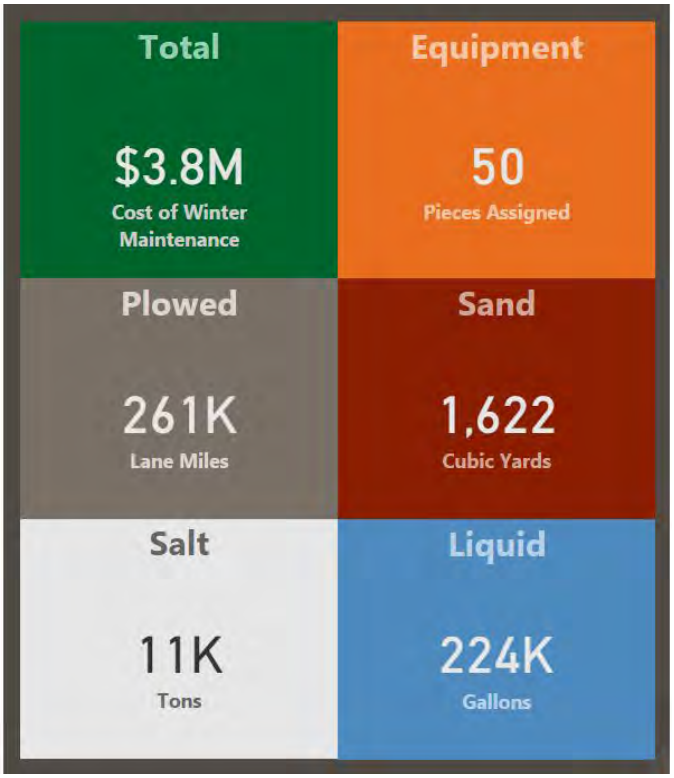
District 9

4611 US 5
Newport, VT 05855
(802) 334-7934

736 Lane Miles

Facility Locations
Barton
Bloomfield
Canaan
Derby
Irasburg
Island Pond
Westfield
Westmore





Statewide Services

Maintenance Operations Bureau Headquarters

2178 Airport Road, Unit A Berlin, VT, 05641
(802) 828-2709

Headquarters includes administrative support and oversight, as well as the business office for maintenance and operations.

Technical Services

2178 Airport Road, Unit A Berlin, VT, 05641
(802) 279-3447

Services:
Logistics/Facilities
Transportation System Management & Operations (TSMO)
Statewide Bridge Crew
Emergency and Engineering Support
Pavement
Environmental

Central Garage

US 302 #31756, Berlin, VT 05602
(802) 828-1776

Facility Locations
Berlin
Colchester
Lyndonville
Rutland
White River Junction

VTrans Training Center (VTTC)

1716 US 302, Berlin, VT 05633
(802) 828-3768

The VTrans Training Center (VTTC) provides a wide spectrum of health and safety and employee development training for VTrans staff to ensure regulatory compliance, a safe and respectful workplace, and offers the necessary tools for employees to grow their careers at VTrans.

Vermont Local Roads

1716 US 302, Berlin, VT 05633
(802) 828-2537
localroads.vermont.gov

The Vermont Local Roads Program provides information, training and technical assistance to cities, towns, and villages in Vermont. This is done through seminars and workshops, distribution of materials, and technical assistance to fulfill service requests.

Vermont's Bridge Population

In conformance with the National Bridge Inventory (NBI), Vermont maintains a historical record of all bridges subject to the National Bridge Inspection Standards (NBIS). These standards establish requirements for inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and both the preparation and maintenance of a state bridge inventory. The NBIS apply to all structures defined as bridges that are longer than 20 feet in length and located on public roads. These assets are commonly referred to as long structures. Short structures are those having a span length of greater than six feet up to or equal to 20 feet.

"Highway" Structure Population (as submitted to FHWA in April 2017)

	Interstate	State Highway	Town Highway	Other	Totals
Long Structures	309	781	1,642	7	2,739
Short Structures	211	1,054	*	*	1,265
Totals	520	1,835	1,642	7	4,004

Long Structures

	Interstate	State Highway	Town Highway	Other	Totals
Above Ground	262	710	1,521	6	2,499
Buried	47	71	121	1	240
Totals	309	781	1,642	7	2,739

Short Structures

	Interstate	State Highway	Town Highway	Other	Totals
Above Ground	0	173	*	*	173
Buried	211	881	*	*	1,092
Totals	211	1,054	*	*	1,265

Vermont's "Off-Highway" Structure Population

	State Highway	Town Highway	Totals
Retaining Walls	160	**	160
Recreation Path Structures	0	121	121
Overhead Sign Support Structures	138	***	138
Totals	298	121	419

DEFINITIONS

Long Structure
Bridges having a span length greater than 20 feet in length and located on public roads.

Short Structure
Bridges having a span length of greater than six feet up to or equal to 20 feet and located on public roads.

* VTrans does not maintain an inventory of or inspect town highway or other short structures.

Buried Structure
These structures include metal culverts, concrete box culverts, frames, masonry arches, and concrete arches.

Retaining Wall
Height greater than 3 feet

Recreation Path Structures
Span length greater than 6 feet

** VTrans does not maintain an inventory of or inspect municipally-owned retaining walls or overhead sign support structure bases.

*** This number is expected to change as inspection criteria are refined (i.e., minimum sign size, attachment, etc.).

Bridge Inspection and Condition Ratings

Aging Structure Inventory

With 1927 flood-era bridges now over 80 years old and nearing the end of their useful design life, as well as the 1958-to-1978 Interstate-era bridges averaging around 50 years old and in need of repairs or rehabilitation, a wave of structures in need of major investment is quickly approaching.

Restrictions

VTrans continually evaluates the most appropriate performance measures to target which structures are in highest need of repair or rehabilitation, weighed against what is either being lost or gained in terms of keeping our assets open and unrestricted for public travel.

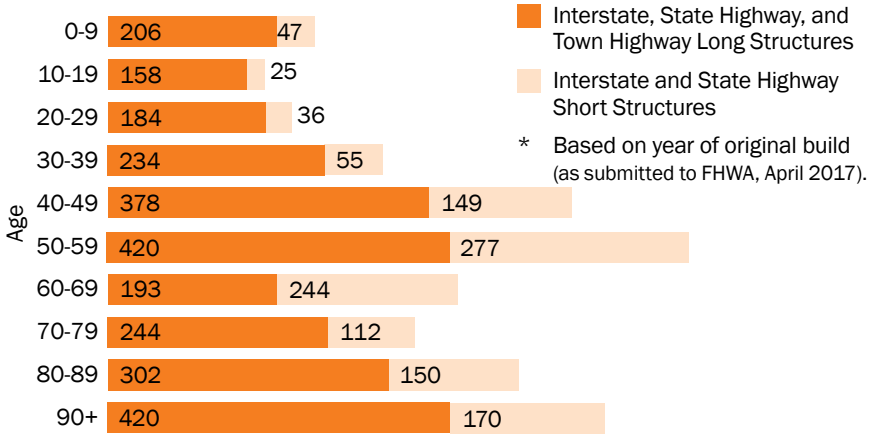
Due to recent public attention on the condition of our bridges, many believe Vermont has more restricted bridges than it did 10 years ago. In fact, prior to 2012 (which showed an increase as a result of infrastructure damage caused by Tropical Storm Irene), the state trend had been decreasing. As large storms become more frequent and infrastructure continues to age, downward trends will become more difficult to maintain in the future.

History of Inspections

The nation's current bridge inspection practice was established largely as a response to disasters involving bridge failures. With each failure, new information emerged and new standards were implemented. Some influential events are listed here:

- 1967. The 2,235 foot Silver Bridge at Point Pleasant, West Virginia collapsed into the Ohio River killing 46 drivers and passengers. This aroused national concern about bridge safety inspection and maintenance, and motivated Congress to enact improvements to the Federal Highway Act of 1968. In 1971, National Bridge Inspection Standards (NBIS) were created, setting national policy for inspection frequency, inspector training and qualifications, reporting formats, and procedures for inspection and rating.
- 1970s. Attention was directed to culverts after several collapses.
- 1983. The Mianus River Bridge in Connecticut collapsed after one of its pin-and-hanger assemblies failed, leading to a national emphasis on fatigue and fracture-critical elements.
- 1987. The fall of the Schoharie Creek Bridge in New York focused attention on underwater foundation inspections.
- 2007. The I-35W highway bridge over the Mississippi River in Minneapolis collapsed, killing 13 people and injuring 145. Undersized gusset plates and the stress of 287 tons of stockpiled construction material were singled out in the National Transportation Safety Board (NTSB) Accident Report as reasons for the failure. Federal safety investigators said the collapse was unavoidable once gusset plates in the bridge's center span failed, dragging other sections and rush-hour commuters into the Mississippi River. This led to an emphasis on gusset plate inspection and design.

Structure Count by Age (in years*)



Current Inspection Practices

Guided by federal requirements, all bridges in excess of a 20-foot span and located on public roads receive regular, biennial inspections by qualified personnel to ensure safety of the traveling public. Short structures, those greater than 6 feet and up to 20 feet in span length, located on either the interstate or state highway systems are inspected once every 60 months. Bridge safety is taken very seriously. If deemed necessary because of deteriorating conditions, bridges are inspected more frequently.

FHWA recently strengthened oversight of bridge inspections and maintenance with the introduction of a new bridge initiative using systematic, data-driven, and risk based reviews and analysis to improve oversight of how states are performing their bridge inspections. This new process, using and reporting on key metrics, each linked directly to NBIS requirements, will help identify opportunities for improvement in achieving consistent compliance with the National Bridge Inspection Standards (NBIS).

The new process is based on objective, statistical data, providing for greater consistency in bridge inspections nationwide and more strategic approaches to identifying problem areas. Key metrics include inspection records; determination of bridge load limits; qualifications of inspection personnel; procedures for underwater, fracture-critical, and complex bridge inspections; and inspection frequency.

Through periodic safety inspections, data is collected on the condition of each structure's primary components. Condition

VTRANS FACT BOOK 2018

ratings are collected for the following bridge components:

Deck
The portion of a bridge that provides a surface for vehicular or pedestrian traffic

Superstructure
The portion of a bridge above the substructure that supports the deck, including beams, girders, trusses, and bearing devices which support traffic and transfer the loads to the substructure

Substructure
The portion of a bridge below the bearing device, built to support the superstructure and transmit loads to the foundation

The culvert condition rating describes all structural elements of culvert designs which do not have a distinct deck, superstructure or substructure, and are buried under fill. The channel and the channel protective system are also rated, describing the physical conditions of slopes, as well as the channel or water flow through the bridge.

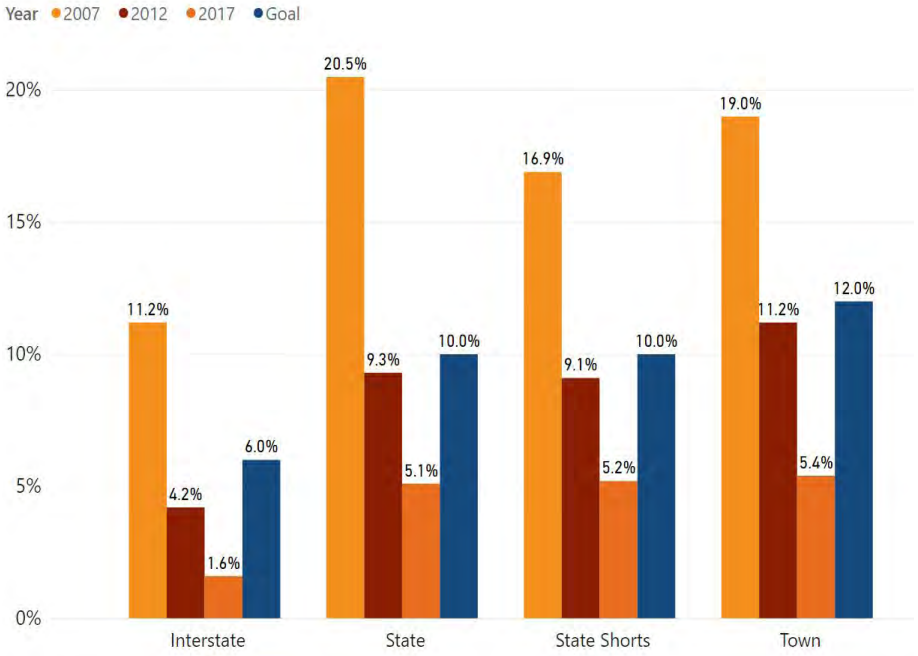
Bridge inspectors utilize a point system from zero to nine, where nine indicates an excellent condition and zero indicates a failed condition. Inspectors visually assess the ratings based on engineering expertise, training, and experience. These ratings form the basis for assessing the structural condition of the bridge.

Recommendations for maintenance or repair needs, load restrictions, posting, or closure originate with, and are based on, inspection findings. Inspection provides a visual record of structural health—including deterioration—and the consequent determination of a structure's ability to continue to perform in a safe manner.

The challenges faced in the northeast—having an older and aging infrastructure, seasonal limitations on performing inspections, extensive use of deicing salts and accelerated corrosion rates—are among the more demanding and the importance of routine inspections cannot and should not be underestimated.

Percent Structural Deficiency Over Time by System

* 2007, 2012 and 2017 represent year data submitted to FHWA



Functional Obsolescence/Deficient (FO) and Structural Deficiency (SD) Population

(as of or reported to FHWA, April 2017)

	FO	% FO	SD	% SD
Interstate "Long" Structures	95	30.7%	5	1.6%
State Highway "Long" Structures	93	11.9%	40	5.1%
Town Highway "Long" Structures	364	22.1%	89	5.4%
On-System "Short" Structures	N/A	N/A	66*	5.2%
System Total	552	–	200	–

* FO and SD are federal definitions not applied to "short" structures. This number represents "short" structures having a condition rating of poor or less.

Structurally Deficient and Functionally Obsolete

'Structurally deficient' and 'functionally obsolete' are terms FHWA uses to classify bridges "according to serviceability, safety, and essentiality for public use" to meet the requirements of Title 23 of the United States Code (23 U.S.C. 144). The technical definitions are as follows (source: 23 C.F.R. 650D):

Structurally Deficient (SD)

A bridge becomes structurally deficient when at least one of six items from the National Bridge Inventory (NBI) reaches a set threshold. The criteria are a Deck Condition Rating, Superstructure Condition Rating, Substructure Condition Rating, or Culvert Condition Rating of 4 (Poor Condition) or less, or a Structural Evaluation Appraisal Rating or Waterway Adequacy Appraisal Rating of 2 (basically intolerable, requiring a high priority of replacement) or less. Any bridge that is classified structurally deficient is excluded from the functionally obsolete category.

Functionally Obsolete (FO)

A bridge becomes functionally obsolete when at least one of five items from the National Bridge Inventory reaches a set threshold. The criteria are a Deck Geometry Appraisal Rating, Underclearances Appraisal Rating, Approach Roadway Alignment Appraisal Rating, Structural Evaluation Appraisal Rating or Waterway Adequacy Appraisal Rating of 3 (basically intolerable, requiring a high priority of corrective action) or less. Any bridge that is classified structurally deficient is excluded from the functionally obsolete category.

Federal Standards and Vermont

Highway bridges classified as functionally obsolete are not structurally deficient, but according to federal standards their design is outdated. They may have lower load carrying capacity, narrower shoulders, or less clearance underneath than bridges built to the current federal standard. Vermont, due to the historic nature of its bridges as well as environmental concerns associated with bridge widening, has established state standards that differ from federal standards. As a result, it is possible for a new bridge built in Vermont to be classified as functionally obsolete. Also, Vermont does not always "modernize" its functionally obsolete bridges. An example is the state's covered bridges, which are functionally obsolete, but no one wants them altered.

