

INTRODUCTION AND OVERVIEW

The Vermont Agency of Transportation (VTrans) has a vision of a safe, efficient and fully integrated transportation system that promotes Vermont's quality of life and economic wellbeing.

VTrans' mission is to provide for the movement of people and commerce in a safe, reliable, cost-effective and environmentally responsible manner.

GOALS

SAFETY: Promote safety as a critical component in the development, implementation and maintenance of the transportation system.

EXCELLENCE: Cultivate and continually pursue excellence in financial stewardship, performance accountability, and customer service.

PLANNING: Optimize the future movement of people and goods with corridor and natural resource management, balanced modal alternatives, and sustainable financing.

PRESERVATION: Protect the state's investment in its transportation system.

VTrans has embarked on a long-term effort to change its business model. Vermont is not alone in this effort. State transportation agencies and departments across America during the 1990s embraced this activity and will continue to do so. The motivations for this are numerous:

1. The mission of state transportation agencies nationwide has moved away from building a highway system and towards managing an intermodal transportation network. With the Herculean effort of building the Eisenhower Interstate System essentially complete, transportation agencies nationwide are shifting their focus towards managing mobility and system preservation through a more effective use of what is essentially a mature transportation network. To achieve the highest degree of mobility for users, it is imperative that VTrans strive to glean the maximum efficiency from the existing transportation system as a first priority, making additional capacity investment in the infrastructure when warranted.

Governor Douglas and Secretary Lunderville recently announced a significant policy change within VTrans. Titled "The Road to Affordability," the policy is driven by a number of factors. The essence of the policy is based on the fact that Vermont has an aging transportation infrastructure that when coupled with increasing traffic volumes and increases in freight movement demands greater and more costly attention than in the past. As a result, bridge, culvert and road maintenance are competing with new roadway construction projects for limited funds.

Given this reality, Governor Douglas and Secretary Lunderville have decided that Vermont must first step back and preserve its existing assets so that they do not deteriorate to the point that they require major reconstruction and become a financial drain on the entire system. Such early intervention and preventative maintenance can result in significant savings:

- A \$100,000 investment in a culvert under 20 feet of fill on the Interstate today will save over \$1 million for replacement construction and detours tomorrow.
- A \$100,000 investment in a new bridge membrane today will save over \$1 million for deck replacement tomorrow.
- A \$1 million investment in the pavement of a good roadbed today will save over \$5 million in costly reconstruction in the future.
- Preventative maintenance done today also eliminates future aggravation and delays for the traveling public and freight haulers.

Another critical component of “The Road to Affordability” is a set of strategic parameters that VTrans intends to use in the day-to-day management of Agency activities. These include:

Realignment of priorities:

- Future investment will be focused on traveler safety and the preservation of existing infrastructure.
- Optimize financial resources by focusing attention on a practical number of large projects.
- Set realistic timetables for large projects and new roadway segments, and balance funding within the Roadway Program to reflect priority on system preservation.

Rethink project focus:

- Back to Basics – Where design status allows, develop project scopes that limit the addition of project amenities not related to preservation and environmental protection. (Example: under-grounding of utilities, streetscapes)
- Innovative Financing - Any proposed new roadway-segment project not presently in the Development & Evaluation portion of the Capital Program will require an innovative financing approach acceptable to the Agency prior to being considered for inclusion in the capital program.
- Just-in-time delivery of Design, Right of Way, & Permitting.

Continue commitment to safety and the environment:

- Completion and implementation of the Strategic Highway Safety Plan.
- Continuation of the Roadside Safety Audit Reviews in collaboration with Regional Planning Commissions and town officials.
- Continued active participation in a variety of Vermont-based and regional environmental planning efforts such as the Governor’s Greenhouse Gas Reduction Program, New England Governor’s/Eastern Canadian Premier’s greenhouse gas planning program, and collaboration with the Vermont

Agency of Natural Resources and Public Service Department planning programs.

VTrans believes that all of the above actions have wide public support. In 2006, a public opinion survey indicated that 70 percent of Vermonters suggested spending a greater share of the budget on bridge repair/replacements and highway road repair and repaving. In addition, ongoing outreach efforts at regional Transportation Advisory Council meetings call for trading new roadway segment investments for preservation of existing systems.

2. Despite additional funding from the federal government under SAFETEA-LU, needs still outstrip resources. Transportation agencies nationwide are experiencing an oversubscription of demand in relation to available resources. Simply put, there are too many needs and not enough resources. Revenues into both the federal and state Transportation Funds are sluggish at best, and the future is uncertain. The result is that we need to maintain our transportation network within already identified revenue sources. At the same time, the budget must deal with an array of upward pressures:

- Major new capacity projects.
- Deferred Maintenance.
- Cost increases outpace revenue increases.
- Unprecedented demands on Public Transit.
- No dedicated federal funding for Rail.

