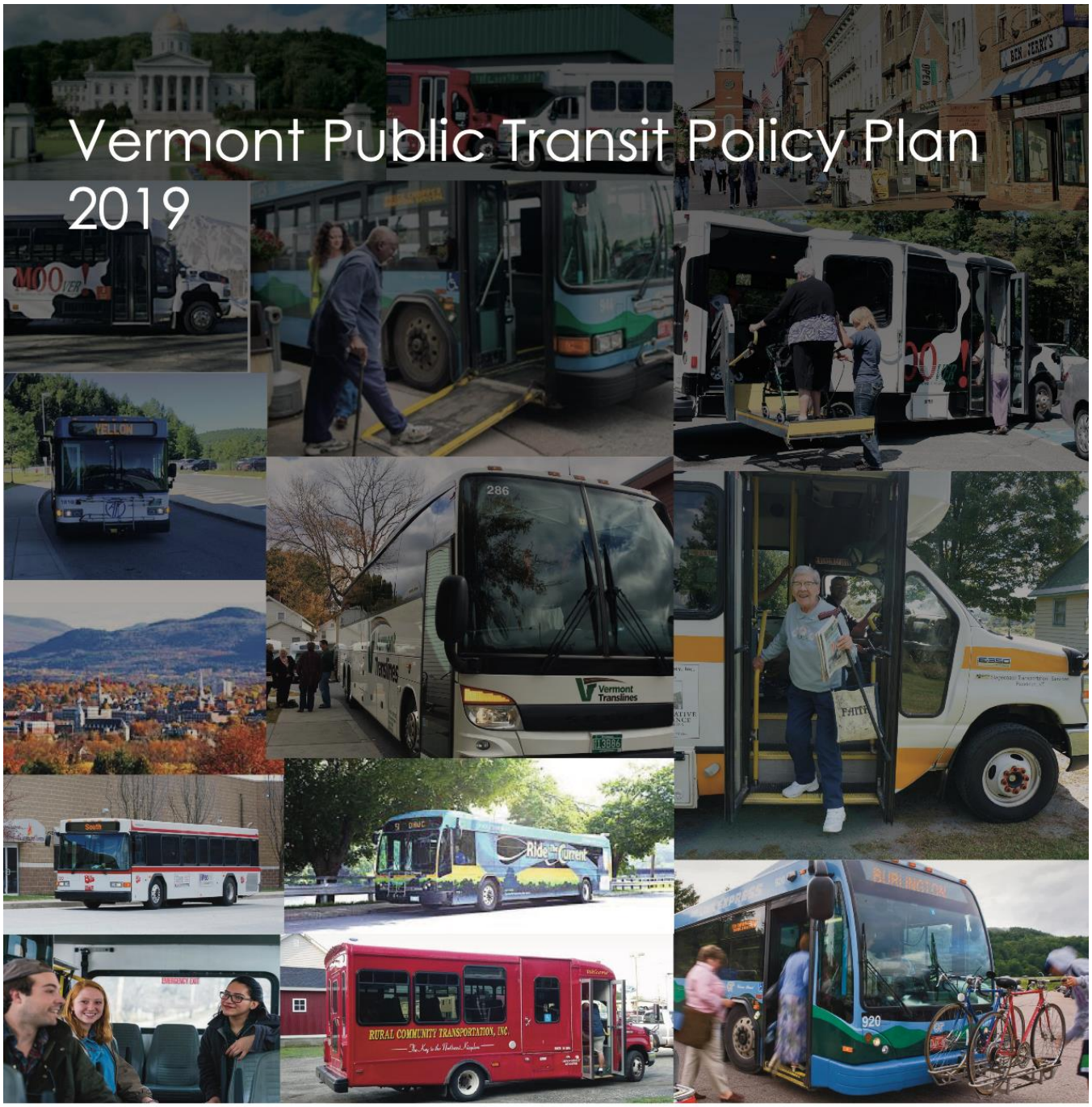

Vermont Public Transit Policy Plan 2019

Vermont Agency of Transportation
Division of Policy, Planning, and Intermodal Development

November 21, 2019

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Thanks to the many Vermont citizens who participated in the public meetings, submitted comments, and shared their vision for transit in Vermont. Your input helped shape this plan.

EXECUTIVE SUMMARY

Introduction

The Public Transit Policy Plan (PTPP) is one of five modal policy plans produced by the Vermont Agency of Transportation (VTrans). The first PTPP was published in January 2000 in response to an act of the Legislature requiring its development. Updated policy plans were produced in 2007 and 2012. The current PTPP reviews and updates past policies and goals and develops strategies to meet a wide range of public transit challenges. It also satisfies the requirements of the federally-mandated Human Service Transportation Coordination Plan: an analysis of the transportation needs of individuals eligible for transportation under the Section 5310 program—that is, people over the age of 60 and people with disabilities—and a list of transportation projects that would address those needs. The PTPP will serve as the primary guidance document for the continued growth and development of public transit in Vermont over the next ten years, with a further update expected after five years.

Vermont's Existing Transit System

Vermont is served by seven public transit providers that offer a range of transit services, from local fixed-route to commuter to demand response. Local routes generally operate all day, while commuter routes typically operate during peak periods Monday through Friday and include express segments. Demand response services are offered by the public transit providers and their partners across the entire state. Many providers also operate shopping services which may run once per week or once every other week. The broader transit network includes intercity bus and rail and ferries.

In State Fiscal Year 2018 (July 1, 2017 to June 30, 2018), Vermont's public transit systems provided 4.74 million trips. Almost half of those rides were provided in the Chittenden County region. In SFY 2018, total transit operating costs reached $34.1 million. The Chittenden County region accounted for approximately 37% of the total costs. In the past five years, total transit operating costs have increased by 27%, while ridership numbers have fluctuated.

The Vermont Agency of Transportation (VTrans) plays a leading role in funding and overseeing transit service in Vermont. The Public Transit Section of VTrans is responsible for the vast majority of oversight of the public transit program and leads the program to greater efficiency and effectiveness through several major initiatives, such as Go Vermont, Mobility on Demand, Rides to Wellness, enhanced demand response scheduling software, and others.

VTrans has many partners in the transit system including the state's eleven regional planning commissions (in Chittenden County, the RPC is also the metropolitan planning organization), the Agency of Human Services, the Public Transit Advisory Council, the Vermont Public Transportation Association, the individual transit providers, and other public and private entities.

Critical Themes and Challenges

In addition to its everyday role of providing mobility to Vermonters, the public transit system plays a key role in addressing several important trends. For this PTPP, foremost among these is **Vermont's aging population**, as within the next 10 years, the leading edge of the Baby Boom generation will enter their 80s, the start of a projected 60% increase in that age cohort. To address the needs of the aging population, a

coordinated strategy including land use, housing, technology, funding, and community participation must be developed and executed.

An **economy in transition** also has significant implications for public transit. Recent job growth in Vermont has been mostly restricted to the northwest corner of the state. In that growing area, public transit is needed to help people to reach jobs and to support economic development without using large tracts of land for additional parking. In the rest of the state, people have to travel farther for employment opportunities, and public transit plays a major role here as well, providing access to those jobs, especially for lower-income individuals who may not be able to afford to drive.

Technology has an impact on almost every facet of life, and public transit is no exception. It has the potential to greatly enhance the information available to the rider and to make it much more convenient to request and schedule on-demand rides. Realizing that potential faces significant hurdles, including the lack of universal cellular and broadband access and the inaccessibility of smartphone technology to some segments of the population.

A major challenge faced by public transit is establishing and maintaining a presence in the **public's awareness**. The PTPP explores how geographic, age-related, and income-related differences affect the public's perception of transit in Vermont. Through partnerships, developing stories and communicating those stories, public transit may be able to occupy a higher rung in the public consciousness.

Finally, the success of public transit is intimately related to **land use and housing** patterns. Over 60% of Vermont residents live in areas with low population density. Traditional bus routes are less feasible in areas with rural density (less than 3 households per acre). A sustained, coordinated effort among state agencies, municipalities, the private sector (employers, developers and property owners) and transportation providers to promote future growth in town and village centers can lead to a much more efficient and effective public transit system in the long term.

Needs Assessment

As an outcome of many forms of analysis, outreach and data collection, four prominent themes emerge:

- **Lack of transit access in rural areas**
  - While it is the case that traditional bus services cannot operate efficiently in areas without a significant amount of population density, the need for public transit access outside of urban areas and small towns exists and is likely to grow as the population ages. The challenge is both one of service supply—having sufficient resources available to operate appropriate service in rural areas—and one of information and awareness in that people may not know that resources exist nor how to gain access to them.
- **Lack of resources to meet the needs of vulnerable populations both today and in the future**
  - Compared to most rural states, Vermont is very generous in the expenditure of state and federal funds to assist older adults and people with disabilities, as well as low-income individuals. In spite of that, there are significant unmet needs, especially with regard to trips for wellness and social activities. The expected large increase in Vermonters over the age of 80 in the coming decade will increase the gap in resources.
- **Lack of transportation for access to jobs**

- The need for better options for work trips, supported by analysis of the availability of existing transportation services, was raised in all eleven Regional Forums and emerged as a major theme in eight of those. This need is a component of each of the needs described above. Potential solutions may include first mile/last mile connections, longer fixed route service hours or more useful schedules, subscription demand response service for work trips, increased use of carpooling and vanpooling, and new types of services such as microtransit (technology-enabled, near real-time demand response service such as that provided by Uber and Lyft but operated by public transit providers).

- **In areas that have bus routes, improved service levels and connections are needed**
  - Various outreach channels indicate that there are many Vermonters, especially young ones, who would like to use public transit but do not because the schedules do not work for them, or because there are missing links in the system. Increased evening and weekend service would be attractive to many, and improved first mile/last mile connections via a variety of modes would make the core bus routes accessible to a wider area.

Policy Plan Recommendations

The public outreach and needs analysis resulted in a recommendation for revised policy language to be incorporated into statute, replacing the current language in 24 V.S.A. Chapter 126 §5083. All of the policy goals contained in the proposed language support the State priority initiatives:

- Grow the economy
- Make Vermont more affordable; and
- Protect the most vulnerable.

Goals 1 and 2 (below) aim to protect vulnerable Vermonters by improving their mobility. Goals 3 and 4 help to make Vermont more affordable by improving access to affordable transportation options for all Vermonters. Goal 5 directly supports the initiative of growing the economy.

Suggested revised language for the policy declaration is provided below:

> (a) It shall be the State's policy to make maximum use of available federal funds for the support of public transportation. State operating support funds shall be included in Agency operating budgets to the extent that funds are available. State policy shall support the maintenance of existing public transit services and creation of new services to promote the following goals:
>
> > (1) Providing basic mobility for transit-dependent people. Basic mobility allows for access to essential services including medical care (including mental health and dental services), food (grocery shopping and congregate meals), day care for children and older adults, and social and wellness resources.
> >
> > (2) Providing access to employment both for people who are not able to drive themselves and for people who choose to use transit vehicles and other shared-ride services to avoid congestion and the cost of automobile commuting
> >
> > (3) Expanding public transit service in rural areas for all trip purposes, making use of the most cost-effective means of serving low-density areas.

(4) Providing convenient mobility choices to reduce the dependence on private automobiles, thereby reducing traffic congestion, improving air quality, decreasing greenhouse gas emissions and sustaining the viability of the highway network.

(5) Supporting economic development in urban and rural areas, including services for workers and visitors that support the travel and tourism industry.

(b) All services supported by state and federal funds administered by the Agency shall strive to increase ridership and meet performance standards as set in the most recent Public Transit Policy Plan and updated in the Agency's annual Route Performance Report. The Agency shall work with transit providers to ensure efficient and effective use of transit subsidies and ameliorate the performance of those services that do not meet the defined standards. Providers shall design public transit service in the most appropriate and cost-effective way for their services areas, using all available appropriate service options.

The existing paragraphs (b), (c), and (d) in §5083 would follow the proposed text as paragraphs (c), (d), and (e).

The PTPP includes recommendations for an enhanced performance measurement system and more specific criteria for the feasibility of new services. These recommendations will help the Public Transit staff at VTrans to better monitor existing services and evaluate proposals for new services when additional funding becomes available.

Other than the new policy language above, the core of the PTPP recommendations consists of a set of action items for VTrans and its partners to pursue over the coming decade. These are organized into five groups, largely reflecting the critical themes and challenges discussed in chapter 3:

- Addressing aging Vermont
- Expansion of transit access
- Outreach and raising awareness
- Using technology to move to next generation of ride scheduling
- Land use planning and investments

A brief summary of each of the action items is presented below:

Addressing Aging Vermont

Establish Working Committee with the Agency of Human Services

The PTPP recommends the establishment of a working committee focused on the issue of mobility for older Vermonters. The working committee would be led jointly by VTrans and the Department of Disabilities, Aging and Independent Living (DAIL) and include representatives from other state and regional organizations with a stake in issues of aging.

More Comprehensive Planning for Elderly & Disabled (E&D) Persons Transportation

The PTPP recommends that VTrans host a statewide E&D meeting and develop a work plan that would be carried out by all of the E&D regions. The goal would be to replicate in all regions of Vermont the data collection process that has been undertaken in Chittenden County and to share best practices having to do with coordination, low-cost trips and volunteer management, among other topics.

Establish Personal Mobility Accounts

A Personal Mobility Account (PMA) would allow individuals to make use of demand response transit services for whatever trip purposes they desired. For this program to function, all Vermont transit providers would need to allow for a "client-pay" billing procedure, as private funds would supplement those available from the E&D program.

Expansion of Transit Access

Spur Growth of Volunteer Driver Programs

1. Streamline the background check process
2. Create a check box on Vermont vehicle registration forms to sign up as a volunteer driver
3. Establish non-monetary incentives for volunteer drivers
4. Increase marketing budget and collaborate with partner organizations
5. Share best practices

Expand Access to Healthcare

Work with hospitals and health centers to expand Rides to Wellness program statewide, incorporating funding from the healthcare sector to make the program sustainable, once it is established that there is a positive return on investment. Another area of emphasis to improve access to healthcare is to maintain ongoing communication between transit providers and primary care organizations.

Expand Access to Employment

1. Increase awareness of ridesharing options through Go Vermont
2. Engage employers in helping to fund job access transportation
3. Create the "late bus" for shift workers
4. Expand partnership with Good News Garage
5. Create partnerships with TNCs where available

Expand Local Connections

Explore feasibility of expanding local connections such as bike share, scooters, microtransit and other types of feeder service.

Expand Access to Available Seats in Transit Vehicles

Transit providers should implement a policy that if a non-eligible rider has origin and destination locations within a short distance, say a tenth of mile, of where eligible riders on a van/volunteer trip are already scheduled to go, that non-eligible rider should be allowed to ride in the vehicle.

Support VPTA to Become a Viable Statewide Broker

Under this recommendation, VTrans will offer financial and organizational support for VPTA to enhance its ability to broker trips. This could include new software and training as appropriate.

Expand Funding Pool Overall

Seek to increase funding for public transit from federal, state, local, private and institutional partner sources.

Outreach and Raising Awareness

Continue Investment in Go Vermont

1. Increase marketing and promote links from others
2. Create interactive map of bus routes

3. Explore new program models and staffing structures for Go Vermont
4. Consider a standalone app for Go Vermont

Document Stories of the Value of Public Transit

VTrans should produce a series of short videos in each of the regions of Vermont with current users of public transit explaining how it makes a difference in their lives. These videos could be incorporated into the Go Vermont website and shown at Town Meetings when local funding proposals are being discussed.

Encourage All Transit Providers to Establish an "Ambussadors" Program

VTrans recommends an "Ambussadors" program be an ongoing initiative for all transit providers. An Ambussador, who could be an agency staff member or a volunteer, would explain how to ride and then be available to ride one-on-one with anyone who feels the need for a companion for the first ride or two.

Continue and Expand Partnerships and Activities to Raise Awareness

VTrans should continue and expand efforts to develop reciprocal relationships with partner organizations so that all parties become more informed about existing and future services offered.

Create Informational Brochure: "How Transit Works in Vermont"

A brochure, that would be available in print form and online, could explain the basics of public transit, including the types of services available, the roles of VTrans and the public and private transit operators, as well as partnerships with human service agencies and other non-profits.

Engage with Public Media to Spur Discussion and Raise Awareness

VTrans should discuss with media additional on-air discussions of public-transit-related topics following the successful appearance in July 2019 on Vermont Public Radio's call-in show, Vermont Edition and in May 2019 on the Dave Graham show on WDEV.

Using Technology to Move to Next Generation of Ride Scheduling

VTrans should pursue a paradigm shift in demand response transportation by expanding the rider interface of the microtransit model to cover all modes of public transit and to handle all funding programs.

Long-Term Land Use Planning and Investments

Work with State, Regional and Local Entities to Promote Efficient Development

VTrans and others should maintain focus on two objectives in the Long Range Transportation Plan:

- Maintain and strengthen the vitality of Vermont's villages and downtowns.
- Make transportation investments that promote active transportation and reduce social isolation.

Invest in Workforce Development to Maintain Transit Provider Staffing

VTrans should work with colleges and universities, such as Vermont Technical College, to establish programs to train drivers and mechanics. The Vermont legislature should also consider allowing people who acquire commercial driver's license (CDL) credentials while serving in the military to easily qualify for a passenger transportation endorsement with an appropriate level of training.

Support Electrification of the Transit Fleet

VTrans, working with the transit providers, has begun the procurement of electric transit vehicles. Experience with these initial vehicles on the hilly terrain and in winter conditions will guide future procurements, with the goal of substantially reducing greenhouse gas emissions from transit vehicles.

1. INTRODUCTION

Role of the PTPP

The Public Transit Policy Plan (PTPP) is one of five modal policy plans produced by the Vermont Agency of Transportation (VTrans). "Public transit" means transportation by a conveyance that provides regular and continuing general or special transportation to the public, including transportation provided by buses and vans operated by transit agencies, demand-response rides provided by volunteer drivers and taxis and scheduled through the transit agencies, intercity bus and rail and passenger ferries. The plan does not include school bus transportation operated by school districts nor charter bus service operated by private companies.

The first PTPP was published in January 2000 in response to an act of the Legislature requiring its development. Updated policy plans were produced in 2007 and 2012. Although each plan addressed a wide range of issues, the primary outcomes from each plan can be characterized as follows:

- 2000 PTPP – Expansion of the Elders and Persons with Disabilities program, including its integration with general public rural transit, and the establishment of regional E&D committees for all parts of Vermont
- 2007 PTPP – Expansion of commuter routes serving important job centers as well as the establishment of the performance monitoring process still in effect
- 2012 PTPP – Establishment of subsidized intercity bus routes in the Western Corridor and the US 4 Corridor to replace services that had been discontinued by Greyhound in 2005

In the course of developing the current PTPP and in gathering public input from stakeholders and the general public, it became clear that public transit will play an increasingly vital role in addressing a host of statewide issues ranging from mobility challenges facing an aging population, enhanced mobility options for commuters and younger Vermonters, and reduced greenhouse gas emissions.

In order to meet future needs, public transit infrastructure and services must be expanded and will require increased investment through innovative funding solutions. As VTrans and its partners move forward, the challenge is to make an honest assessment of Vermont's existing public transportation delivery systems and build consensus for the appropriate mix of growth, service efficiency and funding necessary to meet increased demand.

The current PTPP reviews and updates past policies and goals and develops strategies to meet the wide range of public transit challenges. It will serve as the primary guidance document for the continued growth and development of public transit in Vermont over the next ten years, with a further update expected after five years.

Current State Policy

The clearest policy statement with respect to public transportation is contained in Section 5083 of Chapter 126 of V.S.A. 24 (modified in the 2019 legislative session):

> It shall be the state's policy to make maximum use of available federal funds for the support of public transportation. State operating support funds shall be included in agency operating budgets to the extent

that funds are available. State policy shall support the maintenance of existing public transit services and creation of new services including the following goals:

(1) Provision for basic mobility for transit-dependent persons, as defined in the current public transit policy plan, including meeting the performance standards for urban, suburban, and rural areas…

(2) Expanding public transit service in rural areas and increasing ridership statewide.

(3) Access to employment, including creation of demand-response service.

(4) Congestion mitigation to preserve air quality, decrease greenhouse gas emissions, and sustain the highway network.

(5) Advancement of economic development objectives, including services for workers and visitors that support the travel and tourism industry…

These goals speak to the types of services that should be offered in different geographic areas. The various regions of Vermont have distinct needs and levels of demand for service. Vermont's public transportation providers have used a diverse set of services to meet the needs in their areas, while seeking to maximize efficiency through greater coordination of service among different travel markets (commuters, older adults, students, people with disabilities).

The current PTPP does not change the overall policy direction and goals as stated in the statute. VTrans' major goal is to preserve and enhance the level of public transportation services in Vermont. Performance monitoring of existing routes—by VTrans and the providers' boards of directors—is crucial to ensure that the public's investment in public transportation is well spent.

Role of the Human Service Transportation Coordination Plan

Beginning in 2008, the Federal Transit Administration (FTA) instituted a new requirement that states produce a human service transportation coordination plan (HSTCP). The plan was required to include an analysis of the transportation needs of individuals eligible for transportation under the Section 5310 program—that is, people over the age of 60 and people with disabilities—and to define a list of transportation projects that would address those needs. Funding for future projects would depend on their being listed in an approved HSTCP.[1]

VTrans produced a plan in 2008 and another one in 2014 to meet the federal requirements. Another update is now due, and VTrans decided to incorporate all of the content of the HSTCP into the PTPP so that one document would suffice for both the state and federal requirements. After all, a large portion of public transit in the rural areas of Vermont is oriented toward the same vulnerable populations covered by the HSTCP.

The result of this integration is that the current PTPP is more inclusive of human service transportation than past iterations, while still being consistent with the requirements of a PTPP. Sections of this report that fulfill the requirements of the HSTCP will be noted along the way.

[1] https://www.transit.dot.gov/funding/grants/coordinated-public-transit-human-services-transportation-plans

Summary of Outreach Process

The PTPP included an extensive public outreach process. Much of the process was oriented toward gathering information about unmet needs for public transit in Vermont, but presentations, surveys and meetings were also conducted to inform the public about draft recommendations and obtain feedback on policy priorities. The components of this process are described below.

- **Regional Forums –** Eleven regional forums were will in Fall 2018, coordinated by the 11 regional planning commissions. The project team presented a wealth of information about each region and then engaged attendees to comment on a variety of unmet needs in their region. The results of this outreach is described in chapter 4 and in great detail in appendices C through M.

- **MetroQuest Online Surveys –** MetroQuest is an online survey platform that allows respondents to engage with survey questions in an interactive way. Two rounds of surveys were conducted including one on policy priorities and needs in Fall 2018, and a second round presenting findings and recommendations in Summer 2019. Over 1,200 responses were obtained in round 1, and over 2,200 responses were obtained in round 2. Summary results of the surveys are presented in chapters 4 and 5 and in appendices P and Q.

- **Stakeholder Interviews –** During the Winter of 2019, the project team conducted one-on-one interviews with nine stakeholders. These individuals, representing agencies and organizations whose constituents and clients depend on public transit, provided further insights on the role of public transit and unmet needs in the state. The results of these interviews are summarized in chapter 4.

- **E&D Committee Assessments –** During Spring 2019, the project team attended meetings at all nine of the E&D committees in Vermont to observe how they function and explore ways to improve their effectiveness. Committee members also offered comments about the transportation needs of the region's older adults and people with disabilities, service gaps, and potential solutions.

- **Study Advisory Committee Meetings –** VTrans convened a Study Advisory Committee for the PTPP to provide feedback and guidance. Three meetings of the SAC were held, in February, May and October. These meetings covered existing conditions/policy, needs and recommendations, respectively.

- **Appearance on VPR's Vermont Edition –** In July 2019, the PTPP project manager and a VTrans Public Transit Coordinator appeared on Vermont Edition, VPR's daily call-in show that explores issues of importance to Vermonters. Numerous listeners called or emailed with questions.

- **Presentations –** During the course of the study, the project team attended meetings of other organizations to present findings and a status report on the PTPP. These include the Transportation Planning Initiative; the Public Transit Advisory Committee; the Department of Disabilities, Aging and Independent Living; the Vermont Public Transportation Association; and the Bi-State Primary Care Association.

- **Project Website –** Throughout the entire project, VTrans has maintained a website to explain the PTPP and disseminate interim products. This website can be viewed at https://vtrans.vermont.gov/planning/PTPP.

2. THE STATE OF PUBLIC TRANSIT IN VERMONT

Overview of the Transit Network

Vermont is served by seven public transit providers that offer a range of transit services, from local fixed-route to commuter to demand response. Figure 1 portrays VTrans' map of service areas for these transit providers and illustrates the fixed and deviated routes operated throughout the state. Local routes generally operate all day, while commuter routes typically operate during peak periods Monday through Friday and include express segments. Demand response services are offered by the public transit providers and their partners across the entire state. Many providers also operate shopping services which may run once per week or once every other week. The broader transit network includes intercity bus and rail and ferries. All of these components are discussed below.

Since the first PTPP in 2000, there has been a significant amount of consolidation of transit operations in Vermont, with the number of distinct operators going from twelve to seven. Consolidations in the past eight years include the merger of Green Mountain Transit Agency into the Chittenden County Transportation Authority (renamed as Green Mountain Transit in 2016); the merger of Connecticut River Transit and Deerfield Valley Transit Association to become Southeast Vermont Transit; and the merger of Stagecoach Transportation Services and Addison County Transit Resources to become Tri-Valley Transit.

Brief summaries of the seven current transit providers are presented below.