While functional obsolescence is not one of our performance measures, we report it here as a federal measure. It is important to note that when structural repairs are made to structurally deficient bridges the functional obsolescence count may rise.

The fact that a bridge is structurally deficient (SD) or functionally obsolete (FO) does not mean the bridge is inherently unsafe. The VTrans inspection unit takes bridge safety very seriously. If unsafe conditions are identified during an inspection, the structure will be restricted or closed.

Performance Goals

In the past, VTrans relied on the Federal Highway Administration's measures of structural deficiency and functional obsolescence to evaluate bridge condition. Vermont, however, is evaluating new performance measures that VTrans believes better model the average condition of Vermont's bridge network. These measures include bridge health index; averaged condition; worst condition; numbers and deck area of structurally deficient and functionally obsolete bridges; and the number of restricted, posted, closed, or temporary bridges. VTrans is not doing away with the federal measures and the agency will continue to supply FHWA data for these determinations.

With the passage of MAP-21, the federal transportation bill, government created a performance measure stipulating in law a minimum condition level requirement. National Highway System (NHS) bridge deck area on SD bridges must not exceed 10% of total NHS bridge deck area for that state, and national measures, with targets set by the state, must be established.

Still being used, the previous federal measures—Structural Deficiency and Functional Obsolescence—imply but do not really tell us anything about the bridge's overall condition, nor do they tell us how bad a particular bridge component is. The federal measures only indicate that one or more bridge components have deteriorated to a point where they are within a range that requires assessment. They may or may not need treatment.

For example, our interest in fitting bridges into the historic Vermont landscape—all covered bridges and many historic truss bridges are considered functionally obsolete—lead to the development of Vermont specific standards that allow us to design bridges narrower than the federal standards. Many of Vermont's new designs and rehabilitations are considered functionally obsolete though they function very well.

To better evaluate our structures, VTrans, together with Maine and New Hampshire, is working to develop and implement a more holistic approach to measuring the condition and performance of our structures. Although these efforts are still in development, Vermont and our partner states see promise in utilizing a condition index as an effective management tool that can be compared across state lines.

Bridge condition index (BCI), percent structurally deficient by deck area and the national deficiency comparison (number of SD/FO bridges) are all measures being used and evaluated at the tri-state level (Maine, New Hampshire, and Vermont). The goal is to develop a network measure which reflects the relative health of our bridge population.

As the Agency moves to new performance measures, structural deficiency performance goals will continue.

- 6% on the interstate system (18 bridges)
- 10% on the state highway system (77 bridges)
- 12% on the town highway system (195 bridges)
- 10% on interstate/state highway system culverts (126 culverts)

Structures and Hydraulics Highlights

The Structures and Hydraulics Section (SHS) is responsible for the delivery of bridge and culvert rehabilitation and replacement projects including project initiation, hydraulic analyses, design, and construction support. SHS reorganized in 2017 to focus on internal collaboration, employee development, and succession planning. The Accelerated Bridge Program and Conventional Design Teams were merged. In an effort to cross-train and build a team-based atmosphere while matching skills and qualifications, teams will now be chosen on a per project basis.

Structure's META Common Resource Archive (CRA)

In 2017, the Structure's META CRA was launched to capture and retain institutional knowledge for project delivery and engineering and implement succession planning. META is a framework consisting of people and technology that seeks to capture knowledge and experience and disseminate it in a useful way. META's basic goals are to: establish a central committee, encourage an environment where individuals collaborate between 'silos', and capture the most fitting and useful knowledge in the most fitting and useful format, as deemed by Structure's strategic needs. The CRA is comprised from two sources of data: content generated by the META Steering Committee and official working groups, or "curated content" - content contributed by users to share personal experience and knowledge.

Structures E-Design Book

In an effort to standardize the way design books are kept, a Structures Electronic Design Book was created. The design book will capture the appropriate information at the appropriate time – assuring proper documentation is generated for every project.

Advanced Development

To accommodate a changing budget, SHS is committed to building a "shelf" of projects that are fully designed and await only funding to proceed to construction. An Artemis activity, "Advance Development", was created to designate projects that make up the "shelf", indicating that plans, special provisions, and estimates are complete and the project is ready for advertising. This activity is used when a project could be advertised at least one fiscal year prior to the budget year. When unanticipated construction funding becomes available, these projects can be advanced and completed sooner. Currently, 11 structures projects have been identified for advanced development.

Preserving Bridge Infrastructure

In 2016 the Asset Management and Performance Bureau and SHS partnered to create a "Deck Replacement Program" to extend the service life of bridge decks located along our interstates, state routes, and town highways. Two bridge decks were replaced in 2016 and two more were replaced in 2017. Three more are planned to be replaced in 2019 and one was revised to include the entire superstructure.

Hot 200 Culvert Inventory Project

In an effort to more efficiently plan for future culvert repairs and replacements, a consultant looked at 200 priority culverts. Building upon the existing bridge inspection database, and with a budget of $1000 per structure, the consultant gathered information on 36 design criteria, including hydraulic capacity, site geometry, and natural resource presence. The Agency will use this information to identify possible projects, which will be grouped by type and implemented by the proper teams. Bundling of like projects also allows for accelerated alternative contracting methods if funds become available.

Celebration of Success

Thirty-one bridge replacement, rehabilitation, and preventative maintenance projects were under construction during 2017, totaling $80.7 million. Seventeen projects utilized Accelerated Bridge Construction (ABC).

Nine projects were advertised in 2017 representing a 75% success rate of advertising on-time. Of the nine projects advertised, seven projects are state highway projects, one is a town highway projects, and one is an interstate project. Three projects in the Town Highway Bridge Program were delayed, with two scheduled to be advertised in early 2018. Sixteen projects were transferred from the Project Initiation and Innovation Team (Scoping) into design.

ABP

Five state highway projects were designated into the Accelerated Bridge Program over the past year and three were advertised in 2017. All but one of the 17 ABC projects constructed in 2017 were successfully completed on time or ahead of schedule.

Hydraulics

Approximately 110 culverts for towns and 25 culverts on State Routes were sized for the Maintenance and Operations Bureau, in addition to working on 20 programmed projects from the Project Delivery Bureau.

CHELSEA. One of two bridges replaced this past summer on Route 110. The new bridge was constructed using Accelerated Bridge Construction methods to minimize the length of the bridge closure.

Pavement Management

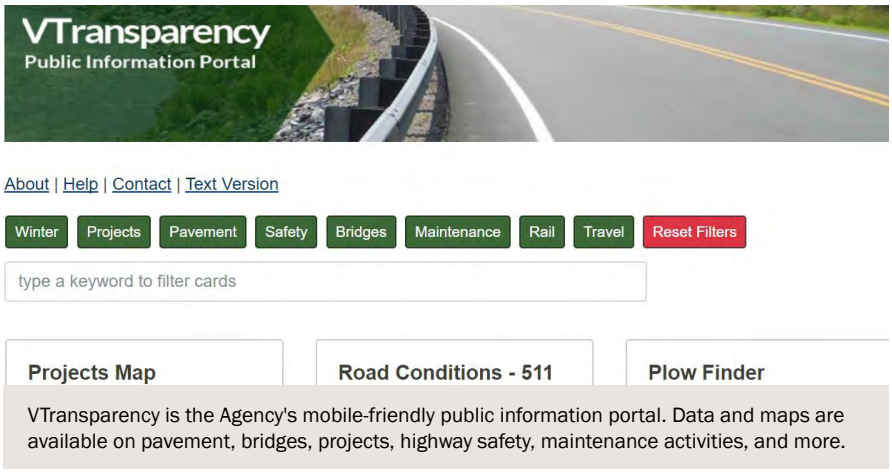
Paving Mileage Summary (Two-lane miles, rounded to the nearest mile)

Category	Construction Season					
	Proposed 2018	2017	2016	2015	2014	2013
Interstate	0	0	0	0	33	18
Carried forward from previous year	0	0	0	0	0	31
Incomplete, to be carried forward	0	0	0	0	0	0
Rut Filling (single lane miles)	0	0	2	10	0	0
Surface Treatments	50	52	0	64	50	61
Carried forward from previous year	0	0	0	12	0	31
Incomplete, to be carried forward	0	0	0	0	12	0
State Highway	25	46	67	18	44	59
Carried forward from previous year	16	37	22	20	13	7
Incomplete, to be carried forward	11	16	37	22	20	13
Surface Treatments	39	8	46	0	43	25
Carried forward from previous year	15	10	0	11	13	*
Incomplete, to be carried forward	0	15	10	0	11	13
Class 1 Town Highway	13	10	4	4	11	6
Carried forward from previous year	1	8	5	7	0	0
Incomplete, to be carried forward	0	1	8	5	7	0
State Paving (FPAV and SPAV projects)	50	51	63	85	189	80
Carried forward from previous year		6				
Incomplete, to be carried forward			6			
District Leveling		20				
Crack Seal	300	229	220	361	362	212
Carried forward from previous year	50	0	0	0	0	0
Incomplete, to be carried forward	0	50	0	0	0	0
PAVING TOTAL (items in orange)	55	101	98	49	101	121
PREVENTIVE MAINTENANCE TOTAL (items in gray)	104	70	48	97	106	117
STATE PAVING TOTAL (items in light orange)	50	77	63	85	189	80
CRACK SEAL TOTAL (items in blue)	350	229	220	361	362	212

Paving Mileage Maps

Paving mileage maps are available through VTransparency, the Agency's public information website, at vtrans.vermont.gov/vtransparency. Information available includes:

- 2017 Paving Accomplishments
- 2018 Proposed Paving Program
- National Highway System Pavement Condition
- National Highway System Pavement History
- State Highway System Pavement Condition
- State Highway System Pavement History

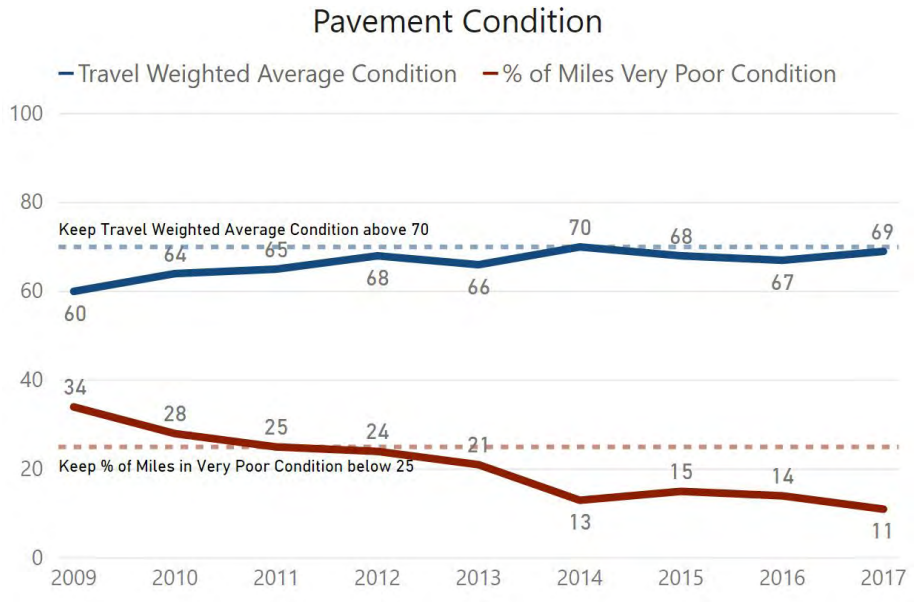


Performance Measures

Automated surveys are conducted annually to determine pavement conditions across the state. Each segment of road is rated on a scale of 0 to 100 based on rutting, cracking, and roughness. These are then weighted by their respective traffic volumes. The VTrans goal for this performance measure is 70.

Percent of Network in "Very Poor" Condition

While the "Travel Weighted Average Network Condition" graph measures VTrans performance for the majority of road users, the "Conditions Over Time, Unweighted" graph measures the agency's performance for all users, including those on low volume roads. The VTrans goal for the percentage of roads in very poor condition is no more than 25%.



Conditions Over Time, Unweighted

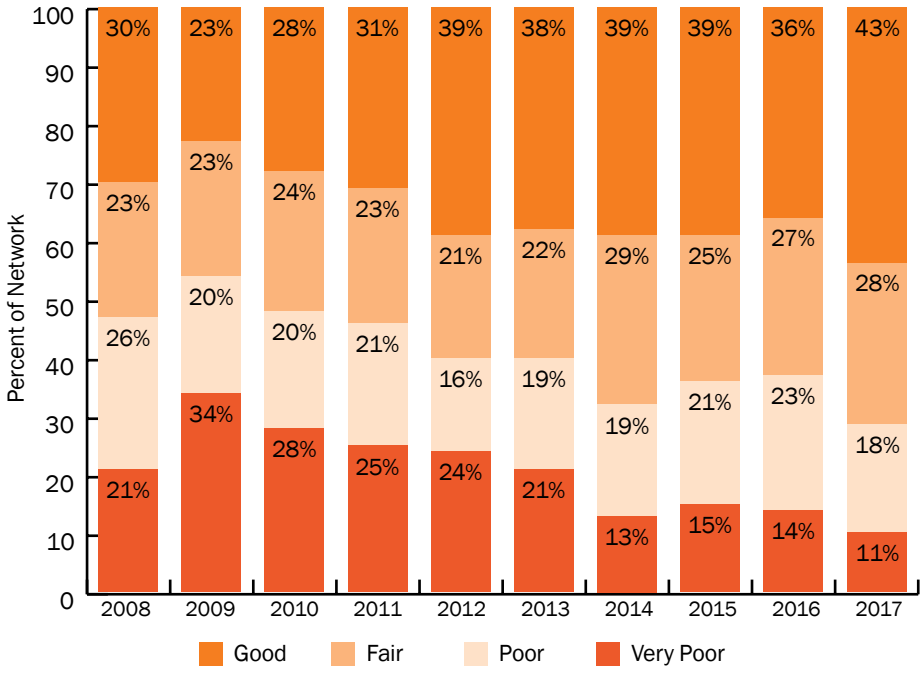
Pavement Condition Descriptions

Good
Like new pavement with few defects perceived by drivers
Composite Pavement Condition Index 80-100

Fair
Slight rutting, and/or cracking, and/or roughness become noticeable to drivers
Composite Pavement Condition Index 65-79

Poor
Multiple cracks are apparent, and/or rutting may pull at the wheel, and/or roughness causes drivers to make minor corrections
Composite Pavement Condition Index 40-64

Very Poor
Significant cracks may cause potholes, and/or rutting pulls at the vehicle, and/or roughness is uncomfortable to occupants. Drivers may need to correct to avoid defects.
Composite Pavement Condition Index 0-39



Network Pavement Structural Types

The "Pavement Type Distribution" chart represents the breakdown of the various pavement structural types a motorist will encounter throughout the Agency's highway network. This information provides a sense of how the network structures vary, and how that can pose a challenge from a management perspective.

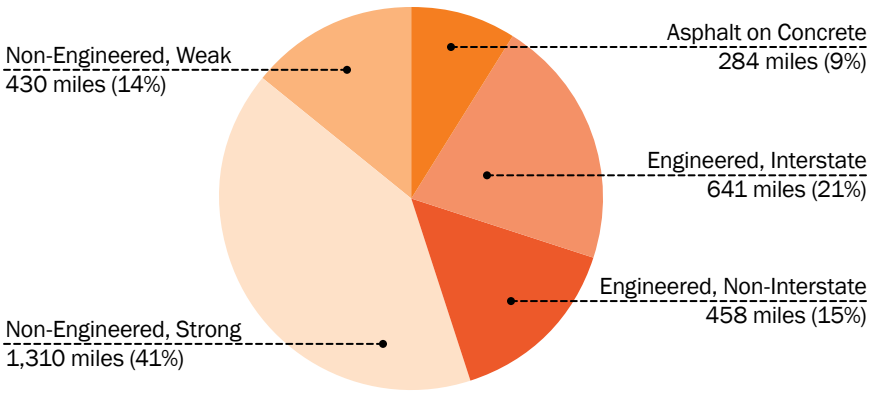
Interstate travel provides a motorist the best example of an engineered pavement or highway. Engineered pavement is designed and constructed from the bottom up with the expectation that if maintained properly over time, the pavement will stand up very well to Vermont's harsh climate for 40 years or more. About 36 percent of the state's pavements are engineered, and it is these pavements which can be managed the most effectively, both in terms of cost and serviceability.

