Transportation in Vermont
Policy Options.

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Introduction

VEIC has articulated its policy position on federal transportation infrastructure and the depletion of the Highway Trust Fund, in the context of the GROW AMERICA Act currently before Congress (It’s an Energy Issue, Too: Re-thinking How We Fund America’s Transportation Infrastructure; in the VEIC.org Resource Library). This position paper takes that thinking and applies it specifically to Vermont.

For consistency, this paper uses three important policy recommendations from Beyond Traffic, a U.S. Department of Transportation report cited in It’s an Energy Issue, Too:

1. **Promote** public transit, biking, car- and van-pooling, and walking

2. **Reduce** emissions by improving fuel efficiency and increasing the use of alternative, cleaner fuels

3. **Ensure** adequate carbon-based revenue solutions to address critical needs through existing taxes, new excise taxes, user fees, tolls, congestion pricing, fees for vehicle miles traveled, or other funding mechanisms.

VEIC believes these recommendations offer significant value in Vermont.

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Promote Public Transit, Biking, Car- and Van-Pooling, and Walking

Land use is inextricably linked with transportation, influencing both individual travel choices and the types of transportation infrastructure that can be efficiently provided. Vermont’s land use is primarily characterized by historic downtowns and villages surrounded by working landscapes with traditionally small town centers. Despite the fact the state has relatively low population density, there are pockets where people and jobs cluster. From a transportation efficiency perspective, these characteristics create both advantages and disadvantages, which play out differently for local and regional travel.

Vermont’s traditional land use patterns have helped cluster population and employment activity. Many communities could increase bicycle and pedestrian infrastructure to help meet mobility needs, while reducing energy used in transportation. In addition to reducing greenhouse (GHG) emissions, biking and walking offer health and quality-of-life benefits. These are well recognized in the 2011 Vermont Comprehensive Energy Plan.

Public transportation can be an energy-efficient form of transportation. Although the state’s rural character poses challenges for public transportation, it can be a successful alternative to single-occupancy vehicle driving.

Vermont public transit operators provided 4.84 million trips in 2014. Although approximately half of those rides were in Chittenden County, there are many examples of small-town and rural routes that are attracting strong ridership. The state’s commuter services that connect Burlington and Montpelier, St. Albans and Burlington, Middlebury and Burlington, and Rutland and Middlebury are very successful at attracting riders and providing energy-efficient travel options. For instance, the Burlington-Montpelier Link Express serves 500 riders a day. Other successful regional services exist that provide access to jobs, services, and education resources.

By providing access to employment centers—primarily to jobs at hospitals, universities, ski resorts, and State government employers can increase the pool of applicants, creating additional efficiencies and supporting employment opportunities. Because the cost of housing is high in many of the employment-rich communities, transit services have been particularly effective at providing access to jobs for those living where housing prices are lower.

Carpool and vanpool programs like go!Vermont, and popular park-and-ride facilities also help meet Vermonters’ transportation needs. But there is room for more thinking and new solutions.

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2 The term working landscapes is used here in the context of Vermont statute, VSA 24, 2790(a)(2): http://legislature.vermont.gov/statutes/section/24/076A/02790.
3 For an overview, both volumes, and other material relating to the Plan, see: http://publicservice.vermont.gov/publications/energy_plan/2011_plan#current_plan.
Encouraging the adoption of EVs will require making comprehensive vehicle charging a priority.

Reduce Transportation Emissions by Improving Fuel Efficiency and Increasing the Use of Alternative, Cleaner Fuels

Strong policy based on carbon reductions from transportation use can move a state’s energy profile toward greater energy security and resilience. Vermont has begun to take a few steps in this direction. It can take more.

In 2009, Vermont Governor Jim Douglas signed a Memorandum of Understanding with other East Coast states, committing Vermont to examining the issues around a regional low-carbon fuel standard (LCFS). According to the Memorandum, most Northeast and Mid-Atlantic states have laws and other commitments for achieving an 80 percent reduction in GHG emissions. Although to date there is no regional LCFS, the Northeast States for Coordinated Air Use Management (NESCAUM) has supported several efforts to create a regional LCFS that the states can sign onto. One such effort is a project to establish a crude-oil carbon intensity tracker, which can calculate the full life-cycle carbon emissions of vehicle fuels used. NESCAUM has such a tool, and has developed scenarios that, to date, help demonstrate the tool’s capability. According to NESCAUM, the tool could be used to support a regional or state carbon intensity tracking or LCFS program. The tracker combines inputs for the various fuels’ extraction, refining, transportation, and combustion. The tracking tool would need to be updated and modified to accommodate any final program framework.

California created its Low Carbon Fuel Standard through an executive order from Gov. Arnold Schwarzenegger in 2007. Through the LCFS, California has been tracking its crude oil carbon intensity lifecycles annually since 2012, against a baseline obtained in 2010. The Air Resources Board posts the information, and solicits public comment, posting the responses to the comments.