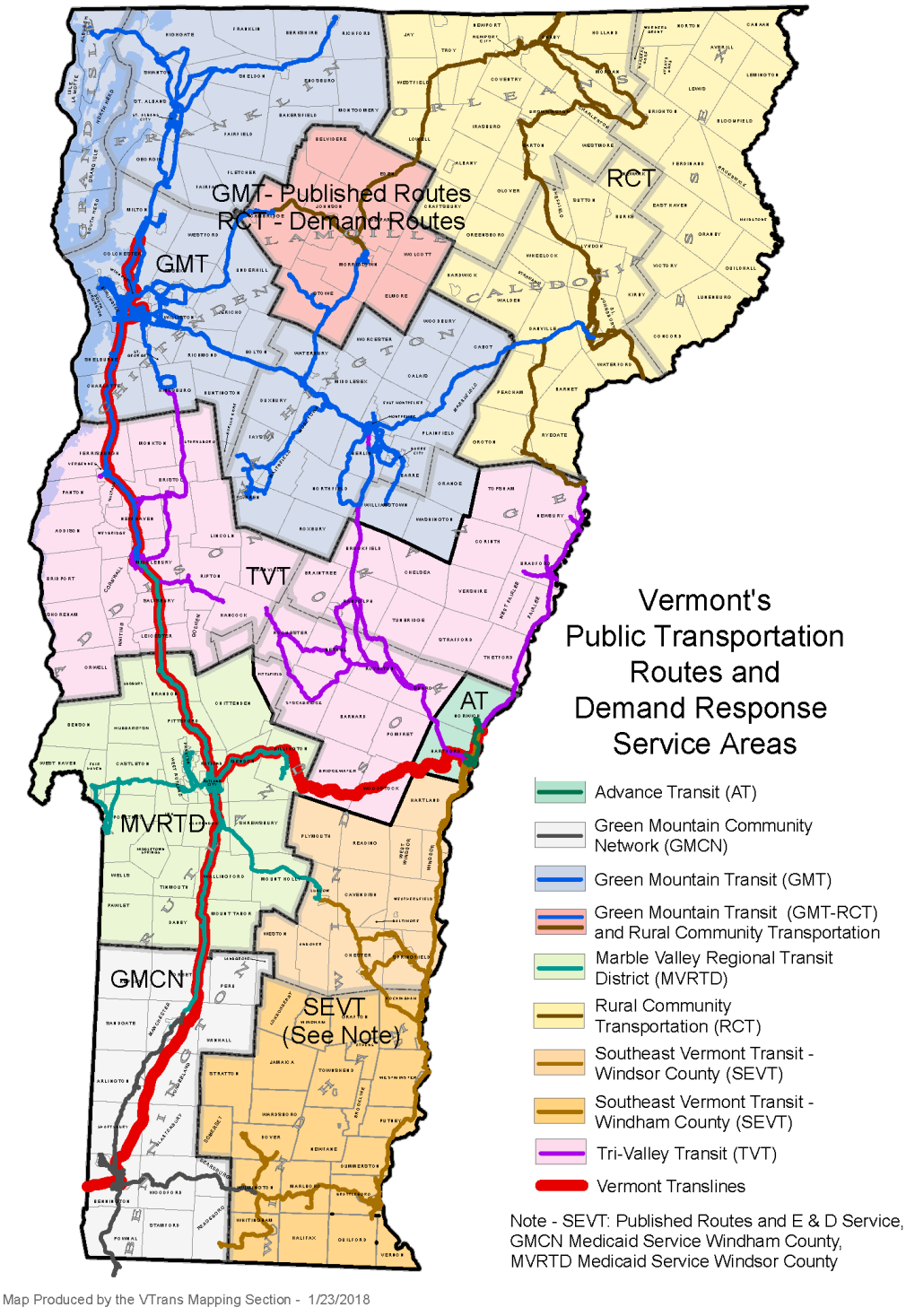
Advance Transit (AT)

AT provides public transit services in the Upper Valley, serving the towns of Hartford and Norwich in Vermont and Hanover and Lebanon in New Hampshire. AT also provides commuter service to Enfield and Canaan, New Hampshire. Three of the five fixed routes—Orange, Green and Brown—serve Vermont with connections to West Lebanon and Hanover. Buses operate Monday through Friday. AT has built strong partnerships with Dartmouth College and Dartmouth-Hitchcock Medical Center to provide high-quality shuttle services to these major employers in Hanover and Lebanon, NH. AT provides Americans with Disabilities Act (ADA) complementary paratransit service, called Access AT, for eligible persons with disabilities who cannot use the fixed-route bus services due to a disability. AT does not operate other demand response service such as non-emergency medical transportation (NEMT) or service for older adults; TVT provides that service in Hartford and Norwich.

Green Mountain Community Network (GMCN)

GMCN provides public transit service in and around Bennington County under the Green Mountain Express (GMX) brand. GMCN offers deviated fixed bus routes, demand response transportation for Medicaid, Reach-up, and older/disabled residents, as well as private pay services. Deviated fixed route services include: Bennington to Manchester, Bennington to Pownal and on to Williamstown, MA, Bennington to Wilmington, North Bennington, Shaftsbury, and around the town and up to Southern Vermont College. Partners for Elderly, Disabled and Visually Impaired Services include: Southwestern Vermont Medical Center; United Counseling Services; Bennington Project Independence, Southwestern VT Council on Aging and VT Association for the Blind and Visually Impaired. GMCN provides NEMT to both Bennington and Windham counties under contract to VPTA (see below). GMCN also maintains a pool of volunteer drivers who use their personal vehicles to transport a variety of clients.

Figure 1: Vermont's Public Transportation Routes and Demand Response Service Areas



Source: VTrans Website: http://vtrans.vermont.gov/sites/aot/files/publictransit/documents/PublicTransportationProviderServiceAreas.pdf

Green Mountain Transit (GMT)

Green Mountain Transit is the main transit provider for Chittenden, Franklin, Grand Isle, Lamoille, and Washington counties. It operates all of the fixed and deviated route service in those counties, and all of the demand response service in Washington and Franklin counties. In Chittenden County, GMT offers local fixed routes, regional commuter routes, and interregional LINK Express routes. Fixed route service covers the communities of Burlington, Essex, South Burlington, Shelburne, Williston, and a portion of Colchester. Regional commuter services extend to Hinesburg, Milton, and Jeffersonville. LINK Express routes serve Montpelier, Middlebury, and St. Albans commuters, also stopping at park and rides and communities along the way. ADA paratransit, NEMT and Elderly and Disabled services in Chittenden County are operated under a contract with Special Services Transportation Agency. GMT also provides shuttles from senior housing complexes to local supermarkets and neighborhood specials for student transportation to Burlington schools.

GMT also operates a variety of rural public transportation services including local routes, commuter routes, demand response medical shuttles, and service to elders and persons with disabilities in Washington, Lamoille, Franklin, and Grand Isle Counties. Services to elders and persons with disabilities in Grand Isle County are operated under contract by Champlain Islanders Developing Essential Resources, Inc (CIDER), and in Lamoille County these services are provided by Rural Community Transportation.

Marble Valley Regional Transit District (MVRTD)

MVRTD, known as "The Bus," serves Rutland County and operates a fixed-route network in the city of Rutland. MVRTD provides ADA complementary paratransit service for eligible passengers. MVRTD provides a deviated fixed-route service in Proctor with four trips a day, and The Bus operates several commuter routes between Rutland and other cities within Rutland County, as well as in adjacent counties. Seasonal service is provided to Killington to accommodate shift work in the resort area. Other services offered by The Bus include human service or contractual transportation with organizations including: Vocational Rehabilitation; Southwestern Vermont Council on Aging; Castleton Community Seniors; Inter-Age Adult Day Center; and the Foster Grandparent Program. MVRTD also provides subscription, point-to-point service in Rutland City and Rutland Town, and operates transportation for the Medicaid and Reach-Up Programs in Rutland County as well as the Medicaid program in southern Windsor County.

Rural Community Transportation (RCT)

RCT provides public transit in the Northeast Kingdom, including Caledonia, Essex, and Orleans Counties, as well as demand response service in Lamoille County. RCT provides transit through various modes, including buses, vans, volunteer drivers, and taxis. Services are available to the general public as well as the clients of partner human service agencies, including the Northeast Kingdom Council on Aging, Northeast Kingdom Human Services, Riverside Life Enrichment Center, and the Northeast Kingdom Community Action. RCT acts as the Medicaid/Reach-Up broker for its service area. RCT operates two deviated fixed-route services, which will deviate up to a quarter-mile from the published routes. RCT partners with GMT in providing a commuter service between Montpelier and St. Johnsbury, along the US 2 corridor. The agency also operates five "Green Express" shuttles that serve outlying villages and towns, primarily transporting riders for shopping trips.

Southeast Vermont Transit (SEVT)

SEVT is the designated public transit provider for Windham and southern Windsor Counties. SEVT provides fixed route bus services and demand response van service for the elderly or disabled. SEVT operates two divisions: The MOOver, which serves the Deerfield Valley and southern Vermont between Bennington and Brattleboro, and The Current which serves Brattleboro, Bellows Falls, and the Connecticut River Valley. Most of the services operated by the MOOver are oriented to the Mt. Snow ski resort, though several routes operate year round. The Current operates three fixed routes in Brattleboro, including one route that extends to Hinsdale, NH. North of Brattleboro, SEVT operates local shuttles in Bellows Falls and Springfield, as well as routes between Brattleboro and Bellows Falls and a route from Bellows Falls to Ludlow. Finally, the Current operates commuter express service from Rockingham to the Upper Valley, with stops at park-and-ride lots along I-91 and numerous stops at large employers and institutions in Lebanon and Hanover, NH.

Tri-Valley Transit (TVT)

TVT was formed in 2017 by the merger of Stagecoach Transit Services, Inc. (STSI) and Addison County Transit Resources (ACTR). The two services continue to operate Dial-a-Ride and deviated fixed route services under separate brands. The Dial-a-Ride System provides older adults, people with disabilities and many others access to comprehensive transportation alternatives. The deviated fixed route systems connect passengers to employment and shopping centers. ACTR predominantly serves Addison County with six different bus routes, including local shuttles in Middlebury and connections to Rutland and Burlington. STSI serves Orange and northern Windsor Counties, with eight bus routes through Central Vermont and linking to the Upper Valley.

Intercity Bus

Intercity bus service connects passengers with major population centers inside and outside of Vermont and provides transit users a way to connect between local transit systems. These services are operated by private providers on either a for-profit or grant-subsidized basis.

Since 2014, VTrans has distributed funds from the Federal Transit Administration to support routes on important corridors that were no longer served for-profit intercity bus service. A 2013 study of intercity bus services in Vermont commissioned by VTrans identified several priority intercity bus corridors: Burlington to Albany, NY; White River Junction to Springfield, MA; and Rutland to White River Junction. No service has yet emerged on the Newport – St. Johnsbury – White River Junction corridor, also identified as a priority corridor in the 2013 Intercity Bus Study.

Intercity services are currently provided by four private carriers: Greyhound Lines, Vermont Translines, Yankee Trails, and Megabus. Intercity bus service is fixed route, fixed-schedule bus service open to the general public, operated using over-the-road coaches with the capability of carrying baggage or package express. Among all Vermont residents, 74% live within 10 miles of an intercity bus stop and 92% live within 25 miles. These figures would be substantially lower without the routes subsidized by VTrans.

Greyhound Lines service in Vermont is provided on two routes. Greyhound bus service from Montreal to Boston operates seven days per week, four times daily in each direction, with Vermont stops in downtown Burlington, Burlington International Airport, Montpelier, and White River Junction. Greyhound also offers one daily trip each direction from White River Junction to Springfield, MA, with additional Vermont stops in Bellows Falls and Brattleboro. This latter service receives a subsidy from VTrans.

Vermont Translines operates three intercity lines within the state with subsidies from VTrans. The company, a subsidiary of Premier Coach, began offering service in 2014 along US Route 7 from Colchester to Albany, NY, Route 4 from Rutland to Lebanon, NH, and a new shuttle (as of September 2017) from Manchester to Albany, NY via Bennington. These are all corridors identified as priority needs in the 2013 Intercity Bus Study.

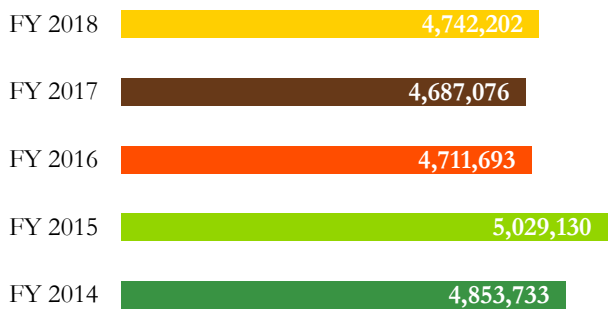
There are two wholly unsubsidized intercity bus services in Vermont. Yankee Trails operates between Bennington and Albany, NY three times per day. Megabus service runs daily round-trip service from the University of Vermont in Burlington to Boston, with an additional stop in Montpelier.

Ridership and Cost Trends

Systemwide Data

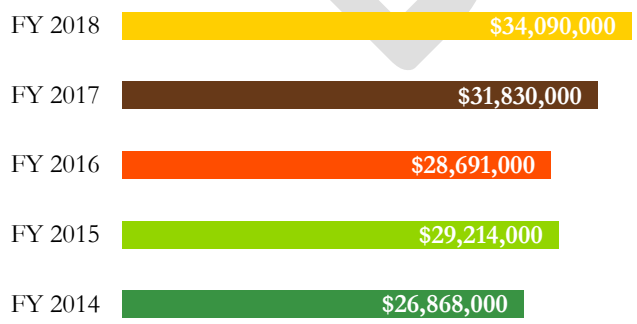
In State Fiscal Year 2018 (July 1, 2017 to June 30, 2018), Vermont's public transit systems provided 4.74 million trips. Almost half of those rides were provided in the Chittenden County region. Figure 2 presents Vermont's transit ridership over the past five years. Statewide public transit ridership has decreased by 2% since SFY 2014 but increased 1% over last year.

Figure 2: Statewide Ridership 2014–2018



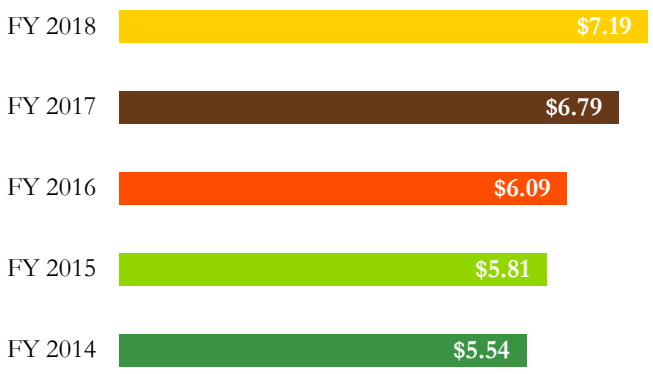
Several systems saw significant ridership growth. GMCN, GMT-Rural, MVRTD, and TVT experienced ridership gains of 5% or more. Vermont Translines' ridership continuously increased since the Intercity category was introduced in 2015, with a 33% gain in SFY 18, partly fueled by the establishment of the Vermont Shires Connector route. Ridership in the urban area, which had been dropping sharply in FY 2016 and 2017, stabilized in FY 2018.

Figure 3: Statewide Total Costs 2014–2018



In SFY 2018, total transit operating costs reached $34.1 million. The Chittenden County region accounted for approximately 37% of the total costs. In the past five years, total transit operating costs have increased by 27%, while ridership numbers have fluctuated. Figure 3 presents Vermont's total operating costs from SFY 2014 through SFY 2018.

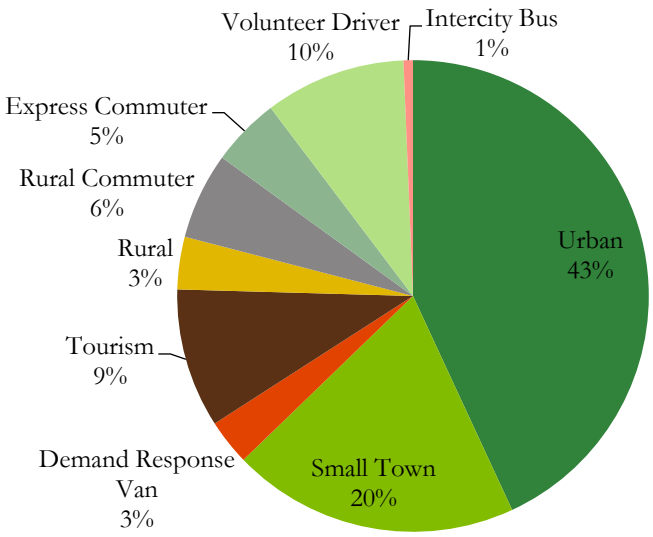
Figure 4: Statewide Cost per Trip 2014–2018



The average cost for a transit trip in Vermont has been trending upward, reaching $7.19 in SFY 2018, a 6% increase from SFY 2017. Figure 4 illustrates the historical average cost per transit trip, showing an increase of 30% in the last five years. The loss of ridership without a commensurate reduction in costs has led to this increase in cost per trip. Also, intercity bus trips, because they are much longer than local transit trips, have a greater cost per trip, and the increasing amount of intercity bus service provided in Vermont has tended to boost the overall cost per trip.

Vermont's transit systems provide an array of transit services to meet various markets and needs. Figure 5 illustrates FY2018 ridership by service category as defined in the annual Route Performance Report. The Urban service category generates the highest share of ridership statewide.

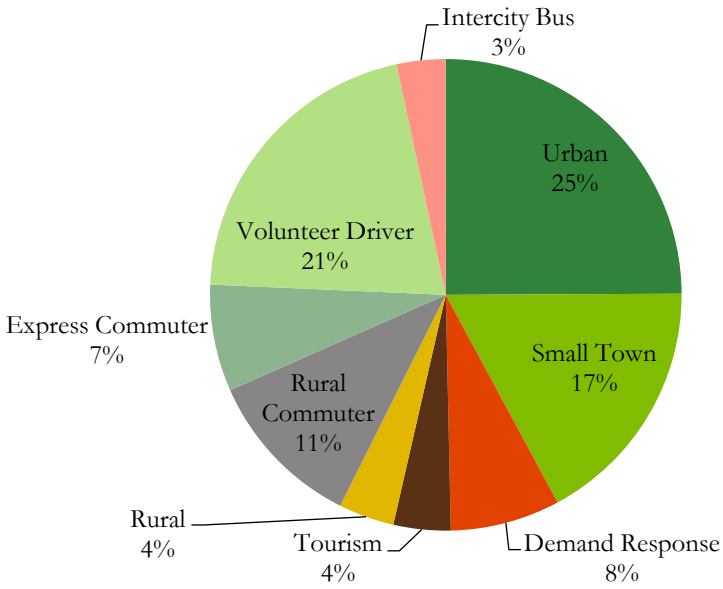
Figure 5: Transit Ridership by Service Category in SFY 2018



In SFY 2018 Small Town, Volunteer Driver, and Intercity Bus services experienced increased ridership gains ranging from 6% to 10%. Other categories were essentially stable, except for Express Commuter which dropped by 5%. Over the past five years, the Small Town, Rural and Tourism categories have shown small gains (less than 5%), while the Urban category and the two commuter categories have shown relatively large declines. Much of this drop can be attributed to lower gasoline prices.

Figure 6 shows the operating costs per service category as a percentage of statewide costs in SFY 2018. Not surprisingly, Urban service consumes a smaller percentage of the total cost compared to its share of the total ridership, because urban bus routes, which can carry 40 people or more on some trips, are more cost-effective on a per passenger basis. In contrast, Demand Response service consumes 10% of the total cost but only accounts for 3% of the total riders. This reflects the fact that many demand response trips are carrying one person, or at most a few people, at a time. Rural Commuter, Express Commuter and Intercity Bus all consume greater shares of the cost than of the ridership because these trips are generally longer and thus more costly than local trips in an urban or small town area. Volunteer driver trips, while being the most cost-effective way to serve demand in rural areas, are nonetheless much less cost-effective than Urban and Small Town bus routes on a per passenger basis.

Figure 6: Operating Costs by Service Category in SFY 2018



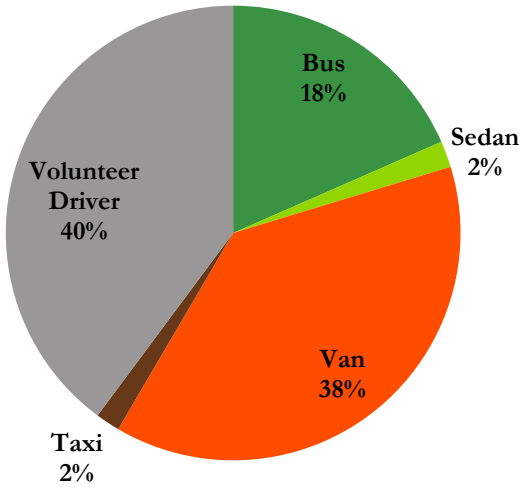
Vermont's E&D Transportation Program

FTA's §5310 Elders and Persons with Disabilities Transportation Program is targeted toward older adults (people 60 and above) and people with disabilities. The E&D Program, as it is commonly known, is used in most parts of the country to finance the purchase of accessible vans and buses. In Vermont the scope of the E&D Program has been expanded by incorporating funds from the §5311 (non-urban) program. These funds are used to pay for administrative expenses and preventive maintenance, thereby making them eligible for an 80/20 match formula.

In SFY 2018 the total amount spent on the E&D Program in Vermont was $4.97 million. This program helped to provide 183,449 rides, for an average cost per passenger trip of $27.09.

Trips funded through the E&D Program are provided across many modes as shown in Figure 7. In SFY 2018, 18% of E&D trips were provided on regular bus routes, 38% in vans, 2% in taxicabs and, most importantly, 40% in private cars operated by volunteer drivers.

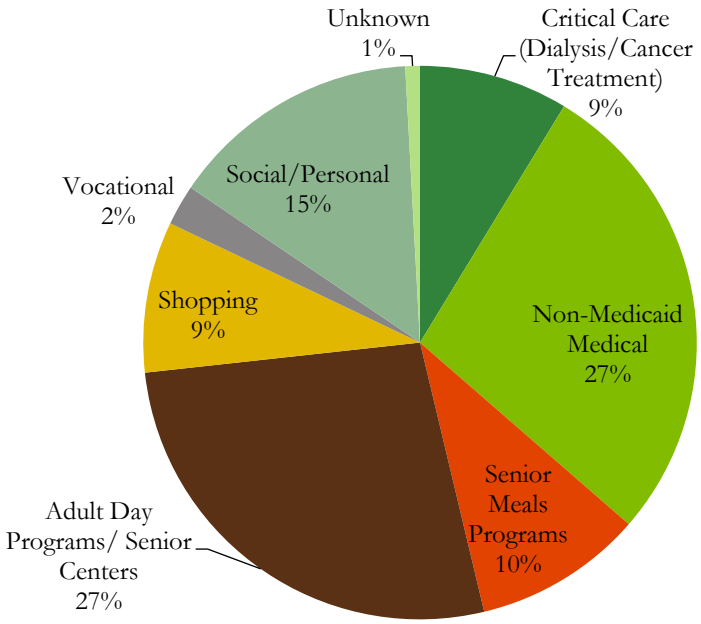
Figure 7: E&D Trips by Mode in SFY 2018



Over the past decade, the transit providers, which also serve as E&D brokers, have increasingly used volunteer drivers to transport riders under the E&D Program. SFY 16 was the first year that more E&D trips were provided through volunteer drivers than by vans and this continued to be true in SFY 2018. Volunteer driver trips cost less per passenger trip (except when enough trips can be coordinated to fill up a van) and can provide a more personalized service to seniors and persons with disabilities, some of whom are traveling long distances (including to neighboring states) for medical services and other needs. Volunteer drivers are especially important to mobility in large rural areas where the population is thinly distributed, such as the Northeast Kingdom.

Figure 8 displays the percentages of E&D trips by trip purpose in SFY 2018. Some 36% of E&D trips transport people to medical appointments and critical care services such as dialysis and cancer treatments. Thirty-seven percent of E&D trips are used to access adult day programs and senior meals.

Figure 8: E&D Trips by Mode in SFY 2018



Rail and Ferry Transportation

Intercity Rail

Robust local transit systems are an important part of the State's efforts to implement its policy priorities and maximize leverage of passenger rail funding. Passengers who arrive by rail can use local transit not only to access local town centers, but also as a viable transportation option once they have reached their end destinations. Two Amtrak lines currently serve Vermont. The Ethan Allen Express provides daily service from New York, NY to Rutland, VT via Albany, NY. This train service also stops in Castleton, VT. The Vermonter provides daily service from Washington, D.C. to St. Albans, VT, with additional Vermont stops in Essex Junction / Burlington, Waterbury, Montpelier, Randolph, White River Junction, Windsor, Bellows Falls, and Brattleboro, and offers connections to Baltimore, Philadelphia, and New York City. Both train services are subsidized by VTrans.

In 2017, as directed by the Vermont General Assembly, VTrans conducted a commuter rail feasibility study for the corridor between St. Albans, Essex Junction, and Montpelier, which also included a study of connecting service to Burlington. The legislature defined the purpose of the study as to "determine the feasibility of implementing a commuter rail system within the corridor, to estimate the time horizon to plan for and design the service, to estimate ridership potential, to estimate costs for operations and capital acquisition, and to identify any other general operational, capital, legal, and administrative requirements." The results of this study can be found here.

More recently, VTrans has been approached by two organizations interested in pursuing additional passenger rail initiatives. These include the private Champ P3 development group interested in starting a commuter rail service linking St. Albans, Essex, Burlington, and Montpelier. Vermont does not currently have any commuter rail services and neither the State Rail Plan nor the State Public Transit Policy Plan includes any commuter rail plans.

The Windham Regional Commission is interested in extending two-daily Amtrak Intercity passenger rail (ICPR) services from Greenfield, MA to Brattleboro, VT. AOT will monitor the planning undertaken by both organizations for any future determination on whether additional ICPR or commuter rail recommendations should be included in future state rail and public transit plans.

Private Ferries

Two companies provide ferry service between Vermont and New York. Lake Champlain Transportation (DBA: Lake Champlain Ferries) offers three crossings: a Northern Crossing from Grand Isle, VT to Plattsburgh, NY; a Central Crossing from Burlington, VT to Port Kent, NY; and a Southern Crossing from Charlotte, VT to Essex, NY. Ticonderoga Ferry offers a crossing between Ticonderoga, NY and Shoreham, VT. These ferry services generally operate year-round, with availability depending on weather conditions during the winter months. Fares are charged for passengers, vehicles, and bicycles.

Go Vermont

Go Vermont, at http://www.connectingcommuters.org or through 1-800-685-RIDE (7433), is a VTrans travel demand management initiative aimed at providing easily accessible and reliable information about commuting and ridesharing resources, including transit routes and a carpool/vanpool matching service. It

began as a home-grown initiative within the Public Transit section of VTrans in 2008, starting with support for ridesharing and vanpools. With investments of federal funds and staff resources, the program grew to include support for biking (in partnership with Local Motion, beginning in 2012), CarShare VT, and the Way to Go! program (help children get to school by means other than being driven by their parents). In 2012, VTrans contracted with VEIC to handle telephone calls from the public, and in 2014 developed a partnership with the Upper Valley Transportation Management Association to expand outreach and services in the Upper Valley region. Specific features include the following:

- The rideshare/ride match program now has 5,245 registrants in the matching database. Registrants receive emails (optionally) and rewards for participating.
- The Guaranteed Ride Home program is available to all members. If the rider needs to get home in an emergency but does not have their car available because they carpooled or rode transit to work (or because their carpool driver is unable to drive them because of an emergency), the program will reimburse the rider for up to $70 to pay for a bus ride, car rental, carshare use, or taxi/Lyft/Uber ride.
- The Go Vermont trip planner helps users see all of the possible ways to accomplish a trip from point A to point B. Using newly-developed GTFS-flex technology, the trip planner goes beyond what regular Google Transit can offer, finding routes that would be overlooked by Google Transit's algorithm.
- The Capital Commuter program encourages Montpelier-based State employees to use transit or ridesharing options to get to work. It includes discounts on bus passes and preferential parking locations for carpools and vanpools.
- The Rides for Veterans program helps Vermont veterans to find transportation options in their communities. It provides community specific information and links to help veterans accomplish their trips.
- The Volunteer Driver program offers a collection of information on the various programs administered by the transit providers and easy access to the applications for each provider to become a volunteer driver. All of the transit providers are in need of additional drivers, and this portion of the Go Vermont site helps to publicize the programs and guide people to applying.
- Links to other resources, including
    - Websites for all of Vermont's transit providers and intercity operators (including neighboring states)
    - Carshare Vermont (based in Burlington)
    - Information about bicycling in Vermont
    - Information about Lake Champlain ferries
    - Information about Amtrak service in Vermont
    - General information for the public and employers on the benefits of ridesharing and transit.

As discussed later in this report, further expansion, enhancement and promotion of Go Vermont will require continuing attention and investment by VTrans, but this can help solve the "awareness" challenge discussed in chapter 3.

Transit Program

Vermont's public transit program is more than just the bus routes and other types of services operated in the state. This section describes the management role played by the Vermont Agency of Transportation, the

structure of funding that pays for the services, and the partners VTrans works with to ensure that the services meet the needs of Vermonters.

