

# Vehicle Ownership and Use in the Vermont Travel Model

## STUDY TIMELINE

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can be found at:  
<http://vtrans.vermont.gov/planning/research>

## Introduction

Many Vermont policies enacted or being considered are intended to affect vehicle ownership patterns and the composition of the state's privately-owned passenger-vehicle fleet, including Feebates, EV purchase incentives, Advanced Clean Cars (ACC) II and MileageSmart. To allow the state's travel demand model to be responsive to these policies, we developed a vehicle-ownership module with household-level vehicle data from the Vermont vehicle registration records. This module enables the Model to forecast vehicle ownership and use, providing enhanced tracking of the state's policies, and highlight the composition of different vehicle types, providing statewide vehicle-miles of travel, fuel use, and greenhouse-gas emissions forecasts.

## Project Methodology

The research team used a self-organizing map (SOM) to classify Vermont's 2011 and 2021 vehicle fleets into 9 efficiency classes. After considering classifications from other policy sources like ACC II and the prevalence of certain vehicle types in Vermont, the SOM classes were reduced to a 7-class system.



## Conclusions

Forecasting change in the Vermont fleet involves the development of realistic default values that allow the prediction of fleet composition using the past trends as a predictor for the future. However, it is equally important to allow the past trends to be altered to forecast scenarios to accommodate futures that are not consistent with past trends. Scenario modeling is needed to develop forecasts that are consistent with policy goals. Trends in vehicle ownership in Vermont are typified by (1) shifts to more efficient vehicle classes and (2) efficiency improvements within classes.

## Impacts and Benefits

This Model is the first and only of its kind with the capability of forecasting realistic changes in the fleet of privately-owned passenger vehicles in Vermont, including purchasers' shifts to more efficient vehicles in response to purchase incentives, and efficiency improvements of specific models by manufacturers in response to policies like C.A.F.E. standards. This tool will allow VTrans and other stakeholders to assess more accurate forecasts of fuel use and greenhouse gas emissions from mobile sources in Vermont.