

Andrea Wright, VTrans Environmental Policy Manager
Chris Porter & Ben Eskin, Cambridge Systematics

Introduction:

Vermont's Global Warming Solutions Act, or GWSA establishes greenhouse gas emissions reduction requirements and required the development of the Initial Vermont Climate Action Plan (CAP). The Plan identifies specific initiatives, programs and strategies necessary to achieve the State's greenhouse gas (GHG) emission reduction requirements and achieve net zero emissions by 2050. The CAP identifies that the transportation sector is responsible for 40 percent of emissions in Vermont. AOT sought to understand how its current programs affect greenhouse gas emissions and to assess future policy options and investment strategies towards the reduction of transportation emissions, both within the span of the Agency's authority as well as beyond its authority.

Methodology:

The technical analysis included the following elements:

Baseline Projection > Capital Program Evaluation > Gap Analysis > Strategy Evaluation

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.

Baseline Forecast

| Source Category | 2022 | 2025 | 2030 | 2050 |
|------------------------------|------------------|------------------|------------------|----------------|
| Onroad Vehicles | 2,650,367 | 2,546,692 | 2,146,801 | 508,778 |
| Public Transit | 15,781 | 15,781 | 15,781 | 15,781 |
| Rail (passenger and freight) | 63,453 | 64,221 | 65,120 | 65,171 |
| Aviation | 99,502 | 100,702 | 102,104 | 102,188 |
| Marine (navigation) | 33,555 | 33,961 | 34,434 | 34,465 |
| Other ^a | 29,128 | 29,480 | 29,892 | 29,916 |
| Construction and Maintenance | 7,390 | 7,095 | 6,686 | 6,179 |
| Total | 2,899,177 | 2,797,933 | 2,400,818 | 762,477 |

The transportation emissions baseline forecast estimated that about 2.9 million metric tons (MMT) of carbon dioxide-equivalent (CO₂e) were emitted by Vermont's transportation sector in 2022. This is projected to decline to 2.4 MMT in 2030 and under 800,000 metric tons (MT) in 2050, considering adopted federal fuel efficiency standards and state rules to accelerate adoption of zero-emission cars and trucks.

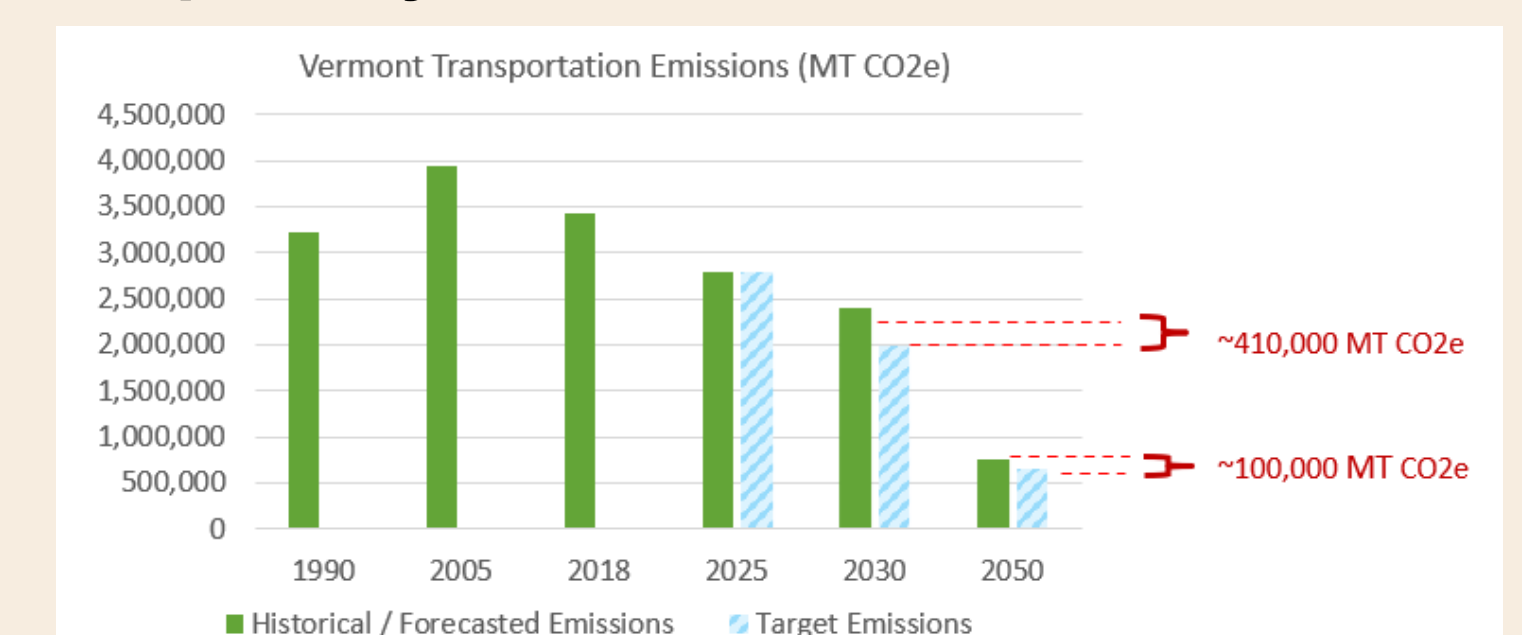
Data/Results:

Current programmed projects in the capital budget will have a small impact, reducing total transportation emissions by about 0.1 percent or less. When comparing with the emissions levels from the transportation sector recommended by the CAP, a gap of 410,000 MT in 2030 and nearly 100,000- MT CO₂e in 2050 remains.

Capital Program Evaluation

| Project Type | 2025 | 2030 | 2050 |
|-------------------------------------|---------------|---------------|-------------|
| Bicycle and Pedestrian ^a | -560 | -425 | -68 |
| Roadway Expansion | 0 | 0 | 0 |
| Traffic Operations | -1,925 | -1552 | -564 |
| Transit | -19 | -23 | -4 |
| Travel Demand Management | 0 | 0 | 0 |
| Park and Ride | -141 | -107 | -17 |
| Total | -2,654 | -2,115 | -654 |

Gap Analysis



Potential strategies would further close the 2030 gap by about 18 percent (73,000 MT), with an estimated cost of just over \$400 million cumulatively through 2030.

Strategy Evaluation

| 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. 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.