Management of the Transit Program

The Public Transit Section—part of VTrans' Policy, Planning and Intermodal Development Division (PPAID)—is responsible for the vast majority of oversight of the public transit program in Vermont and leads the program to greater efficiency and effectiveness through several major initiatives, such as Go Vermont, Mobility on Demand, Rides to Wellness, enhanced demand response scheduling software, and others. The Public Transit Section consists of a Public Transit Manager and three Program Coordinators plus a Financial Administrator. The role of the Public Transit Section is to oversee how federal and state funds are utilized and to be a bridge between the federal government, state legislature, and the transit providers. The section ensures that transit providers are providing services that are efficient, address the needs of the traveling public, and are compliant with all relevant federal and state rules and regulations. Another section of PPAID—Policy, Planning and Research—assists the Public Transit Section with certain long-term projects (such as the PTPP) and with interaction with the state's regional planning commissions and Metropolitan Planning Organization.

The guiding document for the oversight of the transit program is the State Management Plan (SMP). This document covers the requirements associated with the many federal funding programs that VTrans administers. These programs are discussed in more detail below. The SMP is periodically updated as federal regulations evolve and serves as the basis for triennial reviews conducted by the Federal Transit Administration.

The major components of the Public Transit Section's oversight responsibility include the following, based on requirements in current state legislation:

- **Managing Funds** – Manage federal and state operating and capital support funds in a manner that provides a foundation for financial stability and reliability in the provision of public transit services to the public. This involves meeting within the annual budget setting process with the Public Transit Advisory Council (PTAC) to establish the level of state funds needed by public transit in Vermont.
- **Monitoring** – Collect and analyze data on the effectiveness and efficiency of the public transit services funded under the state and federal programs. This includes evaluating both existing services and proposals for new services annually as well as adopting performance and service standards for transit systems receiving state and federal funds.
- **Training and Technical Assistance** - Provide guidance, training, funding, and technical assistance to transit systems to meet performance and service standards, in preparation of financial and management plans for each fiscal year,
- **Reporting -** Report to the legislature annually on financial and performance data for all public transit services that receive state and federal subsidies. VTrans reports annually to the legislature on transportation planning needs, expenditures, and cooperative planning efforts (S.5089) as well as to the federal funding sources.
- **Public Involvement and Consultation** - Develop the PTPP and HSTCP in consultation with stakeholders including the public transit providers, regional planning commissions, and their regional Transportation Advisory Committees. Working with the PTAC, VTrans establishes both short and long-range fiscal, operating and capital investment plans to support public transit goals.

This element also includes consulting with these stakeholders annually in advance of the award of planning funds. Available planning funds shall be awarded in accordance with State and federal law and as deemed necessary and appropriate by VTrans following this consultation.

Funding for the Transit Program

Public transit in Vermont, as in many states, is funded primarily through federal (49 U.S.C.) and state transit programs. While Green Mountain Transit is a direct recipient of transit operating/capital funds for small urbanized areas, most of the federal funds coming to Vermont flow through VTrans to rural transit operators (section 5311). The State is the designated recipient of all federal rural transit funding as well as funding for specialized services under the Elderly and Persons with Disabilities program. The total amount of federal and state funding for public transit in Vermont is approximately $34 million annually. Note that this figure excludes approximately $6.1 million in urban operating and capital funds (5307) that flow directly to Green Mountain Transit and $335,000 in planning funds (section 5303) that go to CCRPC. Table 1 presents a summary of federal and state transit operating and capital funding for fiscal year 2019. The first column showing FTA section numbers is explained more fully on the next page.

Table 1: Fiscal Year 2019 Federal and State Funding by Category and Source

FTA Section [flexed]	Funding Category	Federal		State	Total
		FTA	FHWA		
5304	Planning	$115,000		$28,727	$143,727
[5307/5311]	CMAQ Service Expansions		$3,052,162	$334,343	$3,386,505
[5311]	Administrative Support		$416,185	$126,146	$542,331
[5311]	Rural Transit Administrative		$2,828,910	$21,090	$2,850,000
[5307/5311]	Maintenance Assistance		$3,750,000		$3,750,000
5311	Rural Transit Operating	$3,650,000		$166,396	$3,816,396
	State Operating			$6,075,000	$6,075,000
5311(b)(3)	Rural Technical Assistance Program	$115,000			$115,000
[5311]	Special Services for Elders and PWD		$4,000,000	$101,784	$4,101,784
[5311]	Reserve for E&D		$160,000	$40,000	$200,000
n/a	VT Kidney Association Grant			$50,000	$50,000
n/a	Go Vermont Marketing (CMAQ)		$850,356	$178,144	$1,028,500
5339+ [5307/5311]	Capital - General Public	$1,750,000	$4,173,480	$552,392	$6,475,872
5310	Capital - E&D	$546,674		$68,327	$615,001
[5307/5311]	Capital - Facilities		$467,008	$177,992	$645,000
	TOTALS	**$6,176,674**	**$19,698,101**	**$7,920,341**	**$33,795,116**

As can be seen in the table, in addition to $6.1 million in public transit dollars from the Federal Transit Administration (FTA), Vermont "flexes" (transfers) highway funds from the Federal Highway Administration (FHWA) into the state's transit program. The total amount flexed in Fiscal Year 2019 was nearly $20 million, or more than three times the revenue directly from FTA. These FHWA funds, before they can be spent on public transit, need to be flexed into existing FTA funding programs. The programs being flexed into are shown in [brackets] on the table. Those lines that show [5307/5311] reflect that a portion of the flexed funds are going to the Burlington urbanized area into section 5307, while the rest go into the non-urban section 5311 program. The individual FTA programs, by section number, are described below.

- **Section 5304 – Statewide Transportation Planning Program and Section 5303 – Metropolitan Transportation Planning Program -** These programs provide funding to support cooperative, continuous, and comprehensive planning for making transportation investment decisions in metropolitan areas and statewide. Federal planning funds are first apportioned to VTrans which then passes through metropolitan planning funding to the CCRPC which in turn passes funding on to GMT for its planning activities.

- **Section 5307 – Urbanized Area Formula Program –** This program provides transit subsidies in urbanized areas under 200,000 in population, of which there is just one in Vermont, the Burlington urbanized area. For urban areas of this size, S.5307 funds can be used for operating or capital and the federal program will pay for up to 80% of capital items and 50% of the net deficit for operating expenses, up to an annually allocated amount.

- **Section 5310 – Elderly Persons and Persons with Disabilities Capital Program -** Funding from FTA under S.5310 is available for capital assistance for private non-profit entities or public bodies providing coordinated transportation services to older adults and persons with disabilities. The federal program pays for up to 80% of the capital costs. Projects must be part of a locally developed coordinated human service – public transit plan to be eligible for funding.

- **Section 5311 – Non-Urbanized Area Formula Program –** S.5311 provides federal operating and capital funds in rural areas with less than 50,000 people (this encompasses all areas in Vermont outside the Burlington urbanized area). The program pays for up to 80% of capital and administrative expenses and 50% of the net deficit (costs minus operating revenue) for operating, up to an annually allocated amount. Federal funds are allocated to states annually.

- **Section 5311 (b)(3) – Rural Technical Assistance Program (RTAP)** – The RTAP program provides funding to assist in the design and implementation of training and technical assistance projects and other support services tailored to meet the needs of transit operators in non-urbanized areas.

- **Section 5311(f) Intercity Bus Program –** The S.5311(f) program allows states to subsidize intercity bus needs using their S.5311 formula grant funds. The state must use 15% of its annual apportionment to support intercity bus service, unless the Governor certifies, after consultation with affected intercity bus providers that the needs of the state are adequately met.

- **Section 5339 – Bus and Bus Related Equipment and Facilities Program** – This program provides capital assistance for new and replacement buses, related equipment, and facilities. It is a discretionary program to supplement formula funding in both urbanized and rural areas.

- **Surface Transportation Program [FHWA] for RPC/MPO Planning Assistance** – Transit planning is an eligible STP funded activity and, as such, regional planning organizations assist transit operators with their local transit planning using FHWA funds through the VTrans Transportation Planning Initiative or CCMPO funding.

- **Congestion Mitigation/Air Quality Program [FHWA]** – CMAQ is a program to support areas of air quality non-attainment. Since Vermont is not "out of attainment," it can use CMAQ for eligible activities including new transit demonstrations/starts through flexing of FHWA funds.

Aside from the federal formula programs, Vermont also receives funding from federal competitive/ discretionary programs. Examples include capital funding from the "State of Good Repair" program, discretionary grants from the section 5339 "Bus and Bus Facilities" program, planning and operation funds from a Rides to Wellness grant (described elsewhere in the PTPP), and a Mobility On Demand grant to work with technology companies to expand access to traveler information.

Vermont is a leader among small states in flexing highway funds for public transit, and the State has introduced other innovative features into the program over the past 15 years as well:

- VTrans' designates a portion of its Non-Urbanized Area Formula Grants (S.5311) for "Special Services for Elders and People with Disabilities" referred to as the E&D program. The goal of the program is to maximize coordination between human service agencies and public transit providers, and to improve the utilization of unused vehicle capacity on vehicles.
- VTrans provides nearly $4 million in funding for its Rural Preventive Maintenance program in an effort to prolong the life of the operators' fleets. By "capitalizing" rural preventive maintenance, those costs are eligible for 80% from the federal program, and the transit providers only have to provide 20% in local share.
- The state has used highway funds from the Congestion Mitigation/Air Quality program to encourage the transit providers to create new routes and expand service on existing routes. For most routes, this funding lasts for a three-year period, at which point VTrans will offer other funding for any route which has proved itself viable.

State transit funding per capita in Vermont is higher than in other states with similar rural/urban mix. According to the 2010 census (the most recent time that urban and rural areas were defined) Vermont is the second most rural state in the country with 61.1% of its population residing in rural areas. (Maine has 61.3% of its population in rural areas.) Despite its rural character, the State will spend about $12.65 in state funds per capita on transit services in 2019. According to the 2018 *AASHTO Survey of State Funding for Public Transportation*, the other ten states with over 40% or more of their population in rural areas spent an average of $1.39 per capita in state funds, only about 11% of what Vermont spent. Only one of these states, North Dakota—at $6.86—spent more than $1.28 per capita. Removing that state from the mix, the other nine most rural states spent an average of only 78 cents per capita, barely 6% of what Vermont spent.

Matching Funds

Local match refers to the money that FTA requires from projects that is from non-federal sources. From FTA's perspective, all non-federal funding is local and can include State or local funds, but not farebox revenue. (By federal rules, farebox revenue is subtracted first from the gross operating cost to determine the net operating deficit.) Operating assistance for the net deficit requires a 50% match of the federal funds (one non-federal dollar for each federal dollar), while capital, administration, marketing, preventive maintenance and planning assistance requires a 20% match (one non-federal dollar for each four federal dollars).

The Vermont Legislature created the State Operating Program to provide a portion of the non-federal share for the federal operating subsidies in the non-urbanized areas. There is no prescribed share of the operating subsidy that comes from the State. Available State funds are allocated among the rural operators based on need and maximizing the federal dollars available.

For capital expenditures, the State normally provides half of the non-federal share, that is, 10% of the project cost. The other half of the non-federal share must come from local funds.

Transit providers can raise local funds from several sources, including property tax revenue from municipalities they serve, sales tax revenue from those communities that have a local option sales tax, and private sector funds from institutional partners, contracts with human service agencies, ski resorts, businesses or individual donations. To secure the property tax revenue, transit systems generally are required to appeal to the towns for support through Town Meeting ballot initiatives, thereby competing with the local funding for most other services such as school and police. While this requires a considerable effort on the part of the transit systems, it is consistent with the State goal to preserve and enhance the level of public transit services by encouraging local financial support for those services. Many local transit providers rely heavily on contracts with human service agencies as a source of non-federal matching funds, though it has become increasingly difficult for human service agencies to come up with the required match as their expenses have not kept up with revenue, some have experienced stagnant federal funding for decades and many are also competing for limited town support.

Partners in the Transit Program

Regional Planning Commissions and Transportation Advisory Councils

Through its Transportation Planning Initiative, VTrans collaborates with the states eleven regional planning commissions (RPCs) to carry out transportation planning at the regional level. RPCs enter into cooperative agreements with VTrans for the agency to provide FHWA planning funds in exchange for collaborative transportation planning. The RPC in Chittenden County also serves as the Metropolitan Planning Organization (MPO), a federally-required organization for any urbanized area with a population of at least 50,000. Within its area of jurisdiction, the MPO, in coordination with VTrans and the area's transit provider Green Mountain Transit, plans all surface transportation infrastructure and services – including public transportation. With VTrans' approval, the MPO is a direct recipient of urban planning funds and GMT is a direct recipient of urban operating and capital funds.

Each of Vermont's 11 RPCs has a Transportation Advisory Council. The TACs include representatives from each town and some representation from the local transit operator. The MPO has a Public Transit Advisory Committee as well as a TAC that makes recommendations on action items to be considered by the full Board of Directors.

Agency of Human Services

Many of the Vermonters served by the Agency of Human Services (AHS) face challenges related to transportation. Whether because of age, disability or income, many Vermonters cannot drive and rely on public transit for their mobility. The departments within AHS that work with VTrans and the transit providers most actively are primarily concerned with transportation to and from medical appointments, community meals programs, shopping opportunities, adult day centers and other essential services. AHS also works with vulnerable Vermonters to help them obtain and maintain employment—access to jobs is a key issue facing many low-income individuals. The two AHS departments with the most active relationships are the Department of Disabilities, Aging and Independent Living (DAIL) and the Department of Vermont Health Access (DVHA) which administers the Medicaid program and contracts with VPTA (see below) to provide non-emergency medical transportation. The Department for Children and Families, which administers the Reach Up program, also interacts with transit providers to meet the mobility needs of the clients of that program.

As discussed elsewhere in this report (section yet to be written), VTrans and DAIL are coordinating their policy efforts to address the growing needs of older adults for mobility assistance. With the leading edge of

the Baby Boom generation entering their 80s during the 10-year timeframe of this PTPP, it is essential that Vermont prepare for the mobility challenges ahead.

Public Transit Advisory Council

The Public Transit Advisory Council's (PTAC) role as stated in the V.S.A. Title 24, Chapter 126, Section 5084 is to "serve as an advisory group to the agency of transportation on all matters relating to public transit service". PTAC is chaired by VTrans' Secretary and composed of representatives from a wide range of public transit interests including representatives from the Vermont Public Transportation Association, Green Mountain Transit Authority, Agency of Human Services, Agency of Commerce and Community Development, Vermont Center for Independent Living, Community of Vermont Elders, Vermont Association of Planning and Development, a "nonprofit purchaser of elderly public transit services," the State Legislature, and a citizen appointed by the governor. Since PTAC is made up of representatives from so many stakeholders throughout the state, it is a vehicle for communication and collaboration to improve public transportation for Vermont residents and visitors.

Vermont Public Transportation Association

The Vermont Public Transportation Association (VPTA) comprises representatives from the state's seven transit providers. VPTA's mission is "to improve mobility of people in Vermont by increasing awareness of public transportation benefits and needs through education and advocacy." The Association participates in supporting and providing numerous public services, including dissemination of information on public transportation in Vermont and recommendations to the state Legislature. VPTA has contracts with various government agencies to improve and administer transportation services. The most important such contract is with DVHA to provide non-emergency medical transportation (NEMT) all over Vermont. VPTA then subcontracts with the transit providers to operate and broker the NEMT service.

Transit Providers

The seven public transit providers are critical participants in supplying reliable transportation options to Vermont residents and visitors, especially for those people who are transportation disadvantaged. Each operates in a different geographic location within the state, with little overlap in the system. All providers offer demand response service; many operate fixed routes. Still others located near ski resorts also run seasonal services that support the state's tourism industry.

Others

In addition to those mentioned above, the following are also important stakeholders in the public transportation system: transit riders; businesses, institutions and towns that support public transportation; local "cares" groups and other volunteer organizations that provide rides; the United Ways of Vermont and Vermont 2-1-1, which provides information on transportation resources; and health care providers that help support transit access to health care facilities.

Prior Studies

VTrans has commissioned and performed many plans and studies on public transportation in recent years. These studies provide specific transit policy and service recommendations, outline strategies for public involvement, and assess the transportation needs of human services providers statewide. Overall, these documents help to direct the state's public transit policies and identify trends in the community's transportation needs to provide a better understanding of the role public transportation plays in the state of Vermont. The Steadman Hill Consulting team identified and reviewed the following studies that are directly relevant to Vermont's Public Transit Policy Plan and Human Service Transportation Coordination Plan:

Transportation & Transit Plans

- Vermont Public Transit Policy Plan (2012)
- Vermont Public Transit Policy Plan (2007)
- 2040 Vermont Long-Range Transportation Plan (2018)
- State Management Plan for Vermont Public Transit Programs (2015)
- Public Transit Route Performance Reviews Annual Report (State Fiscal Year 2017)
- Vermont Statewide Intercity Bus Study Update (2013)
- VTrans Public Involvement Guide (2017)
- Tri-Valley Transit Annual Report (2017)
- Chittenden County Transportation Authority Transit Development Plan (2010)
- Green Mountain Transportation Authority Transit Development Plan (2012)

Transportation-Related Human Service Plans

- Elders & Persons with Disabilities Program Guidance (2004)
- Human Service Transportation Coordination Plan (2014)
- Vermont State Plan on Aging Needs Assessment (2017)
- Vermont Elders & Persons with Disability Transportation Program Review (2015)
- Exploring Transportation Behaviors and Needs of Veterans and People with Physical Disabilities and Mobility Constraints (2017)
- Opioid Coordination Committee – Transportation Working Group Findings (2018)
- Rides to Wellness Implementation Plan (2018)

A summary of each study is provided in Appendix A, including the purpose of the study and the implication of the project.

Best Practices

Introduction

This section summarizes the key information and findings of statewide public transportation/transit plans prepared by Idaho, Iowa, Maine, and Minnesota. A detailed look at each of these statewide plans is provided in Appendix B.

Initially, plans from 23 states were reviewed and analyzed to determine feasibility for this effort. The four states selected were those in which statewide transit plans, or similar studies, had been prepared in recent years. Additionally, the peer review focused on plans in states that are similar to Vermont in population, population density, and percent of urban and rural population, as shown in Table 2. Of the selected states, Maine's characteristics most closely match those of Vermont. Despite having larger populations, all states are less densely populated than Vermont. Although Minnesota stands out in terms of population, the transit plan in study covers an area of 80 counties outside of the Twin Cities called Greater Minnesota. This area presents population and density comparable to the other selected states.

A summary of each plan is provided, including the purpose of the plan, its goals, funding strategies, and supporting policies. Key challenges faced by the states and key recommendations, policies, and funding that could impact this study are highlighted.

Table 2: Population and density in comparison states.

State	Population and Density				
	2017 Population	2010 Population	2010 Pop/Sq. Mi	2010 Percent Pop in Urban Areas	2010 Percent Pop in Rural Areas
Idaho	1,716,943	1,567,582	18.7	70.6	29.4
Iowa	3,134,479	3,046,355	54.5	64.0	36.0
Maine	1,335,907	1,328,361	41.3	38.7	61.3
Minnesota	5,576,606	5,303,925	61.8	73.3	26.7
Vermont	**623,657**	**625,741**	**66.1**	**38.9**	**61.1**

Source: U.S. Census.

Key Findings

This section highlights comparative goals, challenges, and strategies identified and proposed by each state. Public transportation goals in these plans are used to describe the desired future for public transportation in the state, and to establish priorities and guidance for future public transportation investments.

Goals

A summary of the elements of the goals appearing in those plans, and the states to which they apply, is shown in Table 3. The most frequently occurring goal elements across these plans include:

- Preserve existing network
- Service expansion/enhancement where justified and as resources permit
- Ensure a range of mobility options/modes
- Expand education outreach, and marketing
- Ensure safety and security

Table 3: Statewide transit plan goals by state

Goals	Idaho	Iowa	Maine	Minnesota
FUNDING				
Ensure fiscal responsibility			●	●
Involve partners in funding transit services			●	
Utilize a range of funding sources			●	
Partnerships, especially with the private sector				●
SERVICE DELIVERY				
Preserve existing network	●		●	●
Expansion/enhancement where justified and as resources permit	●		●	●
Provide appropriate level of service in all communities		●		●

Goals	Idaho	Iowa	Maine	Minnesota
Ensure a range of mobility options/modes		●	●	●
Encourage public transportation use	●			●
Improve efficiency through coordination			●	
Coordination between transit services and human service organizations/transportation				●
Increase transit ridership				●
Improve passenger experience				●
PUBLIC INFORMATION AND OUTREACH				
Expand education outreach, and marketing	●		●	●
Build trust			●	
OTHER				
Support economic opportunity	●		●	
Transportation and land use coordination	●	●	●	
Energy independency and environmental responsibility		●		
Ensure safety and security		●	●	

Challenges

A summary of the major challenges identified in the plans is shown in Table 4. Limited operating funding is listed as a major challenge in all the plans, other frequently occurring challenges include:

- Funding source restrictions
- Difficulty in obtaining local matching funds
- Service gaps

Table 4: Statewide transit plan identified challenges by state

Challenges	Idaho	Iowa	Maine	Minnesota
Limited operating funding	●	●	●	●
Limited capital expansion funding	●	●		
Funding source restrictions	●		●	●

Challenges	Idaho	Iowa	Maine	Minnesota
Difficulty in obtaining local matching funds	●		●	●
Increase in operating costs				●
Insufficient fare and contract revenues				●
Lack of new potential source of state funds for public transportation			●	
Service gaps	●	●	●	●
Low productivity and performance of transit systems			●	
Intercity service high costs			●	
Difficulty in providing service in small communities		●		

Performance Measurement

The establishment and use of performance measures to achieve their goals is a strategy common to all plans. The state of Minnesota, for example, developed a performance-monitoring framework using metrics at both the state and local level. State-level metrics include four performance measures (ridership, fleet condition, span of service, and on-time performance) and evaluation criteria used to monitor the transit systems. MnDOT also uses evaluation criteria to assess transit systems for strengths and weaknesses in order to make informed funding decisions. At the local level, MnDOT recommends that providers use performance guidelines and standards to monitor their own services.

MnDOT annually evaluates transit system performance to prioritize operating and capital projects. MnDOT ranks each system based on a series of specific criteria and assigns each transit system a score. Based on the evaluation criteria, the transit systems are nominally ranked and scores within the bottom 10 percent are targeted for additional technical assistance from MnDOT.

Strategies

A summary of the main strategies proposed in the plans, and the states to which they apply, is shown in Table 5. A column for Vermont has been added to indicate which strategies have already been employed in the state. Common strategies across the plans include:

- Identify and seek out opportunities to apply for available federal, state, and local funds to address identified unmet needs;
- Maintain, develop, and encourage partnerships among stakeholders for planning and implementation of coordinated transportation solutions;
- Monitor performance of current and future public transportation services;
- Expand education, outreach, and marketing.

Table 5: Statewide transit plan proposed strategies by state

Strategies	Idaho	Iowa	Maine	Minnesota	Vermont
FUNDING					
Identify and seek out opportunities to apply for available federal, state, and local funds to address identified unmet needs	●	●	●		●
Formalize state's passenger transportation funding participation role		●			
Lottery revenue as potential source of funds			●		
Improve grant decision making process			●		●
Continue to support the transit infrastructure grant program		●			●
SERVICE DELIVERY					
Consider investing in technology systems that contribute to more efficient and sustainable service delivery	●			●	●
Maintain, develop, and encourage partnerships among stakeholders for planning and implementation of coordinated transportation solutions	●	●		●	●
Encourage volunteer networks and alternatives to traditional transit services			●	●	●
Invest in customer amenities that improve the transit experience				●	●
Support Medicaid Enterprise Transportation Brokerage		●			
PERFORMANCE MONITORING					
Establish performance standards for new and expanded services	●		●		?
Monitor performance of current and future public transportation services	●	●	●	●	●
Safety/security and service quality performance monitoring system	●				●

Strategies	Idaho	Iowa	Maine	Minnesota	Vermont
PUBLIC INFORMATION AND OUTREACH					
Expand education, outreach, and marketing	●		●	●	●
Develop clear, comprehensive, and accessible public information about transit services	●			●	●
OTHER POLICIES					
Strengthen local coordination of land use decisions with transportation plans		●			
Develop strategies for first and last mile rider needs				●	●
Improve and update State Management Plan			●		●
Establish a Public Transportation Advisory Group			●		●

Finally, it is worth highlighting Iowa's strategy of strengthening local coordination of land use decisions with transportation plans. This plan proposes that additional coordination with transportation services should be incorporated into the long-range land use planning process and identifies topics that require more evaluation:

- Reduce potential conflicts created by approving residential developments that need passenger transportation service but are proposed for areas where passenger transportation service is not provided and is not expected to be provided in the foreseeable future;
- Increase the level of coordination that occurs in the determining the location for a new medical facility and the need for passenger transportation services;
- Promote the livable communities concept in the land use decision-making process.

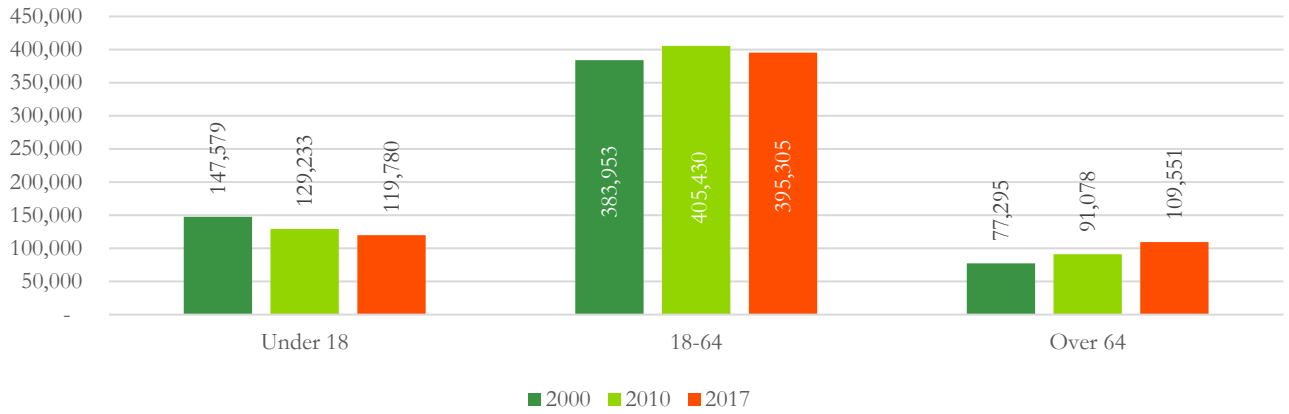
3. CRITICAL THEMES AND CHALLENGES

Aging Population

America's population overall is growing older, and northern New England is leading this trend. While the median age in the US was 38.1 years in 2016, the three northern New England states had the highest median ages of all states, at 44.6 in Maine, 43.2 in New Hampshire, and 42.6 years in Vermont[2]. As recently as 1990, Vermont's median age was just under 33 years, the same as the nation[3].

According to the US Census, 17% of Vermonters were age 65 or older, compared to 15.6% in the nation[4]. The aging of Vermont is accelerating; between 2010 and 2017, the number of Vermont residents over 65 years old grew by 18,500. This change has happened within a stagnant overall population, which means a similar decline in the number of people under the age of 65 as can be seen in Figure 9.

Figure 9: Number of individuals by age category in 2000, 2010, and 2017, in Vermont.