3. As noted in “The Road to Affordability” discussion, there is an expressed intent to focus attention on maintaining the overall system. This emerges from an asset management and performance management frame of mind that takes a system-wide view of transportation problems, needs, and opportunities. The rationale here is to ensure the maximum benefit per dollar of investment, while at the same time achieve system-wide performance goals. An explicit link to the annual budget-development process is a necessary means to carry out these goals.

The urgency of these factors is driving VTrans’ effort. To spend transportation dollars in the most cost-effective manner, VTrans management and staff are employing an array of management tools and practices that align in a hierarchical manner. The overarching element of this hierarchy is acceptance of the philosophy of asset management.

The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) define asset management as “a strategic and systematic process of operating, maintaining, upgrading, and expanding physical assets effectively throughout their lifecycle. It focuses on business and engineering practices for resource allocation and utilization, with the objective of better decision making based upon quality information and well defined objectives.”

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 and requires substantial investment. This is common sense, but it is easier said than done and will require balancing many competing interests. Tradeoffs must be made between paving, bridge, new highways, rail, airports, park & ride lots, and more.

The following is a short description of transportation asset management, its background and current status in Vermont.

Vermont is a small state in both geography, and population. VTrans consists of 1,300 employees and is centrally managed by a Secretary, a Deputy Secretary, four Directors, and a Commissioner of Motor Vehicles. Top management, engineering, information technology, finance, planning, portions of the operations activity, contracting, and legal are all located in one building in Montpelier, Vermont.

Vermont has an aging infrastructure that must be preserved. VTrans views asset management, quantitative project prioritization criteria, and associated performance measures as a means to get the most out of limited transportation dollars.

The total transportation budget of \$420 million including DMV is highly dependent on federal funding (about 51 percent). That budget supports a transportation infrastructure of:

- 3,200 two-lane miles of pavement on state roads.
- 2,675 bridges greater than 20 feet in length.
- 10 state-owned airports.
- 305 miles of state-owned rail line with 265 bridges.
- 122 heated and 289 unheated buildings.
- Other assets including a fleet of vehicles, park & ride lots, rest areas, and ancillary highway assets.

In essence, 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 levels of funding for all aspects of the transportation system. VTrans has been working with the broader definition (as has the FHWA).

Vermont is one of the few states with asset-management principles and performance measures written into statute. VTrans was involved on a cooperative basis with the General Assembly, the Joint Fiscal Office, and the Legislative Council in developing the language. Specifically, 19 VSA § 10b (c) and (g) direct VTrans to:

- Develop an asset-management plan which is a systematic goal and performance-driven management and decision-making process of operating, maintaining, and upgrading transportation assets cost-effectively.
- Include deterioration rates for infrastructure assets.

- Determine, long term, the annual funds necessary to fund infrastructure maintenance at the recommended performance level.
- Assets mentioned in the legislation are pavements, structures, facilities, construction and maintenance equipment, vehicles, real estate, materials, corporate data and information, and ground and water transportation facilities & equipment.
- In 2005 and 2006, the Legislature required a quantifiable project-prioritization method that assigns a numeric score to projects listed in the annual budget. Those scores must include the project priorities from the eleven Regional Planning Commissions and Vermont's one Metropolitan Planning Organization.

Current VTrans Asset Management Systems

Like many other states, Vermont has “stovepipe” systems that analyze investments within a single type of asset. The elements of VTrans’ asset-management process include the following: system inventory and condition assessment, performance measures, project prioritization, and the annual budget-development process.

The status of Vermont’s asset management systems are:

- Pavement – Computer software for pavement management is widely available. Vermont’s Paving Section does an excellent job running Deighton’s dTIMS pavement management software to develop VTrans’ paving program.
- Bridges – Vermont uses AASHTO’s Pontis bridge management software. VTrans’ Structures Section measures structurally deficient bridges, but is working to make more use of the Pontis deterioration models and a bridge health index to plan effective preventative maintenance.
- Safety – This is not an “asset” in the traditional sense. However, safety and crash statistics are important factors in project prioritization and selection. Vermont in the last two years doubled the number of crash incidents it collects due to a combination of components including a new DMV crash form, education, and a web-based crash reporting form for law enforcement. As part of the Highway Safety Improvement Program, VTrans analyzes crash statistics and identifies the state’s top 50 high-crash locations. VTrans calculates the benefit/cost ratios of possible fixes, makes appropriate repairs, and monitors the results. VTrans continues to work with other agencies to keep Vermont’s crash rate from climbing despite rising traffic volume.
- Roadway – Vermont is in the process of implementing a computerized system for asset management of the Highway system. The Highway Economic Requirements System- State version (HERS-ST) software was developed under the guidance of the Federal Highway Administration and it considers such factors as safety, mobility, roadway geometry, pavement structure and condition, as well as economic factors like fuel and maintenance costs, travel time or delay costs to the system’s users.

