VERMONT
AGENCY OF TRANSPORTATION
RESEARCH PROGRAM

Capital Program Greenhouse Gas Reduction Modeling

STUDY TIMELINE
August 2022 – November 2023

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More information about the Agency of Transportation Research Program, including additional Fact Sheets, can be found at: http://vtrans.vermont.gov/planning/research

Introduction (or Problem Statement)

Vermont's Act 153 (2020) – the Global Warming Solutions Act, or GWSA – establishes greenhouse gas emissions reduction requirements and required the development of the Initial Vermont Climate Action Plan (CAP) which was adopted on December 1, 2021. The Plan identifies specific initiatives, programs and strategies necessary to achieve the State's greenhouse gas (GHG) emission reduction requirements, enhance carbon storage and sequestration, achieve net zero emissions by 2050. The CAP identifies that the transportation sector is responsible for 40 percent of emissions in Vermont. Therefore, it is incumbent upon the Vermont Agency of Transportation (AOT) to continue to develop and implement programs and projects to reduce greenhouse gas emissions and for the state to evaluate the effectiveness of other reduction strategies for the transportation sector.

Project Methodology

To develop the baseline forecast and to evaluate the Capital Program and potential GHG reducing strategies, AOT's consultant team created a spreadsheet tool referred to as the VTrans GHG Sketch Tool. The tool includes calculation methods to develop planning-level estimates of GHG reductions associated with different types of policies, projects, and strategies that are or could be included in the Capital Program and/or considered more broadly for transportation GHG reductions.

Strategy	CO_2 Reduction (2030 metric tons)	% of 2030 Gap Closed	Estimated Cost Through 2030 ($M)
Bicycle and pedestrian network expansion	220	0.1%	55.7
Transit service expansion	690	0.1%	44.0
Micromobility	1,420	0.3%	7.9
Travel demand management	80	0.0%	2.8
Transit vehicle electrification	4,260	1.0%	31.5
Land use	5,660	1.4%	NA[a]
Broadband expansion	5,300	1.3%	191.7
Advanced Clean Fleets	35,700	7.7%	79.3
Feebates	19,800	4.8%	NA[b]
Combined Effects			
Transportation investment and services	6,500	1.6%	141.8
Transportation + land use + broadband	17,600	4.3%	333.5
Transportation + land use + broadband + ACF + feebates	73,000	17.8%	412.8

Conclusions/Next Steps

The analysis found that while capital investments can make a modest impact on emissions, the large majority of emission reductions will

come from policies and programs outside the transportation agency's direct authority. The tool developed for this analysis will be used to evaluate the effects of relevant funding implementation on GHG emissions.

Impacts and Benefits

As stated above, AOT can support implementation of the strategy through the choices it makes in its long-range, corridor, and modal planning, project prioritization, Capital Program, and design and materials standards. However, full implementation of the Strategy will require additional actions beyond the purview of AOT, thorough analysis, public engagement processes, and coordination on the part of many stakeholders; including the legislature, executive branch, municipalities and regional planning agencies, and Vermont's citizens, businesses, and public utilities. This analysis showed that further policy analysis is needed to meet the GWSA requirements. The legislature used the results of this analysis to require ANR, VTrans, and the State Treasurer to conduct an analysis to understand the pros and cons of VT joining the New York or Western Climate Initiative Cap and Invest programs and to analyze the potential effects of a low carbon fuel standard. That analysis is underway and is required to conclude with a recommendation to the legislature by February 2025.