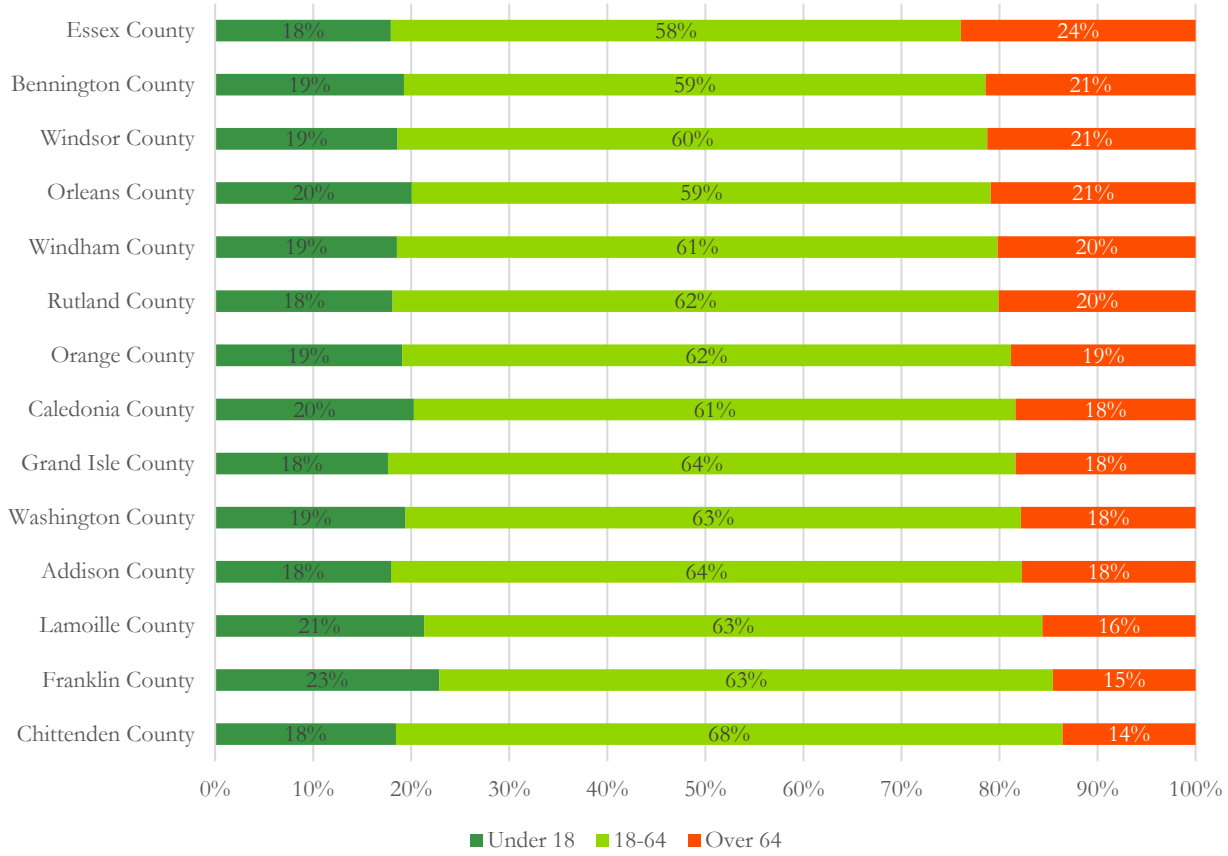
As shown in Figure 10, the Northeast Kingdom and the southernmost counties in the state had the highest percentages of older adults, while the northwest corner of the state and central Vermont had the lowest percentages. However, because Chittenden County accounts for over 25% of the state's population, it has by far the largest number of older adults, at nearly 22,000, almost double the number of older adults in the three counties of the Northeast Kingdom, combined. Chittenden County, notably, had the highest percentage of "working age" adults (18-64), consistent with its role as the economic engine of Vermont.

According to the *Demographic and Economic Trends & Forecasts Report,* produced in support of the *2040 Vermont Long-Range Transportation Plan,* Vermont's population is forecast to increase by 0.174% on average between now and 2046, resulting in a total population of 660,000 in that year.[5] In contrast to that slow overall growth, the number of residents age 65 or older is forecast to increase quickly, from 18% of the population

[2] U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.
[3] "Vermont State Plan on Aging." Vermont Agency of Human Services Department of Disabilities, Aging and Independent Living (DAIL). https://asd.vermont.gov/sites/asd/files/documents/VT%20State%20Plan%20on%20Aging_2018_FINAL%20APPROVED_1.pdf
[4] U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.
[5] *Demographic and Economic Trends & Forecasts Report,* RSG and Economic & Policy Resources, Inc., p. 5.

in 2015 to 27% of the population in 2030, reaching a plateau at that level for the remainder of the forecast period.[6] These percentages translate into an increase from about 110,000 older adults today to 175,000 in the year 2030, an increase of nearly 60%

Figure 10: Percent of population by age group by county in Vermont in 2017



The Challenge of Aging in Place and Maintaining Independence

Older adults face significant problems as soon as their ability to drive becomes limited. These problems include access to medical care, shopping, other services and social isolation. As Morken and Warner[7] explain, older adults in rural areas will experience those problems more strongly because lower residential density and limited service infrastructure pose greater challenges to serving older residents. In contrast, older adults in town centers, villages and cities may continue to be able to accomplish many of their trips by walking and may also have easier access to friends and neighbors who can travel short distances to help. As will be discussed in more detail in the section below on housing, Vermont is a predominantly rural state with very low population densities outside of Chittenden County and the other small cities located along the I-89, I-91 and US 7 corridors. This rural land use pattern emphasizes the challenge for aging in place for most of Vermont's older adults. It also represents an opportunity for public transit to attract new riders.

[6] Ibid., p. 19.
[7] "Planning for the Aging Population: Rural Responses to the Challenge." Lydia Morken and Mildred Warner. Available at: http://s3.amazonaws.com/mildredwarner.org/attachments/000/000/196/original/5a05087ac5578fa1f3cbf7b4fcefb24a

In a survey conducted in October 2017 as part of the *State Plan on Aging* (December 2017), when asked to identify challenging types of trips, Vermonters ranked visit to family or friend and entertainment and social events as the most difficult to achieve. For those who currently have mobility limitations, transportation assistance programs are geared mainly toward medical appointments and shopping. It is recognized that social isolation is a significant problem, but there are not sufficient resources available in existing programs to address it adequately. It is impossible to separate the effects of social isolation from overall wellness. Indeed, as Morken and Warner note: "research shows that weak social connections are on par with smoking and alcohol consumption – and trump obesity and physical inactivity – as risk factors in mortality."

Travel Needs of an Aging Population

Transportation services used by older Vermonters are similar to those used by younger people until physical limitations begin to affect their abilities. At first, it may be a reluctance to drive at night or in bad weather when fast reflexes are needed and visibility may be poor. In more urban areas, as they feel these limitations, older adults may begin to use bus services or rely on friends to give them rides. In more rural areas, where existing resources are not as obvious, they will begin to learn about the range of services available to them, supported by funds from the federal government, the Vermont Agency of Transportation and the Agency of Human Services, including the Medicaid program.

The survey in the *State Plan on Aging* found that the great majority of older adults still use automobiles for all or most of their transportation needs, and among these seniors, there is a fear that losing their ability to drive will leave them stranded in their homes. However, many of these older adults are likely not yet aware of the services that exist both in urban and rural areas in Vermont. While the available resources are not sufficient to maintain the level of mobility that a private automobile can provide, they are designed to address the essential needs of older Vermonters. The challenge moving forward is how to address the needs of a population of older adults that is 60% larger than what we have today and how information about services can get to this population both to allay fears and to allow them to plan for future mobility before it becomes a crisis. Encouraging "younger seniors" to make use of existing services now both increases the productivity of those services and eases the transition to non-automobile mobility when they can no longer drive.

Potential Strategies

When confronted with the challenge of an aging population who will experience mobility challenges sooner or later, and the leading edge of the Baby Boomers reaching their eighties within the next decade, three broad strategies present themselves.

- Make town/village centers, where needed services are more accessible and social interactions more possible, more attractive so that older adults will choose to move there from isolated rural areas.
- Plan for a significant expansion of rural transit services (primarily demand response) so that older adults living outside of town and village centers can maintain access to needed services.
- Rely on technology, such as autonomous vehicles, virtual reality, drones, etc. when they become available in Vermont to provide access and services to older adults in rural areas.

Vermont's policy goals have long encouraged housing development in existing town and village centers. One of the three main principles in the Long-Range Transportation Plan states:

> Focus on downtown & village investments - Vermont has for many years supported planning, regulatory and funding programs, and policies aimed at downtown and village development and

redevelopment. Focused growth centers place housing, shopping and services, and employment closely together. Mixed use development such as this can reduce the transportation demand placed on our highways, along with the associated energy consumption and tailpipe emissions. Compact development also supports the viability of public transit services and walking and bicycling as a means of transport.

Out of over $35 million spent on public transit annually in Vermont (including federal, state, local, and institutional partner funds), nearly $12 million (just about one third) is spent on demand response service and other transit in rural areas.[8] To address the future mobility needs of the Baby Boom generation and following generations, should they decide to remain in their rural homes, this outlay would need to increase significantly. The Needs Analysis section of the PTPP will estimate what the financial implications would be of this policy choice, but it is clear that the millions of dollars already spent on transportation for older adults[9] would have to grow by a large factor. If that were feasible, it would lead to a further challenge of finding a sufficient number of drivers to operate the trips to reach the riders, whether they are volunteer or professional drivers. There is already a shortage of volunteer drivers today, when the Baby Boomers are in their sixties and early seventies, and thus most appropriate to be a driver, rather than a rider. The PTPP will have recommendations for ways to increase the number of volunteer drivers in the pool, but the currently available strategies may not be sufficient for the future wave of older adults above the age of eighty.

Technology can often supply cost-effective solutions to problems, but it is unclear if it will be able to solve the problem of mobility for older adults in rural areas. *Technology and Vermont's Transportation System,* a white paper developed for the Long-Range Transportation Plan, discussed the state of the art (as of 2016) in various technologies that could affect mobility in Vermont. By the year 2030, it is possible that autonomous vehicles could comprise half of the vehicle fleet nationally, though only a small portion of those would be true "driverless" cars.[10] Existing driverless technology relies on extensive 3D mapping and stripes on the road to guide the car. Commercial GPS is not precise enough to keep a driverless car in a lane. Given that about half of the road mileage in Vermont is on dirt roads without any stripes, and that these roads can become nearly impassable during mud season, it seems unlikely that a driverless car will be able to reach the home of an elderly resident on a mountain road in the near future, but automakers are working to overcome these challenges with high-resolution mapping and the potential use of military GPS, which is much more precise than the commercial variety, among other technologies. The white paper notes the potential mobility benefits of autonomous vehicles, as well as other transportation and land use impacts.

Other technological advances may be able to meet some of the needs of people in remote areas. Drone delivery services do not face the same obstacles as driverless cars and could function to bring meals or medical supplies to remote areas. Amazon is working on such delivery technology, but the regulatory framework is not yet in place to allow for such deliveries to occur. Video connections and virtual reality could help older adults to feel less isolated even if they cannot easily be in the same room as other people. This technology could also obviate the need for some medical trips, as "telemedicine" grows in rural areas. Such technology would depend on robust Internet service, which is still unavailable in many remote areas.

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[8] Figures from the SFY 2018 Route Performance Review. The $12 million figure includes the following service categories: Demand Response, Rural, Rural Commuter, and Volunteer Driver. It excludes Small Town, Tourism, Intercity, and Express Commuter all of which operate partly or wholly in rural areas but are nonetheless more similar to urban bus routes. It also, of course, excludes the Urban category based in Chittenden County.

[9] In SFY 2018, the total amount spent in the Elders and Persons with Disabilities program was $4.98 million. That figure is part of the $12 million referred to earlier.

[10] *Technology and Vermont's Transportation System*, Dubois & King, VEIC, and Smart Mobility, 2017, p. 20.

Thus, while technology could help in some areas, it is unlikely to solve all of the problems faced by older adults in rural areas within the next decade.

Economic Trends and Opportunities

As noted in an article in the Burlington Free Press in 2016, the story of economic opportunities is a "Tale of two Vermonts." Between 2010, when the economy started growing after the Great Recession, and 2016, job growth in northwestern Vermont (including Chittenden County, Grand Isle County and a spine of towns along the western edge of the state between Vergennes and Swanton) amounted to 13%, while growth in the rest of the state was "anemic, at only 4.6%."[11] Outside of Vermont's one urban area, growth has been slow for many years, and this has limited the opportunities for residents in these areas to find jobs. The economic stagnation is correlated with stagnation in the housing supply and in population; people move to areas and spur growth in housing when there are new jobs available. This section explores the role of public transit in both the fast growing area of Chittenden County (and to a lesser extent, the Upper Valley straddling the Connecticut River) as well as its role in assisting people in slow-growing areas to reach job opportunities which may be more distant.

Across North America, public transportation helps rural communities to become more efficient and equitable. It helps ensure that all residents, including non-drivers, enjoy independent mobility and receive a fair share of public spending on transportation facilities and services. In this context, public transit can help support rural economies in ways such as[12]:

- It helps attract and retain residents who cannot drive (including older Americans, young people, people with disabilities and lower-incomes) and tourists, therefore helping to support local businesses, healthcare centers, and schools.
- It can help businesses reduce their parking costs, which is particularly important for revitalizing older downtowns, and for developing large institutions such as colleges and hospitals.

A 1998 Transit Cooperative Research Program (TCRP) Report assessing the economic impacts of rural public transportation found that there was an 11% difference in average net earnings growth between rural counties that had public transit systems and those without it[13]. The researchers also discovered an economic multiplier of 3.35 for every dollar of federal investment in rural public transit.

Public Transit and Vermont Economic Trends

As noted above, economic growth in Vermont has been unequally distributed. As documented in *State of Working: Vermont 2018*, a report by the Public Assets Institute,[14] between 2007 and 2017, six northwestern counties accounted for all of the job growth, while seven counties to the east and south actually lost jobs (see Figure 11). Chittenden County accounts for a third of all jobs in Vermont (as of 2017) and over half of the jobs created since the Great Recession.[15]

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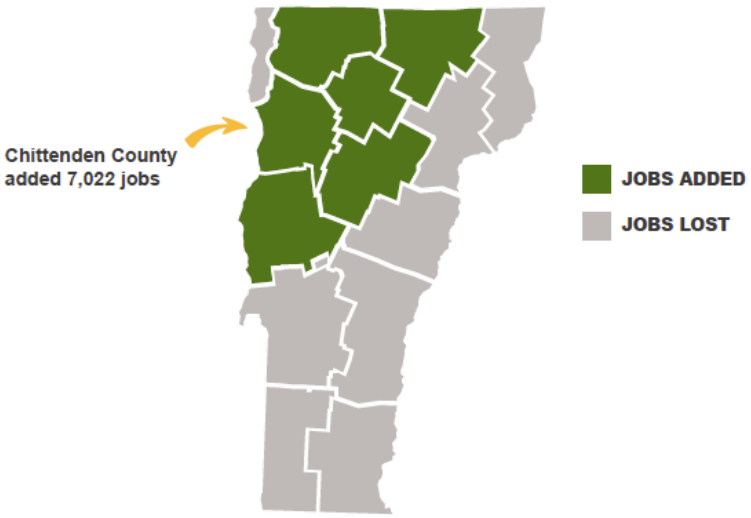
[11] https://www.burlingtonfreepress.com/story/money/2016/11/17/tale-two-vermonts-where-jobs-and-not/93967306/
[12] "Public Transportation's Impact on Rural and Small Towns." Todd Litman. Available at: https://www.apta.com/resources/reportsandpublications/Documents/APTA-Rural-Transit-2017.pdf
[13] "Assessment of the Economic Impacts of Rural Public Transportation." Jon E. Burkhardt, James L. Hedrick and Adam T. Mcgavock. Available at: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_34.pdf
[14] https://publicassets.org/wp-content/uploads/2019/01/SWVT2018final.pdf
[15] Ibid., p. 20

Figure 11: Change in Jobs by County 2007– 2017



Data source: U.S. Bureau of Labor Statistics

For a growing job center, public transit can play a critical role in allowing growth to happen in an efficient way, both in terms of land use, as well as the use of energy resources. One of the least productive uses of land is a parking lot, and while a parking garage may have a smaller footprint relative to parking capacity, such structures are very expensive to build and maintain. Available parking also encourages people to drive to work, mostly with one person in the car, which is the most energy-intensive way to commute, on a per-passenger basis. Convenient transit access allows economic growth to happen without the inefficient land use of large parking lots and inefficient energy use of single-occupant vehicles. The primary opportunities for transit to play this role are located in the core of Chittenden County (Burlington, Winooski, and parts of South Burlington) and in the Upper Valley (Hanover and Lebanon, NH and White River Junction). Cooperation and collaboration between large employers and institutions—such as the University of Vermont, Dartmouth College, UVM Medical Center, Dartmouth-Hitchcock Medical Center—and transit agencies such as Green Mountain Transit and Advance Transit can help the employers save money that would otherwise be devoted to parking and help the transit providers gain new riders. Transit also plays an important role at Vermont's ski areas, where they provide efficient access for workers and skiers, allowing for a reduced footprint for parking and less traffic congestion.

In most of the rest of Vermont, public transit plays a very different role with respect to economic opportunity. Vermont's rural communities were historically spaced between 2 and 10 miles apart and each provided services such as schools and churches, while some also developed general stores, town halls, libraries, fire stations, and commercial downtowns. Many of these town centers exist to this day, some "with a remarkable degree of vitality." However, many of these rural areas are also experiencing aging infrastructure, limited growth, and economic hardships.[16]

Access to Jobs and Services

Rural communities face several challenges in providing accessibility and the transportation connections between the community and its needs. Local markets and shops have been closing as they face competition from "big box" and online retailers. This means not only that people may have to travel farther to do their shopping, but that the local jobs associated with these local services have disappeared. Years ago, small town residents may have been able to accomplish most of their trips on foot—to work, to eat, to shop, to conduct personal business—but now many or all of these trips may require longer trips. The University of

[16] State of Vermont 2020 Comprehensive Economic Development Strategy. https://accd.vermont.gov/economic-development/major-initiatives/ceds

Vermont Transportation Research Center has found that Vermonters travel longer distances than the national household average for shopping trips, including groceries and clothing: 6.7 miles (one-way) compared to the national average of 5.6 miles.[17] Furthermore, residents of rural areas in Vermont tend to travel longer distances than urban Vermonters: less than 5% of urban residents travel more than 10 miles for a shopping trip, while over 20% of rural Vermonters travel at least 10 miles (one-way) to go shopping.[18]

Public transportation, including local bus, paratransit, medical transport, and other services, can play a vital role for people in rural communities. Rural public transportation is most effective when it can[19]:

- provide rural commuters with access to their jobs, either in rural areas or in town/cities;
- provide relatively high levels of service to their localities (to permit the generation of significant economic impacts);
- leverage economies of scale offered by the transportation services (such as providing service to the regional airports, medical centers, and commercial businesses);
- focus on education, job training, or other "human investment" programs;
- serve expanding retirement, recreation and tourism communities; and
- provide cost-effective access to public services, health services, and shopping for rural, often older, people with limited transportation options.

It must be recognized that in rural areas, fixed-route bus services are unlikely to generate enough riders to be viable. Towns with reasonably dense village centers may be able to support a bus route connecting to other towns or a larger city. Indeed, as jobs and shops vanish from small towns, a bus route can serve as a lifeline to allow people who may not be able to drive or to afford a car to be able to continue to work and have access to other essential needs.

The Future of Access to Jobs

Economic forecasts for Vermont predict slow growth in the number of jobs statewide. A technical report done as part of the Long-Range Transportation Plan estimated annual statewide growth at 0.81%, with employment increasing from about 320,000 in 2019 to about 350,000 by 2030.[20] There will likely continue to be a split between growth in Chittenden County and the rest of the state, though western Franklin County and parts of Addison County have shown recent growth and are predicted to have the fastest growth over the next 30 years.[21]

The type of job available in Vermont has also been changing, with a shift away from manufacturing and toward services. As shown in Figure 12, there has been a substantial shift in the past decade in several sectors of the economy. It is notable that the second largest decline in employment is in the retail trade category, reflecting the closure of retail stores in the face of online competition.

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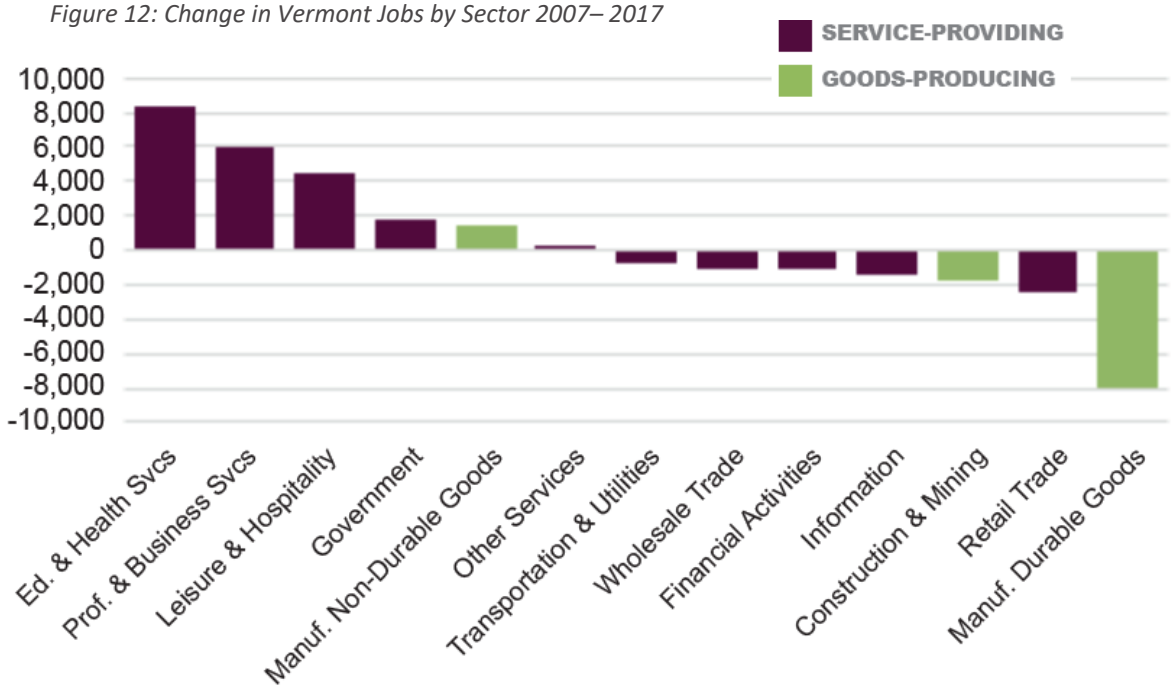
[17] The University of Vermont Transportation Research Center, "NHTS – Vermont: Travel for Food in Vermont and Northern New England," June 2011.
[18] Ibid.
[19] "Assessment of the Economic Impacts of Rural Public Transportation." Jon E. Burkhardt, James L. Hedrick and Adam T. Mcgavock. Available at: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_34.pdf
[20] Demographic & Economic Trends & Forecasts Report, RSG & EPR, 2016, p. 25.
[21] Ibid., p. 26.

Figure 12: Change in Vermont Jobs by Sector 2007– 2017



Data source: Vermont Department of Labor

Freight employment, which is correlated with manufacturing, is forecast to decline gradually over the coming period from a level of about 50,000 jobs currently, to about 45,000 jobs in 2030.[22] Employment in the service sector of the economy will take up the slack, accounting for much of the predicted overall growth in employment. Some portion of the service sector will reduce the amount of commuting needed, as more people choose to work at home or in local co-work spaces.

For people who need to commute and who do not have ready access to private automobiles, Go Vermont[23] can serve as a centralized resource of transportation information and access to alternatives to driving. It is the primary public access to Vermont's statewide transportation demand management (TDM) program and is a clearinghouse for all kinds of alternative transportation options, including carpools, vanpools, public transit, and rail services, as well as park-&-ride locations. The website offers a rideshare searching tool within Vermont and describes the state's "Guaranteed Ride Home" benefit for bus riders and carpoolers that reimburses up to $70 travel costs if someone needs to get home and is not able to via their regular shared-ride mode.

Over the past 15 years, VTrans has provided funding for numerous commuter routes in Vermont, serving both large and small job centers. Express commuter routes operate on Interstate and state highways into the core of Chittenden County and to Hanover and Lebanon, New Hampshire. Rural commuter routes operate on state highways, connecting rural towns to small and moderate job centers including Rutland, Montpelier, Manchester, Middlebury, St. Albans, Wilmington, Waterbury, Bennington, Brattleboro, Randolph, and St. Johnsbury. Indeed, "Rural Commuter" is the largest category of bus routes in the state, with 31 individual

[22] Ibid., p. 27.
[23] https://www.connectingcommuters.org/

services currently operated. VTrans will continue to support bus routes where they are viable and will encourage people in other areas to take advantage of ridesharing opportunities and vanpools to be able to reach jobs.

Technology and Information

Emerging Transportation Technologies

Technology is having an ever-greater impact on public transportation in Vermont and across the world. With today's technology, a transit operator can track and schedule service vehicles more efficiently and improve the user experience by providing consumer access to real-time, integrated transit information services. In Vermont, Green Mountain Transit , Advance Transit, Rural Community Transportation, and The MOOver are already providing real-time information to passengers on the current location of transit vehicles. The ability to conveniently request, track, and pay for trips via mobile devices is changing the way people get around.

Transit Information

Access to real-time transit data is playing a central role in traveler information services. Intelligent transportation system (ITS) technologies support the monitoring in real time of a range of information that can be shared with travelers[24]. Mobile applications aggregate information to provide users with a menu of real-time transportation options to get to their destination, including transit, taxi service, carsharing, bikesharing, and ride-hailing. RCT, using a grant from the US Department of Agriculture, developed a smartphone app that shows the location of all of their buses and vans, as well as some volunteer drivers and local taxis. The app then provides a phone number to allow people to request a ride on one of those vehicles.

VTrans provides improved information to the public using an open-source platform, OpenTripPlanner. A modified version of the General Transit Feed Specification (GTFS) standard, called GTFS-Flex, incorporates several transportation services into one trip planner. The primary benefit of this is that far fewer trips are rejected as "not possible" as GTFS-Flex can suggest connections between fixed route transit and flexible transit, while other trip planners based on the GTFS standard would only show connections between fixed route transit and walking, biking, or driving modes. Future development goals are for GTFS-Flex data to capture carpools, airport shuttles, taxi cabs, and transportation network companies, and to incorporate real-time demand response trips into the trip planner[25].

Operational Management

Transit operators have been deploying software to optimize operations through more efficient tracking and scheduling of service vehicles. Rural transit service operators have also been breaking out of traditional siloed operational models and using software to broker greater integration and coordination among the different transit modes available within a community. Then, rather than introducing new services, existing transportation assets can be deployed more efficiently and the current capacity better managed.

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[24] "Emerging Technology Trends In Transportation." Eno Center for Transportation, ICF International. See: https://www.enotrans.org/wp-content/uploads/EmergingTech.v13.pdf?x43122

[25] "The Future of Rural Transportation and Mobility for Older Adults: Current Trends and Future Directions in Technology-enabled Solutions." Andrew Broderick. See: https://www.giaging.org/documents/180424_CITRIS_rural_mobility_paper_F.pdf

Public transit agencies and other public-sector entities can build on the mobility innovations of technology-enabled shared-use modes[26]. For example, new dynamic scheduling systems are impacting the deployment of paratransit in several ways:

- Interactive reservation, confirmation, schedule adjustment, and cancellation systems;
- Dynamic dispatch and routing of vehicles;
- Route combination for riders with similar origins/destinations;
- Mobile app-based payment integrated into reservation systems;
- Ability to track vehicle arrival and share trip details, location, and estimated arrival time with caregivers or other third parties; and
- Real-time customer feedback.