About 55 percent of the network is composed of non-engineered pavements. A non-engineered pavement is a structure that has been built-up over the years based on minor treatments and maintenance activities. The end result is a highway evolving from what may have once been a logging road into what is now a paved roadway. Some of these pavements perform reasonably well over time. Fortunately, 41 percent of the network's pavements respond in this manner and are considered non-engineered strong. It is the remaining percent—the 14 percent of the network that is non-engineered weak pavements—that pose the greatest challenge to the Agency. A significant investment is required to keep these pavements in good condition for a reasonable amount of time.

The last pavement structure classification is Asphalt on Concrete. These comprise 9 percent of the state highway network pavements, and they are a challenge to manage effectively. Often times they are discernible to the untrained eye where cracks reflect through the asphalt revealing the slabs beneath. While strong, problems exist where a lane has been widened beyond the slab's edge because the additional pavement will distress or settle differently creating a poor ride. Unfortunately, these structures are typically maintenance intensive and do not perform well with a conventional resurfacing treatment.

This asphalt re-cycler takes old pavement, breaks it down, and turns it into hot patch on the spot.

Pavement Type Distribution (Two-lane miles, percent of network miles)



Asset Management

Introduction

Vermonters depend on VTrans to be good stewards of the State's transportation, environmental and financial resources. This trust is something that VTrans does not take lightly; VTrans has consistently and diligently worked hard to build accountability for its actions and gain credibility with the public and the Legislature. In 2013, the message to the Legislature was that VTrans has renewed its commitment to asset management and that "asset management was going to change how VTrans conducts its business." These words continue to have a transformative impact on VTrans' plans and operations. VTrans is in development of its initial Transportation Asset Management Plan or TAMP. The TAMP will outline a plan to manage the Agency's assets; starting with pavements and bridges.

Asset management is and has always been tightly woven into VTrans' culture. Asset management encompasses the planning, programming, design, construction and maintenance phases of an asset's lifecycle and is supported by all Agency employees.

Asset Management Philosophy

Asset management is the strategy that allows VTrans to invest the right amount of funds in the right asset at the right time. Asset management, when fully implemented, will allow the Agency to monitor asset status and condition, determine appropriate customer service levels performance and determine the level of unmet needs. The primary goal of VTrans Asset Management is to conduct effective and efficient decision-making processes based on a combination of quality data and well-defined performance objectives, enabling VTrans to effectively program construction and maintenance activities at strategic points in an asset's life. Asset management at VTrans represents a best practices approach to managing infrastructure performance that is both strategic and proactive. In addition, asset management seeks to identify risks across the Agency and managing these risks to reduce threats while increasing innovations and opportunities. Effective management of infrastructure risks increases the likelihood that the Agency will achieve its strategic goals and associated performance objectives.

Asset Management Best Practices

Asset Inventory	Customer Service and Continuous Improvement	Risk Management	Life Cycle Cost Management	Trade-off Analysis
Identify and prepare an accurate asset inventory database, graphically represented spatially on a GIS platform	Work with stakeholders to determine Customer Service Levels (CSLs). Identify performance measures and indicators to continuously monitor status.	Develop Agency risk registry. Identify, quantify and prioritize risks associated with asset management. Develop risk mitigation plans to reduce exposure.	Determine minimum life cycle costs for maintaining, rehabilitating and replacing assets to provide the highest levels of service over time.	Develop ability to predict asset condition over time and to use this information to establish long term funding strategies to maintain assets at sustainable CSLs.
EXAMPLES				
Interactive GIS map of asset locations with "pop-up" information of asset condition.	Condition Target: Maintain a minimum of 75% of pavements above a "Very Poor" Condition.	Analyze freight corridors for bridge restrictions and economic impacts. Develop strategies to remove restrictions.	Apply the right treatment, using the right materials, at the right location and at the right time.	Manage customer expectations in a fiscally responsible and environmentally sensitive manner for present and future generations.

Fiscal Management

Asset management is a collection of best practices targeted at utilizing available funding strategically and efficiently. VTrans asset management practices are performed with a "preservation first" principle rather than "worst first." The Agency applies this principle by optimally balancing regular preventive maintenance activities with construction of carefully planned and programmed rehabilitation and replacement projects. These activities are performed with the intent of increasing the asset's useful life. Typically, an asset with a long useful life requires multiple intervention points including a combination of repair and maintenance activities. The strategic timing of these intervention points effectively optimizes the balance between the asset's useful life and its overall lifecycle costs, thereby maximizing the value of the Agency's financial resources.

VTrans' Asset Management and Performance Bureau coordinates the management of effective and realistic scopes, accurate cost estimates, and reliable schedules for these activities. The Bureau is committed to providing these services at an acceptable level of risk to the Agency and within current forecasted revenue projections while delivering customer service levels that the public expects and decision makers require. Maintaining our highways at a fair, good or very good condition is more cost-effective than allowing it to erode to a poor or very poor condition where replacement costs dramatically increase. VTrans utilizes asset management, performance management and risk management principles to effectively manage both the physical and financial condition of its assets to achieve its strategic objectives. This renewed commitment and focus on asset management complements the Agency's customer service focus.

Customer Service Levels

Assets provide services to our customers by providing them with the ability to get where they need to go in a safe and timely manner. VTrans' customers are Vermont residents, businesses, and visitors who rely on VTrans to manage the needs of our transportation system in a cost-effective, efficient, safe and sustainable manner. Through asset management and its commitment to the stewardship of public resources, VTrans manages the condition and performance of highway assets by minimizing life cycle costs through the timely programming of capital improvement projects and maintenance activities. Simply stated, VTrans is developing an initial asset inventory and documenting where it is located, while at the same time evaluating the asset's condition and understanding the financial costs required to maintain the State's infrastructure at an acceptable condition state to maintain a required level of customer service.

These actions form the foundation of VTrans' commitment to providing quality customer service, for both present and future customers. VTrans is currently engaging stakeholders in discussions of customer service levels. Recent progress in this area has resulted in the Maintenance and Operations Bureau collaborating with the Asset Management and Performance Bureau to develop customer service levels based on VTrans' current understanding of customer expectations and past policies.

Risk Based—Performance Driven

Asset management is risk-based and performance centered; driven by policy goals and performance objectives outlined in the Agency's Strategic Plan. Asset management represents an approach to managing infrastructure that is both strategic and proactive, and places a premium on quality data and information. Many of these objectives have time frames that span several years. Failure to acknowledge, measure, and manage both short and long term uncertainties is to overlook obvious risks that affect the credibility and success of the Agency's decisions. Thus the effective management of VTrans' highway assets must rely on risk management to enhance its decision making processes.

In 2017, VTrans continued a journey that it began in 2014; to develop an Agency wide risk registry that will ultimately enhance its decision making processes by documenting internal and external risks that may affect its performance objectives. These risks have and will continue to be identified at the enterprise level and across Agency programs, projects and activities. Both performance and risk management play an integral role in supporting asset management activities towards the achievement of the Agency's strategic goals

To summarize, the risks and challenges to manage transportation infrastructure assets in a fiscally responsible and sustainable manner has led VTrans to emphasize an asset management policy and incorporate business processes that ensure that quality decisions are made based on accurate data and analysis while mitigating identified risks.

Asset Management Framework and the TAMP

Currently there are significant efforts being expended to develop a transportation asset management plan (TAMP). The TAMP is the tactical plan for managing the Agency's assets and one of its primary objectives is to support the Agency's Strategic Plan. This effort is being coordinated through the Agency's Transportation Asset Management Plan Working Group (TAMP-WG). This group is comprised of 27 individuals representing asset management functions across VTrans; they are participating and leading nine task forces that are focused on developing different parts of the overall plan.

The collective efforts of the TAMP-WG, combined with the energy and on-going activities of the Asset Management and Performance Bureau team, are synergistically developing an asset management framework to support the Agency's asset management efforts to comply with future MAP-21 requirements and Vermont State Statute 19 V.S.A §10k.

The components of this framework reflect the recommendations of the Federal Highway Administration (FHWA), MAP-21 and best practices of the international community.

VTrans' asset management framework is designed to support the Agency's policies and goals related to accountability, mobility, resiliency, safety, sustainability, and transparency. The proposed framework is envisioned to include a continuous cycle of asset condition and inventory, performance, and risk and cost assessments. These activities will provide data and information that asset managers can use to develop, implement and support the TAMP.

Conclusion

The Asset Management and Performance Bureau is committed to measuring and monitoring the Agency's performance relative to its assets and provision of those assets to VTrans' customers. VTrans believes that through education and effective communication that it can provide its customers with a deeper understanding of the costs and benefits of individual functions (asset maintenance, resurfacing, rehabilitation and replacement) and how these costs impact overall Agency programs and budgets. In return, the customers (the public) can then use this information to communicate more clearly to the decision-makers (the legislators) the level of infrastructure investment, maintenance, and condition they expect. The decision-makers can then use this information in partnership with VTrans to collaboratively make the decisions they believe reflect the best stewardship of the public resources.

In summary, VTrans has adopted asset management policies and processes consistent with internationally accepted best practices to maximize the value of its infrastructure assets and to guide its decision-making processes. VTrans is committed to responding pro-actively to Vermont's transportation needs and is responsible for ensuring that Vermont's transportation system remains in a state of good repair, regardless of its age.

Asset Inventory

As stewards of Vermont's highway infrastructure, the Agency of Transportation is responsible for understanding the components of the State's transportation system and how asset improvements to these components can be budgeted to preserve the integrity of our highway system in a cost effective and efficient manner. To support this understanding, several Asset Management projects have been undertaken across the Agency.

TAMIS

The Agency is adopting asset management business practices to improve the stewardship of its transportation infrastructure. The Transportation Asset Management Information System (TAMIS) is a cohesive framework that allows Agency personnel to make risk and performance based, data supported programming decisions.

A TAMIS is a collection of hardware, software, data, and processes which support asset management business processes. VTrans' TAMIS will be used to collect, process, store, and analyze information about assets. It will be used to implement sound maintenance and rehabilitation strategies and to schedule, track, and manage work.

The TAMIS will provide the Agency a way to track future maintenance needs, increasing the quality of its programming decision. The TAMIS implementation will bring numerous tools for internal decision-making processes, driving credible programming.

These re-inspection activities will maintain current asset information as well as ensure the utilization of the small culvert data to prioritize maintenance and repair activities.

Historically, Agency decision makers have had difficulty identifying authoritative data to support their processes.

SK1 ("Steak Knife 1")

The goal of SK1 is to improve integration of data sources into a framework that allows users to seamlessly find answers to questions and make decisions based upon factual data.

It has created a centralized mapping tool that incorporates data from many of the Agency's existing systems with an intuitive interface. This tool incorporates intermediate level analysis capability.

This has provided the non-GIS staff an effective method to run complex analysis routines, replacing on-demand data preparation with live retrieval.

Right-of-Way Imagery Open Data

Forward facing right-of-way imagery has been collected for many years and distributed for agency and public use through a stand-alone web application viewer. Moving into 2018, we are transitioning out right-of-way imagery to a new vendor, Mapillary, and leveraging their viewer's ability to integrate with our growing GIS inventories and web mapping application. The viewer enables support for viewing any type of geotagged imagery (360 panoramas, flat images from mobile phones, frames from video logs), and will allow our users to capture video on their phone, tablets, or other video media, and upload those images to the viewer to complement our existing imagery set. The Mapillary viewer is a JavaScript Library which is designed for easy integration into web and mobile applications, and will enable us to stand our right-of-way imagery side-by-side with our web mapping applications, allowing the user to migrate seamlessly from our GIS data to a "street view" experience in the imagery viewer, without the need to jump through several applications. The viewer also includes a "time travel" slider for comparing imagery taken at the same location at different times. We are very excited for the possibilities of these integrations, creating a user experience that breaks borders between our data and allows our users to generate a fuller view of our roadway systems and the assets we maintain.

The life cycle of most Agency assets is spent under Maintenance and Operations. Our crew adds asphalt patching to the roadway.

Project Prioritization

NOTE: VTrans is in the midst of revamping its project prioritization system so that there is a clear understanding of how a project becomes a project and how projects are prioritized based on the "value" they provide to taxpayers. Transportation value is determined by evaluating each project against eight criteria: safety, asset condition, health access, environment, community, economic access, resiliency, and mobility and connectivity. This new system is expected to be in operation for the Fiscal Year 2021 capital program. In the interim, the existing prioritization process remains in effect as documented herein.

In compliance with 19 V.S.A. paragraph 10b(c), a priority ranking system was developed for each asset type.

Structures Criteria

Structures Criteria	Maximum Points
Bridge Condition	30
Load Capacity and Use	15
Regional Input and Priority	15
Remaining Life	10
Waterway Adequacy and Scour Susceptibility	10
Asset-Benefit Cost Factor	10
Functionality	5
Project Development and Momentum	5

Points are summarized for each program, with the highest score receiving the top ranking. Rankings will change from year to year as projects are completed, as bridges change in condition, or as regional planning commissions' priorities change. These priorities are used in developing the capital program, help in deciding which bridges to advance next, and have enabled us to clear a backlog of projects in a defined, documented, and efficient manner.

Selection for proposed rehabilitation and reconstruction projects will continue to utilize the priority system. To become a project and have design initiated, the bridge will need to be among the highest ranked.

The bridge priority system, which is used to rank major bridge replacement and rehabilitation projects, will continue to be used for project selection and determining funding needs. However, this system is not inclusive as it does not rank short structures or maintenance needs, both preventive and routine.

Bridge replacement and rehabilitation projects progress through the VTrans Project Development Process. With its current reorganization, the Structures Section is aggressively looking for opportunities to streamline project delivery while reducing project scope, impacts and costs.

Scope reduction can be achieved by various methods: reducing approach work, minimizing or eliminating enhancements, phased construction or road closures. Although inconvenient for a community, the elimination of a temporary bridge reduces timelines, cost, need for significant right-of-way acquisition and resource impacts. Swiftness of construction and improved safety conditions are benefits of road closures.

Where appropriate, accelerated bridge construction (ABC) and materials are utilized. The technique minimizes traffic disruptions and congestions, improves work-zone safety, and lessens environmental impacts. Additionally, prefabrication can improve constructability, increase quality, and lower life-cycle costs.

The establishment of the bridge maintenance program gave us a start, enabling us to perform much-needed preventive maintenance on a limited number of bridges, but it was just the beginning. Preventive maintenance is not a high-profile activity; if done on a routine schedule, however, its benefits will be obvious as it will extend service life and delay the rate at which our bridges become structurally deficient. The agency has substantially grown the program from its origins and has now integrated it into the regular program.

Focusing efforts toward preventive maintenance activities will slow, but not reduce, the number of bridges becoming structurally deficient. Preventive maintenance does not correct existing structural deficiencies, but instead retards deterioration so that a bridge's lifespan can be extended, thus preventing the structure from becoming structurally deficient. To this end, preventive maintenance is essential to slowing the rate at which structural deficiencies evolve over time.

The value of preventive maintenance will be appropriately demonstrated in the future through new performance measures that evaluate a bridge's overall core unit condition or network health.

BARTON. Before being replaced, this bridge on Route 16 showed weathering that only Vermont winters combined with Spring snow melt can deliver.

