

Vermont Statewide Travel-Demand Model

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SCOPE

The Vermont Agency of Transportation (VTrans) uses a statewide travel-demand forecasting model with a base-year of 2000 and a forecast-year of 2030. The purpose of the model is to forecast travel patterns in the year 2030, and analyze changes in travel patterns which result from network-development scenarios. The model includes 698 traffic analysis zones (TAZs), of which 70 represent external travel. The roadway network includes all interstates, major arterial highways, minor arterial highways and major collector roads in Vermont.

The model is an important planning tool beneficial not only to VTrans but to regional planning commissions, the Chittenden County Metropolitan Planning Organization, and the University of Vermont Transportation Research Center (TRC). The TRC hosts and maintains the model, including:

- Collecting the latest basic passenger travel data and updating the model parameters as appropriate,
- Investigating the utility of the current model and potential improvements relative to policy changes,
- Running the model as requested and supporting VTrans in presentations and regulatory proceedings related to the use of the model.



PROJECTS

The TRC has conducted four separate analyses for VTrans using the model:

Exit 12B Burlington-Middlebury Corridor Analysis: The model was used to analyze the changes in traffic volumes on the 6 primary roads that constitute the Burlington-Middlebury Corridor with the addition of the proposed Exit 12B for I-89 at Route 116. Travel patterns with and without the exit were evaluated for base model-year 2000 and forecast model-year 2030. Although a significant shift in traffic from Route 2A to Route 116 was found, with the addition of Exit 12B, the overall effects on traffic volumes in the corridor were found to be negligible, for both model-years.

Truck Emissions Analysis: Used the Comprehensive Modal Emissions Model (CMEM) to analyze data collected on truck driving cycles on parallel segments of I-89/I-189 and US-7. The data collection was done on July 21, 2009 using a tractor-trailer truck provided by a local shipping company. Results indicated that overall emissions inventories and per-mile emission rate were lower by up to about 50% for the I-89/I-189 routes compared to the US-7 routes.

Chester, Vermont Bridge Closure Analysis: The model was used to analyze traffic diversions due to potential bridge closures in Chester, Vermont, by running the model with and without the subject bridges. Total changes in network vehicle-miles of travel and vehicle-hours of travel due to the closures were determined in order to minimize network disruption.

Model Evaluation Project: The goals of the model-evaluation were to (1) investigate the utility of the current model and potential improvements relative to policy changes, and (2) compare its existing software platform with two other widely-used software packages. It was determined that there is enough cause for the model to be maintained and updated for planning needs in the state. The model can remain in its current platform without substantial improvements, such as transit and rail networks, for forecasts of roadway travel and estimates of aggregate travel. The success and longevity of the model greatly depend on clearly-defined goals for its applications.