Mobility on Demand

Mobility on Demand (MOD) is a transportation concept where consumers can access goods and services on demand by using an integrated and connected multi-modal network of shared mobility, goods delivery, and public transit service solutions. The most advanced forms of MOD passenger services incorporate trip planning and booking, real-time information, and fare payment into a single user interface. Passenger modes facilitated through MOD providers include carsharing, bikesharing, ridesharing, ridesourcing/transportation network companies (TNCs), scooter sharing, microtransit, shuttle services, public transportation, and other emerging transportation solutions.

Urban areas play a leading role in driving innovation and action. The application of the MOD framework in rural areas is challenging given that the low densities of dwellings and populations can limit opportunities to create operational efficiencies at scale. Some elements of the MOD concept applied to rural areas include:

- **Hail-and-ride** is one of the most common forms of semi-flexible transit in rural areas. Vehicles providing this type of service can stop anywhere that is safe along a road since designated stops are not needed every few blocks as in urban areas. The GTFS-flex specification allows the trip planner to suggest short walks to access a hail-and-ride service, instead of directing the person to a fixed route stop, or returning no possible results.
- **Dial-a-Ride** is a curb-to-curb service available through prior scheduling. In some parts of Vermont, this type of service is only available to people over the age of 60 or people with disabilities, but in some regions, it is available to the general public.
- **Deviated-Fixed** routes operate along a fixed alignment or path at generally fixed times but may deviate from the route alignment to collect or drop off passengers who have requested the deviation. Many of the small town and rural bus routes in Vermont operate as deviated-fixed routes. The GTFS-flex data model combines both fixed route and dial-a-ride-like elements in a way that lets the flexible trip planner show those elements all in one cohesive itinerary.

Ride Hailing

Few services exemplify the on-demand economy more than ride-hailing apps. Using a smartphone, users request a ride, track the progress of their driver in real-time, and access an integrated payment and rating

[26] "Shared Mobility and the Transformation of Public Transit." Sharon Feigon, Colin Murphy. See: http://nap.edu/23578

system. Ride-hailing apps primarily offer their services in and around urban areas and accordingly, usage and awareness of these services among rural residents is low. According to a 2019 Pew Research report, 45% of urban residents and 40% of suburban residents have used a ride-hailing app, but only 19% of Americans living in rural areas have done so.[27]

Transportation Network Companies and Their Alternatives in Vermont

In Vermont, Transportation Network Companies (TNC) services are not available throughout the entire state, but both Uber and Lyft operate in several urban areas. The most robust presence is in Chittenden County, but there are a few drivers located in places such as Montpelier, the Upper Valley, and Brattleboro, and service is available during the ski season in major tourist areas such as Killington, Sugarbush and Stowe. Reasons for ridesharing services not being more broadly deployed in rural areas include a perceived lack of consistent demand due to low population density, poor connectivity because of the inconsistency of cell service coverage and, even where services are available, a lack of familiarity with the service.

The lower demand for trips in rural areas requires a different business model for the provision of shared-use mobility alternatives. It needs to be more socially oriented, with greater involvement of local municipalities and public transport operators to offer services at affordable prices.

Microtransit is a form of demand-responsive transit that offers flexible routing and flexible scheduling of shared-ride vehicles, often 10-15 passenger vans. The pitch to public agencies is that microtransit can be a more cost-effective way to provide service in some travel markets than fixed-route buses. Conceptually, it fits somewhere between individual private transportation (cars, taxicabs, some TNC services) and public mass transit (bus). The current implementations result from public-private partnerships, and some are subsidized. Companies can provide the technology as well as the vehicles, drivers and their management (Chariot, Lyft Shuttle, SHARE, Shotl, Split, and Via) or only the software and technology (Padam and Via).

VTrans is currently working with partners in the Montpelier area to test the concept of microtransit in a non-metropolitan environment. The project is still in the information-gathering phase, but the objective is that microtransit could reduce some of the demand for parking in downtown Montpelier and improve mobility for residents of the city and potentially the immediately surrounding towns.

Car sharing is another mobility alternative that has been tried in Vermont. CarShare Vermont (https://www.carsharevt.org) is currently operating in Burlington and Winooski with 17 vehicles available. A user-friendly website and sophisticated technology allowing people to access cars with their smartphones makes the system convenient and easy to use. It offers a variety of vehicles for different types of travel needs. Several years ago, the company tried to expand to Montpelier, but closed operations there after it did not prove economically viable.

Challenges of Technology in a Rural Environment

Given the lack of local and federal transportation funding for new infrastructure, shared mobility may be one of the most efficient and economical options to expand service, meet increased demand, and improve access in low-income and low-density areas. This section discusses the potential for shared mobility and the role that technology plays in enabling it.

[27] "More Americans are using ride-hailing apps" Jingjing Jiang. See: https://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/

A barrier to the widespread adoption of new shared modes is access to information technology, a precondition to using many shared mobility services[28]. The large-scale installation of broadband connectivity in rural communities would benefit transit services as well as the general population by facilitating improved communication capabilities for both the operational management of transit services and the dissemination of information-based services to the public. Broadband infrastructure would also enable future opportunities for innovation in mobility solutions such as connected and autonomous vehicles[29].

Also, infrastructure investments that expand the availability of high-speed broadband internet can contribute to an individual's quality of life through providing social connection, facilitating the delivery of virtual services to the individual, and reducing the need for trips for non-essential goods. Despite rural broadband connectivity continuing to expand geographically, availability in rural areas still lags more densely populated areas. And, where broadband is available, barriers to Internet adoption in rural communities remain significant for individuals with low levels of family income or education.

Shared-use transportation modes depend on economies of scale. Shared-use transportation modes require a minimum level of population, household density, mix of uses, the percentage of transit commuters and walkability to flourish. The low density of dwellings and population in rural areas limits the opportunities to create efficiencies of scale in transportation networks. To counteract lower overall transportation demand, rural shared mobility services in Vermont can look to low-cost, grassroots programs that can provide these services at a low-enough cost to make it feasible for low-density environments.

The SHARE-North project (https://share-north.eu), an initiative that has advanced in developing, implementing, promoting and assessing shared-use mobility options in rural areas in the North Sea Region in Europe, has the following recommendations on ways to improve mobility:

- Share the local government fleet: especially outside office hours, cars in the governmental fleet represent an unutilized resource. With a social pricing system, for instance, it becomes possible to give lower incomes access to a car and improve the chances of maintaining social contacts or gaining access to different employment locations.
- Promote shared mobility generally: People often don't know the opportunities of shared mobility.
- Permanent promotion on every level: Shared mobility is relatively new, promotion is much needed. Inform about shared mobility in general, to specific target groups, in particular areas, etc.
- Don't focus on the first car: In cities, it's rather easy to live without owning a car. In rural areas, it's more difficult. Not questioning the need to own a car in rural areas gives you credibility because you are showing understanding for the living situation. You can, however, ask citizens if they need a second (or even a third) car. A shared mobility solution is often a good alternative for these cars.
- Cooperate: Find the right partners, bringing together expertise from other areas is the way to success.
- Be creative: assets that are underutilized can be shared and used more effectively. It's not only about materials but also about human assets and spare time.
- Be patient: don't expect success from day one or even year one. Be persistent, repeat your actions and adapt if necessary.

[28] "Shared Mobility and the Transformation of Public Transit." Sharon Feigon, Colin Murphy. See: http://nap.edu/23578

[29] "The Future of Rural Transportation and Mobility for Older Adults." Andrew Broderick. Available at: https://www.giaging.org/documents/180424_CITRIS_rural_mobility_paper_F.pdf

Many of these principles are applicable to a range of rural public transit initiatives. Only a few municipalities in Vermont have a large enough government fleet to have a real impact on local mobility, but even in small communities, one or two cars could make a difference for a group of households that lack transportation. Collaboration and promotion are critical to the success of any initiative which is different from what has been accepted as the norm in American society for decades: private auto ownership. As "home-sharing" is spreading rapidly on such platforms as AirBnB, car sharing could also see rapid growth once technological, insurance, and perception hurdles are overcome.

Public Awareness

One of the most significant challenges to operating a sustainable and successful public transit system in a rural state, such as Vermont, is establishing and maintaining public awareness of the services that are offered. This section will examine how geography, age, and income, among other factors, affect the perception of public transit service. It will then look at various forms of messaging that can begin to address the presence of public transit in the public consciousness.

Geographical Differences

A Vermonter's awareness of public transit service depends, in large part, on where he or she lives. People who live in the urbanized portions of Chittenden County are very likely to be aware of bus service operated by Green Mountain Transit (formerly the Chittenden County Transportation Authority). In a 2019 survey of residents of 11 Chittenden County municipalities served by GMT, nearly 75% of respondents had actually ridden a CCTA/GMT bus at some point in their lives, and 30% had used GMT service in just the past three months. Only 8% of residents are frequent users of GMT service, but these prior numbers indicate that awareness of GMT service is widespread in Vermont's only urban area.

A statewide survey conducted as part of the Long Range Transportation Plan found that 3% of Vermonters used a "public transit bus" as their primary commuting mode and that another 8% said that they had used public transit for commuting at some point in the last year. Considering all types of travel, 8% of respondents said they used public transit frequently, and another 22% said they used it infrequently. Another 2% of respondents used intercity bus or Amtrak frequently, and about 26% used these modes infrequently. These results were not subdivided by land use type but it is clear that statewide use of public transit, and thus awareness of these services, is much lower than that seen in Chittenden County.

The MetroQuest survey done as part of the PTPP, while not based on a statistical sample, can also shed some light on the use of transit outside of Chittenden County. Among the thousand or so respondents who provided a home zip code, about 450 lived in the urban area, while 300 lived in small towns (population 2,500 to 15,000) and 260 lived in rural towns (population under 2,500). Among the urban residents, 61% said that they had used some form of public transit in the last month, while among small town residents, only 38% had done so, and among rural residents only 32% had done so. Given the nature of the survey, it is likely that the MetroQuest respondents were more knowledgeable about public transit than the general population, so that these figures are likely overestimates of total transit use. However, it is clear that use of transit is highest in the urban area, moderate in small towns, and lowest in rural areas.

Varying awareness of public transit makes sense based on the simple matter of the visibility of transit services in these various kinds of communities. Living in Burlington or the surrounding communities, it is hard to avoid seeing GMT buses or bus stops. In smaller cities and towns around the state, such as Middlebury, Rutland, Bennington, Brattleboro, Montpelier, and St. Johnsbury, bus service, while less

obvious than it is in Burlington, is still relatively present, with multiple routes operating. However, in the more rural parts of the state, buses or vans may be seen only rarely. In the Northeast Kingdom, for example, most of the public transit service is provided by volunteer drivers in their own cars; this service is invisible to the general public.

Age-Related Differences

Awareness of public transit service can also be related to age, since, as discussed elsewhere in this PTPP, age is one of the key factors affecting one's ability to drive or otherwise provide mobility for oneself. Among older adults (age 65 or over), the vast majority in Vermont continue to use personal automobiles for mobility, as verified in the survey conducted as part of the *State Plan on Aging*. Some 93% of respondents said they drive for some or all of their mobility needs. At the upper end of the age range, a much lower percentage of people are still able to drive because of sight or other physical or mental limitations. Many of these oldest Vermonters make use of the "E&D" services provided in all parts of the state by the regional transit providers.

Until they reach the point when the loss of driving ability is imminent, however, few of Vermont's older adults actively seek out information about mobility options other than driving. The *State Plan on Aging* found a lot of fear among older adults that they would be stranded in their homes as soon as they could no longer drive, reflecting a lack of awareness of the availability of existing services. This lack of awareness is a problem for several reasons:

- The fear about the loss of mobility is an unnecessary stress for older adults and may cause them to continue to drive beyond the point when they should stop operating vehicles, resulting in possible health problems or vehicular accidents.
- Older adults make up a large portion of the electorate at the local level, and an unawareness of public transit service could undercut support for necessary local funding, as well as increased state funding.
- Younger retirees are one of the best sources to populate the volunteer driver networks around the state. If they don't know about these programs, they will not volunteer for them.

There is also anecdotal evidence that many older adults, even if they are aware of available transportation resources, fail to take advantage of them because they don't want to "be a burden." It is unclear how widespread this sentiment is, and if it carries through into the Baby Boom generation, but it has been seen in cases occurring under VTrans' Rides to Wellness program, in which some older adults had to be strongly encouraged to take advantage of a free ride to the health clinic to take care of a medical condition. To some extent, older adults who can no longer drive may feel defeated and powerless because of the central role the automobile plays in mobility in the US, especially in rural areas where public transit service is less available. This sense of defeat may be an obstacle toward taking advantage of other, non-auto means of transportation.

Among working-age adults (25-64), the vast majority, especially outside of Chittenden County, currently have low awareness of public transit services. There may be some awareness that services exist, but little detailed knowledge of where bus routes go and how much area is covered by demand response service. Most people in this group likely associate public transit with service for the economically disadvantaged, or people with disabilities, or older adults—that is, people who are not able to drive themselves. In areas that do have a significant amount of bus service, people may make themselves aware of service when they need it—if their car breaks down, or if a family member without a car needs to get around. But generally, this group thinks of public transit as service for other people, rather than for themselves. The recent survey in

Chittenden County shows that 55% of people in this age group agreed with the statement, "GMT is an important resource for the community, but it is not relevant to me." In other parts of the state with less transit service, that percentage is undoubtedly higher.

Younger people typically have greater awareness of public transit service. There is a well-documented national trend of younger people delaying the purchase of automobiles and relying more on public transportation, especially in metro areas.[30] In Vermont, younger people are more likely to make use of bus service to get around town or to get to after-school jobs.[31]

Income-Related Differences

In addition to geographic and age-related differences, a person's income level also affects their awareness of public transit service in Vermont. Owning and operating a car is expensive (about $8,500 annually on average[32]) and can be the second-largest line item in a household budget after housing. The great majority of people in Vermont who can afford cars go ahead and make that expenditure because of the convenience and flexibility that automobiles provide. Only 6.8% of Vermont households have no vehicles available, according to the 2017 American Community Survey (ACS), and a significant portion of these are households that cannot afford to own a car. Once a car is purchased, the household members tend to use it for most or all of their mobility needs, and thus usually do not make any effort to think about public transit options.

Of course, there are people who live in city and town centers who choose not to own a car, and these people are very aware of public transportation options available to them. In the Burlington area, the existence of Carshare Vermont makes it more possible to avoid car ownership while still having easy access to an automobile when it is needed. But these people are most likely not using Carshare on a daily basis, because that would quickly become more expensive than owning a car, and thus they are relying on other modes of travel (walking, biking, public transit) for routine mobility.

Among the 34.1% of Vermont households that own one car (ACS), there are many for whom the expenses of operating an automobile are a struggle. These "lower middle class" or "working class" households likely make use of public transit services when they are available. A common situation would be one adult using the car to get to work, while the other uses bus service to get to their own job, or to take care of household business. Alternatively, the primary worker could use a commuter bus route to get to their job, while the other adult uses the car to transport children around and take care of other errands.

Continuing down the income scale to people in poverty, this group is more likely than not to be aware of public transit services. On-board surveys of transit riders in Vermont typically show that 40-50% of riders have household incomes of $25,000 or less.[33] People with this level of income are much less likely to be able to afford a reliable car and to keep it operating. They tend, therefore, to live in places that offer at least some public transportation service so that they can find employment and take care of other basic life needs without having to drive. Indeed, the highest concentrations of people living below the poverty line are in

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[30] https://www.citylab.com/transportation/2014/09/new-study-millennials-love-transit-most-boomers-still-stuck-on-cars/380380/ or https://www.ecolane.com/blog/millennials-using-public-transportation; or https://boston.uli.org/news/millennials-want-results/ or https://scholarcommons.usf.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1473&context=ipt

[31] The Chittenden County survey did not have enough responses in this age category to draw any conclusions.

[32] https://newsroom.aaa.com/tag/cost-to-own-a-vehicle/

[33] Green Mountain Transit Passenger Survey (Fall 2017 and prior years) is one example.

urbanized parts of the state in Chittenden County, as well as in places such as Brattleboro, Barre City, Bennington and Rutland. Of course, some low-income people live in remote rural areas where they may have access to very inexpensive housing. The ACS shows that every one of the 184 Census tracts in Vermont has at least 25 people below the poverty line, and 70% of tracts have between 100 and 500 people in poverty; the average number per tract is 370. People in poverty living in remote areas likely focus their resources on having a car available since they do not have any viable transit options.

Perceptions of Public Transit

Thus far, we have been considering how various segments of the population may or may not be aware of public transit services in their area. It is also important to consider how the public perceives public transit, and whether they see it as relevant to them. Four forms of public transit are discussed:

- Commuter and urban bus services
- Rural bus services
- Demand response service
- Volunteer driver service

Until the recent era of low gasoline prices took hold in 2015, a broad swath of the public saw urban bus services and commuter express services (such as those operated by GMT, and those serving the Upper Valley) as relevant to them. They may not have actually used the service themselves, but people working in the core of Chittenden County and in the Hanover-Lebanon-White River Junction area would have seen plenty of commuter buses and local bus routes and would have recognized them to be an option for them or people like them to avoid paying gas prices nearing $4 per gallon.

With the drop in gas prices since 2014, many commuters have been lured back into their cars because of the automobile's advantages in flexibility and convenience. As long as gas prices stay low, or rise by only small increments, most of these drivers will think little about public transit options, and likely assume that the people still riding the buses are unlike them, either by age or income or politics.

The ridership drop experienced by many urban and commuter bus routes in Vermont and across the country have resulted in a stagnation—or in some cases, cuts—in service. If low gas prices are not enough to lure people away from transit, then service degradation would certainly tip many people over the edge and back to their own cars.

Bus services in rural areas are typically less likely to be carrying riders who are there by choice. While urban areas and larger job centers have enough travel density to support frequent bus service—which is needed to attract choice riders—most rural services are limited to a frequency of one or two trips per hour, simply because there are not enough people to justify more frequent service. (Nor is there normally funding available to support more service.) Because of the limited amount of service that can be sustainably operated, most of the riders on rural services are there because of necessity, not by choice. As a result, these services are perceived to be "only for" poor, disabled, or elderly people, and most others see them as not directly relevant to their lives.

Demand response service, operated with cutaway vans, is normally seen as oriented toward people with disabilities and older adults. People mostly see these vans at senior centers, independent living complexes, social service agencies, and hospitals, and therefore associate those vehicles with those populations and those types of trips. These vans often have a headsign that says "Special" or "Paratransit" and therefore people assume (rightly, in most cases) that they are not for the general public.

Finally, volunteer driver service is essentially invisible to the general public. If they don't know someone who is a volunteer driver, or someone who has been driven somewhere by a volunteer, or seen one of the advertisements or PSAs promoting volunteer driver programs, then they likely don't know that there even are volunteer drivers in Vermont.

Spreading the Word

Given all of these barriers to public awareness of public transit service in Vermont, the question arises as to how to increase awareness generally and among specific populations who would benefit most immediately from increased access to information. A later section of the PTPP will contain more detailed recommendations on this topic, but here we look at several possible means of getting the word out.

Partnerships with AARP, CTAA and State Agencies

VTrans has established relationships with local and national agencies and organizations. AARP, which works actively with older adults in Vermont, is engaged in the PTPP process and with VTrans more broadly and can continue to inform its members about the availability and role of public transit services in all parts of Vermont. The Community Transportation Association of America works with rural areas and small towns to help promote public transit services. While it may not be well known as an organization to the general public, it can work through many channels to spread the word about transit. VTrans works with other state agencies on an ongoing basis. The Agency of Human Services, specifically the Department of Disabilities, Aging and Independent Living, is thoroughly engaged with the PTPP and in developing state policies to promote the wellbeing of older adults in Vermont. All of these partnerships could benefit from additional structure and formalization to ensure that there are tangible products of the collaboration.

Developing Stories

Reports, studies and data have their role in policy development and the budgeting process, but they do not usually have much of an impact on the general consciousness. Instead, stories are needed so that people can understand the role that transit currently plays in Vermont, and the enhanced role it can play in the future. Below are three possible storylines that can be used to engage the public and raise awareness of transit:

- **Transit and Mobility** – Transit can enhance mobility for everyone, not just people who cannot otherwise drive. As more people unshackle themselves from cars, service can be increased, making it more convenient for everyone.
- **Transit and Environment** – While Washington talks about a Green New Deal sometime in the distant future, transit offers the possibility of having a real impact on climate change right now. The transportation sector in Vermont accounts for about 43% of greenhouse gas emissions.[34] A broad switch to transit can lower that figure significantly.
- **Transit and Independent Living** – Transit is an option that older adults should take advantage of sooner rather than later, saving money and enhancing mobility before the dreaded day when driving is no longer feasible.
- **Transit and Healthy Communities** – Transit not only allows people with mobility challenges to get the health care they need, but it is also part of a lifestyle that includes more walking, less driving, and more engagement with other members of the community, all of which contribute to improved health.

[34] https://anr.vermont.gov/sites/anr/files/Final%20VCAC%20Report.pdf, p. 3

Telling the Story

Once stories such as those listed above have been developed, it is critical to use channels to get those stories into the public consciousness. Channels should include the newsmedia in Vermont, including commercial stations as well as Vermont Public Television and Vermont Public Radio. These organizations occasionally report on public transit issues, but could be engaged more fully to help spread the stories above. Public officials have a role to play in communicating to their constituents what they learn through studies such as the PTPP. Community leaders beyond elected officials can also be involved in this effort, as word of mouth among peers is often the best means of reaching into the community.

Go Vermont (www.connectingcommuters.org) is VTrans' primary portal for the general public to get information on ridesharing, public transit, and other travel information. All public outreach undertaken to help spread the word about public transit should direct people to that website, as it contains a wealth of information on transit and links to just about every type of transit service in Vermont.

Overcoming Resistance to Change

The final stage in the process of increasing awareness of public transit is to help people overcome their resistance to change and to actually begin to use the services they are learning about. Publicity events, travel training and incentives are among the many ways of getting people to try using public transit. The perceptions of public transit need to change as the awareness of service grows, so that more people recognize that transit is relevant to their lives and offers value to them.

Land Use and Housing Location

Over 60% of Vermont residents live in areas with low population density. The urbanized area of Burlington is the most significant exception to Vermont's rural character, with other smaller urban clusters scattered across the state. Vermont's dispersed settlement pattern poses a significant challenge to public transit, limiting transit options to demand responsive services and other non-fixed route services in most of the state.

As mentioned in the section on aging, Vermont has a policy focus, codified in 24 V.S.A. Chapter 117 and articulated in the Long-Range Transportation Plan (LRTP) and the Comprehensive Energy Plan (CEP), on supporting downtowns and village centers. Recommendations from the LRTP are incorporated into the list of action items in chapter 5 of the PTPP. The CEP, especially in sections 8.4 and 8.5, contains a wealth of data on the interplay among land use, transportation and energy use. The six strategies listed in the CEP starting on page 144 are very much in line with the land use recommendations in chapter 5 of this document. Four additional recommendations in the CEP bear repeating here:

- Direct additional public sector funds, if and when available, to downtown redevelopment, in order to control the long-term costs for supporting energy services and infrastructure related to sprawl development.
- Increase funding for municipal planning grants, to help municipalities develop integrated plans and policies, and restore municipal education grants. Because all residential development in Vermont is subject to local regulations, helping to improve municipal bylaws will allow for greater densities, better design, diversity of uses, and lower parking requirements — all proven to be effective in lowering vehicle miles traveled. ACCD's forthcoming Planning Manual update will help municipalities work towards such improvements, and municipal planning grants have continued to prioritize projects that work on the creation of walkable centers.

- The state currently invests in several programs that coordinate transportation and land use investments in ways that promote walkable, bikeable environments, including Strong Communities, Better Connections and the Neighborhood Development Area (NDA) Designation Program. Working together, the Agency of Transportation (VTrans) and ACCD developed Stronger Communities, Better Connections, a new initiative that uses existing funding to create a joint grant program to help communities coordinate transportation and land use planning and prioritize investments that meet multiple goals. The NDA program has been updated in recent years to focus on increasing housing in walkable neighborhoods, and to respond to improvements suggested by local municipalities and developers. Continuing the Stronger Communities, Better Connections, expanding to include ANR in natural resource planning, and continued investment in benefits for NDAs will provide support for local communities in helping create an environment where alternatives to single--occupancy vehicles are safe and available.
- One of the biggest incentives for driving to work alone in the United States and in Vermont is free parking — an enormous untaxed benefit that most employers offer their employees. But whether employers or taxpayers are paying for it, parking is of course never free. Studies show that, on average, shifting parking costs from employers to employees reduces single-occupancy vehicle use by 25%. But given that most commuters consider free parking a basic right, charging for parking when employees currently pay nothing could be challenging. One successful alternative is to have employees choose cash instead of a free parking space, a practice known as cash-out. The State of California has made parking cash--out required for employers with greater than 50 employees. Studies of employers who have switched to a cash--out system have experienced an average VMT reduction of 12%. As the biggest employer in the Vermont, the state has an opportunity to employ this strategy to help reduce VMTs, and should consider a pilot a parking subsidy cash-out program in high demand locations.

Rural Character and Development Patterns

The 20th century saw an overall decline in rural Vermont's population compared to the 19th century, due to a decrease in agriculture and mill work. Vermont's rural population increased in the latter portion of the century, starting in the 1970s, spurred by the back-to-the-land movement and the proliferation of all-wheel-drive vehicles. Today, the newest phenomenon impacting development patterns in Vermont is technology; as high-speed internet becomes more prevalent, people can work, shop, and do other business remotely, allowing them to live even further from town centers.

Some quick facts about Vermont's development characteristics:

- Six out of ten Vermonters live in areas classified as rural by the census. While states in the Midwest and West have vast amounts of rural land, Vermont and Maine are the two states in the U.S. with the highest proportion of their populations living in rural areas.[35] There are many small cities and towns in Vermont which have populations too small (under 50,000) to be considered urban, but still contain many residents. The census designates 'urban clusters' – areas with populations between 2,500 and 50,000 – of which there are 19 in Vermont (see Figure 13). The landscape can feel more

[35] "Rural America," a story map by the U.S. Census Bureau. Available at: https://gis-portal.data.census.gov/arcgis/apps/MapSeries/index.html?appid=7a41374f6b03456e9d138cb014711e01

urban than rural in many of these small cities and towns, with ground-level shops and walkable downtowns, though the people living in these areas are still considered rural residents.

- The vast majority of people in the U.S. (86%) live in urban counties. Only one county in Vermont, Chittenden, is considered an urban county (there are many rural dwellers within the county as well). Three of Vermont's counties (Essex, Orange and Lamoille) are 100% rural.[36]
- Statewide, the population density is 67.9 people per square mile of land area, which is similar to the national average (2010 Census). The density by planning region in Vermont varies between 32 in the Northeast Kingdom (NVDA) and 299 in Chittenden County. The density for each region is shown in Table 6 below.