Roadway Criteria

Roadway Criteria	Maximum Points	Criteria Description
Highway System	40	This factor looks at the Highway Sufficiency Rating and the network designation. Interstates are held to the highest standard, followed by non-Interstate primary and then off-primary roads. The Highway Sufficiency Rating considers traffic, safety, width, subsurface road structure, and more.
Cost per Vehicle Mile	20	This is the project cost divided by the estimated number of miles vehicles will travel on the project. This is a relatively easy method to get a benefit/cost ratio for comparing similar projects.
Regional Priority	20	The top RPC Roadway project is assigned 20 points. The score is reduced for lower RPC priorities. Projects listed as priority #10 and lower get two points
Project Momentum	20	This factor considers where the project is in the development process and anticipated problems such as right of way or environmental permitting. Some projects are so far along that they must be completed or the Agency would have to pay back federal funds.
Designated Downtown Project	10	Per 19 V.S.A. § 10g(l)(3), VTrans awards ten bonus points to the base score for projects within a designated downtown development district established pursuant to 24 V.S.A. § 2793.

Traffic Design Criteria

Traffic Design Criteria	Maximum Points	Criteria Description
Intersection Capacity	40	This factor is based on Level of Service (LOS) for the intersection and the number of intersections that are in the coordinated system. Projects with a lower LOS and that are part of a larger coordinated system receive higher scores for this category.
Accident Rate	20	This factor is based on the critical-accident ratio for the intersection. Projects with higher critical-accident ratios receive higher scores for this category.
Cost per Intersection Volume	20	This factor uses the estimated construction cost and average-annual-daily traffic through the intersection. VTrans calculates the construction cost of the project for each anticipated user through the intersection. Projects with lower costs per intersection volume receive higher scores for this category.
Regional Input and Priority	20	This factor is based on the ranking of projects from the RPCs/MPO. The RPCs/MPO rank the projects based on criteria they develop. Projects with higher regional rankings receive higher scores for this factor.
Project Momentum	10	This factor considers where the project is in the development process, anticipated problems such as right of way or environmental permitting; and funding.

Pavement Criteria

Asset Condition (PCI)

Pavement Condition Index

- Combination of; Ride, Rut, Cracking
- Scoring structured to recognize need to address roads in very poor condition regardless of traffic

Project Economics (Benefit Cost)

Benefit Cost Ratio

- Benefit compares condition difference between the selected treatment and doing nothing on the project section over the lifespan of the treatment
- Benefits are weighted by traffic volume
- Cost is present value financial cost to the state
- Measures the “Bang for the buck” amongst candidate projects

Regional Planning Commission (RPC) Rank

Regional Importance

- Allows RPCs to address socio-economic, cultural/local importance and impact on local economy of candidate projects
- Scoring structure helps create a geographically distributed program

Public Transit

The Public Transit Section is responsible for the planning, administration, funding and oversight of the statewide network of public transit providers. Transit providers operate multiple types of service including fixed-route, fixed-deviate route, commuter, demand response, health care and shopping shuttles, winter seasonal routes, ADA complementary transportation, special services for the state's elderly and disabled citizens and intercity bus services. Transit services provide vital access to communities, local businesses, educational institutions, employment, national bus connections, adult day services, medical services, and tourism destinations.

For more information, visit: www.connectingcommuters.org/bus-info/city-to-city/

Ridership Trends

In SFY 2017, Vermont's public transit systems provided over 4.6 million trips. A little over half of those rides are provided in the Chittenden County region, and the remainder is spread throughout the rest of the State. There are many types of transit riders, and VTrans is proud to serve the spectrum of the population from those needing one-on-one volunteer rides to medical appointments to commuters riding coach buses.

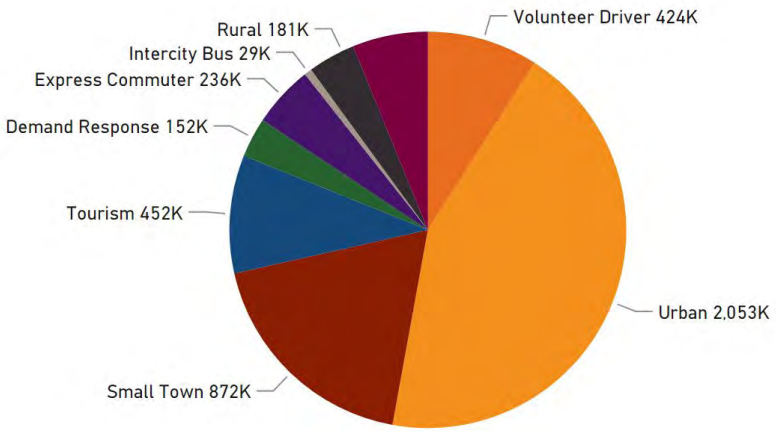
The Public Transit Section has established route categories based on the type of service provided. Over the past year, tourism, demand response, volunteer driver, rural and intercity bus services saw positive ridership growth. The tourism routes, which suffered from a poor ski season last year, experienced a 32% ridership increase in SFY 2017. Ridership on demand response and volunteer driver services also increased by nearly 30% over the past year. Over the same time frame, urban, small town, and commuter services experienced moderate decreases in ridership.

The transit providers submit monthly Service Indicator Reports for each route and all services reflecting total ridership, miles, cost, etc. Annual service performance is compared to benchmarks based on Vermont services and comparable routes in other states. This data reveals overall route performance and trends. VTrans looks for areas to add more service where ridership has grown and new service where demand warrants it. Routes that are under-performing or losing ridership over time will be changed or canceled. VTrans seeks to provide technical support to improve ridership on low-performing routes.

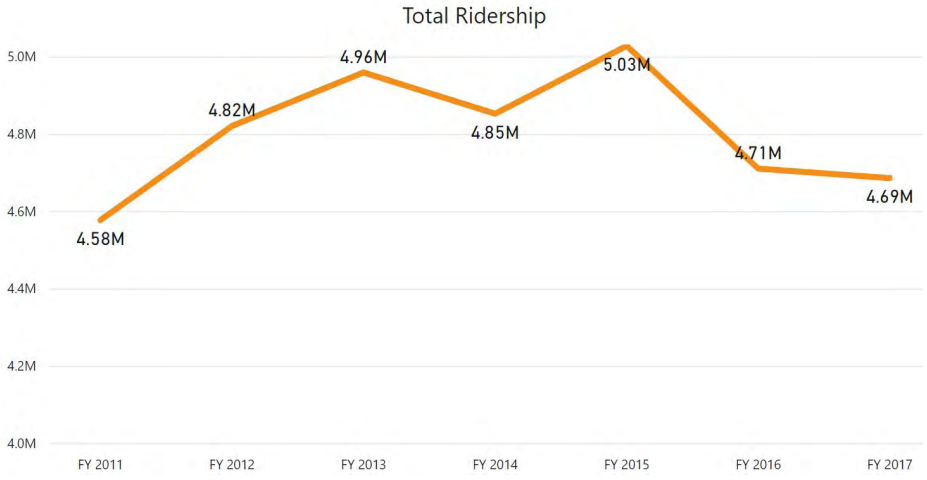
Route Performance

The Public Transit Section has established route categories based on the type of service provided. Transit providers submit monthly Service Indicator Reports for each route and all services reflecting total cost, ridership, miles, etc. and each service category is compared to VT and comparable routes in other states. This data reveals overall route performance and trends. Routes that are under-performing or losing ridership over time will be changed or canceled. VTrans looks for areas to add more routes where ridership is likely to be high and seeks to provide technical support to improve ridership on low-performing routes.

Statewide Transit Ridership by Service Category



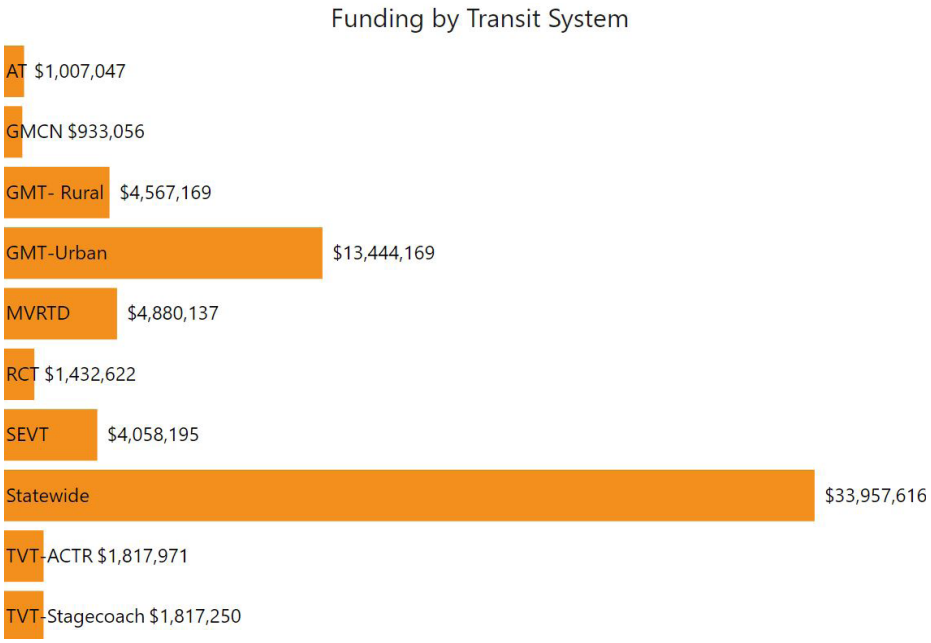
Total Ridership

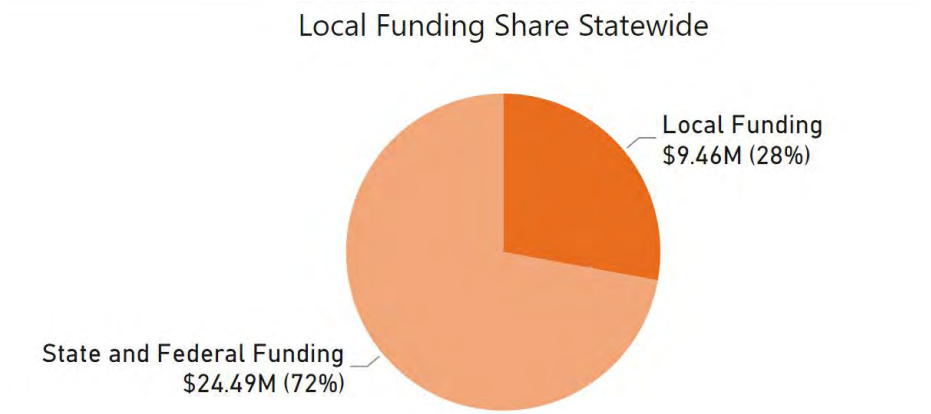


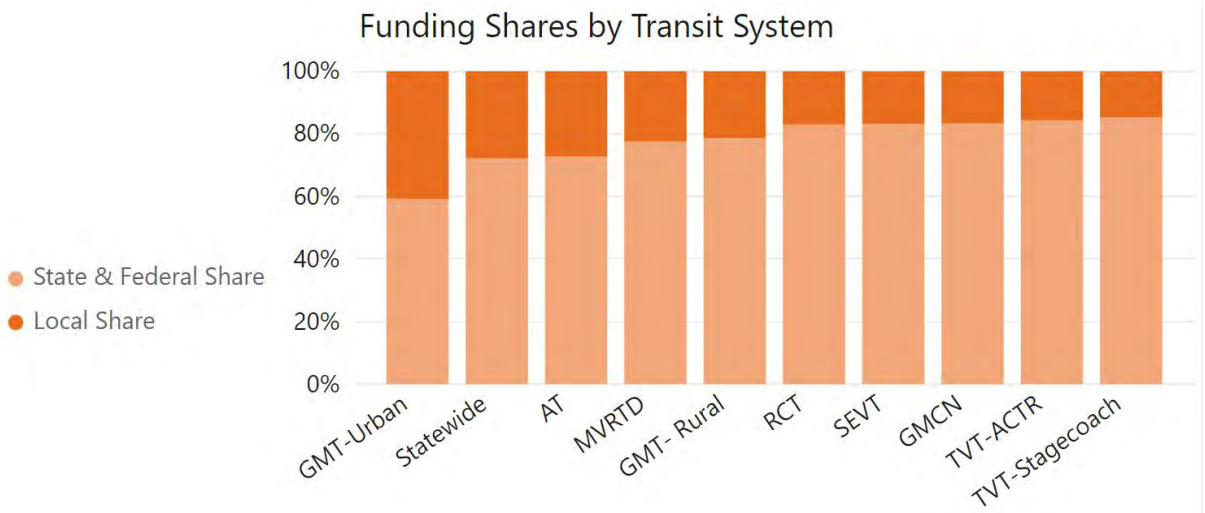
Farebox Revenue & Local Share

VTrans has an established statewide goal of 20% local share participation for public transportation adopted as part of the 2012 Public Transit Policy Plan. Local share includes fare revenue, private contributions, contracts from outside agencies, payments from cities and towns, and in-kind contributions.

The local share analysis found that 28% of statewide transit funding comes from local sources including fares. Of the seven agencies in the state, five charge fares on at least some routes. Other routes are offered fare-free because of local contributions from towns and institutions. Total fare revenue collected statewide in SFY2017 was $3.1 million. Fare recovery ratios (% of operating costs covered by fares) range from roughly 1% on some rural and small town routes to 63% on the Montpelier-Burlington LINK Express. The average among all routes that collect fares is 10%. Fare revenue comprises 17% of the operating budget for GMT-Urban.







Go Vermont Program

GO! Vermont is a resource for Vermonters who want to reduce the costs and environmental impact of driving alone. Services provided include automated matching for carpools, a public/private vanpool program, links to all public transit routes, and an emergency ride home service. In addition, we offer program development and transportation demand management program (TDM) assistance to Vermont employers. Our one-click/one-call clearinghouse of transportation-related resources allows Vermonters to examine their travel options and make educated transportation choices. VTrans' Public Transit Section administers the Go! Vermont program in-house with the assistance of the ride matching software, Zimride, and the Vermont Energy Investment Corporation, which provides a call center service with live operations and a messaging service. To raise the profile of Go! Vermont, VTrans is implementing a statewide marketing plan, promoting efficient modes of transportation.

Capital Commuters

Go! Vermont continues to expand its services through contracts with existing Transportation Management Associations to bring employer assistance to any interested employer in the state. An example of this is Capital Commuters, a pilot project for state employees to Montpelier. The goal of this plan is to reduce the parking pressures in downtown Montpelier and provide incentives for efficient commuting options. Incentives include 50% discounted bus passes, preferential parking for carpools and vanpools, and bike/walk "rewards." All registrants are eligible for the Guaranteed Ride Home Program, where VTrans will reimburse an individual for up to $70 for alternative transportation (taxi, rental car, bus) home in the event of an emergency.

Intercity Bus Service

VTrans has entered into partnerships with commercial bus services to bring more connectivity and travel options to the state. In addition to ongoing services provided by Greyhound, Megabus, and Yankee Trails, two new intercity routes were developed with Vermont Translines in 2014 to add service between Burlington and Albany, NY and between Rutland and White River Junction. Intercity bus ridership on VTrans supported routes has increased each year, including a 13% increase in SFY 2017. All intercity routes connect to national bus networks. All intercity service and routes can be found at the Go Vermont website or by calling 1-800-685-RIDE.

go! VERMONT
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MANCHESTER. Governor Phil Scott poses with Secretary of Transportation Joe Flynn and Department of Tourism and Marketing Commissioner Wendy Knight at the grand opening ceremony for the Vermont Shires Connector Amtrak Thruway service between Albany, NY and Bennington County.

