

2017 Research Symposium

Quantifying the Impact that New Capital Projects Will Have on Roadway Snow and Ice Control Operations

& STIC Annual Meeting

RESEARCH PROJECT TITLE

Quantifying the Impact that New Capital Projects Will Have on Roadway Snow and Ice Control Operations

STUDYTIMELINE

July 2015 – October 2017

PRINCIPAL INVESTIGATOR

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VTRANS CONTACT(S)

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MORE INFORMATION

Research will add link to the final report and other materials on VTrans website

This fact sheet was prepared for the 2017 VTrans Research Symposium & STIC Annual Meeting held on **September 28, 2017** at National Life in Montpelier, VT. 8:00 am– 12:00 pm.

Fact sheets can be found for additional projects featured at the 2017 Symposium at <http://vtrans.vermont.gov/planning/research/2017symposium>

Additional information about the **VTrans Research Program** can be found at <http://vtrans.vermont.gov/planning/research>

Additional information about the **VTrans STIC Program** can be found at <http://vtrans.vermont.gov/board-s-councils/stic>

Introduction or What was the Problem?

As Vermont adjusts to a climate that includes not only more precipitation, but more severe and unpredictable weather events, it will become increasingly important to integrate the cost of roadway snow and ice control (RSIC) operations into the capital-project planning processes. Many states are already facing substantial budget constraints and are struggling to adequately maintain existing roadways with respect to RSIC operations. The introduction of new capital projects like new roadways and lane expansions, will obviously result in additional effort and expenditure for RSIC operations. The additional RSIC burden associated with new capital projects is rarely, if ever, quantified and is therefore typically not considered during the early stages of the capital-project development process. As a result of this oversight, RSIC supervisors and maintenance staff may find themselves without the necessary resources or budget to adequately maintain their road network in winter/spring months. In turn, this can have a negative impact on both safety and mobility within.

Methodology or What was done?

The overall goal of this project was to support VTrans by developing an automated method for quantifying the expected impact that a new capital project will have on RSIC burden. We examined additions of new roadway capacity, including new lanes and new roadway, as well as new roadway configurations, like adding left-turn lanes. The research team developed a methodological approach to quantifying the impact that new capital projects will have on total vehicle-hours of travel (VHTs), salt, service time, and equipment needs for the RSIC fleet. The proposed methodology should be used in the early stages of capital project development to estimate the need for additional RSIC resources such as trucks, salt, fuel, and operator hours to properly maintain new infrastructure once construction is completed.

Conclusion or What are the next steps?

The primary outcome of this project is a MS Excel calculation tool, providing quick estimates of the monetary impact of a variety of major highway project types. An additional service-time impact is also calculated, although this value does not contribute to the annualized monetary cost. It simply represents a loss of service quality that needs to be considered when evaluating total RSIC impacts. The findings provide a strong argument for the increased need to involve RSIC operations staff in the highway planning and design processes for major capital projects. The ultimate long-term goal is for the geometric design of highways to fully consider the impacts on all operations & maintenance needs, including RSIC.

What are potential impacts? What is the benefit to VTrans?

The information gained will help RSIC decision makers and managers argue for appropriate RSIC resources that are consistent with the construction of different types of new capital projects. The future impact that new roadway projects will have on RSIC operations tends to be overlooked when budget decisions are made, but RSIC operations' staff are expected to absorb the load. This oversight can create a budget misalignment where the resources needed to effectively manage RSIC operations are not available.