
VERMONT RURAL TRANSPORTATION ACCESS, CLIMATE CHANGE, AND EQUITABLE SOLUTIONS

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INTRODUCTION

Transportation is fundamental to healthy communities. It connects residents to their jobs and livelihoods, to doctor's appointments and grocery stores, to parks and other recreational facilities, and to other destinations essential for health, wellness, and a decent quality of life. Streets designed to accommodate walkers and bicyclists also promote health through physical activity. However, as residents of a largely rural state, most Vermonters need to travel further — and at higher expense — than those in urban areas, mainly relying on personal automobiles. For many low-income Vermonters, older residents, and people with disabilities, who do not own or cannot operate automobiles, reaching necessary destinations is even more difficult, as they are often left to rely on a patchwork of limited public transportation, volunteer driver services, and rides from family and friends. Furthermore, the state's heavy reliance on personal vehicles — powered by gasoline and diesel — has another important consequence: the transportation sector in Vermont accounts for 45% of the state's yearly greenhouse gas emissions, which contribute to climate change. Due to these overlapping issues, improvements to Vermont's rural transportation systems present an opportunity to bolster the health and quality of life in Vermont communities by better serving the needs of all residents, while ratcheting down the state's contribution to climate change.

This is a key time to address the state's transportation system. The Vermont Global Warming Solutions Act (GWSA), enacted in 2020, created greenhouse gas emissions reduction requirements. The Act also created the Vermont Climate Council and tasked it to develop the Vermont Climate Action Plan, which will set out a process to achieve the required emissions reductions and to prepare the state for the impacts of climate change.¹ The Council's Rural Resilience and Adaptation Subcommittee, in particular, has the responsibility to provide

policy and planning recommendations to help rural communities adapt to climate change and develop stronger emergency preparedness. Transportation will be an important component of the Climate Action Plan, since it relates to both reducing emissions and adapting to climate impacts. The GWSA requires the development of the Climate Action Plan by the end of 2021.

During the 2020–1 academic year, a joint team of Yale University and Vermont Law School students conducted a study to analyze the nexus of Vermont rural transportation with three key factors: *equity*, *public health*, and *climate change*. To structure the research, the team focused on the Rutland and Northeast Kingdom areas as case studies. The team conducted 24 interviews with Vermont community members, local and state agency personnel, and community-based organization staff to better understand current barriers to clean and equitable transportation, as well as to identify existing successes and ongoing work. The interview results were combined with a review of scientific (i.e., peer-reviewed) papers, agency reports, and other documents, resulting in identification of a set of barriers to transportation access in Vermont. Next, the team drafted policy recommendations to address those barriers, and vetted these recommendations with community stakeholders before being finalized. This brief serves as a summary of the project findings and recommendations.

BARRIERS TO TRANSPORTATION ACCESS IN VERMONT

Stakeholder interviews revealed a number of barriers to transportation access and clean transportation in Vermont, which are summarized into the seven themes below.

1 Built environment and rural character

“Vermont is challenging because it’s a rural state, and so although pockets of employment are in urban areas, a lot of people are forced to drive. It’s hard to make a go of public transportation.”

—STAKEHOLDER INTERVIEWEE

Vermont is characterized by its vibrant downtowns surrounded by rural landscapes, but this type of development leaves Vermonters reliant on personal vehicles and makes public transportation difficult to provide. In downtown areas, people are more likely to have access to a variety of transportation options, including walking, biking, and public transit. But pedestrian infrastructure, like sidewalks and crosswalks, is lacking in many downtowns and on the edges of towns. Vermont does have a policy that supports the building of “complete streets;” that is, streets designed and built for safe and convenient travel for users of all ages and abilities, including pedestrians, bicyclists, drivers, and public transportation users. However, as one interviewee put it, *“Complete Streets has a long way to go.”* Because so many transit trips begin and end as walking trips, creating more pedestrian friendly environments will make it easier and safer to take public transportation. In particular, it could increase ridership on public transit that follows fixed routes, which in turn could reduce dependence on dial-a-ride ser-

vices, leading to cost savings for the transit agency or the municipality.

Outside of town, the “first mile/last mile” problem – that is, the distance someone needs to travel to get to or from the bus stop at the beginning and end of their journey – is even greater. For this reason, many in rural areas rely on dial-a-ride services. However, these are costly to provide, have restrictions on user eligibility, and often only provide trips for doctor’s visits and other healthcare needs.

Between 2005–2014, about 78% of residential structures were built outside of downtown areas,² increasing the likelihood that those living in the new developments would rely on cars to get around. Building more housing, especially affordable housing, in downtown areas allows more people to live closer to essential services such as healthcare, schools, and grocery stores. This makes it easier for those living in downtown areas to walk, bike, or take transit to get to their destinations. Even if those living in downtown areas drive, the distance they travel (calculated as their “vehicle miles traveled”) is likely to be less, reducing total greenhouse gas emissions from transportation.