Table 6: Population Density by Region

Region	People/sq. mi.	Region	People/sq. mi.
Addison County	54	Northwest Vermont	78
Bennington County	61	Rutland County	66
Chittenden County	299	Southern Windsor	71
Central Vermont	80	Two Rivers	43
Lamoille County	55	Windham County	50
Northeast Kingdom	32		

State Land Use Regulations

Vermont is one of few states that has robust planning and development controls in place at the state level. As described in more detail in Appendix E of the Long-Range Transportation, Act 250, the VTrans Corridor Planning Process, State Design Standards, Title 18 §1111 Permit Process, Act 145 Transportation Impact Fees and ongoing coordination with partner state agencies all allow VTrans and other transportation and planning organization to have a seat at the table regarding land use decisions.[37]

The most well-known among these processes is Act 250, Vermont's Conservation and Development law, State Land Use and Development Plans (10 VSA 151) , which has been in place since 1970. Act 250 is a state-wide land use planning law that regulates large scale developments using ten criteria related to natural resources, cultural resources, and social effects. The law requires review of certain larger-scale development proposals and subdivision activity for their impact on the surrounding area and applies 10 criteria for evaluation of the application. Criteria 5B and 9K have particular relevance to transportation demand management and public investments. The legislation is intended to protect environmental resources and rural character. Some types of projects that would trigger an Act 250 review include commercial projects on more than ten acres (if the town has permanent zoning and subdivision regulations), or on more than one acre (if it does not), or the subdivision of ten residential lots or dwellings or more in a five-year period.[38] [39] [40]

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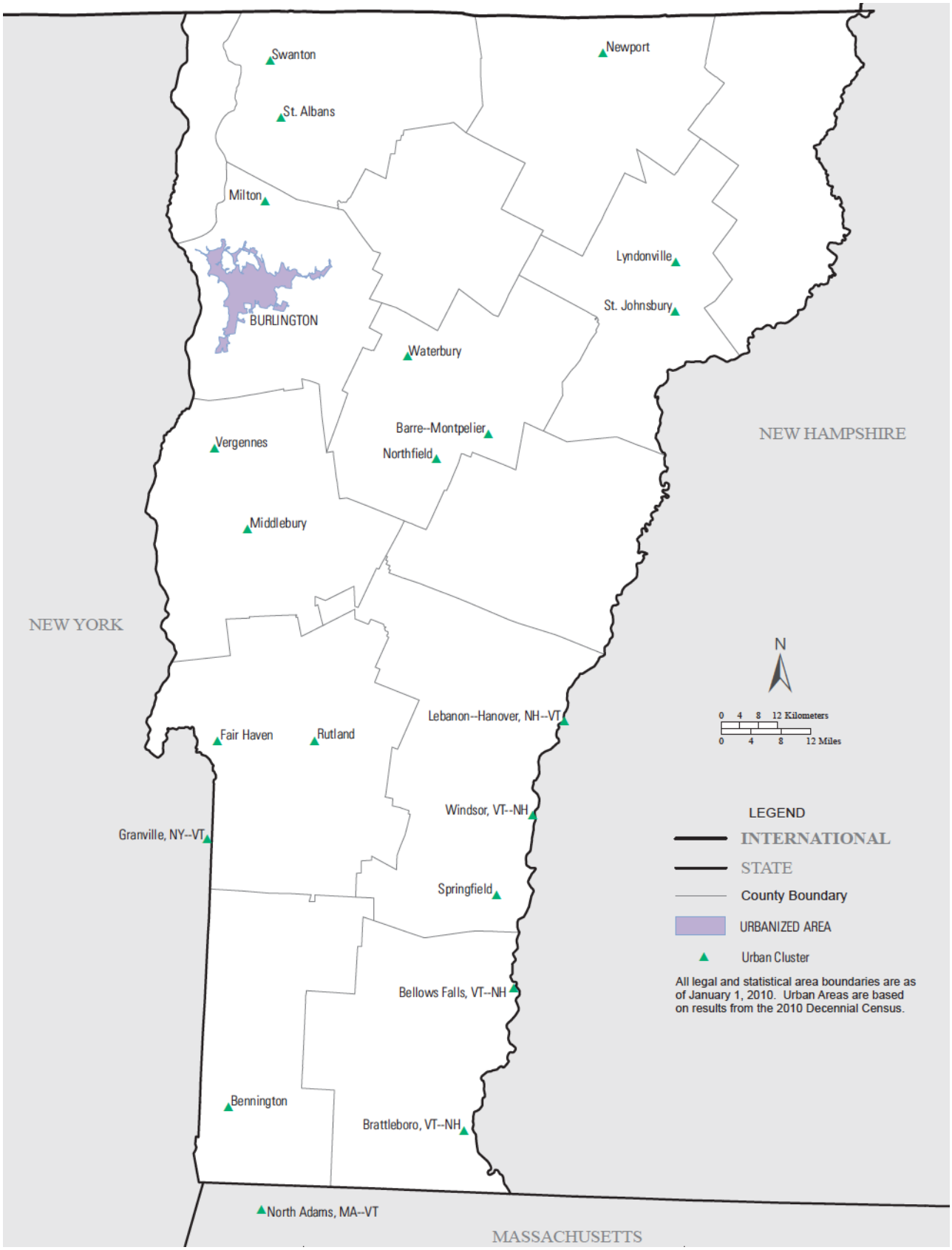
[36] Ibid.
[37] Existing Conditions and Future Trends, Appendix E of Vermont's Long-Range Transportation Plan, p. 41 et seq.
[38] "Vermont Landscapes." National Park Service.
[39] "Act 250: The Next 50 Years." Vermont Natural Resources Council. July 2018. Available at: http://vnrc.org/programs/sustainable-communities/act-250-and-permitting/act-250-the-next-50-years/
[40] "Land Use Planning in Vermont An Overview." Commission on Act 250. October 25, 2017. Available at: https://legislature.vermont.gov/assets/Documents/2018/WorkGroups/Act250/Commission%20Meeting%2010.25.17/W~Sharon%20Murray~Land%20Use%20Planning%20in%20Vermont~10-25-2017.pdf.

In 2017 state legislators established a legislative committee, the "Commission on Act 250: the Next 50 Years," to review the original goals of Act 250, assess the outcomes, and to address new issues impacting development that have emerged in the past decades. Part of the committee's charge is to understand residents' priorities for the future of the Vermont landscape – current engagement activities include an online survey and public forums. Among the Commission's recommendations is the following:

Fiaure 13: Vermont Urban Area and Clusters (2010)



> Amending the transportation criterion to: (a) include review of the safety and congestion impacts to bicycle, pedestrian, and other transit infrastructure and (b) better define when it is appropriate for Act 250 to require projects to incorporate transportation demand strategies and require connectivity to transit services other than single-occupancy vehicles.[41]

A promising change in Act 250 reviews has been to include transit providers at the table. Staff from the Planning section of VTrans should also be included in these discussions to support the position of the transit provider and supply additional analysis regarding the relationship of transit and land use when needed. For development proposals that have implications for public transit, such as senior housing or affordable housing, comments from the local transit provider are sought. Developers are strongly encouraged to locate these types of projects in areas already served by public transit routes, and to accommodate transit vehicles in the design of the project as appropriate (so that a canopy at the main entrance is built high enough for a transit vehicle to pass under it, for example).

The Challenge of Public Transit in Non-Urban Areas

The development patterns of rural communities pose a challenge regarding the availability of public transit for low-income households, people with disabilities, and elderly people who may have no access or limited access to cars. Without a car, public transit may be the only affordable option, but in most parts of the state fixed-route services are just not an option. A commonly-used threshold for residential density that can support fixed-route bus service running once per hour is 3 households per acre, roughly equivalent to quarter-acre zoning, what one might find in a moderate-density suburb[42]. Outside of the Burlington metropolitan area and the centers of smaller cities and towns (the urban clusters shown in Figure 13), residential density in Vermont is well below that threshold. Transit potential is also associated with employment density, since much public transit service is oriented toward commuting trips. A minimum threshold for employment density is 4 jobs per acre.[43] These densities are critical for the viability of fixed-route bus service because there needs to be a sufficient number of trip origin and destination points (trip ends) within easy walking distance of the bus route. The higher the density, the more trip ends can be served by a route. This results in higher ridership. As density rises further (past 6 households per acre), more frequent service can be operated, with buses running twice or three times per hour. The higher frequency makes the service more attractive to people who might otherwise drive. A high-frequency service cannot be operated sustainably in a low-density area, though, because there are simply not enough people within easy walking distance. Strong local connections (bike access, scooters, feeder routes) can help expand the market for a bus route beyond its immediately surrounding neighborhood, but the friction associated with having to use a vehicle to get to the main bus route diminishes the attractiveness of the bus route compared to driving.

Density is necessary but not sufficient to make a bus route viable. Virtually all bus riders become pedestrians at one or both ends of their transit trip. The walking trip from home to the boarding bus stop, and then from the exiting bus stop to the workplace (or other destination) needs to be safe and comfortable. That means well-maintained sidewalks and crosswalks must be available, with bus shelters and lighting also important. In an ideal situation, the bus rider would not have to walk along busy streets with large trucks or

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[41] Commission on Act 250: The Next 50 years. Vermont General Assembly. Available at: https://legislature.vermont.gov/Documents/2018.1/WorkGroups/Act250/Final%20Report/W~Ellen%20Czajkowski~Commission%20on%20Act%20250%20Final%20Report~1-11-2019.pdf (page 3)

[42] *Transit Capacity and Quality of Service Manual,* Chapter 5, page 17, available at https://www.nap.edu/download/24766

[43] Ibid.

traffic moving faster than 30 MPH and would not have to cross through large parking lots to get to their destination.

The absence of a safe and comfortable walking environment and/or insufficient density to support high frequency bus service means that ridership will be low and confined mainly to people who have no other transportation options. Most service in Vermont's smaller communities runs once or, at best, twice per hour.

For rural areas, public transit relies on a demand responsive model, deviated route service, special shopping routes which only run one day a week, and other creative solutions. Because of this challenge, one USDA-funded report posits that "in rural areas, transportation policy and poverty policy are often one and the same."[44] One of the challenges of this PTPP is for VTrans to continue to pursue innovative ways to serve people in low-density areas appropriately and efficiently.

How Housing Can Address the Challenge of Public Transit in Rural Areas

In 2017, the governor released a state housing plan to provide resources for locating future housing more efficiently and providing more affordable housing options. Strategies within the plan include promoting a $35 million housing bond to create more mixed-income housing in areas designated for growth and increasing the number of tax increment financing districts so that new infrastructure investment will support new housing opportunities and grow jobs.[45] This plan will help to address the significant gaps in housing identified in the *Vermont Housing Needs Assessment*, which found that for the period 2015-2020, Vermont has a gap of over 6,000 units of rental housing and over 10,000 units of owner housing. The majority of the gaps applies to households with members over the age of 55.[46]

Future housing development can either help address the transportation problem, or it could exacerbate the problem. Vermont desperately needs more housing located in town and village centers close to shopping and a variety of services. If one of the solutions to the transportation challenge of addressing aging in place is to make village centers attractive places to live so that seniors will choose to move there, then there must be housing available for them in such places.

It must be recognized, however, that existing village and town centers are not ready for new housing construction in the near term. Legacy water and sewer systems, most of which were built over 50 years ago, do not have available capacity to accommodate new housing, and indeed are in a generally fragile state so that they can barely keep up with current demand. Frequent water main breaks in cold weather are just one signal that this basic water and sewer infrastructure needs a major investment to serve existing housing, not to mention increased housing.

If no new housing is provided in town and village centers, or if new senior/affordable/accessible housing projects are built in locations removed from shopping and services and not on existing transit routes, then the transportation problem will worsen. Additional resources would be needed, over and above current investments, to accommodate the needs of older adults, people with disabilities and low-income individuals.

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[44] "The Challenges of Rural Transportation." Western Rural Development Center. 2006. Available at: https://wrdc.usu.edu/files-ou/publications/pub__9373753.pdf.

[45] "Housing for All – A Plan to Strengthen the Economy." Vermont Governor's State Housing Plan. 2017. Available at: http://accd.vermont.gov/sites/accdnew/files/documents/CD/CPR/ACCD-ACT157-GovernorsHousingPlan.pdf.

[46] https://accd.vermont.gov/sites/accdnew/files/documents/Housing/H-Research-VTHousingNeedsAssessment.pdf.pdf pages ES-2-3.

Of course, housing is just one piece of the puzzle, but it is perhaps the primary piece, as shopping and other services tend to agglomerate where people reside. Carrying out the State Housing Plan, including a major investment in infrastructure, will be a wise investment that results in enormous savings of transportation resources in the future, improvements in the quality of life of Vermonters, and preservation of the essential Vermont landscape.

Key Strategies - Transportation

Harnessing technology and other creative and cost-effective solutions will be key to continuing to provide and improve public transit in rural areas.[47] Much research has been done on the topic of providing public transit and mobility options in rural areas. Some useful resources are described below.

Reconnecting America and the Community Transportation Association of America released a report exploring the best practices for public transit investments in smaller cities, towns, and rural areas.[48] Many of the strategies identified in this report relate to Vermont, as they focus on areas with a small-town character, a rural environment, and populations smaller than 50,000. Best practices and lessons learned from the report include:

1) Coordinate transit investments with transportation and other services for older adults, low-income families, workers, and people with disabilities
2) There is no one solution for rural transit – the solution that works must be "right-sized" for the community making the investment.
3) Coordinating with multiple partners, including cities, counties, transit agencies, employers, community stakeholders, and importantly, human services organizations, is essential in order to succeed in providing transit to rural populations.

The third point is perhaps less relevant to Vermont, as there is no county government, and there is only one transit agency per planning region. Nonetheless, coordination continues to be essential to make the best use of available resources.

AARP has a toolkit to help planners and government officials in rural areas considering alternative transportation options "beyond public transit's fixed-route and demand response programs which typically have limited service areas, days and hours of operation" to assist aging adults with mobility needs.[49] The report is an excellent reference for anyone who may need to present the ideas of innovative modes of transit and their benefits to unfamiliar audiences. The report also includes a messaging guide for communicating the importance and feasibility of additional rural transportation options to policymakers.

A report from APTA examines the connection between public transit and rural communities in terms of cost efficiency and describes successful examples of smaller community public transit programs.[50] The report includes basic information about different service options and analysis relevant to rural communities.

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[47] "Trends Analysis: How Changing Rural Demographics Impacts Rural Transit." Community Transportation Association of America. 2014. Available at: http://web1.ctaa.org/webmodules/webarticles/articlefiles/WinterSpring14_Trends.pdf.
[48] "Putting Transit to Work in Main Street America How Smaller Cities and Rural Places Are Using Transit and Mobility Investments to Strengthen Their Economies and Communities." Reconnecting America and the Community Transportation Association. May 2012. Available at: http://reconnectingamerica.org/assets/PDFs/201205ruralfinal.pdf.
[49] "Meeting Older Adults' Mobility Needs: Additional Rural Transportation Options." AARP. 2012. https://www.aarp.org/livable-communities/act/walkable-livable-communities/info-12-2012/meeting-older-adults-mobility-needs-additional-rural-transportation.html.
[50] "Public Transportation's Impact on Rural and Small Towns." APTA. Available at: https://www.apta.com/resources/reportsandpublications/Documents/APTA-Rural-Transit-2017.pdf.

There are numerous case studies which demonstrate a diverse array of public transit solutions in various types of rural communities across the country and around the world.

The solutions for addressing mobility in rural areas through housing, transportation, technology, and economic development are not a mystery, but they are not simple either. A sustained, coordinated effort among state agencies, municipalities, the private sector (employers, developers and property owners) and transportation providers, supported by the federal government can address the unmet needs over the medium and long term. Specific recommendations regarding land use are described in chapter 5, beginning on page 87.

4. NEEDS ASSESSMENT

This chapter of the PTPP presents the results of an assessment of public transit needs throughout the state. This information provided the foundation not only for the development of service improvement strategies and associated policies that are discussed in the Recommendations chapter of the PTPP, but also for the identification of strategies and solutions that can address the needs of older adults and people with disabilities, which is a key component of the Human Service Transportation Coordination Plan, integrated in this document.

The needs assessment methodology is described below, followed by a summary of the key findings from each component of the methodology. The section following that identifies common themes emerging from the analysis.

Methodology

The needs assessment methodology consisted of four primary steps:

- Identify service gaps and unmet needs by region
- Estimate transit market segments by age, disability, income, and likely auto access in each region and statewide
- Estimate number of trips necessary to address identified needs, and required resources
- Estimate impacts of possible scenarios that may occur during the planning horizon of the PTPP

Each step is explained briefly below.

Service Gaps and Needs

The project team assembled information from a variety of sources to identify service gaps and challenges faced by residents of eleven regions across the state. The regions used for the needs assessment aligned with the state's eleven regional planning commissions (RPCs) and included:

- Northeast Kingdom—Caledonia, Orleans, and Essex counties
- Lamoille County
- Central Vermont—Washington County
- Upper Valley—Orange and northern Windsor counties
- Southern Windsor County
- Windham County
- Bennington County
- Rutland County
- Addison County
- Chittenden County
- Northwest Vermont—Franklin and Grand Isle counties

Data from the U.S. Census and other sources were used to generate maps for each region that illustrated the location of current transit services; key destinations, including employers of various sizes; populations in general and target transit markets such as older adults, people with disabilities, and individuals with lower incomes; and commuting patterns. An initial list of service gaps and needs was generated from comparison

of transit service areas to the locations of populations likely to use transit service and key destinations, and analysis of the days and times during which transit services are available.

This information was presented at a series of eleven regional forums conducted across the state, at which members of the public and stakeholders offered comments on existing transit services, service gaps and needs, and preferred potential solutions.

Beyond the regional forums, the project team also attended nine meetings of the regional E&D committees, in which transit providers and their human service agency partners, along with RPC staff, oversee Vermont's transportation program for Elders and People with Disabilities (E&D). Members of these committees offered comments and suggestions regarding service gaps for those two target populations and ways to address them.

An online survey on a platform called MetroQuest was conducted in two rounds. The first round, which was available from September through December 2018 and generated 1,200 responses, collected information about current use of and attitudes about transit service as well as service gaps and needs. The second round, which was conducted from July to September 2019 and generated 2,200 responses, focused on potential solutions to gaps and needs. The results of the two rounds of surveys are presented in Appendices P and Q.

Finally, the project team conducted interviews with nine individual stakeholders who shared their thoughts about transit service gaps and needs, and potential service and policy solutions, for their constituent groups: transit providers, Medicaid recipients, older adults, individuals with disabilities, veterans, and others.

Transit Market Segments

The second step in the needs assessment methodology was to estimate the number of individuals in each region in each the following sub-markets for public transit services, to facilitate estimates of the number of transit trips needed statewide to meet identified needs:

- Youth under age 18
- Young adults 18-24 years, (employed or in school)
- Adults 25-64 years, above the poverty line
- Adults 25-64 years, below the poverty line
- People with disabilities (of all ages)
- Younger seniors, age 65-79
- Older seniors, 80 years and older

People with disabilities were subtracted from the other categories to avoid double counting. Automobile availability was treated as a secondary characteristic, related to the age and income of each particular group. Groups likely to have relatively lower access to a private vehicle included youth, young adults (often by choice), adults with lower incomes, people with disabilities, and older seniors.

Appendices C through M provide a detailed analysis, region by region of the specific service gaps and needs identified using input from all of the sources mentioned above and the estimated size of transit market segments.

Trips Necessary to Meet Needs and Required Resources

The third step in the needs assessment involved estimating the number of transit trips needed statewide to address identified service gaps and needs. Estimates were developed by assuming 1) an annual number of transit trips per member of each market segment to fully meet transportation needs and 2) a reduced number of transit trips per market segment member to meet only basic, lifeline needs. The purpose of this analysis is to create order-of-magnitude estimates of the number of transit trips that would need to be operated, and the cost of operating those trips if Vermont adopted policies to address all of the potential needs of these populations, or all of the basic, lifeline needs.

Impacts of Possible Scenarios

The final step in the needs assessment methodology was to consider several possible scenarios that could occur during the 5-10 year planning horizon covered by the PTPP, and the impacts that they might have on transit ridership. This is a separate analysis from the consideration of needs and is more relevant to people who might choose to use transit service instead of driving.

Scenarios included:

- A doubling of fuel prices leading to higher transportation costs, and higher demand for transportation services as drivers seek a more affordable alternative
- Continued relatively low fuel prices, which would create a challenging environment for transit, since choice riders would have little incentive to choose transit over driving
- A changed transportation landscape due to advancing technology, primarily driverless cars and transit vehicles, plus greater availability of ridesharing (services such as Uber and Lyft) and technologies to allow for more efficient grouping of trips

The impacts of each scenario on transit ridership and the net cost per trip were estimated to give policy makers some indication how each scenario may affect public transit subsidies over the next decade.

Data Gathering and Outreach

The overall outreach process was described in chapter 1. The focus of outreach for the first nine months of the project was to gather information on unmet needs for public transit in Vermont. Key points that emerged from each stage of the data gathering process are summarized below.

Data Analysis

The data analysis conducted by the project team resulted in a number of conclusions about existing fixed route and demand response services and service gaps or needs that are not completely addressed.

Fixed Route Service Overview

- In each region, fixed route services cover appropriate areas given the following factors:
  - Density of populations and jobs, a key indicator of the effectiveness of fixed route services
  - Concentrations of target groups: older adults, people with disabilities, individuals with lower incomes
  - Key medical, shopping, employment, educational destinations

- Deviations, or requests from riders for pickups or drop-offs within ¼ to ¾ of a mile from routes expand the reach of fixed route services.
- The span of fixed route service is generally business hours or up to 12 hours of service per weekday. Exceptions are:
  - Saturday service is available on some routes in some regions
  - Service in Chittenden County is generally available 12-17 hours per day Monday through Saturday, with a somewhat lower level of service on Sunday
  - Commuter routes, which operate several trips in morning and afternoon peak hours
- Frequency varies from several trips/day to every 30 minutes
  - Chittenden County service operates up to every 20 minutes
  - Several providers offer service on designated days in smaller towns
- Providers located near ski areas or colleges offer seasonal services

Fixed Route Gaps and Challenges

Common gaps in the fixed route systems that were identified across regions include:

- Lack of first/last-mile options that limit the use of fixed routes
- Schedules for local and commuter routes generally do not accommodate trips to jobs with non-traditional hours
- Rural communities and some larger employers are not served by existing routes

Based on mapping and data analysis, and confirmed by regional forum comments and MetroQuest responses, potential fixed route changes, where supported by the required levels of density, would be additional service during early morning and evening hours, service to provide work trips to 2nd and 3rd shift jobs, and increased weekend service.

Demand Response Service Overview

In all regions, transit providers and E&D partners deliver the majority of available demand response services. Services are provided primarily to clients of partner human service agencies and are delivered through a combination of provider-owned vehicles driven by staff and rides provided by volunteer drivers.

In some areas, Ticket to Ride is also available. This program is essentially a flexible spending account for E&D eligible individuals that allows people to make trips for purposes beyond medical trips, adult day, and shopping.

ADA paratransit service, for individuals who are unable to use fixed route services because of a disability, is also available in several areas, including most of the GMT-Urban service area, Morrisville, Rutland, Brattleboro, and White River Junction/Norwich. ADA paratransit matches fixed route service in terms of service area, days/hours of service, and other service characteristics. In smaller communities, deviated fixed route services that allow for pickups or drop-offs within ¼ to ¾ of a mile from the route take the place of separate ADA paratransit service. Deviated services are typically open to people with disabilities and others.

Demand Response Gaps and Challenges

Eligible riders for demand response service generally include older adults, people with disabilities, and human service agency clients. This means that members of the general public in areas without fixed route service who do not qualify for E&D transportation have no transit options available to them.

Even for those eligible for E&D service, funding constraints have led to prioritized trip types. Critical care medical trips—for dialysis, cancer treatment, and sometimes cardiac care and adult day health—are given the highest priority in all regions. Lower priority trips, particularly wellness trips to exercise programs or social activities, which have been shown to contribute to positive health outcomes and reduced health care costs, are not regularly provided in some areas. Providers and partners in some regions use trip or funding limits per person as a way to manage constrained budgets.

Volunteer drivers are an essential element of service delivery for E&D trips, but for most transit providers, there is an inadequate supply of volunteers, and recruitment and retention are challenging.

Regional Forums and E&D Committee Meetings

Service gaps and challenges reported in regional forums and E&D committee meetings are listed below.

While many regions are faced with specific challenges due to their locations or the size and/or characteristics of their populations, there were common themes that emerged across regions.

Comments that were raised in multiple regional forums include the following:

- Workforce development/access to jobs are transportation priorities in at least eight of eleven regions
  - Suggested solutions include availability of transit service during non-traditional hours, longer span of fixed route service, and more frequent trips to urbanized areas
- Rural areas need options
  - Fixed routes and schedules, if any, are limited
  - First/last-mile options needed to enable potential transit users to get to and from stops
  - Demand response services in rural communities, which may be the only available transit services, are constrained due funding limitations
- Existing services and resources may not be well known, despite marketing of the information resources offered by Go! Vermont and transit providers' websites and online trip planners
- More integrated walk/bike/transit/driving networks would encourage transit use

Common themes also emerged from meetings with E&D committees, mostly centered around the effects of funding limitations:

- Funding constraints have led to prioritized trip types, and trip limits are in place in some regions; only two regions provide E&D services without limits.
  - Even high priority critical medical care and adult day health trips are limited in some regions
  - Shopping and congregate meals are sometimes limited
  - Wellness trips often fall to the bottom of the priority list and cannot be provided within available funding limits
- Financial resources to bring other human service partners into the program are not available
- Volunteer drivers are an essential element of service delivery, but recruitment and retention are challenging

High priority E&D trips include critical care/adult day health, non-Medicaid medical, meals, shopping, vocational, and social/personal/wellness trips, with the order varying by region. E&D committees noted the following trends in the highest priority trips:

- Demand for critical care trips is increasing in the Central Vermont region (Washington County), Rutland County, and Lamoille County/Northeast Kingdom (which share an E&D committee)
- Demand for critical care trips or adult day health trips is decreasing in the Northwest Region (Franklin/Grand Isle Counties) and the Upper Valley Region (Orange and northern Windsor counties).

