

PLANNING: Optimize the future movement of people and goods through corridor management, environmental stewardship and customer service

Inventory and assess the condition of all transportation assets

Initiatives and successes in 2007:

- VTrans has completed the development of the four modal policy plans: the State Rail and Policy Plan, the Vermont Pedestrian & Bicycle Policy Plan, Vermont's Public Transportation Policy Plan and the Airport System and Policy Plan. These policy plans provide the tools to begin employing asset management principles, including performance measures, to better manage these state assets and systems.
- Regional Planning Commissions, in close collaboration with VTrans through the Transportation Planning Initiative, have completed inventories of locally owned bridges, culverts, and assessments of road networks. These inventories help communities with asset management principles, including performance measures, to better manage their local assets and systems.



Inspection of transportation assets is an ongoing activity



Maintenance projects are chosen after a careful analysis of all transportation assets

What is Asset Management?

Simply put, asset management is putting limited transportation dollars to work where they do the most good. That means maintaining an aging transportation infrastructure before it becomes unusable. This is common sense, but it is easier said than done, and requires balancing of many competing interests. Departments must consider tradeoffs between paving, bridge, new highway, rail, airports, park & ride lots and more.

Good stewardship of transportation assets requires that VTrans invest limited dollars where they best preserve our transportation system. The Agency works continually with the Regional Planning Commissions and the Chittenden County Metropolitan Planning Organization (MPO) to make selections through the use of a quantitative scoring mechanism which prioritizes competing projects.

The process begins by RPCs/MPO prioritizing all state transportation projects in their area. These priorities are consolidated and given to VTrans program managers to factor into agency priority scores. VTrans is in the third year of driving the annual budget based on these scores. The scores consider factors such as the asset condition, safety, traffic volume, transportation corridors, and more.

After scoring potential projects, VTrans program managers develop a prioritized draft list of projects for the next budget year. The managers explain the projects to a VTrans Budget Committee and describe how the projects will maintain and improve transportation and services in Vermont. Selecting the most beneficial projects is crucial. Overall, the process is accepted by stakeholders, and VTrans continues to improve the scoring and prioritization methods. This approach balances VTrans engineering analysis with local input. It seeks to achieve fairness when allocating limited funding across asset classes.

Prioritizing, selecting and accomplishing projects are important; however, VTrans must also measure the effect of our decisions and make adjustments where necessary. That analysis is done through performance measures and associated goals for key assets such as pavements and bridges. The greatest challenge is to find performance targets that are acceptable to the public but are still affordable. For example, it would be ideal to have excellent pavement throughout the entire state; however, that must be balanced with the available funds and competing demands.

Strictly defined, transportation asset management is a tool for making transportation investments in a way that maximizes the value of existing transportation infrastructure, including the ability to predict asset conditions under different funding levels. Electronic databases and computer models are usual features of an asset management system. A broader definition includes all transportation investment, and the ability to do comparative scenarios with different funding levels.

Align asset management target performance levels with financial resources

Initiatives and successes in 2007:

Small Culvert Rehabilitation

Project Purpose: The State of Vermont has limited funding to repair, construct and maintain its transportation infrastructure. The State's highway system is aging, and is experiencing an increase in traffic and freight volume. In order to maintain our infrastructure, we must preserve our existing assets.

Vermont's small culvert rehabilitation projects focus on culverts less than six feet in diameter. Many of these culverts are failing or are in poor condition, creating unsafe driving conditions for the traveling public. Deteriorating culverts have the potential to transport roadway sub-grade material creating areas of settlement or unseen sub-grade voids.

The "Statewide Small Culvert Inventory" is a current undertaking that will ultimately allow the Agency to maintain a comprehensive database that includes condition assessment of all small culverts. This database will serve as a tool to define and develop rehabilitation projects, and ultimately maintain our existing assets. This information will be critical to the development of future projects; however it is still necessary to address the immediate problem areas. In the winter of 2007, the Roadway Design Section and Operations Division set out to identify and develop solutions for these problem areas.

Preserving Assets: The small culvert rehabilitation projects focus primarily on preservation. These projects serve to improve the condition of small culverts as a critical asset. Their rehabilitation and resulting preservation will in turn protect other assets (pavement, road structure) and improve the safety of the traveling public. By identifying and correcting these problems in a proactive way it reduces the likelihood of emergency projects and the financial constraints that accompany them.

Completed Work: All nine Transportation Districts were tasked with developing a spreadsheet that identified the location of small culverts in poor/failed condition. Additional information provided by the Districts included a detailed description of the problem, estimated cost, and a priority ranking. Design staff reviewed this information and scheduled field visits to each District. During the field visit many of the high-priority locations were inspected and site characteristics such as visual culvert condition, presence of roadway settlement, presence of embankment sinkholes, erosion, piping, environmental constraints, right-of-way constraints, and access constraints were recorded. This information was used to identify a total of five rehabilitation projects, with solutions ranging from full replacement to cured-in-place pipelining.