Public Transportation Routes and Demand Response Service Areas

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Green Mountain Community Network (GMCN)
Donna Baker
dbaker@greenmtncn.org
P (802) 447-0477
F (802) 447-2550

Green Mountain Transit (CCTA/GMTA)
Mark Sousa
msousa@RideGMT.com
P (802) 223-7287
F (802) 223-6236

Marble Valley Regional Transit District (MVRTD; The Bus)
Ken Putnam
ken@thebus.com
P (802) 773-3244
F (802) 773-0840

Rural Community Transportation, Inc. (RCTI)
Mary Grant
marygrant.rct@gmail.com
P (802) 748-8170 x301
F (802) 748-5275

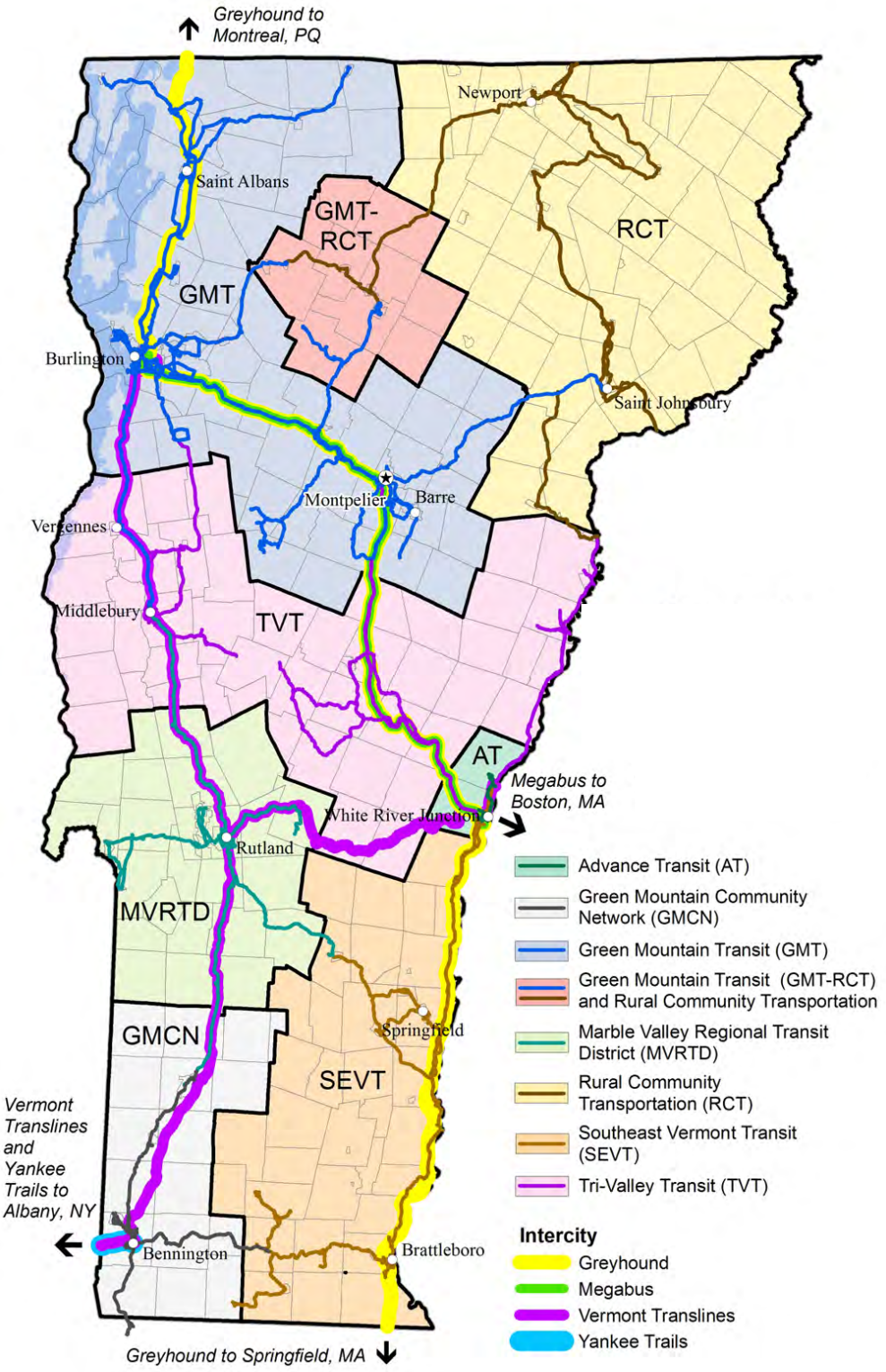
Southeast Vermont Transit - Current and Moover Division
Randy Schoonmaker
randys@moover.com
P (802) 464-8487
F (802) 464-0164

Tri-Valley Transit, Inc. (TVT) – ACTR and Stagecoach Divisions
Jim Moulton
jim@actr-vt.org
P (802) 388-1946
F (802) 388-1888

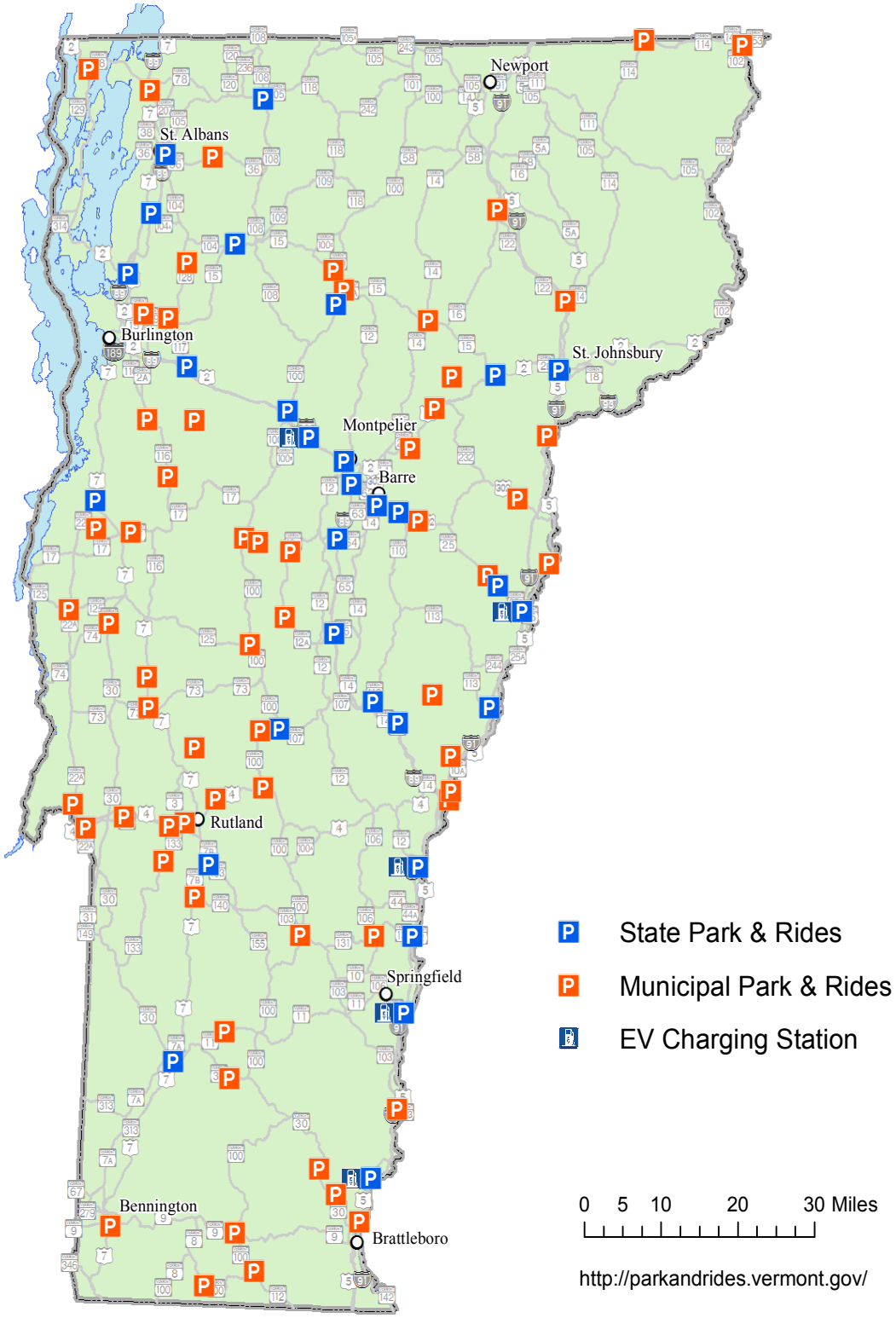
Intercity Bus Service Providers:

Vermont Translines
Info@vttranslines.com
(802) 888-7267
www.vttranslines.com

Greyhound Bus Lines
ifsr@greyhound.com
(800) 231-2222
www.greyhound.com



Park and Ride Locations

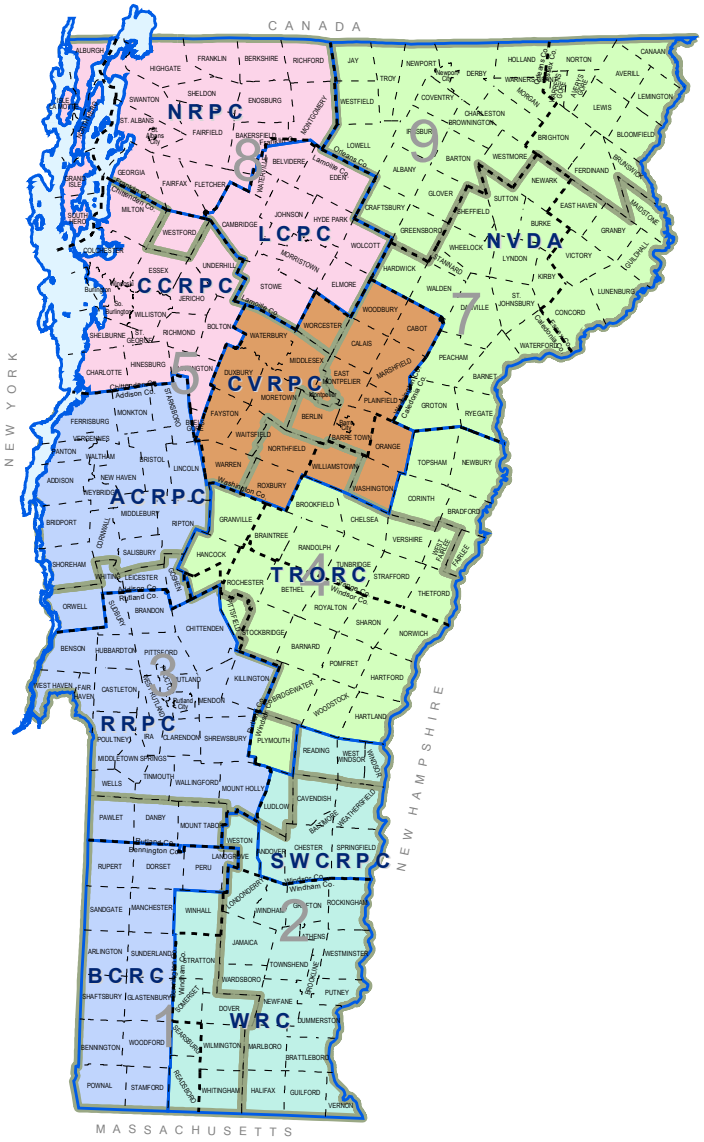


Regional Planning

Regional Planning

The Policy and Planning section coordinates and collaborates with all agency divisions, other state agencies, regional planning commissions, the public, and other stakeholders as it considers all modes of travel in the context of broader economic, land use, environmental, energy, and equity goals.

Through the Transportation Planning Initiative (TPI), VTrans provides grants to Vermont's 11 Regional Planning Commissions (RPCs) for transportation planning and to facilitate collaboration between municipalities and the agency.



Transportation Planning Coordinators

CCRPC, LCPC, NRPC
Amy Bell
(802) 828-2678, amy.bell@vermont.gov
CCRPC: Chittenden County Regional Planning Commission
LCPC: Lamoille County Planning Commission
NRPC: Northwest Regional Planning Commission

NVDA, TRORC
Matthew Langham
(802) 828-5578, matthew.langham@vermont.gov
NVDA: Northeastern Vermont Development Association
TRORC: Two Rivers-Ottauquechee Regional Commission

CVRPC
Zoe Neaderland
(802) 828-5748, zoe.neaderland@vermont.gov
CVRPC: Central Vermont Regional Planning Commission

SWCRPC, WRC
Jackie Cassino
(802) 272-2368, jackie.cassino@vermont.gov
SWCRPC: So. Windsor County Regional Planning Commission
WRC: Windham Regional Commission

ACRPC, BCRC, RRPC
Sommer Bucossi
(802) 828-3884, sommer.bucossi@vermont.gov
ACRPC: Addison County Regional Planning Commission
BCRC: Bennington County Regional Commission
RRPC: Rutland Regional Planning Commission

2017 Transportation Planning Initiative Objectives and Accomplishments

Cooperation & Coordination between VTrans, RPCs, and Municipalities	Conformance with Act 200 & Facilitation of Decentralized Decision-Making	Provide Transportation Planning Support to Municipalities
87 Transportation Advisory Committee (TAC) Meetings	**11** Regional Transportation Plans	**45%** of TPI Budget Spent on Local Technical Assistance
306 Counts: Traffic, Bike/Ped, Park and Ride	**41** Act 250 Hearings with Transportation Comments	**22** Scoping Studies Completed
184 Safety Forums, Standards, Road Foreman, Other Meetings	**22** Accelerated Bridge Project Meetings	**101** Inventories: Bridges, Culverts, Sidewalks, Signs

Aviation

The Aviation Program manages 90 runway lane miles at 10 state-owned airports in Vermont, providing a safe environment for users of the system, preserving the publicly-owned infrastructure, promoting aviation-related activities, and expanding travel opportunities.

VERMONT AVIATION

Students from the 2017 NSTI summer program participate in flight lessons with members of Vermont Aviation.