As mentioned above, some E&D transit providers and their partners limit trips in order to manage tight budgets. In the Lamoille County/Northeast Kingdom E&D region and the Bennington County region, no trip limits are in place. Limits placed on individual riders in other regions include the following:

- Southeast Region (Windham and southern Windsor counties):
  - Two dialysis, three cancer treatment trips/week
  - Three out of town medical (25 miles)/month
  - Recent cuts to critical care, shopping trip limits
- Addison County
  - Six one-way trips/month, including four out of county
  - 100% cancer, dialysis, cardiac rehab trips are provided
- Rutland County
  - Some partner organizations limit number of trips
- Upper Valley (Orange and northern Windsor counties)
  - 10 round trips dialysis, 13 round trips cancer/month
  - Ticket to Ride limited by monthly dollar amounts
  - Ticket to Ride waiting list
- Northwest Region (Franklin and Grand Isle counties)
  - Six one-way trips/month in Franklin County
  - No limits in Grand Isle County
- Chittenden County
  - Limits vary by partner organization; most limit the number of trips per week or month
- Central Vermont Region (Washington County)
  - Ticket to Ride is limited by monthly dollar amount; waivers for additional trips

Survey Results

The MetroQuest survey covered many topic areas, including broad policy options, current modes of travel, current travel purposes and desired trips. The section most relevant to the needs analysis concerned the various possible improvements to transit service that would encourage people to make greater use of the transit system. Nine possible improvements were listed, with an "Other" category available for respondents to specify another type of improvement that was not listed, and a "none of the above" option available for people who prefer driving and would not use public transit under any circumstances. The nine types of improvements were the following:

- More frequent service
- More service near my home
- Service to my desired destinations

- Evening and/or weekend service
- More reliable service
- Faster service
- Cheaper service
- Safer service
- Better information about the service

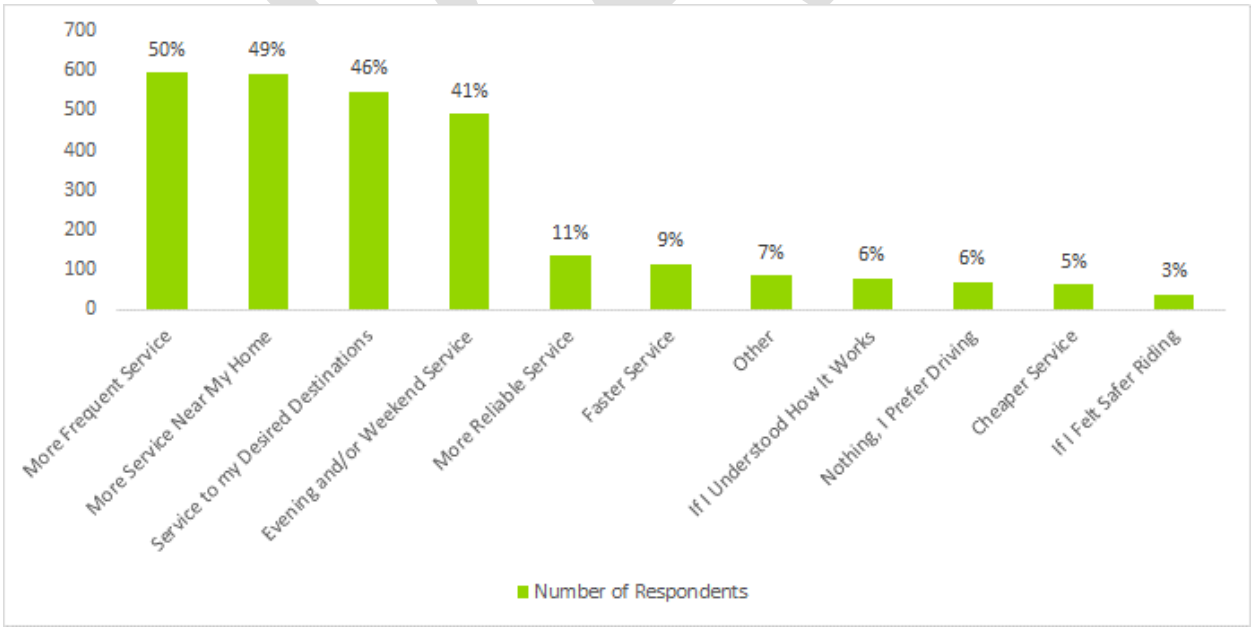
The responses to this question indicate the most salient ways for the transit system to become more attractive to Vermonters and thus meet their travel needs. The results were considered for the state as a whole, and then broken down by people who currently use transit vs. those who do not, and then by those living in urban areas vs. those in rural areas.

Statewide Results

The most popular desired improvements to transit included more frequent service (50% of respondents), service closer to homes (49%) and desired destinations (46%), and evening and weekend service (41%). These four responses were significantly more popular than any of the other choices, as shown in Figure 14 below. Thus the overall quantity of service, rather than specific aspects of the quality of service, seem to be the overriding concern, at least on a statewide basis.

Only 6% of survey respondents responded that none of the improvements would encourage them to drive less, suggesting that providing more and higher quality transit service would draw additional users. The most common "other" responses included early morning service, more and bigger park and rides, and an app to provide real-time bus arrival information.

Figure 14: Desired Improvements to Transit



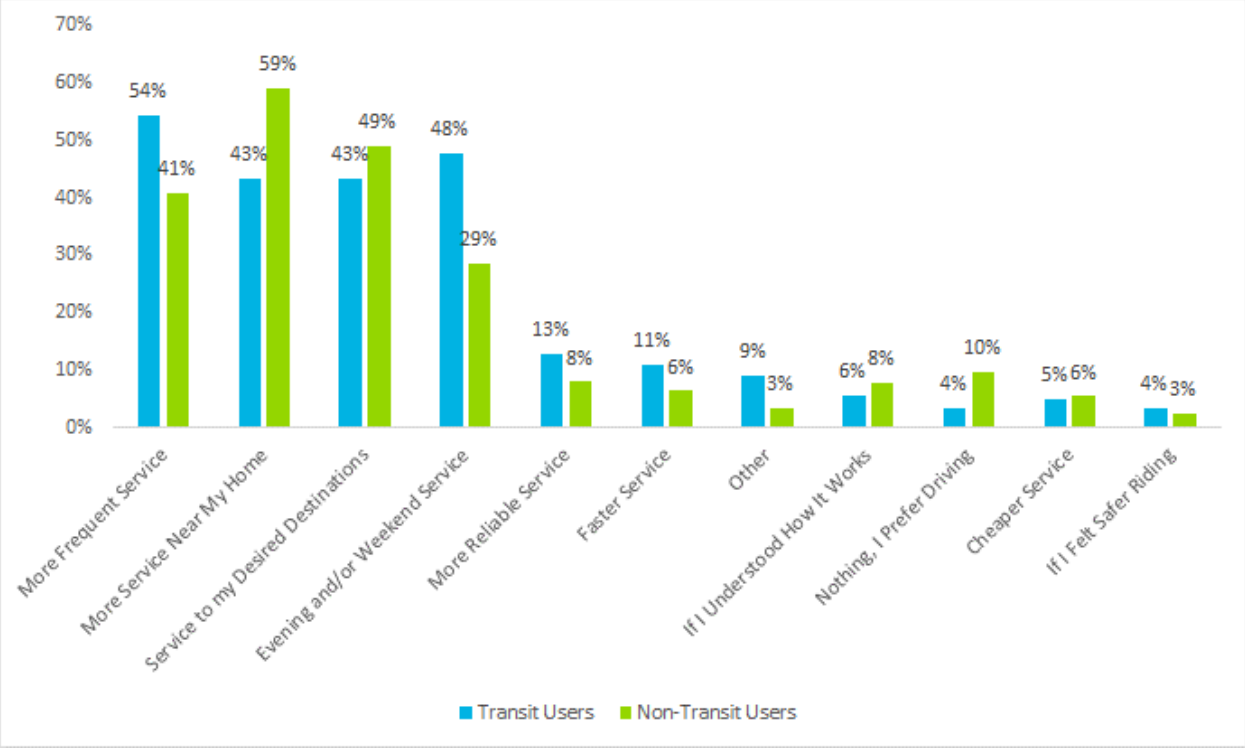
Breakdown by Transit Use

Respondents who never use public transit services were most likely to express a desire for more service near their homes (59% of respondents) and service to their desired destinations (49%) as shown in Figure 15. This suggests that a key barrier for many respondents who only drive is a lack of service where they need it.

Respondents who used some type of transit at least once in the last month were most likely to express a desire for more frequent service and more evening and/or weekend service, suggesting that many existing transit users would use transit more often if it had greater frequency or a longer span of service. Thus, the level of service is more critical than service coverage for transit users.

Travel time and reliability are important factors when people choose their travel modes, but they rank well below service supply measures in this context. This suggests that the existing transit services used by the respondents are already satisfactory in terms of travel time and reliability, and so improvements in those factors would not alter their travel choices. Rather, people are looking for more service when and where it is not already offered as the most significant inducement to use transit more often.

Figure 15: Desired Improvements to Transit Breakdown by Mode Choice



Urban-Rural Breakdown

There are some notable differences between the desired transit improvements preferred by urban and rural Vermonters. For this purpose, "urban" was defined as someone living the core communities of Chittenden County or one of the other urban clusters in the state, such as Rutland, Barre-Montpelier, White River Junction, Brattleboro, Bennington, etc.

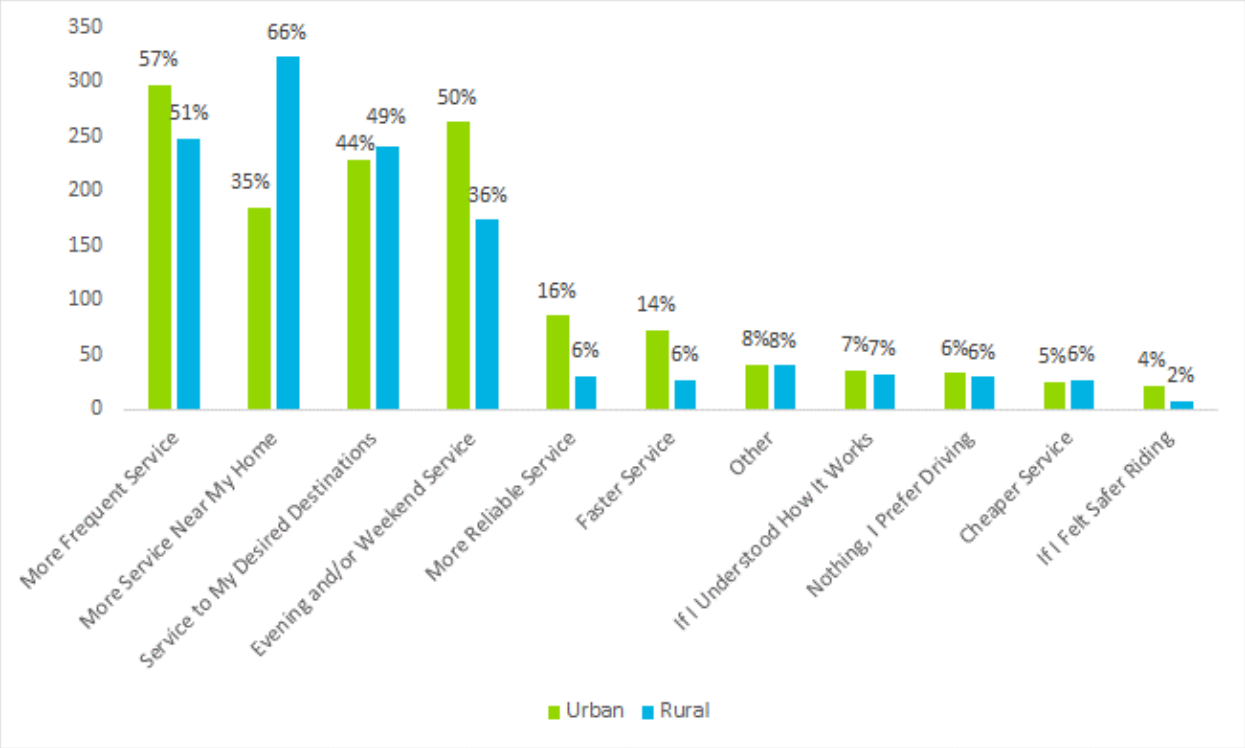
As shown in Figure 16, rural Vermonters were far more likely than urban residents to want more service near their home (66% of rural residents, as opposed to 35% of urban residents) and somewhat more likely

to want more service to their desired destinations (49% of rural residents versus 44% of urban residents). This suggests that rural residents see a need for greater transit coverage in their community, while urban residents recognize that they already have some service coverage.

In contrast, urban Vermonters were more likely to want more frequent service (57% of urban Vermonters versus 51% of rural Vermonters), and significantly more likely to want more evening and/or weekend service (50% of urban residents, as opposed to 36% of rural residents) and more reliable service (16% of urban residents versus 6% of rural residents).

Thus, rural residents are most concerned with having any service at all, while urban residents are more concerned with upgrading the service they already have.

Figure 16: Desired Transit Improvements Urban-Rural Breakdown



More of the results of the MetroQuest survey are presented in Appendix P.

Stakeholder Interviews

During the course of the Needs Assessment, nine individuals were identified as candidates for individual stakeholder interviews. These interviews were seen as complementing the information received from participants in the 11 regional forums that took place in October-December 2018 by either filling subject gaps or diving deeper on recurring themes. The interviews were conducted either in person or on the phone, with most taking place in February and March 2019.

Methodology

Interviewees consisted of leaders of non-profit human service organizations, State agencies, and others. The list was not meant to be comprehensive in and of itself, but rather to give the consultant team additional insights from a variety of perspectives. The organizations included the following:

- Vermont Public Transportation Association
- Agency of Human Services – Department of Vermont Health Access (DVHA)
- Agency of Human Services – Department of Disability, Aging and Independent Living (DAIL)
- Vermont Center for Independent Living
- Office of Veterans Affairs
- AARP Vermont
- Capstone Community Action
- United Way of Northwest Vermont
- Vermont House of Representatives

The individuals to be interviewed were selected jointly by the consultant team and the VTrans project managers. The goal was to obtain a broad range of input not only on issues of the need for public transit and human service transportation, but also on the effectiveness of VTrans to develop and sustain partnerships with other agencies to promote service quality and awareness. Questions were developed to stimulate discussion of various areas of need (as was true in the regional forums) and to probe about any specific insights relating to the constituencies their agency/organization serves. Participants were informed their responses would be reported in aggregate with no comments attributed to any one participant. This approach was designed to encourage candid responses.

Key Findings

A number of themes emerged from the interviews, and there was a significant amount of overlap to the themes that were most common in the regional forums. The most salient points are summarized below.

- Demand response service
    - Opioid treatment trips causing a significant strain on the Medicaid transportation budget because it is raising the per member per month rate, due to the need to ride every day of the week for treatments. It is also a challenge because a portion of the volunteer driver pool is uncomfortable transporting opioid addicts. Recovered addicts may be a source of drivers.
    - In general, both DVHA and VTrans are working to make sure needs of low-income Vermonters are met; will approve all medical trips allowable consistent with federal rules.
    - There was a strong consensus to expand volunteer driver programs through marketing/awareness and streamlining of the background check process.
    - Greater coordination between providers (trips crossing regional boundaries) is a continuing goal; has been a hope associated with Routematch—a dashboard where connections could be made and so that providers could see each other's trips. This goal is not yet realized due to technical and staff capacity limitations. Also, more progress on E&D and Medicaid coordination is desired.
- Elders and Persons with Disabilities Program
    - Create individual flexible E&D budgets – similar to Ticket To Ride program. Tailor allocation amounts based on need and location, so that wheelchair users have a sufficient allocation due to the added expense of each trip, and reflecting that people who live in town

centers have access to bus services and so additional funds should be available to rural participants who have no other options. These individual budgets should be conjoined to trip accounts so that private funds can be added (and serve as match).
    - Improve functionality of E&D committees
        - Define roles and responsibilities
        - Better communication to Town officials
        - More data and clearer standards; use evaluation tools like rider surveys
        - Ride guide to disseminate information more easily
    - Number one unmet need is social trips; personal business trips other than grocery shopping are also difficult to accomplish
- Housing
    - Changes to Act 250 needed to facilitate housing construction for older adults in village centers; could include transfer of development rights
    - There are limitations on development because of lack of water and sewer infrastructure
    - Older housing stock is not accessible to people with disabilities
    - AARP is working with the State to change housing bylaws at the local level
    - Inadequate affordable housing available
- Urban/Rural differences
    - Different policy priorities regarding coverage vs. quality of service; in the urban area, coverage is reasonably thorough but there are frequent requests for a higher level of service, while in rural areas, there are often large gaps in coverage
    - Housing construction and availability vs. affordability; in urban areas, affordability is the primary issue while in many rural areas and town and village centers, there is simply not enough housing available
    - Legislative action tied to the power of the Chittenden County delegation; implies that statutory changes must benefit both the urban and rural areas
- Aging
    - Vermont needs forward-looking planning for younger seniors to avoid crisis later on
    - Needs of veterans increasing; access to VA hospitals is currently provided in cooperation with transit providers. (VA has 11 drivers and provides over 13K trips per year)
    - Adult Day programs likely to increase significantly; unclear if state is prepared for this
    - Partners for VTrans in addressing the issue of aging in Vermont
        - DAIL
        - AARP
        - COVE (Community of Vermont Elders)
        - AAA (Area Agencies on Aging)
        - T4VT (Transportation for Vermonters)
- Access to Healthcare
    - Engage hospital networks to help fund transportation (related to Accountable Care Organization model) so as to minimize the total cost of care and improve health outcomes
    - Better communication and relationships between hospitals and transit providers (including such programs as Rides to Wellness)
- Information/awareness
    - Travel training and bus buddy programs can have significant benefits for all segments of the population.
    - Simple items like refrigerator magnets with key information can improve awareness

- Technology
  - Real-time information about transit vehicle location can have a large impact on ridership
  - Real-time ride scheduling can make demand response service much more attractive
- Commuters and other riders
  - Amenities at bus stops make the system more attractive
  - First mile/last mile connections are vital in less dense areas
  - Access to jobs for rural residents without a reliable car are essential, also allowing parents to get kids to daycare

Conclusion

Many of the themes mentioned by stakeholders echoed those heard in the regional forums and the MetroQuest input. The stakeholders were able to provide additional detail beyond what was heard in the other outreach channels. Some of the discussions included potential solutions, which have been incorporated into the draft recommendations.

Common Themes from Regional Analysis

Among the many forms of analysis, outreach and data collection, several prominent themes emerge. Without losing the detail provided above and in the appendices, the most important public transit needs facing Vermont are the following:

- **Lack of transit access in rural areas**
  - While it is the case that traditional bus services cannot operate efficiently in areas without a significant amount of population density, the need for public transit access outside of urban areas and small towns exists and is likely to grow as the population ages. The challenge is both one of service supply—having sufficient resources available to operate appropriate service in rural areas—and one of information and awareness in that people may not know that resources exist nor how to gain access to them.
- **Lack of resources to meet the needs of vulnerable populations both today and in the future**
  - Compared to most rural states, Vermont is very generous in the expenditure of state and federal funds to assist older adults and people with disabilities, as well as low-income individuals. In spite of that, there are significant unmet needs, especially with regard to trips for wellness and social activities. The expected large increase in Vermonters over the age of 80 in the coming decade will increase the gap in resources.
- **Lack of transportation for access to jobs**
  - The need for better options for work trips, supported by analysis of the availability of existing transportation services, was raised in all eleven Regional Forums and emerged as a major theme in eight of those. This need is a component of each of the needs described above. Potential solutions may include first mile/last mile connections, longer fixed route service hours or more useful schedules, subscription demand response service for work trips, increased use of carpooling and vanpooling, and new types of services such as microtransit (technology-enabled, near real-time demand response service such as that provided by Uber and Lyft but operated by public transit providers).
- **In areas that have bus routes, improved service levels and connections are needed**

- Various outreach channels indicate that there are many Vermonters, especially young ones, who would like to use public transit but do not because the schedules do not work for them, or because there are missing links in the system. Increased evening and weekend service would be attractive to many, and improved first mile/last mile connections via a variety of modes would make the core bus routes accessible to a wider area.

Resources to Meet Needs

Earlier sections of this chapter identified a range of needs that are not adequately met by existing public transit service in Vermont. The next logical step is to estimate how much it would cost to address all of those needs so that policy-makers and decision-makers can make informed choices about future investments in service, technology, vehicles, facilities and other infrastructure.

By its very nature, such an estimate would be a very rough approximation since it is impossible to quantify precisely all of the travel demand of Vermont residents—not to mention the added demand of visitors to the state—and determine how much of it would be served by transit routes and demand response vehicles. To produce a reasonable, if very rough, estimate, available data was compiled and processed with a series of assumptions described in Appendix N, to yield estimates of the number of annual transit trips to meet the "basic" needs of Vermonter and the number to provide a "full" level of mobility to Vermonters. In both cases, it is assumed that automobile ownership would remain at its current level and that people who drive themselves or family members to accomplish their daily needs would continue to do so. The potential for public transit to carry more people who currently drive is considered in the section on scenarios below.

The "full" level of mobility was based on daily trip rates derived from the 2017 National Household Travel Survey, thereby assuming that the portion of the population that was assumed to need transit service (i.e. not be able to drive themselves) would be taking all of their trips via public transit.

The "basic" level of mobility was assumed to consist of 12 round-trips per month (24 one-way trips), or about 3 round-trips per week. This figure seems to be a reasonable estimate of the minimum number of trips needed for basic subsistence and is consistent with a similar analysis done as part of the 2012 PTPP.

Considering all of the trips taken by Vermonters who do not have easy access to an automobile and subtracting out those trips likely to be made by walking or bicycle gives us a total of 22 million trips that could be served by public transit. In FY2018, about 4.3 million transit trips were provided (excluding tourism services) meaning that 17.7 million additional transit trips would be carried to meet the "full" needs of Vermonters who don't have easy access to automobiles. This figure can be considered the upper bound of "needs" for the near term. It does not include riders who might be drawn to public transit for convenience, environmental concerns or cost savings and thus give up driving for some of their travel.

Looking only at the basic level of mobility, a total of 6.5 million additional transit trips would be carried to meet the essential needs of Vermonters who don't have easy access to automobiles.

In order to calculate the costs of carrying all of those additional transit trips, it is necessary to split the totals into urban and rural figures, because the operating subsidy per trip is very different for the two environments. It is assumed that the FY2018 net cost per trip (gross operating cost less fare revenue) for urban and rural trips remains the same for the millions of additional trips that would be added to the system. The FY2018 net costs (operating subsidies) are as follows:

- Urban operating subsidy: $4.64 per trip
- Rural operating subsidy: $10.11 per trip

Among the 17.7 million additional trips estimated for the "full" level of mobility, 4.2 million apply to the Urban area and 13.5 million apply to the Rural area. Multiplying those figures by the respective operating subsidies per trip produces a cost estimate to serve those new trips of $19.6 million for the Urban area and $136.2 million for the Rural area, resulting in a statewide total of $156 million. Urban spending would nearly triple from its currently level of $10.5 million, but Rural spending would increase by a factor of 10.

For the "basic" level, among the 6.5 million new trips, 730,000 would occur in the Urban area and 5.7 million in the Rural area. Multiplying those figures by the respective operating subsidies per trip produces a cost estimate to serve those new trips of $3.4 million for the Urban area and $60 million for the Rural area, resulting in a statewide total of $63.4 million. These figures are summarized in the Table 7 below.

Table 7: Summary of Riders and Resources

Statistics Excluding Intercity, Tourism and Volunteer Driver Trips	Urban	Rural	Statewide
FY2018 Riders	2.3 million	1.5 million	3.8 million
FY2018 Net cost per rider	$4.64	$10.11	
FY2018 Total subsidy	$10.5 million	$15.5 million	$26 million
"Full" additional riders	4.2 million	13.5 million	17.7 million
"Full" additional net cost	$19.6 million	$136.2 million	$156 million
"Basic" additional riders	0.7 million	5.7 million	6.5 million
"Basic additional net cost	$3.4 million	$60.0 million	$63.4 million

Future Scenarios and Ridership

It is unlikely that conditions will remain the same as they are today for the next ten years. The environment in which public transit operates and the costs it faces are very likely to change. This section examines three possible scenarios that would affect ridership and costs in various ways, thus having a significant impact on the cost efficiency of the transit system and the resources necessary to operate it.

It is important to note that none of the scenarios envisage significant changes in housing or in other land use/development patterns. Even if there were a consensus now that development patterns need to change and a strong impetus to invest, the results of this change would only begin to take effect toward the end of the ten-year timeframe of the PTPP. A more appropriate timeframe for land use changes is 20 or even 30 years.

It is also important to note that this analysis mainly concerns the existing ridership base and people on the margins who may become transit riders or stop riding based on external factors. It is separate from the prior analysis looking at the needs of the whole population of Vermont.

Scenario 1 – High Fuel Prices

In this scenario, it is assumed that gas prices double sometime within the ten-year timeframe. That would mean a retail price above $5.50 per gallon based on prevailing prices in 2019. Such an increase, especially if it

happened in a short time, would cause substantial shifts in mode choice. It is assumed that drastic changes in fuel prices would affect the mode choice of people in the 18-24 and 25-64 age groups most significantly. It was reasoned that other groups have more constrained choices about transportation options (people over 80 or people with disabilities) or have a reduced amount of travel (fewer commuters) which would make fuel prices less important to them (people in the 65-79 age group).

Scenario 2 – Low Fuel Prices

While fuel prices are relatively low now, they could go even lower. As fuel prices have dropped over the past five years, transit agencies nationally have seen their ridership decrease.[51] As most of the research points out, fuel prices are not the only factor affecting transit ridership, but there is an undeniable correlation between the drop in fuel prices since 2014 and the decline in transit ridership. If fuel prices were to go even lower, dropping by 30% to under $2 per gallon, what would be the impact on transit? According to this analysis, the net cost per rider would increase moderately as people who have the option to drive would do so more often.

Scenario 3 – Changed Technological Landscape

While technological advances have been affecting people's lives and livelihoods for decades, the impacts on public transportation have accelerated quickly in the last five years. For instance, real-time passenger information systems have been around since the early 2000s, but those early systems were expensive and required significant investments to get the information on vehicle locations and arrivals into the hands of passengers. With the widespread availability of smartphones in the past few years, however, the cost to provide real-time information has dropped precipitously and transit agencies no longer need to install video screens and message boards at stops to tell passengers when the next bus will arrive.

Better information is not the only major change brought about by technology. Automakers and technology companies are working hard to implement autonomous vehicle technology, and eventually this technology will find its way into buses and other transit vehicles. In addition, companies such as Uber and Via have been working on algorithms to create shared-ride trips in real time. The old model of having to call 24 or 48 hours in advance to request a trip is giving way to the new model of using a smartphone to request a trip 15 minutes hence and then the database engine creating driver manifests in real time that maximize the efficiency of fulfilling all outstanding trip requests. The drivers receive those manifests via tablets in their vehicles, and these are updated constantly.

Summary of Impacts

The analysis described in detail in Appendix N produced the estimated impacts shown in the Table 8 below. High fuel prices have the greatest potential impact on cost effectiveness, but technology could have a very significant impact on demand response transportation. As would be expected, high fuel prices make transit a more attractive option, helping to reduce the net cost per rider. Low fuel prices, in contrast, make transit less attractive, thereby increasing the net cost per passenger as more people choose to drive instead of riding the bus. Improved technology will reduce costs as well. The most significant change could be on the demand response side, where the net cost per rider could drop from $21 to $14 due to increased productivity.

[51] https://www.govtech.com/fs/transportation/2018-Was-the-Year-of-the-Car-and-Transit-Ridership-Felt-It.html and https://fas.org/sgp/crs/misc/R45144.pdf

Table 8: Summary of Scenario Impacts

Scenario	Urban	Rural
Baseline net cost per rider	$4.64	$8.84
Baseline gross operating cost	$12.8 million	$12.7 million
1 – High fuel prices net cost per rider	$3.47 to $4.59	$7.95 to $8.74
1 – High fuel prices gross operating cost	$13.8 to $15.2 m	$14 million
2 – Low fuel prices net cost per rider	$4.75	$9.02
2 – Low fuel prices gross operating cost	$12.5 million	$12.3 million
3 – Technology net cost per rider	$4.10	$8.42
3 – Technology gross operating cost	$12.2 million	$12.7 million

Updates to State Policy

Current Policy Declaration

After more than 15 years since the state's policy declaration was first codified, the Vermont legislature amended the statement in its 2019 session. The most significant changes were to remove "in order of precedence" from the end of paragraph (a) and to add a new goal to the original four. The revised language of the policy declaration is shown below (24 VSA Chapter 126 §5083). Goal number 2 is the one added in 2019.

> (a) It shall be the State's policy to make maximum use of available federal funds for the support of public transportation. State operating support funds shall be included in Agency operating budgets to the extent that funds are available. State policy shall support the maintenance of existing public transit services and creation of new services including the following goals:
>
> (1) Provision for basic mobility for transit-dependent persons, as defined in the current public transit policy plan, including meeting the performance standards for urban, suburban, and rural areas. The density of a service area's population is an important factor in determining whether the service offered is fixed route, demand-response, or volunteer drivers.
>
> (2) Expanding public transit service in rural areas and increasing ridership statewide.
>
> (3) Access to employment, including creation of demand-response service.
>
> (4) Congestion mitigation to preserve air quality, decrease greenhouse gas emissions, and sustain the highway network.
>
> (5) Advancement of economic development objectives, including services for workers and visitors that support the travel and tourism industry. Applicants for "new starts" in this service sector shall demonstrate a high level of locally derived income for operating costs from fare-box recovery, contract income, or other income.