- Maintenance Management – VTrans’ Operations Division uses MATS (Maintenance Activity Tracking System) to record most highway maintenance work by location. MATS is being expanded to track inventory and condition of ancillary assets.
- Central Garage Fleet and Equipment – The Central Garage must have the right equipment available at the right time especially for snow removal and emergencies. VTrans uses a computerized system to track equipment usage and to optimize maintenance and replacement cycles at the least cost.
- Buildings – The Operations Division uses facility-inventory and condition-reporting software to both calculate a building health index and to recommend repairs in a priority sequence.
- Signs – Traffic Operations maintains a database of 80,000 signs. Over 5,000 signs are replaced annually due to knock-downs, obsolescence, loss of reflectivity, changing federal standards, or as part of paving and construction projects.
- Aviation – The Aviation Section uses the Airport Information Management System (AIMS) to identify, prioritize and track progress on aviation-related projects. Aviation safety is the primary project driver at both the federal and state level. A consultant is assisting VTrans in developing an Aviation Policy Plan that will address managing these assets, prioritizing projects, and measuring the results.

In summary, asset management views transportation facilities as the building blocks of our communities. Wise management of these publicly-owned facilities is necessary to ensure a satisfactory quality of life, including a high level of economic vitality.

A short overview of how VTrans senior management has incorporated these concepts into its business model follows.

Preparing a comprehensive inventory and assessing the current capacity of the system’s various components is the first step in this management process. Subsequent to inventory development is the development of acceptable performance measures for the expected functioning of the asset. These measures need to be reasonable, but not necessarily easily achieved. Performance measures should articulate an expected minimum performance level. Monitoring the asset’s operation on a periodic basis is necessary to ensure that effective service levels are achieved.

As stewards of publicly owned assets, it is incumbent on VTrans to periodically report to the General Assembly as well as the public at large regarding asset condition. Such an effort provides these audiences with assurances that VTrans not only has a long-term vision for the transportation network, but that it is effectively managing the resources under its care.

A last critical component of this asset-management hierarchy is a project-prioritization process. Project prioritization ensures that VTrans is able to sift through the multitude of

project and program ideas that are proposed annually to focus its efforts on those that achieve the greatest benefit to the transportation network. A more extensive description of the project-prioritization process is found in this document as a separate tab.

Over the last two years, a new component has been added to the VTrans business process: the Budget Committee. This committee, made up of senior staff from all divisions and chaired by the Deputy Secretary, is responsible for working with various program managers to develop a budget proposal for review and approval by the Secretary and Executive Staff. The committee process is highly iterative. Program managers develop spending proposals at varying funding levels. For each scenario, program managers define the performance-level impact on the part of the system they manage. This portfolio-management approach allows the Committee to test varying investment mixes to seek the total system's optimum performance level.

This work is a continuation of previous efforts designed to infuse the concepts of asset management, performance measurement and project prioritization into VTrans' business model. The history is as follows:

- **2002**
 - Act 141: asset management and performance measures; first set of asset performance measures established.
- **2003**
 - Instituted asset management framework and expanded performance measures.
 - Initiated collaborative effort to develop a plan to address concerns with large culverts.
- **2004**
 - Began dialogue with ANR on cost-effective culvert repairs that meet environmental regulations for Aquatic Organism Passage.
- **2005**
 - Bridge Maintenance category created in FY06 budget.
 - Used asset management and RPC/MPO input for project prioritization and to develop the FY07 Budget.
- **2006**
 - Developed a new set of performance measures based on user feedback and experience with system.
 - Expanded project prioritization used for FY08 budget.
 - Realign Agency priorities using a more scientific approach that recognizes future cost savings by applying the “right treatment at the right time.”

While these efforts are promising, more needs to be done. VTrans is at the early stages of incorporating these principles into its business model. Such efforts are a long-term and continually-evolving process. However, as staff at VTrans get more familiar with this approach, continuous improvement will result.