Airport Contact Information

STATE AIRPORTS

Caledonia County
Daniel Freeto
(802) 626-3353

Edward F. Knapp
John Roberti
(802) 223-2221

Franklin County
Cliff Coy
(802) 868-2822

Hartness
Larry Perry
(802) 886-7500

John H. Boylan
Jennifer Davis
(802) 272-3574

Middlebury
Cisco Herrera
(802) 505-8479

Morrisville-Stowe
Cody Long
(802) 253-2332

Newport
Dan Gauvin
(802) 334-5001

Rutland Southern Vermont Regional
Chris Beitzel
(802) 786-8881

William H. Morse
Rob Luther
(802) 595-5830

MUNICIPAL AIRPORTS

Burlington International
Kelly Colling
(802) 863-2874

PRIVATE AIRPORTS

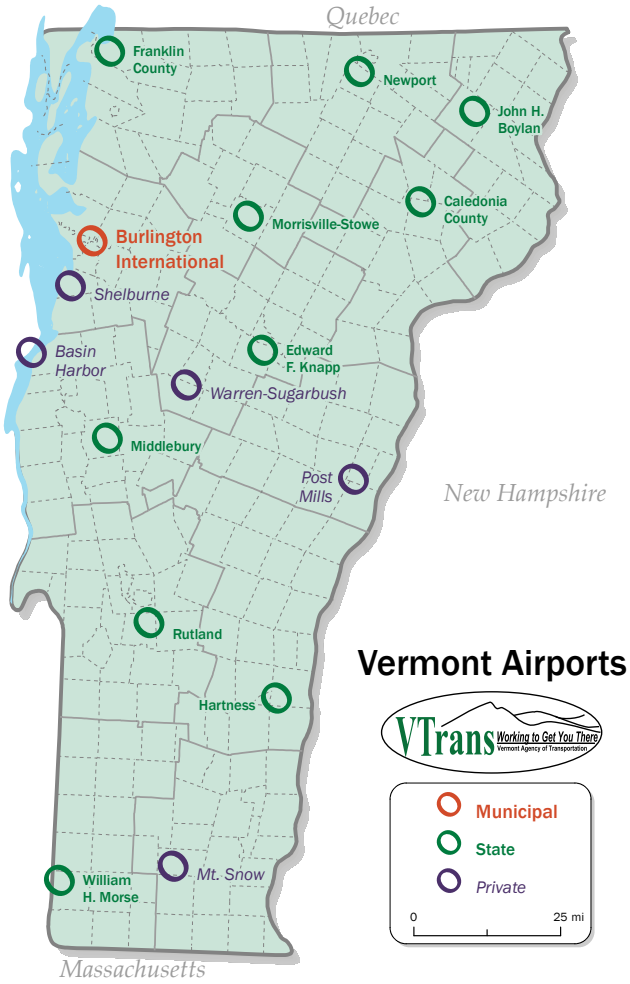
Basin Harbor
Robert Beach, Jr.
(802) 475-2311

Mt. Snow
Jim Barnes
(802) 457-3151

Post Mills
Brian Boland
(802) 333-9254

Shelburne
Ray Magee
(802) 985-2100

Warren-Sugarbush
Rick Hanson
(802) 496-2290



Rail

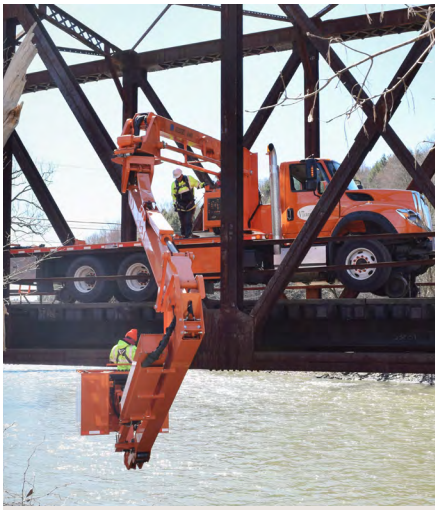
Passenger Rail Service

The State of Vermont partners with Amtrak to provide intercity rail service for Vermonters and visitors to the Green Mountain State.

The **Amtrak Vermonter** runs on the New England Central Railroad (NECR/GWI) from Saint Albans to Brattleboro, continues through Massachusetts and Connecticut, and then down the Northeast Corridor to New York City and Washington, DC. To learn more visit: www.amtrak.com/vermonter-train

Amtrak's Ethan Allen Express runs on the Clarendon and Pittsford Railroad (CLP) from Rutland to Whitehall, New York, and from there continues south to Albany and on to New York City. To learn more visit: www.amtrak.com/ethan-allen-express-train

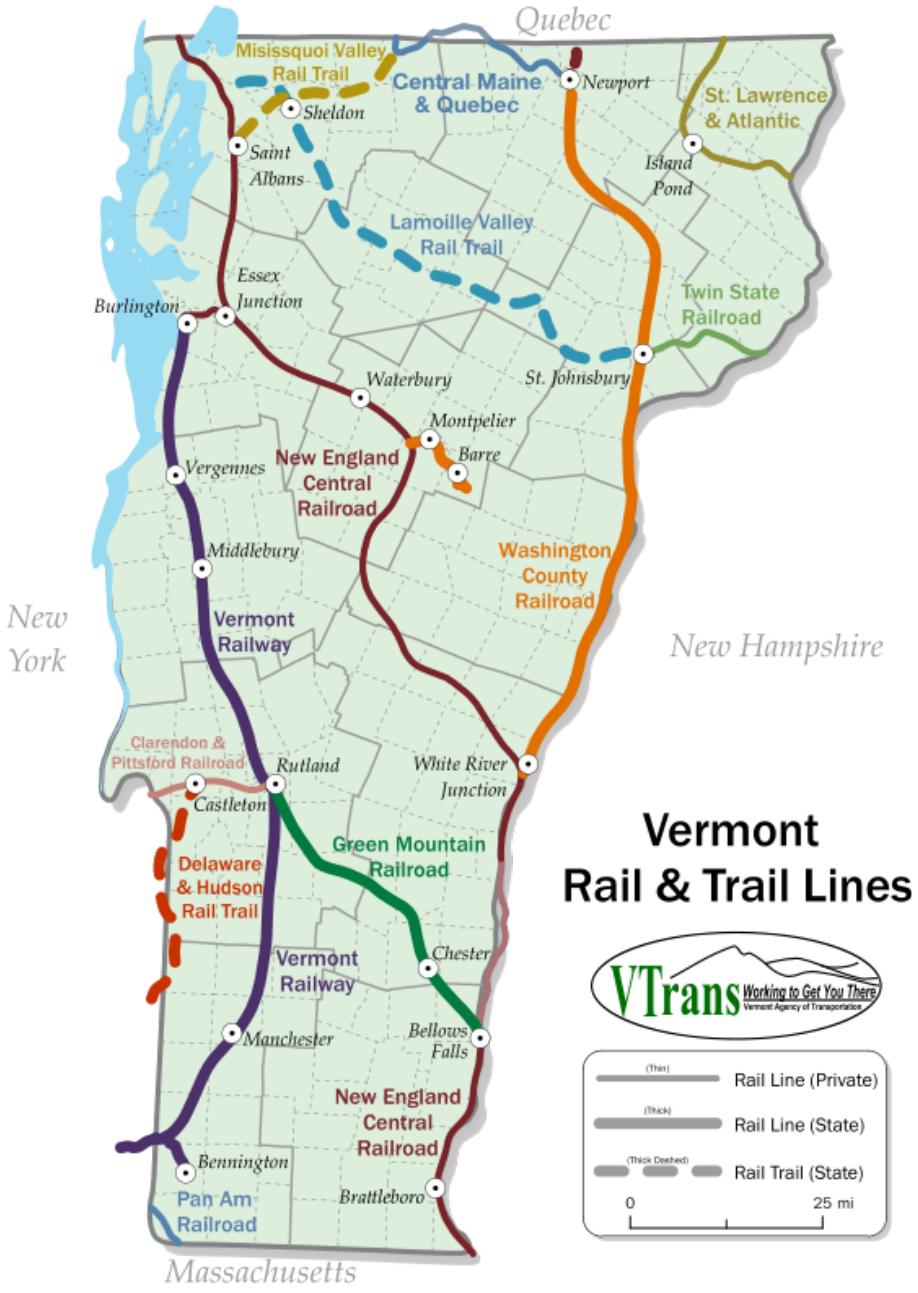
Amtrak Vermonter or Ethan Allen Express reservations:
1-800-USA-RAIL (1-800-872- 7245)
TDD/TTY (1-800-523-6590)
www.AMTRAK.com



Agency maintenance specialists inspect a Vermont Rail bridge.

FY2017 Ridership and Revenue

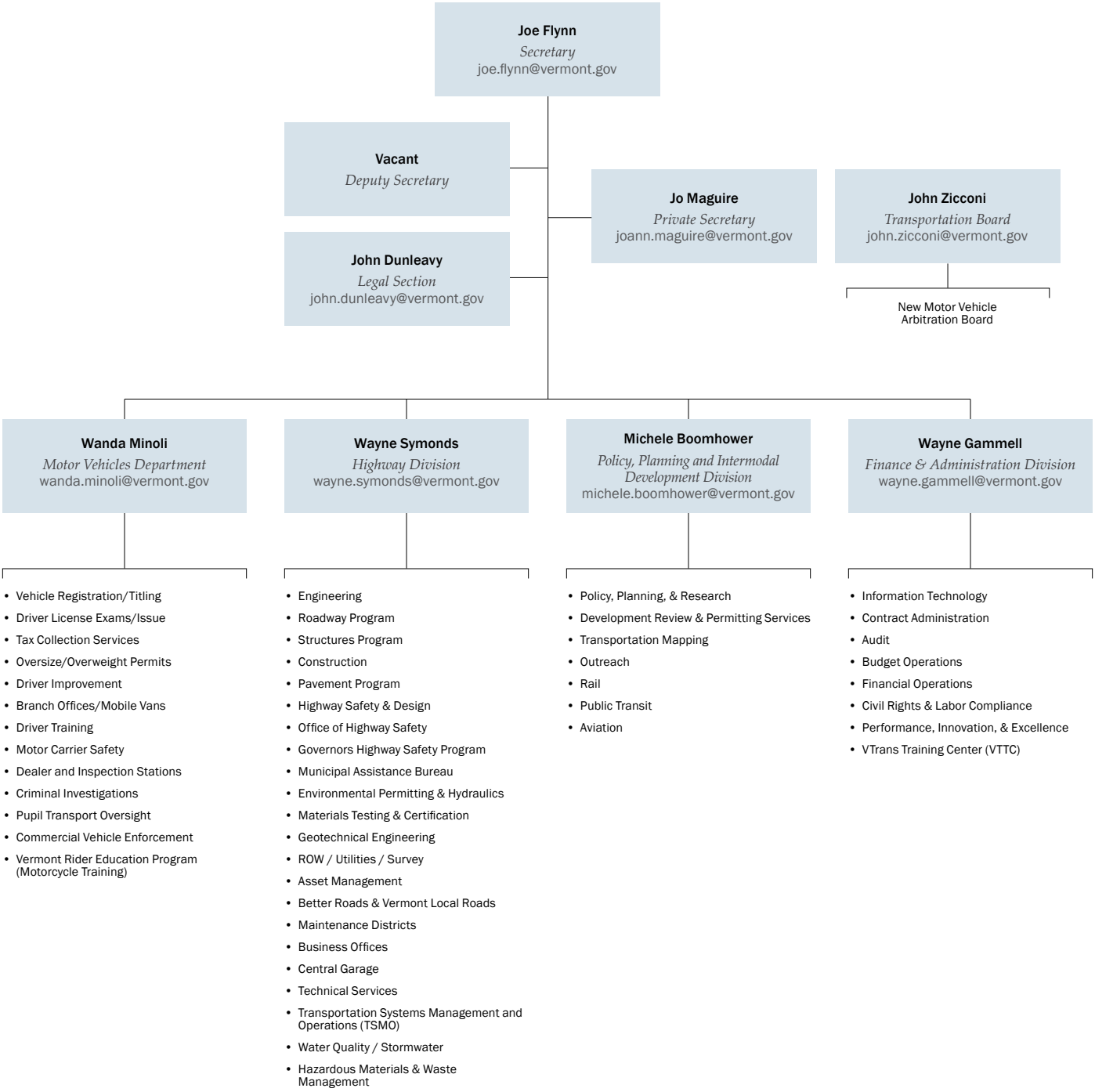
Lines	Ridership	% Change	Revenue	% Change
Vermonter	95,796	-+7.3 %	$6,350,773	+11.1
Ethan Allen Express	49,950	-1.5%	$2,814,180	-2.1%



VTRANS FACT BOOK 2018

Agency Organizational Chart

Agency of Transportation Organizational Chart



VTRANS FACT BOOK 2018

Boards and Councils

Boards and Councils

Transportation Board

John Zicconi
Executive Secretary

Vanessa Kittell
Chair

David Coen
Richard Bailey
Lawrence Bruce
Wendy Harrison
Timothy Hayward
T. Faith Terry

Motor Vehicle Arbitration Board

Pauline Liese
Lemon Law Administrator
(802) 828-2943
LemonLaw@vermont.gov

Mitchell Jay, Chair
New Car Dealer Member

David Baker, Vice-Chair
Technician Member

David Curtis
Citizen Member

Peter Hood
Citizen Member

John Manahan
Citizen Member

Alternates
Vacant
Technician Member

Gina Germond
Citizen Member

Michael Loschiavo
New Car Dealer Member

Public Transit Advisory Council

Joe Flynn
Secretary, Agency of Transportation
Michele Boomhower, *Director of Policy, Planning & Intermodal Development* (VTrans) is his designee

Elaine Haytko
Vermont Public Transit Association

Mary Grant
Rural Community Transportation

Jim Moulton
Addison County Transit Resources

Donna Baker
Green Mountain Community Network

Mark Sousa
Green Mountain Transit

Al Gobeille
Secretary, Agency of Human Services
Jamie Fisher is designee

Lindsay Kurrle
Secretary, Department of Labor
Michael Harrington is designee

Mike Schirling
Secretary, Agency of Commerce and Community Development
Richard Amore is designee

Peter Johnke
Vermont Center for Independent Living

Lee Cattaneo
Council of Vermont Elders (COVE)

John Sharrow
Mountain Transit

Chip Desautels
Premier Coach

Katherine Otto
Southern Windsor County Regional Planning Commission

Meredith Birkett
Village Manager, Town of Johnson

Bethany Whitaker
Citizen, Vermont Energy Investment Corp.

Senator Jane Kitchel of Danville

Rep. Mollie Burke of Brattleboro

Aviation Council

Joe Flynn
Secretary, Agency of Transportation, Chair

Paul Carroccio
Kelly Colling
George Coy
Steven Dolgin
Robert Flint
James MacKay II
Barbara Murphy
Janice Peaslee

Rail Council

Joe Flynn
Secretary, Agency of Transportation, Chair

David Allaire
Christopher Andreasson
Charles Baker
Joann Erenhouse
Carl Fowler
Charles Hunter
Charlie Moore
Rick Moulton
Jeff Munger
Arthur Whitman
David Wulfson
Representative Clem Bissonnette

Vermont Traffic Committee

Joe Flynn
Secretary, Agency of Transportation

Wanda Minoli
Interim Commissioner, Department of Motor Vehicles

Tom Anderson
Commissioner, Department of Public Safety

VTRANS FACT BOOK 2018

Snow and Ice Control Plan

FOR STATE AND INTERSTATE HIGHWAYS

The Vermont Agency of Transportation (VTrans) is responsible for nearly 3,313 miles of roads and 2,655 bridges statewide, which equates to 6,626 snow-lane miles. Standing at the ready to battle winter weather are 275 dump trucks with plows and wings, 72 pickups with plows, and 68 loaders and graders, along with 375 licensed department operators.

Purpose and need

The purpose of this plan is to define the operational procedures and best management practices (BMPs) for performing winter maintenance activities on Vermont's highways. It defines the levels of service that the Vermont Agency of Transportation (VTrans) will strive to provide, and gives guidance to help minimize leaching of salt-laden and other winter maintenance material runoff from state-owned paved surfaces and storage facilities into the ground or into surface waters.

Since storms vary dramatically across the state, this Snow and Ice Control Plan (SIC Plan) is intended to be flexible. It is a guide structured to fit average conditions, but should still be able to accommodate the wide variety of conditions that will be encountered by maintenance crews.

Level of service: General information

VTrans Maintenance District snow and ice control operations are limited by the resources (budget, personnel, equipment and materials) available for winter maintenance. Consequently, VTrans' SIC Plan calls for "safe roads at safe speeds", and not "bare roads." This means that roads during a storm are maintained to allow safe travel at safe speeds, but that drivers should expect to see snow on the roadway during a storm. Most travel takes place during the day, so the majority of VTrans resources are used between 4 am and 10 pm. During those hours, some plow routes can take as long as 2 to 2 1/2 hours to cover. Motorists should anticipate reduced coverage and varying road conditions at night, and should drive accordingly.

Corridor priorities

Four color-coded levels of service have been established and are shown on the "Corridor Priority Map". Priorities are based on winter traffic volumes, roadway classification, and expected truck traffic. Critical areas such as intersections, sharp curves, and hills may have to be treated differently to retain proper mobility and safety regardless of the corridor designation assigned to the balance of the route. Note that during off hours, resources may be shifted to prioritize coverage on higher priority routes.