Proposed Work: Work to be performed over the next year includes completion of all project designs this fall/winter, with project construction in the spring/summer. The following are the culvert projects that are currently under development: Barnet - Interstate 91 (2 Culverts); South Burlington - Winooski - Interstate 89 (9 Culverts); Peru - VT 11 (1 Culvert); Rockingham - Interstate 91 (1 Culvert); Hartford - US 4 (14 Culverts).

- A Master Plan Update is ongoing which will address present and future needs for the airport. This document provides the basis for future development that best serves the airport users and provides for any necessary safety improvements.
- Business Plans are being prepared for five of our airports including Southern Vermont Regional Airport in Rutland. These plans will look at the economic picture at our airports and make recommendations to help them become more self-sustaining. These business plans will work together with our current Statewide Airport System Plan which looks at basic infrastructure needs based on an airport's classification. Master Plans, Business Plans, and the System Plan will all be used to improve the infrastructure needs and economic situations at our airports.
- The Aviation program uses a pavement management software program to monitor all airport pavements. A program of crack seal and block patching is ongoing to help lengthen pavement life and allow us greater flexibility in programming major runway reconstruction projects.



Small culvert rehabilitation has taken center stage in improving the condition of a critical asset

Collaborate and comply to protect and enhance the environment

Initiatives and successes in 2007:

- Following last year's effort to install energy efficient lighting in VTrans garages state-wide, this year we replaced the remaining single pane windows with insulated glass. This translates not only in saving dollars on fuel but also reducing greenhouse gas emissions. In the past ten years VTrans facilities program has completed 42 energy efficiency projects at a cost of about \$1.5 million. VTrans is actively involved in Statewide Agency Energy Plan and Climate Neutral Working Group meetings, and has seen an annual decrease in measured CO2 emissions from agency operations for the last 3 years.
- VTrans is doing its part to help clean up Lake Champlain. In a unique partnership VTrans, VT Better Backroads Program, the VT Youth Conservation Corps, the Agency of Natural Resources and towns such as Fairfield, Morristown, Berlin, Benson, and Enosburg are undertaking projects to keep pollution away from waterways that feed the Lake. Examples of this year's work include stone lining ditches to remove sediment from stormwater coming from gravel roads and replacing under-sized culverts on the towns' roadway systems that are subject to sediment build-up and erosion.

Culvert Fish Passage

Maintenance District 9 and VTrans' Environmental Section worked together in 2007 on a critical culvert repair in Canaan that involved saving aquatic life.

Work on the culvert necessitated the capture and relocation of fish and other aquatic organisms so a scour pool could be dewatered during repair. Seine nets were used to capture hundreds of individual aquatic organisms, including more than 50 Brook Trout, approximately 100 Burbot, 200-300 Sculpins, 200-300 Dace, many Salamanders, many Crayfish, and a few Green Frogs.

The effort not only saved these creatures, but also saved the Agency money because their removal streamlined the regulatory process by reducing the culvert repair's environmental impact. These efforts prevented potential delays of a safety project that was critical in nature.

To relocate the aquatic life, a sandbag and gravity feed pipe was set upstream of the work area and pumped the plunge pool while the seine nets were used to capture the aquatic organisms. The water level of the scour pool was reduced in 4 different stages and seining continued until the net came up empty. Captured fish were placed in large buckets and transported upstream of the work site and released from the inlet into the sandbag pool. Dewatering began about 8 a.m., and the pool was ready for seining at 10 a.m.. The relocation was completed by 1 p.m. and the project repair was underway.

Moving fish during a large culvert repair project



During the summer and fall of 2007 several VTrans trucks were equipped with diesel oxidation catalysts. A DOC functions like a catalytic converter and reduces unhealthful hydrocarbon emissions by 50%, carbon monoxide by 30%, and particulate matter by 30%. This

means not only a healthier planet, but healthier vehicle operators too.

These efforts, when combined with the State's legal action to increase vehicle efficiency by requiring the auto industry to meet the rigorous "California standards," allows Vermont to take significant steps towards reducing its transportation-related GHG emissions.

Reducing Emissions

Transportation-related activity accounts for about 46 percent of the Vermont's greenhouse gas emissions (GHG). VTrans in 2007 outlined several initiatives designed to reduce the state's carbon footprint.

Reduction of transportation GHG emissions is addressed through a three-pronged approach that includes the use of cleaner fuels such as biodiesel, the use of more efficient engine technology, and gaining efficiencies from the transportation system through efforts to help Vermonters find alternatives to single-occupancy vehicles or to reduce the length of trips.

VTrans in 2007 used more than 150,000 gallons of B-5 biodiesel to fuel its truck fleet, while supporting the research and development of alternative vehicle technologies including hydrogen-fueled and plug-in hybrids.

Public transit reduces emissions by transporting more people with less energy expended than individual vehicles. More fuel efficient and cleaner engine technology buses increase the emissions benefits of public transit and help the state meet its reduction goals. In 2007, VTrans supplied 49 replacement buses through its public transit capital program. This reduced the state's vehicle backlog from 126 to 64. VTrans intends to propose the same level of funding in 2008 to further reduce our backlog and cut emissions.