Vermont’s transportation sector uses more energy than any other sector in the state, and contributes the highest level of greenhouse gas (GHG) emissions. Conversely, the electric sector in Vermont is among the cleanest in the country, as shown in Figure 1.

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6 MOU, ibid.  
7 Personal communication with Elaine O’Grady, Senior Policy Advisor, NESCAUM, July 30, 2015.  
8 Ibid.  
9 For more information on the California Air Resources Board’s calculation basis and the annual results, see http://www.arb.ca.gov/fuels/lcfs/lcfs.htm.  
These two factors contribute to an environment in which the advancement of electric vehicles could offer significant benefits, the more they replace gasoline- and diesel-powered vehicles.

Vermont is one of nine states to have adopted a strict set of regulations originating in California and requiring at least 15 percent of new-vehicle sales in 2025 to be zero-emission vehicles (ZEV Mandate, California’s response to a provision in the federal Clean Air Act). The ZEVs under the California regulations must run on electricity or hydrogen. Vermont’s adoption of the California ZEV standards, helps put more ultra-low-emission vehicles (ULEVs) and ZEVs on the road.

A large-scale switch to electric vehicles will require coordination between the transportation sector and the electricity sector. Electric vehicles can increase electric distribution utilities’ revenue. This is good for utility sales, but it will be important for the two sectors to work closely to manage the resulting additional load. Distribution utilities will need to partner with stakeholders in the transportation sector to plan for and install charging infrastructure (EVSE). The infrastructure should be located where travel behavior shows a need for charging. Load growth can be managed through smart charging, dynamic pricing and time-of-use (TOU) rates.

Regulators will have to play a significant role in balancing the consequences from increases in electricity use from electric vehicles (EVs). A statewide commitment to load-flattening, distributed generation, demand response programs, storage opportunities, and energy efficiency will complement this transition. State incentives for EV purchases will encourage market transformation in Vermont. The 2011 Comprehensive Energy Plan for Vermont sets a goal of supplying 90 percent of Vermont energy needs with renewable resources by 2050. The plan sets a 2030 goal of having 25 percent of the fleet powered by renewables. This is the equivalent of approximately 142,000 vehicles. Further, the Legislature created a Renewable Energy Standard in 2015 that sets utility milestones for renewable energy use in 2017, 2019, and 2032. One of the categories calls for “energy transformation projects,” which could be fulfilled in part—with appropriate levels of coordination and regulatory

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\[^{11}\] In enforcing the federal Clean Air Act within California, that state created the ZEV Mandate. See the Encyclopedia of Earth for a well-stated description of how California and other states have used the Clean Air Act as the authority for signing on to the ZEV Mandate. [http://www.eoearth.org/view/article/151129/](http://www.eoearth.org/view/article/151129/).
The quickest way to achieve a change in energy supply and use —by electric vehicles. Developing an EV incentive program is a critical next step for Vermont’s support of EV adoption.

To encourage the adoption of EVs, it will be important to plan for and make a priority a comprehensive vehicle charging infrastructure. DC fast-charging stations must be available where longer-distance travel occurs. And public-private partnerships with gasoline and diesel service stations might be an appropriate way to integrate EV charging stations with existing fueling stations. Under the existing financing authority in the State Infrastructure Bank (SIB), a program to support the installation of DC fast charging with a retail fuel dealer with several locations throughout Vermont would be one way of supporting a broader deployment of DC fast chargers, to increase electric miles driven.

**Ensure Adequate Revenues to Address Critical Needs**

A system benefits charge. Vermont already has a potential funding replacement for the State gasoline and diesel taxes for electric vehicle owners. As gas- and diesel-powered vehicles are replaced with vehicles powered by regulated electricity, they are subject to the system benefits charge that is already in place. This mechanism could be exploited to replace and eventually supplant revenue from the current dominant energy used for transportation (gasoline and diesel), with a charge on the new source of energy used for transportation: electricity. Funds from this system benefits charge could be used to maintain transportation and charging infrastructure, as revenue from taxes on fossil fuels dwindle with reduced sales of gasoline and diesel. The flow of system benefits charges to supporting transportation efficiency is shown in Figure 2.

Facing up to the correlation between carbon and energy use. The quickest way to achieve a change in energy supply and use is to change the way we value carbon. Primary mechanisms for pricing carbon pollution are: a carbon tax; cap and trade carbon credit programs; and a low carbon fuel standard.

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13 In Vermont, this system benefits charge is known as the “energy efficiency charge,” which is collected by the state’s distribution utilities and supplies the statewide energy efficiency utilities operated by VEIC (Efficiency Vermont) and the Burlington Electric Department.

Cap and trade programs. Carbon cap and trade programs lower greenhouse gas emissions through a market trading mechanism that puts a cap on carbon emissions. Carbon credits from clean sources of energy can help offset these emissions, and as such, can be traded. The Regional Greenhouse Gas Initiative (RGGI) is a carbon cap and trade program covering carbon from the electricity sector in Vermont and eight other Northeastern and Mid-Atlantic states. Revenues from Vermont’s participation as a carbon emission creditor help fund the state’s programs to improved building performance and heating system efficiency.