Corridor priority 1

Interstate and limited access highways (orange roads)

Winter maintenance operations will generally be performed between 3 am and 10 pm. Materials noted under Section E will be applied as needed to keep the roads open for traffic and provide a safe surface on which to operate, though road surface may be snow covered at times during the storm. After the storm has subsided, bare travel lanes shall be provided as soon as practical and on these roads before all others. In most cases, this will occur within four daylight hours. A bare pavement shoulder to shoulder will be provided as soon as practical. Travelers are reminded to reduce speed and drive according to conditions.

Corridor priority 2

High traffic highways & truck routes (blue roads)

Winter maintenance operations will be performed between 4 am and 10 pm. Materials noted under Section E will be applied as needed to keep the roads open for traffic and provide a safe surface on which to operate, though road surface may be snow covered at times during the storm. After the storm has subsided, a bare pavement shoulder to shoulder will be provided as soon as practical. Travelers are reminded to reduce speed and drive according to conditions.

Corridor priority 3

Medium traffic highways (green roads)

Winter maintenance operations will be performed between 4 am and 10 pm. Materials noted under Section E will be applied as needed to keep the roads open for traffic and provide a safe surface on which to operate, though road surface may be snow covered at times during the storm. During the next regular working day or after the storm has subsided, a bare pavement shoulder to shoulder will be provided as soon as practical. Travelers are reminded to reduce speed and drive according to conditions.

Corridor priority 4

Low traffic highways (yellow roads)

Winter maintenance operations will be performed between 4 am and 10 pm. Materials noted under Section E will be applied as needed to keep the roads open for traffic and provide a safe surface on which to operate. Road surface may be snow covered at during and immediately following the storm. During the next regular working day after the storm has subsided, one third bare pavement, in the middle of the road, will be provided as soon as practical. As soon thereafter as practical, a bare pavement shoulder to shoulder will be provided. Travelers are reminded to reduce speed and drive according to conditions.

Performance measurement: How are we doing and how do we know?

Performance during and immediately following individual storm events will be monitored by the District General Manager and the Area Maintenance Supervisors to ensure VTrans is providing safe roads at safe speeds and performing snow and ice removal in accordance with established Corridor Priorities noted.

The following information will be reviewed by the Director of Maintenance and Operations, the Maintenance Transportation Administrator (MTA), State Maintenance Engineer (SME) and the District Transportation Administrators ("DTAs") to gauge program effectiveness:

- Material application rates
- Vehicle speeds during and after storm events (Mobility)
- Condition of travel lanes and shoulders during and after storm events (level of "Grip")
- Storm data -precipitation, air temperature, road surface temperature, wind speed, etc. (Winter Severity Index)
- Plowing frequency

Seasonal performance will be measured by monitoring material usage, labor costs, and equipment costs with respect to the number of lane miles maintained and the number of storm events addressed. Assessments will be made based upon consideration of the resources used versus the winter severity encountered, as well as through comparisons between adjacent and nearby geographical areas that have encountered similar winter conditions.

VTrans Maintenance and Operations Bureau will publish the winter maintenance data in the VTrans Fact Book each spring which summarizes the previous winter, and VTrans' performance according to the above mentioned metrics.

Materials & application procedures

The materials in this section are those used by VTrans for snow and ice control on highways throughout Vermont. This section describes the general purpose of each material, the typical use that is expected under normal conditions, and the application procedure. Choice of materials will depend on experienced consideration of the following variables: pavement temperature, nature of the particular snow and ice event, forecast storm conditions, air temperature and wind velocity, traffic volume, time of day/year, and the availability of resources.

Procedures for determining application rates and methods will be the responsibility of District Personnel based on this SIC Plan.

Salt (NaCl)

Unless otherwise designated for specific routes, salt is the primary material used on the majority of roads maintained by VTrans. Salt is used to prevent the bonding of snow and ice onto the pavement surface, and to melt snow and ice that cannot be removed by plowing. Unless salt is pre-wetted with a liquid having a lower working temperature than sodium chloride, the lowest effective working temperature is approximately 15 degrees F.

Application Rates shall normally be selected from the "Salt Application Quick Reference Guideline" and shall be based upon the pavement temperature, snow-ice conditions encountered, and anticipated trends.

Salt Application Quick-Reference Guidelines *(**Double these rates for centerline applications**)*

Pavement Temp. Range	Application Rate (#/LM)	Pre-Wet Material	Comments
Above 32˚	0 to 100	Salt Liquid or Blend	A little salt goes a long way when temperatures are near freezing.
25˚ to 32˚	100 to 200	Salt Liquid or Blend	Salt is very effective here. Pre-wetting with a blend will allow lower application rates.
20˚ to 25˚	200 to 300	Salt Liquid, Chemical, or Blend	Salt effectiveness is dropping off in this range. A blend or straight chemical will help.
15˚ to 20˚	300 to 400	Chemical or Blend	Pre-wetting is especially important. Liquids will provide the extra boost needed.
15˚ or Below	Snow is usually dry and blowing in this range. If no ice or pack exists, plow only—DO NOT APPLY MATERIAL.		If necessary, spot treat icy patches with abrasives. If glazing occurs on high-volume, high-speed, sand will not last and higher salt applications, with pre-wetting, will be needed.

General Notes

- Application rates should be on the lower end when temperatures are on the higher side of the range or remaining steady. Falling temperatures, and temperatures on the lower side of the range, will require applications on the higher side, and possibly in the next range if dropping rapidly.
- In any of the ranges, if the snow is dry and blowing off the roadway, do NOT apply material.
- Pre-wetting under wet storm conditions is not required. In cases where the only pre-wetting liquid available is a high-performance chemical, it is better to save those products for the drier and colder conditions.
- This is a guideline only. Application rates will vary based on climatic conditions experienced in the field, as well as corridor priority.

Winter Sand

Winter sand shall consist of coarse, clean, sharp sand or other granular material. Sand is generally used to provide traction at intersections and corners during icy conditions. When conditions warrant, salt may be mixed with sand to break the bond between the ice pack and road surface.

Sand should generally be used in the following situations:

- On hills, curves and intersections where the supervisor determines that temporary traction is needed
- When pavement temperatures are too low for salt to work properly
- When wet pavements exist on lower volume corridors and falling nighttime temperatures may cause glazing.

Excessive use of sand can have many detrimental impacts to the road and environment, and sand has no melting capabilities. Sand can act as an insulator to snow and ice formed on the roadway making it harder to establish bare pavement following the storm. Sand also can create roadway drainage issues, clog ditches and receiving waters, and is expensive to clean up in the spring. Accordingly, the use of winter sand is generally minimized.

Liquids

A variety of liquids are used to either "pre-wet" solid materials that are applied from the plow trucks or to "anti-ice" the highways in advance of a storm event. Following are descriptions of the types of liquids used by VTrans, and descriptions of the "anti-icing" and "pre-wetting" process.

Salt Liquid

Salt liquid is a 23% solution of salt in water. It can be used to either "pre-wet" solid materials that are applied from the plow trucks or to "pre-treat" the highways in advance of a storm event. However, unless salt liquid is mixed with additives, the effective working temperature is the same as salt in its solid form—approximately 15 degrees F or greater.

Salt Application Rates vs. Miles You Can Treat

Application Rate (Pounds Per Lane Mile)

Number of Tons	100	150	200	250	300	350	400
1	20.0	13.3	10.0	8.0	6.7	5.7	5.0
2	40.0	26.7	20.0	16.0	13.3	11.4	10.0
3	60.0	40.0	30.0	24.0	20.0	17.1	15.0
4	80.0	53.3	40.0	32.0	26.7	22.9	20.0
5	100.0	66.7	50.0	40.0	33.3	28.6	25.0
6	120.0	80.0	60.0	48.0	40.0	34.3	30.0
7	140.0	93.3	70.0	56.0	46.7	40.0	35.0
8	160.0	106.7	80.0	64.0	53.3	45.7	40.0
9	180.0	120.0	90.0	72.0	60.0	51.4	45.0
10	200.0	133.3	100.0	80.0	66.7	57.1	50.0

Lane Miles You Can Treat

Chemical Additives

Chemical additives are used to pre-wet the solid materials that are applied by the plow trucks to lower the effective working temperature of salt and to help keep the solid materials on the road during the application process. Examples of such chemicals may include magnesium chloride (MgCl2), calcium chloride (CaCl) and a number of proprietary products. Chemical additives shall include a corrosion inhibitor, and are generally less corrosive than salt. Chemical additives should be added to salt liquid when road temperatures are lower than 15 degrees F..

Anti-icing

For anti-icing with salt liquid, the application rates per lane mile may vary when pavement temperatures *during the storm* are anticipated to be 15 degrees F or greater. Application will generally occur on designated routes 6 to 8 hours prior to the projected start of the storm, however, up to 12 hours may be permissible based on timing of the storm. Anti-icing may also be used to spot treat bridge decks and other problem areas located on any priority corridor whenever weather forecasts indicate the possibility of glazing.

When anti-icing the roads with a blend, application rates may be cut back. Due to concerns associated with proper timing and effectiveness of anti-icing activities, as well as a desire to reduce salt usage, we reserve anti-icing for very special circumstances.

Pre-wetting

Pre-wetting is the application of liquids onto solid materials. In general, salt liquid shall normally be used when the pavement temperatures are above approximately 15 degrees F and chemical additive or blend shall be used when below 15 degrees F. Pre-wetting is the preferred and typical liquid application method. Pre-wetting allows the salt to work immediately and reduces the loss of salt to "scatter and bounce," where up to 30% of the dry salt can be lost to the side of the road and ditches.

Equipment

Washing Equipment

Snow and ice control equipment are to be thoroughly washed during regular working hours as soon after use as practicable. Particular attention is to be paid to the areas of equipment in contact with sand, salt and liquid chlorides. Truck washing will normally be accomplished outdoors in designated areas.

Loads

When trucks are loaded with salt in advance of performing winter maintenance activities, the load size shall not exceed a level-load. If the storm does not occur, or if the material is not applied, the truck(s) loaded in advance shall be unloaded and washed out the following work day..

Spreaders

Each spreading unit shall be calibrated annually, and after any spreader or hydraulic maintenance, to insure that selected rates of application are attained. The application rates shall be confirmed as being transmitted by the trucks' Automatic Vehicle Location (AVL) system and validated as accurate.

Operations

Mailboxes and Other Structures Within the Highway Right-Of-Way

Occasionally mailboxes or other devices are damaged by snow plowing operations due to poor visibility, the mailbox being buried in a snow bank or the weight/ volume of the snow being plowed.. VTrans is not responsible for damage and does not repair, replace or re-erect boxes that are located within the highway right-of-way unless physically struck by a VTrans plow truck. In these cases, VTrans will replace the mailbox at no cost to the property owner with a generic United States Post Office approved box and basic post if necessary.

Widening or Pushing Back Snow Banks

Following storms with heavy snowfall or when several storms result in substantial snow banks, VTrans will undertake a roadway widening procedure, which will push back the snow banks. This is generally done during normal working hours, and is a necessary operation because it accomplishes the following:

a) Provides room for future snow storage;

b) Reduces or prevents melted snow from running out onto the roadway pavement and creating icing conditions;

c) Increases safe sight distance at intersections and driveways;

d) Maintains a uniform line by eliminating protrusions at driveways and intersections.

There is no practical way to prevent depositing snow in previously cleaned driveways or walkways.

Sidewalks

The maintenance of the sidewalks, including snow removal, is the responsibility of the local community. In addition, in those communities where on-street parking is permitted, snow removal from the parking areas, including plowing and/or hauling away, is a local responsibility.

State and federal regulatory oversight

Winter Maintenance Practices located within designated National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) areas, including Watersheds of Sediment Impaired Waterways, and in the Lake Champlain Watershed Basin

Winter maintenance activities in these areas have and will continue to be regulated and addressed under the VTrans MS4TS4 (Transportation Separate Storm Sewer System) Stormwater Management Plan. Please refer to the VTrans Operations Environmental Program web site for more information regarding the above referenced designations as they may change from time to time and for information regarding the VTrans MS4 Stormwater Management Plan.

Winter Maintenance Practices: Statewide Implementation and Jurisdiction

VTrans SIC Plan has and will continue to be implemented across the state and will not be subject to ANR jurisdiction outside the designated MS4 & Lake Champlain Basin areas. The Operations Environmental Program will forward to the state Agency of Natural Resources (ANR) the SIC Plan as often as updates are made.

Best management practices, tracking and reporting

Best management practices associated with winter maintenance activities in conformance with the provisions of the VTrans SIC Plan include, but are not limited to:

1. VTrans shall disseminate the SIC Plan statewide to employees involved in the application and storage of winter snow and ice control materials and train such employees in the proper performance of these standards. The Maintenance and Operations Environmental Program Manager will ensure that this information is posted on the VTrans Web Site, kept current, and made available to ANR.

2. Low salt and no salt roads (zones) will be signed in the field accordingly.

3. Weekly internal reporting of salt/sand usage will be completed by Maintenance and Operations Bureau staff commencing on the first week of November and terminating 26 weeks later, typically with the last week of April. VTrans shall make note of any single de-icing salt application in excess of 800 pounds per two-lane mile and report such incidents as part of the weekly reporting. The Director of Maintenance and Operations will make this information available to ANR upon request.

4. VTrans shall fully cover with impervious material all bulk salt storage areas under their control to reduce the amount and concentration of salt to the runoff of stormwater from these storage areas. All bulk salt storage shall be situated on an impervious material so as to minimize leaching of salt-laden runoff into the ground.

5. VTrans shall locate sand piles at District Maintenance Facilities in areas that will not result in sediment-laden runoff into surface

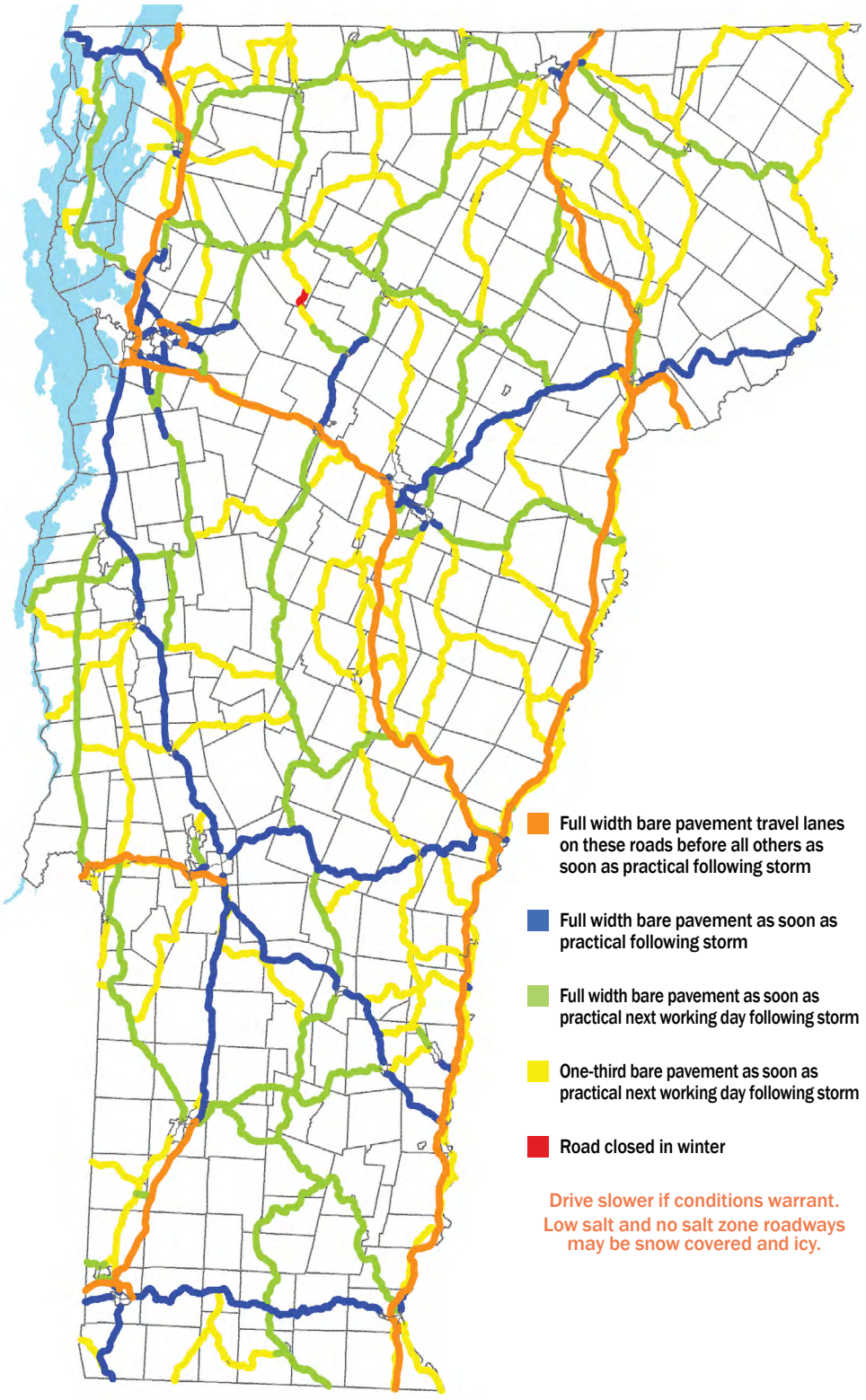
waters. If sand piles are located in close proximity to surface waters, then VTrans shall install adequate erosion prevention and sediment control practices to ensure sediment-laden runoff will not impact surface waters.

