Oregon Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Vermont Agency of Transportation

Alternative Fuel Fact Sheet

Table 1 – VTrans Alternative Fuel Vehicles		
Type of Fuel	**Number of Vehicles**	**Type and Cost of Vehicles**
Plug-in Hybrid Electric	25	6 Volts ($34,000), 3 Prius Plug-ins ($29,000), 16 Ford C-Max Energis ($29,500)

Table 2- Alternative Fuel Stations		
Type of Fuel	**Number of VTrans Stations**	**Cost (if known)**
Electric	7	$10,000

Alternative Fuel Experience

Level of satisfaction with alternative fuels

VTrans and the Vermont Department of Buildings and General Services (BGS) are working to get staff familiar with plug-in electric vehicle (EV) technology and thus increase acceptance of the growing numbers of EVs in the state fleet.

VTrans used biodiesel (B5 and B20) for a portion of its mid and heavy duty diesel fleet between 2008 and 2010. At its peak B5 represented 18% of the fuel purchased. Fuel purchases range between 0.75 and 1.4 million gallons annually. VTrans had to stop use because biodiesel was not available.

When VTrans first introduced B20, some technicians were slow to accept it – numerous problems were wrongly attributed to the fuel. This concern went away with time. Initial supplies of B20 were splash blended with some problems resulting. Now ASTM approved blending is required. VTrans does not want to use any fuel vehicle manufacturers have not approved.

Why did the DOT adopt alternative fuel vehicles?

The state of Vermont agencies work under a legally mandated[1] state agency energy plan (SAEP) which is a chapter in the state of Vermont's 2016 Comprehensive Energy Plan. The CEP has a goal of the state of

[1] Title 3 V.S.A. § 2291 - State Agency Energy Plan. The statute outlines the following objectives to be accomplished by the plan:
(1) Conserve resources, save energy, and reduce pollution;
(2) Consider state policies and operations that affect energy use;
(3) Devise a strategy to implement or acquire all prudent opportunities and investments in as prompt and efficient a manner as possible;
(4) Include appropriate provisions for monitoring resource and energy use and evaluating the impact of measures undertaken;
(5) Identify education, management, and other relevant policy changes that are a part of the implementation strategy;

Vermont meeting 90% of its energy needs for all sectors from renewables by 2050. State government is asked in the CEP "to lead by example" for other public and private entities.

The SAEP sets the following cross sector goals for VT state government:

- Reduce total energy use from state government operations by 20% by 2025 and by 25% by 2030.
- Meet 35% of the remaining energy need from renewable sources by 2025, and 45% by 2030.
- 40% reduction of greenhouse gas emissions below current levels by 2030.

The SAEP tackles transportation under the following:

Go Green Fleets Initiative All state agencies working cooperatively toward 25% of light-duty state fleet vehicles being Plug-in Hybrid Electric Vehicles (PHEVs) and All Electric Vehicles (AEVs) by 2025. This includes installing charging infrastructure to accommodate the fleet and employee vehicles and, where appropriate, public charging at state facilities. In addition, BGS is conducting employee outreach to assist in the transition and leading efforts across state government to right-size fleets, by optimizing vehicle size and composition in order to conserve fuel and save money.

Biodiesel in Transportation: VTrans plans to increase purchases of biodiesel through state fuel-purchasing contracts for those facilities that have diesel storage tanks. All agencies that purchase diesel fuel for transportation purposes should use the highest biodiesel blend available without compromising the manufacturer's engine warranty.

On-the-Job Transportation and Solo Commuting by State Employees: State agencies are working with BGS to consider ways to monitor light-duty vehicle use and reduce unnecessary state employee travel where possible. They should adopt Policy 11.9 on telework. Agencies should work together to maintain and increase employee participation in the Agency of Transportation's successful Capital City Commuters program and explore ways of extending similar services and incentives to other state work sites outside of Montpelier.

Emission Reduction Data Collection and Tracking

VTrans collects fuel and electricity use annually and this data to assess performance regarding increasing use of renewables and energy efficiency. We are not as of yet analyzing emissions benefits.

Procurement Process

VTrans procures vehicles through the state contract. BGS is able to purchase EVs which are more expensive by blending them with less expensive high mpg models in order to meet total fleet cost requirements.

BGS recently released its annual RFP for liquid fuels. It includes the following regarding biodiesel:

1.1. **BIO - BLENDS** The new and revised ASTM biodiesel standards include the following:

1.1.1. ASTM D975-08a, Specification for Diesel Fuel Oils — used for on- and off-road diesel applications, was revised to allow for up to 5 percent biodiesel;

(6) Devise a strategy to reduce greenhouse gas emissions; and
(7) Provide, where feasible, for the installation of renewable energy systems.

1.1.2. ASTM D396-08b, Specification for Fuel Oils — used for home heating and boiler applications, was revised to allow for up to 5 percent biodiesel; and

1.1.3. ASTM D7467-08, Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to 20) — a completely new specification that covers finished fuel blends of between 6 (B6) and 20 (B20) percent biodiesel for on- and off-road diesel engine use.

1.1.4. In addition, ASTM D6751-08, Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels — used to control pure biodiesel (B100) quality prior to blending with conventional diesel type fuels, was revised to include a requirement that controls minor compounds using a new cold soak filterability test.

Fuel Feedstock and Infrastructure

Vermont's electricity is currently 45% renewable; with the renewable energy standard (RES) passed by the legislature last year, that fraction will increase to 55% in 2017, and it will continue to climb to 75% renewable in 2032. Per the RES Vermont will also be home to an increasing portion of the generation that serves our load, with the RES requiring 10% of 2032 electricity to come from small, renewable generators connected to the state's electric grid.

VTrans entered into an agreement with and electric utility to install a dual port level 2 ChargePoint charger for public use at a rural park and ride at exit 9 of I-89 in Central VT.

VTrans is installing level 1 outlets at the base of light posts on all interstate park and ride lots as improvements are made. So far 54 outlets are available at 4 park and rides along I -91.

VTrans is undertaking a planning study due to be completed later this year to identify the optimum equipment, locations, design and business model for placing fast charge facilities at state Welcome Centers, all within the federal ROW.

Biodiesel was purchased from the rack in previous years. Moving forward VTrans will be working with other state agencies and the VT Clean Cities Program in better understanding the source and carbon content of state purchased biodiesel. State policy directs state agencies to reduce emissions and increase the use of renewable fuels and bio-fuels are one of the only options for the transportation heavy duty sector.

VTrans has been shifting to retail diesel sales for several years due to the upfront costs associated with replacing underground storage tanks. Approximately 45% of VTrans' fuel use is from agency owned tanks and this number will decrease as more tanks come off line. This limits availability of biodiesel which is only available currently at one retail outlet in the state.

Photos

Gov. Aiken Drive Charging Station, Montpelier VT


State Fleet EVs and charging, Montpelier, VT

I-91 Hartland Park and Ride