VTrans also invests in several programs designed to reduce "vehicle miles traveled" on the state roadway system. The Agency in 2007 announced its Go-Vermont initiative that will work with local employers to provide mechanisms so that employees can easily share rides to work. For example, VTrans in coming years will work with a vanpool management firm to make vanpooling for commuting purposes easier, and will enhance the current rideshare matching program. In the months ahead, carpoolers will use Internet technology to more easily find partners and make seamless connections to desired destinations.

Improve future customer service levels

Initiatives and successes in 2007:

- The Public Transit Section is working with a coalition of interests to complete a number of state and federally-required planning documents that are geared toward improved mobility across regions, improved coordination among and between modes, and improved access to those who are most dependant upon public transportation. The Legislatively-mandated Section 45 study will look at new approaches to inter-region mobility and inter-modal connections between rail, inter-city and public transportation. The Legislatively-mandated Critical Care Committee examines the extent to which improved coordination of service to medical facilities and improved funding mechanisms can secure rides for those who must have them. The federal mandate to have local Section 5310 - Job Access Reverse Commute and New Freedom programs - completed by



September, 2008 will generate a report that will further the goals of coordination across a range of human service transportation providers. The Public Transit Section has met with stakeholders identified in each of the human service regions in the state early in the project to identify unmet needs and possible strategies to meet them. A draft report will be issued in April, 2008 with an-

other round of stakeholder workshops for discussion and comments.

- Air quality, traffic congestion reduction and system preservation are closely linked to alternative transportation mode use. The significant use of alternative modes will be enhanced through a public-private partnership to promote such use. In response to and recognition of these facts the Public Transit Section formed a new RideShare Advisory Committee. The Committee includes representatives from industry, business, energy efficiency, transportation and environmental fields to brainstorm program goals, objectives and strategies. The result of this effort is a shifting of focus of the retooled RideShare program from strictly on-line car-pool matching to a concerted and coordinated partnership with employers to promote van and car pools. VTrans has also partnered with Maine and NH to link the three RideShare efforts in order to cover the many commuter-sheds that straddle state lines.
- VTrans over the next decade plans to nearly double Vermont's number of state-owned Park & Ride spaces. Today, the Agency maintains 27 facilities representing 1,014 spaces. Use of these Park & Rides is increasing. In 2005, approximately 45 percent of the State's Park & Ride

spaces were being used. In 2006, even with the inclusion of more than 80 additional spaces to the State's Park &

Ride system, usage increased to 60 percent. Reasons are assumed to be the increase cost of petroleum and people's greater awareness of global warming.

The 2007 Park & Ride program identified four existing lots to be improved through lighting, resurfacing or enlarging of existing facilities and identified 11 new facilities. Once complete, these projects will create approximately 980 additional spaces, nearly doubling the existing Park & Ride spaces available today.

- VTrans completed updating its transportation model in 2007. The updated version was used to assist in analyzing scenarios for the Long Range Transportation Business Plan and it will be used in the Western Corridor Study started in the fall of 2007. Recommendations to maintain and refine the model were included in the creation of a medium range plan (5 to 7 years) for model development, maintenance, and implementation.

Vermont Byways Program

More and more towns across Vermont are joining together to apply for designation as a Vermont Byway on routes through their communities. Residents want the ability to apply for federal byway grants to preserve and share their unique scenic beauty, culture and history with others.

Last year saw the designation of Rte. 2 from Alburgh to Colchester designated as a northern section of the Lake Champlain Byway. Rte. 30 from Poultney to Manchester was designated the Stone Valley Byway and the towns of Waitsfield, Warren, Granville and Fayston along Rte. 100 have applied for designation. These towns, along with the CT River Byway, the Molly Stark Byway and the Mad River Byway, are the beginnings to a system of Byways that can be promoted to attract tourists to Vermont.

In the spring of 2007, VTrans held the first state Byway Summit, bringing together byway organizers from across the state to meet one another and talk about what each byway is doing. In the fall, VTrans sponsored a state Byway Conference to provide information about FHWA byway grants. The conference also introduced the beginning design of a state byway website geared towards the tourism market. The site is meant to support and enhance the work of individual byway organizers in creating their own websites. Input from these organizers will be crucial in the development of this site.

- In collaboration with the Agency of Commerce & Community Development, Vermont Association of Planning & Development Agencies, Vermont League of Cities & Towns and Chittenden County MPO, VTrans finalized the technical framework for the Vermont Corridor Management Program (CMP). The CMP approach was recommended in the Highway System Policy Plan as a way of building consensus on transportation solutions that reflect different stakeholder interests and involve collaborative and coordinated actions on the part of multiple agencies and jurisdictions.
- One of the organizations recently created to bring more attention to aviation issues is the Vermont Aerospace Aviation Association (VAAA). VTrans staff also work with towns to prevent non-compatible land use near airports.