EVs could be viewed as a cost containment measure for increased renewable electricity generation. Under this model, they would hold some value in the RGGI cap and trade regime. That is, EVs provide a flexible load that can be deployed to minimize curtailment of renewable resources, thus increasing their cost-effectiveness.

Carbon tax in Vermont. The rationale for a carbon tax contains several elements: (1) it offers simplification (replacing disparate energy taxes with a single fuel tax based on each fuel’s carbon intensity); (2) it efficiently builds in price signals that influence investments in carbon reduction; (3) it motivates behavior change (reducing consumption of fossil fuels and CO2 emissions by making fossil fuels more expensive); and (4) it avoids the possible manipulation of carbon markets under cap and trade programs. One of its principal disadvantages is that on its face, it is regressive, contributing to the already-high energy burden of low-income populations. The regressive elements of such a scheme can be mitigated. VEIC is a partner of Energy Independent Vermont.

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Stymied by the Legislature, Gov. Inslee (WA) used executive action to impose a binding cap on emissions.

(EIV), a coalition of environmental organizations, Vermont businesses and business associations, academic leaders, low-income advocates, and Town Energy Committees. The coalition is dedicated to addressing climate change by putting a price on pollution in Vermont. It has proposed a carbon pollution tax that contains provisions for re-distributing 90 percent of the revenue raised to Vermonters and businesses with a special focus on ensuring equity. Among the strategies is an additional rebate for Vermonters who are at or below 200 percent of the federal poverty level.

Using a different approach, Washington State’s Governor Jay Inslee has proposed a carbon pollution “accountability” bill that compels large polluters to pay a pollution tax under an arrangement that also offers allowances to be traded. Revenues (expected to be approximately $1 billion) will be targeted for disadvantaged communities, education, and transportation.

**Low Carbon Fuel Standard (LCFS).** This mechanism, which has been in place since 2008 in California, is a rule or regulation that reduces carbon intensity in transportation fuels, compared to conventional gasoline and diesel. Common low-carbon fuels are alternative fuels and cleaner fossil fuels, such as renewable natural gas—and to a lesser extent, compressed natural gas decrease carbon dioxide emissions associated with petroleum-using vehicles, in the context of the entire life cycle of the fuel (“well to wheels”).

Vermont’s former governor Jim Douglas signed a Memorandum of Understanding in 2009 with many states in the Northeast, setting a schedule for future implementation of an LCFS largely modeled on the California standard. In committing Vermont to the agreement, Gov. Douglas declared his state “a leader in limiting greenhouse gas emissions,” and suggested the imposition of an LCFS would help both “meet our environmental challenges and encourage the creation of green jobs.”

In its comments to the Vermont Public Service Department in July 2015, regarding future directions for the state’s Comprehensive Energy Plan, VEIC advocated for comprehensive carbon pricing via a cap and trade program or a carbon tax, supplemented by a Low-Carbon Fuel Standard (LCFS). The LCFS offers a strong mechanism for reducing greenhouse gas emissions.

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18 Its plan for a carbon pollution tax that addresses the regressive nature of the tax can be found at: http://www.energyindependentvt.org/our-plan/.
The success of implementing any of these options will be determined by careful program design. Effective administration, regulation, monitoring, and evaluation—and the ability to make adjustments, will be critical to the programs’ success. An LCFS, taking into account carbon intensity of fuels, based on their lifecycle analysis, will make programs more accurate and effective.

**Local Policy Considerations**

Local and regional planning commissions and governments will take on an increasingly important role as Vermont’s transportation and energy sectors continue to evolve toward greater electrification. This means changing zoning and parking codes, changing infrastructure spending, and reconsidering how the public sector locates facilities.

This evolution assumes that these efficiencies will, at some point, become priorities in town hall meetings and town offices around Vermont. Property taxes already support the maintenance and construction of transportation infrastructure and transit operations. As part of making transportation efficiency a priority, cities and towns should support private enterprise in planning and siting electric vehicle supply equipment (EVSE—charging stations, for example) along city streets, near commercial hubs, at park-and-ride facilities, and along highways.

These considerations will not solve all of the state’s transportation challenges. However, if we are to promote mobility options, reduce GHG emissions, and ensure adequate revenues, state and local governments will need to continue to support walkable and transit-oriented development, and have the appropriate zoning and codes in place to support electrification of transportation.

**Conclusion**

Vermont should support its energy, greenhouse gas reduction, and transportation goals through combined and coordinated policies. It can do this most effectively by:

- Continuing its support for transit, walkable, and bikeable communities
- Supporting strong downtowns and land use policies
- Promoting and offering incentives for EVs and EV infrastructure
- Putting a price on carbon emissions (see VEIC’s Carbon Pricing paper on www.veic.org/ResourceLibrary.)