2 Access for underserved populations

Low-income residents, older adults, and people with disabilities, among others, often face challenges accessing transportation in Vermont. Regional bus services that follow specific routes on a set schedule do not currently meet the needs of these populations, especially if they live in rural areas. Demand responsive programs, particularly the Vermont Elders and Persons with Disabilities Transportation (E&D) Program, have been largely successful at meeting essential transportation needs for these groups, such as access to medical care, but the capacity of these services is limited by budget and the availability of volunteer drivers (as has been the case during the COVID-19 pandemic). Access

to food is also a concern in Vermont, as it can be difficult for people living in rural areas to access food shelves. In the Northeast Kingdom, the closure of a series of “minimarts” led to a 40-minute ride to the nearest fresh food source for one interviewed resident. The lack of access to public transit more broadly contributes to higher annual transportation costs for residents, which is especially a concern for low-income residents, since the costs represent a higher proportion of total household expenses.

3 Awareness of transit services

“We need better technologies and better information for people to feel comfortable getting out of their cars.”

– STAKEHOLDER INTERVIEWEE

Rural residents in Vermont often lack adequate information about existing transit services and options. This includes basic awareness about the services available, as well as information that makes using the services easier, such as the locations of bus stops and real-time information about arrival times. The Vermont Agency of Transportation (VTrans) has attempted to address this issue with the development of the *Go! Vermont* flexible trip planner.³ However, the planner does not currently provide information about services such as paratransit and dial-a-ride, which are programs that transportation-burdened communities rely on. In addition, while VTrans has implemented awareness and marketing activities for *Go! Vermont*, more targeted outreach among underserved communities is needed. To its credit, VTrans has partnered with the Vermont Association for the Blind and Visually Impaired and the Vermont Center for Independent Living to raise awareness about the trip planner.⁴ However, there seems to have been no targeted outreach to senior centers, hospitals, or veterans groups, all of which serve individuals that are likely to face mobility challenges and would benefit from the use of this tool.

4 Stigma and culture

“It seemed like people who were using [transit] were people who had no other options. When people have other options, unfortunately, they drive.”

– STAKEHOLDER INTERVIEWEE

Stigma associated with the use of public transportation was identified as one of the major barriers to increasing transit ridership. There is a common misperception that public transit is intended only for riders who are from a low-income population and with no access to alternative modes of transport. This belief is fueled by the inconvenience and discomfort of using public transit. For instance, bus stops lack amenities such as shelter and benches, which makes using the bus system uncomfortable, inconvenient, and potentially dangerous. This situation is made worse by the long wait times that bus users experience.

5 Electrification

“[People are] cost constrained [and] they’re going to buy a \$5,000 used car, regardless of how much gas it guzzles.”

– STAKEHOLDER INTERVIEWEE

Given Vermont’s reliance on personal vehicles, electric vehicles (EVs) will need to be part of any plan to reduce greenhouse gas emissions in the state. But many Vermonters think EVs are too expensive or not suited to their lifestyle and Vermont’s weather and topography. While the cost of a new EV has fallen sharply in the past decade, and there are more model options introduced every year, the up-front purchase price of an EV is still generally higher than that of a new gasoline-powered vehicle. On the other hand, the average annual cost of operating an electric or hybrid vehicle is lower than that of gasoline-powered cars, thanks

to lower fuel and maintenance costs. In fact, the average rural Vermont driver could achieve substantial savings each year by switching to an EV.^{5,6} But low-income households often cannot achieve the savings offered by EVs, since, nationally, fewer than 10% of households earning below the median income purchase new cars.⁷

Vermont's EV incentive programs are designed to help low-income Vermonters access EVs. The Mileage Smart Program, launched in 2020, provides eligible, low-income Vermonters with up to \$5,000 toward the purchase of a used electric or hybrid vehicle that gets at least 40 miles per gallon. The program received over six times as many applications as it accepted. One interviewee, when describing the Mileage Smart Program, noted that the program is *"what made the difference. Just lower the cost, just make it the same amount to buy a used electric or hybrid vehicle and people will do it."*

6 Climate impacts to transportation infrastructure and access

"Vermont is a very wet state."

— STAKEHOLDER INTERVIEWEE

Vermont is currently facing intensifying effects of climate change.⁸ Stakeholder interviewees detailed how stronger storms are a major risk to roads, bridges, and other transportation infrastructure. For instance, in 2011, Tropical Storm Irene caused significant damage: more than 500 miles of state roads and approximately 200 bridges were impacted, effectively disrupting transportation in the state.⁹ Even when infrastructure is not damaged, storm events can affect resident access to transportation, if public transit services are limited or cancelled. Interviewees described how this can have a disproportionate impact on the elderly and people with disabilities. VTrans has undertaken many technology-focused projects to identify and address

risks to transportation infrastructure. However, there is a need to place an equal focus on engaging community members, increasing awareness about climate impacts, and understanding community needs during extreme-weather events. This study's interview results suggest that, at present, few community members are aware of state planning processes, like those under the Global Warming Solutions Act, to prepare for climate change.