6. When it is desirable to charge sand piles with salt to prevent freezing (resulting in mixes or blends), the percentage of salt in the pile shall not exceed 5%.

7. VTrans will implement these activities on a statewide basis in accordance with the protocols and best management practices established within the MS4 and Lake Champlain Basin areas for seamless operational efficiencies across the state and to support the stated purpose of this SIC Plan. The Maintenance and Operations Environmental Program will report on these tasks as a part of each annual MS4/TS4 report to ANR.

8. Nothing in this SIC Plan shall preclude the agency from utilizing experimental and new technologies to achieve higher efficiency in a cost effective and environmentally sensitive manner. VTrans actively supports innovation and promotes the idea of finding new and better ways to reach our goals.

Corridor Priorities (Effective November 2017)



Projects Completed in 2017

Rail Maintenance Projects Completed in 2017

Project Name & Number	Line	DOT Crossing #	Project Type	Asset
Burlington	VTR Northern	837-101B	Maintenance	Crossing
Charlotte	VTR Northern	851-393J	Maintenance	Crossing
Chester	GMRC	859-814V	Maintenance	Crossing
Chester	GMRC	859-812G	Maintenance	Crossing
Clarendon	VTR B&R	851-257J	Maintenance	Crossing
E. Dorset	VTR B&R	851-218T	Maintenance	Crossing
Fair Haven	CLP	248-943X	Maintenance	Crossing
Richmond	NECR	247-685S	Maintenance	Crossing
Rockingham	GMRC	859-803H	Maintenance	Crossing
Rutland City	VTR B&R	851-279J	Maintenance	Crossing
Salisbury	VTR Northern	851-344M	Maintenance	Crossing
Shrewsbury	GMRC	859-884K	Maintenance	Crossing
Shelburne	VTR Northern	851-409D	Maintenance	Crossing
St. Johnsbury	WACR	850-931K	Maintenance	Crossing
Wallingford	VTR B&R	851-234C	Maintenance	Crossing

Rail Standard and Emergency Projects Completed in 2017

Project Name & Number	Line	DOT Crossing #	Project Type	Asset
Barnet-Orleans RRE4178C	WACR		Emergency	Slope
Barre City STP 0261(42)	WACR M&B	837-345K	Programmed Project	Crossing
Brandon STP 2033 (27)	VTR Northern	851-326P	Programmed Project	Crossing
Burke STRB16(4)	WACR		Immediate Attention	Slope
Ferrisburgh RREW001D	VTR Northern		Emergency	Culvert
Leicester VTRY(13)	VTR Northern		Programmed Project	Track
Lyndon WCRL(4)	WACR		Programmed Project	Bridge
Montpelier RREW12T	WACR M&B		Emergency	Bridge
New Haven RREW001A	VTR Northern		Emergency	Culvert
New Haven RREW001B	VTR Northern		Emergency	Culvert
New Haven RREW001C	VTR Northern		Emergency	Culvert
New Haven STP 2035(19)	VTR Northern	851-364Y	Programmed Project	Crossing
Pittsford HPP ABRB(9)	VTR Northern		Programmed Project	Bridge
Rutland-Burlington VTRY(9)	VTR Northern		Programmed Project	Track
Rutland-Leicester FRTII(024)	VTR Northern		Programmed Project	Track
Vergennes VTRY(14)	VTR Northern		Programmed Project	Track

Highway Projects Substantially Completed in 2017

Project Name & Number	Route Number	Description of Work
Barre City NH 2961 (2) & Barre City STP 2961 (1)	US 302, VT 14	Resurfacing the existing highway
Barre City NH 2961 (2) & Barre City STP 2961 (1)	TH 6	Retaining wall construction
Barre City NH 2961 (2) & Barre City STP 2961 (1)	TH 4	Bridge replacement
Berlin-BarreTwnSTP29431 Northfield-Willison STP29591BROKFLDSTP29601	VT 63	Resurfacing the existing highway
Bradford BF 0191(29)	25B	Bridge replacement
Brandon STP 2033(27)	VTR	Reconstruct at grade crossing, install new crossing signal system
Chelsea BHF 0169(9) & Chelsea BHF 0169(10)	VT 110	Bridge replacement
Colchester-Swanton IM SURF (56)	I89	Resurfacing the existing highway
Coventry STP 0113(66)	US5	Ledge stabilization
Danville-St. Johnsbury STP FPAV(9)	VT 2B	Resurfacing the existing highway
Duxbury BF 013-4(47)	VT 100	Bridge replacement
Essex Junc STP2956(1) Essex Junc NH2856(2) Colchester/Essex STPGSGNL(45)(REA	VT 2A	Traffic signal upgrades and other related items.
Granville STP SCRP(13)	VT100	Remove existing culvert, construct new precast culvert
GuilfordBF 0113(68)	I-91	Bridge replacement
Halifax ER STP 013-1(19)	VT 112	Install new culvert and slope stabilization
Hancock ER STP 0174(18)	VT 125	Replace existing undersized concrete box with a new precast structure
Hancock STP 2923(1)	ROUTE 125	Resurfacing the existing highway
Hartland STP FPAV(8)	VT12	Resurfacing the existing highway
Highgate STP SCRP(12)	VT 78	Install a new pipe, headwalls, wingwalls, slope stabilization
Huntington BF 0211(32)	TH 1	Bridge replacement
Jay BHF 0278(3)	VT 242	Bridge replacement
Ludlow BRF 025-1(42)	VT 103	
Ludlow STP DECK(39)	VT 100	Replace the existing bridge deck
Lyndon IM 091-3 (51)	I91	Ledge stabilization
Lyndon STPG SGNL (48)	US 5	Install mast arms with traffic signal system
Lyndon WCRL (4)	WCRL	Bridge rehabilitation
Middlebury EWP3(1) (CMGC)	VT30 (TH2) & TH8	Remove and replace BR 102&2 w/ temp bridges
Middlebury-Ferrisburgh NH SURF(55)	US 7	Resurfacing the existing highway
Milton IM 089-3(66)	I-89	Bridge replacement
Milton IM 089-3(76)	I-89	Construction of a new U-turn
Morristown STPG SGNL(47)	VT 100	Installation of traffic signal system

Highway Projects Substantially Completed in 2017, continued

Project Name & Number	Route Number	Description of Work
Orwell STP DECK(41)	VT 73	Replace existing bridge deck
Pittsford HPP ABRB(9)	VTRW	Bridge rehabilitation
PlymouthER 0149(6)	100A	Resurfacing the existing highway
Randolph-Braintree STP FPAV (7)	VT12	Resurfacing the existing highway
Richmond BF 0284 (28)	US 2	Bridge replacement
Rochester ER STP 0162 (21)	VT 73	Resurfacing the existing highway
Rockingham-Hartford IMG SIGN(54)	I-91	Remove existing signs and posts and install new signs
Rockingham-Springfield STP 2962 (1)	US 5	Resurfacing the existing highway
Roxbury-Northfield STP FPAV(6)	VT12	Resurfacing the existing highway
RyegateSTP CULV(10)	WACR	Bridge replacement
South Burlington IM SCRP(21)	I189	Rehabilitate culvert, and slope stabilization
St. Albans STP FPAV(1) ST. ALBANS STP FPAV(2)	36 38	Resurfacing the existing highway
St. Albans Town BF 0279 (5)	VT 104	Bridge replacement
St. Johnsbury BF 7000(20)	2B	Bridge replacement
St. Johnsbury BRO 1447(30)	TH 371	Bridge replacement
Statewide Northeast Region STPG MARK (306)	MULT	Application of center, edge and lane lines
Statewide Northwest Region STPG SIGN(58)	VT 36, VT 104	Remove existing signs and posts and install new signs
Statewide Southeast Region STPG MARK(308)	STATEWIDE	Application of center, edge and lane lines
Statewide Southwest Region STPG MARK(309)	STATEWIDE	Application of center, edge and lane lines
Strafford BF 0177(10)	TH 1	Bridge replacement
Townshend STP SCTT(1)	NA	Rehabilitate the Scott covered bridge (br45)
Wallingford ER CULV(39)	US 7	Replace exist. 24" & 30" diameter culvert
Waterbury IM 089-2(43)(RE-ADVERTISED)	I-89	Bridge replacement
Windsor-Hartford IM BPNT(13)	I-91	Cleaning and painting the existing structural steel
Winooski-Cambridge STPG SIGN(55)	VT 15	Remove existing signs and posts and install new signs

Municipally Managed Scoping Projects Substantially Completed in 2017

Project Name & Number	Description of Work
Burlington STP BP13(12)	Scoping of Main Street and Old North End bike/ped improvements.
Burlington STP BP15(17)	Scoping of bicycle/pedestrian safety improvements at intersection of Howard, South Winooski and Saint Paul Streets.
Burlington SSMG(75)	Develop a Flow Restoration Plan for Englesby Brook.
Charlotte CMG PARK(41)SC	Scoping for a park & ride facility near US7.
Charlotte STP BP15(14)	Study options for extending the Town Link Trail.
Dover STP BP15(11)	Scoping study for Segment C of the Dover Valley Trail along VT 100 from Stugger Road to South Access Road.
Jeffersonville (Cambridge) STP BP13(15)	Scoping study for bike/ped improvements in the Village.
Jericho STP BP15(21)	Scoping study for a multi-use path along the VT15 corridor between the villages of Riverside and Jericho Corners.
Killington STP BP15(15)	Scoping study to improve pedestrian safety on Killington Road.
Manchester STP BP13(18)	Scoping study for sidewalks along School Street, Memorial Avenue and adjacent to Manchester Elementary/Middle School.
Plainfield STP BP15(16)	Scoping study to complete the sidewalk network in the lower village of Plainfield.
Proctor STP BP14(22)	Scoping study to investigate a bicycle/pedestrian path to connect the town center with the Beaver Pond Recreation Area and the Pine Hill Carriage Trail.
Rochester STP BP14(15)	Scoping study for bike/ped improvements.
Sharon CMG PARK(42)SC	Scoping for expansion of the existing Park & Ride facility near I-89 Exit 2.
South Burlington SSMG(76)	Develop a Flow Restoration Plan for Bartlett Brook.
Swanton STP BP14(13)	Scoping study for connecting Missisquoi Valley Union School and western terminus of recreation path to existing sidewalk network.
Warren STP BP15(13)	Scoping study to determine the feasibility of a shared use path along the Sugarbush Access Road from Eurich Pond Road to Inferno Road.
West Rutland STP BP14(20)	Scoping study for a multi-use path.
Wolcott STP BP15(20)	North Wolcott Road bicycle/pedestrian scoping study.

Municipally Managed Construction Projects Substantially Completed in 2017

Project Name & Number	Description of Work
Barre City TAP TA13(4)	Shared use path along Smith Street connecting Blackwell Street to Berlin Street.
Barre Town STP EH11(1)	Sidewalk along Bridge Street.
Chester STP EH12(7)	Sidewalks along Main, Grafton and Maple Streets.
Colchester STP 5600(15)	Sidewalks along Barnes Avenue.
Derby Line STP EH12(6)	Sidewalk reconstruction along Caswell, Main and Highland Streets.
Hardwick STP LVHT(2)	Sidewalk along Main Street.
Highgate ST PRDP(172)	New park and ride facility.
Highgate TAP TA13(1)	Sidewalk and pedestrian safety improvements along Lamkin Street.
Jericho STP BP15(36)	RRFBs and other small pedestrian crossing improvements in Jericho Center.
Lake Champlain Byway SB VT10(002)	Construction of four bicycle rest areas along the Island Line in the Lake Champlain Islands.
Lake Champlain Byways SB VT11(001)	Construction of four bicycle rest areas along the Champlain Islands Bike Lane in Grand Isle County.
Panton ST PRDP(161)	New park and ride facility.
Putney TAP TA13(2)	Sidewalk along US5 from Kimball Hill Road to The Putney Friends Meeting House.
Rutland STP 3000(20)	Center Street Marketplace improvements.
Rutland City TAP TA15(5)	Sidewalk on the north side of Killington Ave. from Butterfly Ave. to Stratton Road.
Rutland Town ST BP16(23)	Sidewalk on Cold River Road.
Shelburne STP BP14(5)	Sidewalk along Route 7 from Shelburne Museum to Town offices, and along Falls Road near Laplatte Nature Park.
South Burlington TAP TA16(8)	Replacement of two undersized culverts to box culverts in Oak Creek Village.
South Burlington STP SDWK(10)	Sidewalk along VT116 (Hinesburg Road).
South Hero STP SHST(1)	Widening/paving of shoulders along TH2 (South Street) from Martin Road to Landon Road.
St. Albans City TCSP TCSE(16)	Sidewalks, lighting, street furniture along Lake Street from Federal Street to Main Street.
St. Johnsbury SB VT11(003)	Phase II improvements at the St. Johnsbury Welcome Center.
St. Johnsbury STP EH01(25)	Lighting, streetscape, signage, pavement markings and sidewalk on east side of Railroad Street.
Stowe STP 0235(12)	Information signs, kiosks installation and improvements to the existing information booth at the Smugglers Notch Gateway.
Stowe STP 0235(13)	Relocation of two sections of the Long Trail at Smugglers Notch.
Stowe STP 0235(20)	Loop Trail at the Notch Proper Trail and the Boardwalk Trail behind Barnes Camp.
Swanton-St. Johnsbury STP LVRT(5)	Installation of two pre-fabricated truss bridge spans over the Lamoille River.
Woodstock ST PRDP(145)	New park and ride facility.
Woodstock STP SRIN(44)	Sidewalk and pedestrian safety improvements along South Street.
Better Roads Projects	Municipal Mitigation projects at various locations statewide.
Williston STP SDWK(15)	Sidewalk along VT 2A
Windsor STP SRIN(22)	Sidewalk improvements along VT 44
Better Back Roads Projects	Municipal Mitigation projects at various locations statewide

Additional reports available from the Agency of Transportation include:

Vermont Strategic Highway Safety Plan
VTrans On-Road Bicycle Plan: Phase 1 Report
Vermont State Rail Plan
Public Transit Route Performance Reviews
Annual Report to the State Aviation Council
Tri-State Performance Measures Annual Report

http://vtrans.vermont.gov/docs

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