7 Funding gaps to maintain and expand rural transportation services

While Vermont spends more on public transit per capita than similar rural states, many stakeholders identified a lack of funding as a challenge for maintaining and expanding transportation services in rural areas. Currently, Vermont relies on a mix of state and federal funding sources for transportation. The State Transportation Fund generates revenue from a fixed per gallon gasoline and diesel tax, a motor vehicle purchase and use tax, and other programs.

Aside from state funds, the largest source of revenue for transportation in Vermont comes from federal sources. However, federal funding has the challenge of requiring state matching of funds. Recently, however, several additional funding opportunities have emerged, including the Coronavirus Aid, Relief, and Economic Security (CARES) Act and the Coronavirus Response and Relief Supplemental Appropriations Act (CRRSAA). Unlike most Federal funding, these acts do not require any state matching of funds. Vermont received over \$21 million to fund transit providers under the CARES Act, and VTrans received an additional \$26.7 million under the CRRSAA.^{10,11}

RECOMMENDATIONS

1 Enhance public transit experiences by increasing awareness about existing services, improving comfort and safety of existing services, and supporting local demand responsive systems.

VTrans should increase awareness and knowledge about existing services by continuing to invest in upgrades to technologies such as the *Go! Vermont* trip planner and by conducting targeted outreach among communities underserved by the current transportation system. Upgrades to the trip planner should incorporate additional transit options, such as paratransit and dial-a-ride services, as these will enhance its usefulness, especially to underserved communities.

In addition, existing public transit services should be enhanced to provide a more comfortable and convenient user experience. This could include provision of appealing public transit shelters at bus stops, reducing wait times by increasing the frequency of buses, and improving first and last mile conductivity by increasing the number of bus stops. When building out public transit shelters and other user infrastructure, VTrans should use inclusive processes to engage community members, such as through creative placemaking, that is, the integration of arts, culture, and design activities into efforts that strengthen communities (e.g., community-produced artwork for local bus stops). Doing so would help build a sense of community ownership over the infrastructure.

Finally, in certain areas of the state, expanding fixed-route public transit options is not viable due to the long distances involved and high costs per trip. In such areas, Vermont should promote and support demand-responsive systems, such as dial-a-ride and volunteer driver services. Vermont also should consider providing additional support

for volunteer drivers through targeted zero- or low-emissions vehicle incentives programs.

2 Continue to support electrification of the transportation system by providing EV financial incentives and tax rebates, as well as by further expanding EV charging infrastructure.

To support electric and hybrid vehicle access while reducing emissions, the State of Vermont should continue the Mileage Smart Program and expand its available funding. Authorizing the program over several years would provide customers and car dealerships with more certainty of the program's longevity and would increase awareness of the program.

In the long-term, the state and towns need to continue to expand EV charging infrastructure. Expansion of this infrastructure will increase EV adoption throughout the state, as people will become more comfortable with owning EVs if they are confident that they will have easy access to charging stations. Siting of EV charging stations will need to consider flood projections, especially as Vermont experiences more flooding due to climate change.

Finally, Vermont's EV programs will need to more fully respond to resident concerns about EV adoption if the state is to meet its climate goals. For instance, in this study's interviews, stakeholders voiced concern about not only the cost of EVs, but also questioned whether they can adequately perform in winter conditions.

3 Prepare the transportation system for future climate impacts through the development of participatory climate adaptation planning that takes into account the needs of communities, particularly those that are transportation burdened.

To develop policies that equitably prepare for the impacts of climate change in Vermont, there is a need to ensure broad participation by diverse stakeholder groups in the policy development process. In particular, the Vermont Climate Council, which is tasked with identifying implementation priorities for the Global Warming Solutions Act, should ensure participation from all groups, particularly people with disabilities, seniors, migrants, low-income residents, and people of color, who are likely to face disproportionate impacts of climate change and compounding problems from transportation burdens. To do this, the Council should conduct stakeholder mapping and tailored outreach and engagement activities, including community meetings and focus groups.

In addition to engaging communities in the development of adaptation plans, relevant agencies should also ensure appropriate communication of existing plans with important stakeholders across the state. Finally, the state should foster cross-municipality and state/municipality collaboration and communication when developing and implementing these plans. This will ensure that policies across the state and at various levels integrate well with each other, rather than being at odds.

4 In the long term, address the challenges of the built environment by implementing affordable housing projects in downtown centers, improving the state's Complete Streets policy, and promoting adoption of Complete Streets by municipalities and local governments.

Ensuring transportation accessibility for those living far outside of downtown centers will remain a challenge regardless of funding and services available. In the long-term, incentivizing denser development in downtown areas would make it easier for people to access essential services such as healthcare, schools, and groceries. Those who live

in downtown areas can more easily take transit, and those who drive will not need to drive long distances to access their destinations, reducing vehicle miles traveled and emissions from transportation.

To this end, Vermont should pursue state-led implementation of Complete Streets, learning from best practice Complete Streets policies from other states (e.g., Massachusetts) to address both connectivity and implementation issues. Many small towns lack the capacity and technical expertise to implement Complete Streets without additional support from the state. Taking some of the onus away from municipalities presents Vermont the opportunity to perform comprehensive pre-project evaluations, offer training to municipal officials and staff, and specify more rigorous timeframes.

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