There are three additional paragraphs in this section, but they are less policy-oriented than paragraph (a) and its five provisions. It should be noted that the new goal #2 is closely related to the study requested by the legislature in Section 20 of H. 529 (the same law that instituted the changes to the policy).

Policy Priorities from Outreach Process

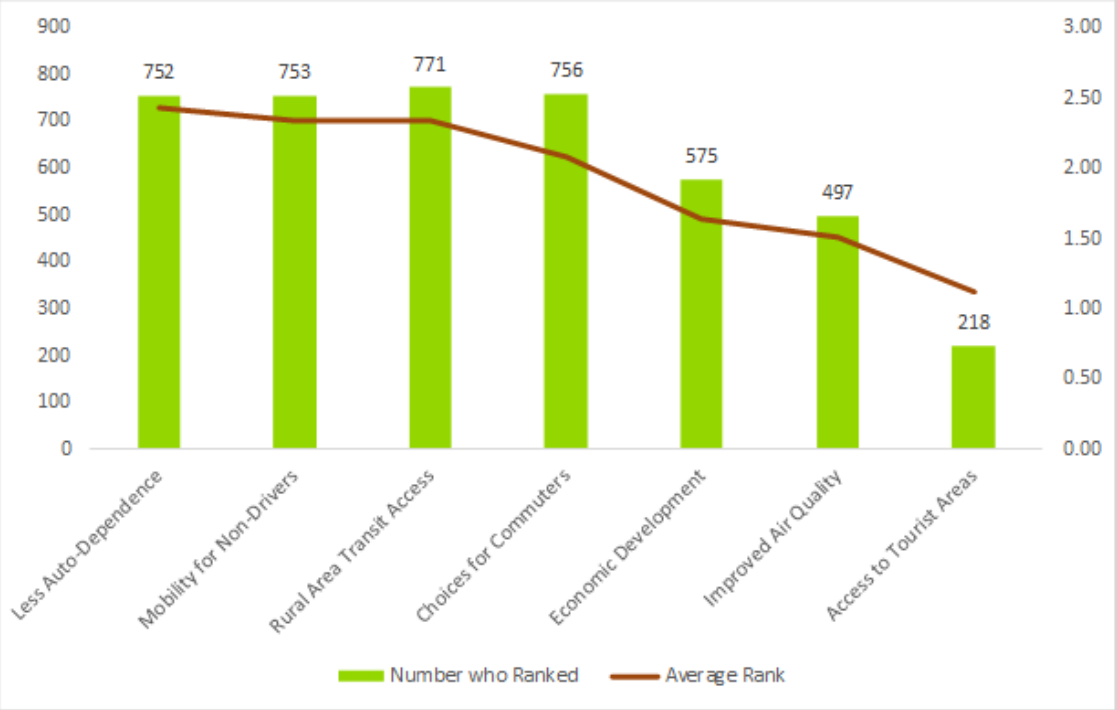
The MetroQuest survey of Vermonters allowed respondents to choose five from among seven possible policy priorities and to rank them in order of importance. Over 1,200 people responded to the survey and recorded their policy preferences. The graphs below show the results of the survey, first for all respondents taken together, and second for respondents from Chittenden County separately from those from the rest of Vermont. Overall, Chittenden County residents represented 44% of all survey respondents, a significantly higher percentage than their 26% share of the Vermont population.

The seven possible policy goals were defined as follows:

1. **Economic Development** includes transit services that could have a large positive impact on the economies of Vermont's towns and cities by allowing growth to occur without having to build new roads and parking lots.
2. **Choices for Commuters** includes transit services aimed at getting people from their homes to the state's largest employment centers.
3. **Mobility for Non-Drivers** includes transit services aimed at older adults and persons with disabilities, as well as people who do not have a license or cannot afford to own a car.
4. **Rural Area Transit Access** includes increased access to transit in rural areas—which could significantly increase public transit costs in the state—but would allow older adults to age in place.
5. **Access to Tourist Areas** includes transit services aimed at getting Vermont visitors to places like ski areas and state parks both to increase economic activity and reduce automobile impacts on sensitive environments.
6. **Less Auto-Dependence** includes transit services aimed at reducing dependence on automobiles for those who prefer living without a car.
7. **Improved Air Quality** includes transit services aimed at minimizing the environmental impacts of transportation in Vermont and reducing greenhouse gas emissions.

Figure 17 shows the number of respondents who selected each of the policy statements as one of their top five (column height) and also shows the average ranking (superimposed line – higher score is better). It can be seen that four of the policies garnered roughly equal support (though "choices for commuters" was ranked somewhat lower than the first three options) and significantly more than the other three policies. It should be noted that while the explanation of "improved air quality" incorporated reduced greenhouse gas emissions, many respondents may have thought it only referred to smog and carbon dioxide and other pollutants that were the focus of the Clean Air Act in the late 20th Century.

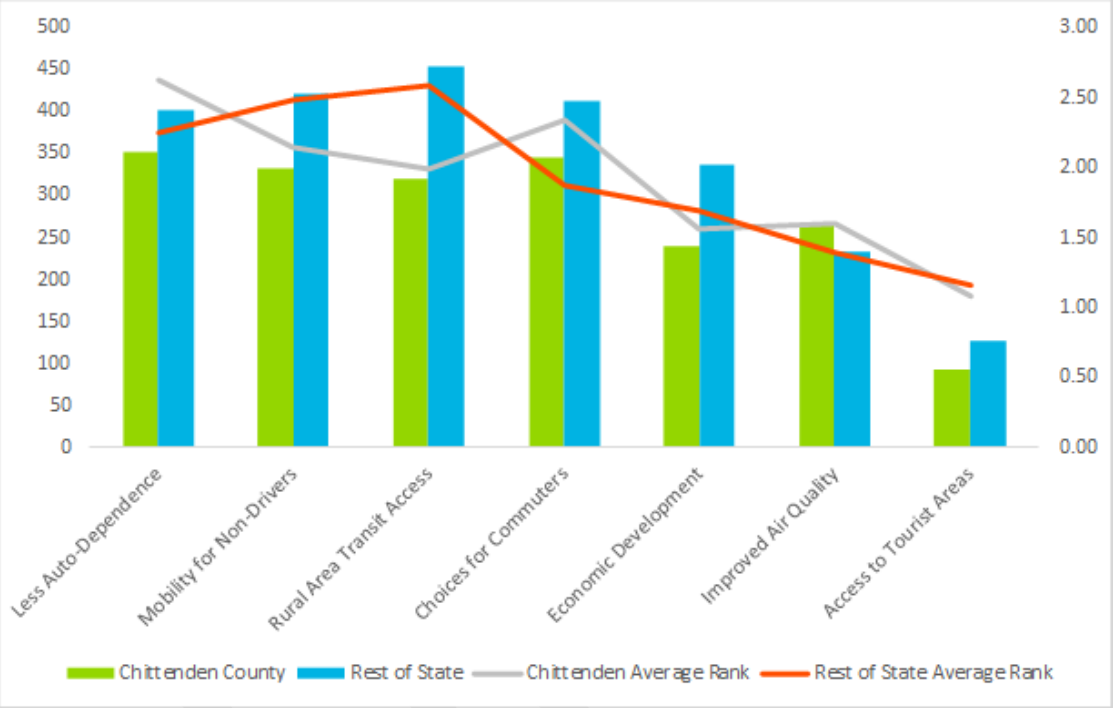
Figure 17: Statewide Policy Preferences



It is not surprising that the other two policies that were ranked lower were not as important to Vermont residents. While Vermonters support economic development overall, it is more of secondary characteristic of the benefits of public transit and has less immediate impact on a person's mobility. Access to tourist areas would also be seen in this light as something beneficial to the Vermont economy, but less directly important to Vermont residents.

Figure 18 shows the policy preferences separately for Chittenden County residents and people who live in other Vermont counties. There was general agreement between the "urban" and "rural" residents of Vermont[52] about which policies were the most important, but the relative rankings within the top four and the bottom three varied between the parts of the state.

Figure 18: Chittenden County vs. Rest of Vermont Policy Preferences



In Chittenden County, less auto-dependence and choices for commuters were the highest priority goals, while for residents elsewhere in Vermont, mobility for non-drivers and rural area transit access were most important. These results are not surprising, as most of the people in the urbanized portion of Chittenden County have good access to public transportation and can easily envision living without a car and having better commuting options. In other parts of the state, where there is little or no fixed-route bus service available, the concerns about basic mobility are much more salient and transit access in rural areas is a clear and present gap.

Among the three lower-ranked goals, economic development and access to tourist areas were more important for rural residents both because employment centers are scarce and distant for rural residents and because it is often the case that a tourist area (ski resort) is one of the most important nearby economic

[52] It is recognized that portions of Chittenden County are rural, and portions of the rest of the state qualify as urban clusters or micropolitan areas, but this geographic division is nonetheless a convenient way to contrast urban and rural policy priorities.

engines. Air quality, including concerns about greenhouse gas emissions, may be a more salient issue in Chittenden County because of the much higher level of traffic congestion there and also the recognition that a robust transit system, like Green Mountain Transit, can offer a real alternative to driving, something much harder for a rural resident to envision.

Ultimately, the State needs to have a set of policy priorities that treats both urban and rural residents in an equitable way. The second and third choices of both the Chittenden County residents and the rest of Vermont were the goals of providing mobility for non-drivers and choices for commuters. It is likely that rural residents who selected choices for commuters as a top-ranked goal were thinking beyond the description of "getting people from their homes to the state's largest employment centers" to include access to jobs in rural areas as well. Thus, these priorities taken together represent basic mobility for essential needs and services, and the ability to get to work, whether for people who have the option to drive or for those who do not. It is not unreasonable to think of these functions as the two most essential purposes of a public transit system.

Recommended Policy Language

Recognizing these two functions as the most important, further reinforced by the major themes of the needs analysis, where basic mobility and access to jobs were mentioned as critical in every region of the state, it is recommended to revise the policy goals in statute to reflect their primacy. Transit access in rural areas could be construed as covered under these two functions, but the need expressed during the public outreach phase was so great that it deserves to be called out separately. Indeed, the Vermont legislature just did so in the 2019 session.

Less auto-dependence, the last of the top four choices, reflects the third major theme of the needs analysis, listed in the prior chapter. As the most important priority for Chittenden County respondents, it also deserves separate mention. Further, the concept of improved air quality and reduced energy use/greenhouse gas emissions is tied very closely to reduced automobile use and thus can be combined with less auto-dependence into a single goal.

Finally, while economic development and access to tourist areas may not have ranked the highest among respondents from the general public, the State has a strong interest in these themes and the public sees important benefits from increased activity, even if it is not as directly apparent. It is proposed to combine these two goals into one, since, as stated above, tourism is a key economic engine in rural parts of the state.

All of the policy goals contained in the proposed language support State priority initiatives:

- Grow the economy
- Make Vermont more affordable; and
- Protect the most vulnerable.

Goals 1 and 2 (below) aim to protect vulnerable Vermonters by improving their mobility. Goals 3 and 4 help to make Vermont more affordable by improving access to affordable transportation options for all Vermonters. Goal 5 directly supports the initiative of growing the economy.

Suggested revised language for the policy declaration is provided below:

> (a) It shall be the State's policy to make maximum use of available federal funds for the support of public transportation. State operating support funds shall be included in Agency operating budgets to the extent that funds are available. State policy shall support the

maintenance of existing public transit services and creation of new services to promote the following goals:

(1) Providing basic mobility for transit-dependent people. Basic mobility allows for access to essential services including medical care (including mental health and dental services), food (grocery shopping and congregate meals), day care for children and older adults, and social and wellness resources.

(2) Providing access to employment both for people who are not able to drive themselves and for people who choose to use transit vehicles and other shared-ride services to avoid congestion and the cost of automobile commuting

(3) Expanding public transit service in rural areas for all trip purposes, making use of the most cost-effective means of serving low-density areas.

(4) Providing convenient mobility choices to reduce the dependence on private automobiles, thereby reducing traffic congestion, improving air quality, decreasing greenhouse gas emissions and sustaining the viability of the highway network.

(5) Supporting economic development in urban and rural areas, including services for workers and visitors that support the travel and tourism industry.

(b) All services supported by state and federal funds administered by the Agency shall strive to increase ridership and meet performance standards as set in the most recent Public Transit Policy Plan and updated in the Agency's annual Route Performance Report. The Agency shall work with transit providers to ensure efficient and effective use of transit subsidies and ameliorate the performance of those services that do not meet the defined standards. Providers shall design public transit service in the most appropriate and cost-effective way for their services areas, using all available appropriate service options.

The existing paragraphs (b), (c), and (d) in §5083 would follow the proposed text as paragraphs (c), (d), and (e).

Performance Measurement Enhancement

The transit service performance measurement system used in the annual Route Performance Report has been in place since the 2006-7 PTPP with only minor modifications to the route classifications. That system uses two primary measures to gauge the performance of Vermont public transit services:

- Productivity – boardings per unit of service operated
- Cost-effectiveness – gross operating cost per passenger trip

For each route class, a performance standard is set (for the most part based on national peer groups derived from the National Transit Database) and Vermont routes and services are rated as "successful" if they perform as well as or better than the peer standard or "acceptable" if they perform at least half as well as the peer standard. Routes and services that are not acceptable are rated as underperforming and thus a priority for improvement through a service planning process. If a route or service underperforms for three consecutive years, it becomes a high priority for improvement.

The present PTPP proposes a modification of the route performance framework. The current two measures are both dependent on ridership. While ridership is perhaps the single most important characteristic of a transit service, including it in both measures may mask underlying issues with the cost structure of a transit provider. If the operating cost per unit of service for a provider is significantly higher than its peers in Vermont or national peers, there may be an issue that needs to be addressed, completely separate from how many riders the route carries.

At the same time, having two separate measures on which the routes and services are judged to be satisfactory or not can cloud the issue to some extent. If a route is acceptable for productivity but underperforming for cost effectiveness, is it an underperforming route or not?

Given these considerations, it is proposed to calculate and display the performance of all Vermont routes and services on two efficiency measures, but rate its performance on one measure that summarizes the other two. The efficiency measures are **ridership efficiency** (the same as productivity as it is calculated now) and **cost efficiency**, defined as the gross operating cost per unit of service provided.

As with the current route evaluation system, the unit of service is specific to the route class:

- Urban – unit is revenue mile
- Express commuter and Intercity – unit is one-way revenue trip
- All others – unit is revenue hour

The two efficiency measures will be calculated for all Vermont routes and services and for national peer groups as well, as has been done over the past dozen years. These results will be shown in a series of graphs. However, unlike past reports, the "successful" and "acceptable" thresholds will not be shown on these graphs.

A third set of graphs displaying cost effectiveness will form the core of the Route Performance Report, and these graphs will show successful and acceptable thresholds. The graphs will show both the gross and net cost per passenger for each route or service, with the difference being any fare revenue attributable to that route. Ultimately, the cost borne by the taxpayer for a ride taken on a transit vehicle is the most relevant measure of the performance of that transit service. The gross cost per passenger maintains continuity with past reports, but the net cost per passenger shows the actual government subsidy for that trip, after the passenger has paid any applicable fare. Fare revenue will include money contributed by institutions through unlimited access programs and direct subsidies from ski resorts, but it will not include municipal or philanthropic contributions. The performance rating will be based on the net cost per passenger.[53]

Because the efficiency graphs already compare all of the routes to national peer groups, it is proposed that the acceptable and successful standards are based on the average of the Vermont routes in each class. The successful standard will be set at a percentage of the class average (66% or 75%) and the acceptable standard will be set at a multiple of the class average (2, 2.5 or 3) to be determined. Until the numbers are run through the process, it is not possible to determine what an appropriate threshold would be to separate the underperforming routes and successful routes from the broader class of acceptable routes.

[53] It is understood that there are questions of equity in comparing systems that charge a fare with those that do not. However, it is assumed that systems that do not charge a fare would have higher ridership than they would if they charged fares, and thus have a reduced cost per passenger.

The other significant change from the prior method of service evaluation is to revise how demand response services are defined and treated. This change, which will be effective in the FY2019 Route Performance Report, takes a more holistic view of demand response service than was true in prior reports. In past reports, the Demand Response category consisted exclusively of agency van trips operated with E&D Program funds. Medicaid or other rides on agency vans were not included at all. The Volunteer Driver category included the administrative cost for all volunteer trips regardless of funding source, but did not include the mileage reimbursement cost.

The new Demand Response category will include all demand response service operated by the transit providers and their subrecipients. This includes the following modes of service:

- Van
- Volunteer driver (both administrative and mileage costs)
- Taxi
- Other

It also includes all E&D service and Medicaid service, as well as other demand response services operated under contract to human service agencies, such as adult day programs.[54] Unlike past years, ADA paratransit service will also be included. While this is "required" service over which the provider has little control, it is still possible to coordinate trips between riders and among all of the demand response programs. Also, passenger revenue from ADA riders will be subtracted from the cost of service in calculating the cost per passenger, helping to mitigate the "penalty" that the providers associate with the lack of flexibility in serving ADA demand. Ultimately, VTrans wants to have an accounting of all of the service operated in Vermont by the transit providers.

While the separate charts for volunteer driver service will no longer appear in the report, the demand response charts for cost effectiveness will show the percentage of trips that are provided through volunteer drivers. Presumably, agencies that use volunteers for a greater portion of their trips should have a lower cost per passenger, though the relative distance of those trips also plays a factor in the cost. As stated elsewhere in the PTPP, the transit providers are strongly encouraged to serve demand with the lowest cost means available, which will usually be volunteer drivers, except in cases where there are enough proximate trips to allow a single van trip to serve several passengers at once.

Criteria for Feasibility of New Services

Section 5083 of 24 VSA Chapter 126 states in paragraph (b):

> The Agency of Transportation shall evaluate proposals for new public transit service submitted by providers in response to a notice of funding availability, by examining feasibility studies submitted by providers. The feasibility studies shall address criteria set forth in the most recent public transit policy plan.

[54] Vermont's transit providers have operated NEMT service for years under contract to the Department of Vermont Health Access, either directly or more recently, through VPTA. Including ridership and cost figures for NEMT within the Route Performance Report does not presume that this will always be the case.

When VTrans has available funding through the federal Congestion Mitigation/Air Quality (CMAQ) program, it solicits proposals from transit providers under the New Services program, following the language of the statute.[55] These proposals can be for capital expenses, such as new buses, or for operating expenses to create a new route or enhance the level of service on an existing route. For a project to be eligible for CMAQ funding, it must demonstrate a high likelihood that it will result in an increase in transit ridership which can then be related to a decrease in emissions from private vehicles. The funding is provided with an 80/20 match requirement, so that the transit agency is responsible for 20% of the net deficit (after subtracting fare revenue) through local support. The CMAQ funding is typically available for three years, after which time VTrans has usually identified continuing funding from Section 5311 and State operating funds for routes and service expansions that have proven to be viable.

In the past, the New Services application has included 20 items that need to be addressed, some of which describe the purpose and characteristics of the service, and others of which provide estimates of cost, ridership and target performance measures. The application has not specified precisely how the projects will be evaluated, other than to say, "VTrans will use several measures, including mobility improvements, environmental benefits, operating efficiencies, project coordination, regional connectivity, local financial commitment, and sustainability of funding continuation."

As shown in the statutory language above, the PTPP is intended to provide guidance on the selection criteria for the New Services program. It is recommended that the current language in the application be clarified to identify five criteria as defined below:

1) **Acceptable performance –** By the third year of operation, the proposed service must achieve "acceptable" cost effectiveness as defined in the VTrans Route Performance Report. The forecast performance in the application must be substantiated by estimates of cost, ridership and fare revenue that are based in objective and publicly available data sources and reasonable estimates of market share with reference to existing similar routes.
2) **Demonstrated local support –** The applicant must show letters of support from local and regional organizations and evidence of commitments from local funding partners to provide the 20% local match of the net operating deficit.
3) **Environmental and/or congestion reduction benefits –** Through a narrative description supported by calculations, the project must show a net reduction in carbon dioxide and other air pollutant emissions and/or a reduction in traffic volume on congested roadways.
4) **Efficient schedule design and coordination –** For any route intended to serve commuters, the application must show communication with relevant employers so that convenient schedules that would be attractive to their employees can be designed. If the route is intended to coordinate with routes operated by other providers, a schedule showing convenient connections to other routes must be provided and a letter of support from the other provider(s) must be included.
5) **Mobility improvements and job access –** Routes that address an unmet need as described in the PTPP, including mobility for transit-dependent persons and access to jobs, will be rated favorably.
6) **Supports compact development and appropriate trip generators –** Routes that serve or are coordinated with developments in designated downtowns, urbanized areas or town and village centers and serve significant trip generators will be rated favorably.

[55] The statute does not restrict the funding source of new services to CMAQ, but over the past 15 years, that has been the only source of new discretionary funding available to expand service. If the federal government were to expand Section 5311 funding substantially, VTrans could theoretically solicit new service proposals using those funds.

A specific scoring rubric is not included here, but VTrans should consider showing the relative weights of the criteria and the possible range of scores.

Recommended Initiatives

In addition to updates to the state policy on public transit, the PTPP has always included an action plan to improve the statewide transit system. Through the process of engaging the public, stakeholders and agency staff, a set of recommended initiatives was developed. These are organized into five main groups, largely reflecting the critical themes and challenges discussed in chapter 3:

- Addressing aging Vermont
- Expansion of transit access
- Outreach and raising awareness
- Using technology to move to next generation of ride scheduling
- Land use planning and investments

The specific recommendations in these groups are organized into a prioritized implementation plan with immediate, short, and long term phases in chapter 6.

Addressing Aging Vermont

As discussed in chapter 3, it is no longer possible to postpone addressing the issue of mobility for older Vermonters. Of course, VTrans, in cooperation with the Agency of Human Services, the transit providers, and many other partners have been providing services for older adults for years, but the expected growth in the number of Vermonters over the age of 80 in the next ten years and beyond means that further and more aggressive action is needed. It is not just that additional service is needed, but that the type of service offered, differentiated mainly by its convenience, must be improved to meet the expectations of the Baby Boom generation.

Three specific actions are recommended here, though the longer-term land use investments in the fifth group are also relevant to the topic of aging. Those actions will be discussed below.

Establish Working Committee with the Agency of Human Services

The Department of Disability, Aging and Independent Living (DAIL) within the Agency of Human Services expends significant resources in studying and addressing the challenges faced by older Vermonters (as well as people with disabilities). The PTPP process has worked toward strengthening the relationship and communication between VTrans and DAIL so that the resources of the two state agencies can best complement each other.

Although DAIL is already a member of the Public Transit Advisory Committee, which meets quarterly, the PTPP recommends the establishment of a working committee focused on the issue of mobility for older Vermonters. The working committee would be led jointly by VTrans and DAIL and include representatives from other state and regional organizations with a stake in issues of aging. These include, but are not limited to, the following:

- AARP Vermont
- Vermont Association of Area Agencies on Aging
- United Way of Northwest Vermont
- Community of Vermont Elders

- Vermont Association of Planning and Development Agencies
- Vermont Public Transportation Association
- Vermont Housing and Conservation Board
- Services and Supports at Home (part of DAIL)

The working committee would be tasked with identifying short, medium and long range actions that need to be taken to prepare for the likely increase in transit demand as the Vermont population ages. Many of these actions are listed in this PTPP, but the needed actions will go beyond public transit. In order to address the needs of older Vermonters now and in the future, a coordinated effort is needed among state, regional and local agencies and governments to plan for future investments and secure the needed funding. The Area Agencies on Aging have regional plans, and these should be integrated with the work done by this committee. A coordinated, joint effort among these many partners would be more likely to be successful in making a case before the Vermont legislature than any of them would be on their own.

More Comprehensive Planning for E&D

The Elders and Persons with Disabilities Transportation Program, referred to as E&D, has played a major role in providing mobility to these vulnerable demographic groups. With a major expansion of the E&D program in 2004 following the recommendations of the first PTPP, and further growth over the years through "flexing" of federal highway funds into the program, Vermont spends about $5 million annually on services targeted to people with disabilities and those over the age of 60. This includes $4 million in federal funds and $1 million in local matching funds, and these funds are spent on administrative costs and preventive maintenance associated with the E&D service.

While this program has functioned reasonably well overall and provided essential services to Vermonters, the conclusion of the analysis based on a prior review of the program in 2016[56] as well as consultant and VTrans attendance at regional E&D committee meetings all over Vermont is that the program could benefit from new guidance and information sharing, as well as new policies and procedures. In the short term, the PTPP recommends that VTrans host a statewide E&D meeting and develop a work plan that would be carried out by all of the E&D regions. The specifics of the work plan template and the statewide E&D meeting are discussed in chapter 6, but the goal would be to replicate in all regions of Vermont the data collection process that has been undertaken by United Way of Northwest Vermont in Chittenden County (funded by the Chittenden County Regional Planning Commission) and to share best practices having to do with coordination, low-cost trips and volunteer management, among other topics. The development of performance measures specific to the E&D program (to complement those used in the Route Performance Review) should be another priority. Additional E&D recommendations are included in chapter 6, many of which—particularly in the areas of addressing unmet needs, sharing information and best practices among partner organizations, increasing the productivity and coordination of services, and increased use of technology—are updates from the 2016 program review.

Establish Personal Mobility Accounts

While it would not be restricted to older Vermonters, this recommendation would have immediate benefits for older adults and people with disabilities who currently obtain rides under the E&D program. A Personal Mobility Account (PMA) would allow individuals to make use of public transit services for whatever trip

[56] *Vermont Elders & Persons with Disability Transportation Program Review, Act 40 (2015) Section 12*

purposes they desired. It is recommended that the concept be pilot tested with people who are currently eligible under the E&D program, but later be expanded to the general public.

Initially, funds would flow into the PMAs from the E&D program in each region in what would essentially be an expansion of the Ticket To Ride (TTR) program. In some regions of Vermont, a portion of the E&D funding is set aside for the TTR program, which allows eligible individuals to take trips for whatever purpose they choose, not limited to the medical or shopping trips which constitute most of the E&D program. Under this proposal, TTR would be extended to all regions in the state, and wherever possible, a larger percentage of the E&D funding would be allocated to TTR. To supplement the public funds, private funds could come from the individual or family members/friends/community supporters. The program could potentially allow for people to earn non-cash credits in their PMA by serving as a volunteer driver while they are still able to drive.

For this program to function, all Vermont transit providers would need to allow for a "client-pay" billing procedure; some agencies now only operate trips funded through Medicaid, E&D or an agency partner. Once the funding channel is set up, the PMA could be used to pay for trips for any purpose operated by the transit provider, either with an agency van or a volunteer driver, or a brokered trip with a taxi. The individual would draw down funds in the PMA as needed, and while the public funds would be limited based on the policies of the regional E&D committee, the private sources would not be limited.

Expansion of Transit Access

A clear message in the public outreach process is that more service is needed. In spite of the fact that Vermont spends about ten times per capita on public transit what its peer states do (see page 17 in chapter 2) there are still many unmet needs and large portions of the state have limited access to transit services. There are several strategies to expand the supply of service: increase the amount of funding from existing sources, bring new sources of funding to the table, and reduce the average cost of service. The specific recommendations in this group address all three of these strategies.

Spur Growth of Volunteer Driver Programs

Volunteer driver trips are the most cost-effective means of expanding access to transit, especially in low-density rural areas. Wages and benefits usually make up at least half of the cost of transit operations, so when a volunteer driver can provide the trip, the overall operating cost drops significantly.[57] All across Vermont, agencies cite a lack of volunteers as the limiting factor on their ability to make use of this mode of transit.

In discussions with stakeholders and agency staff, several specific actions rose to the top as effective means to increase the supply of volunteers:

1. **Streamline the background check process**
   Individuals who want to serve as volunteer drivers must pass a number of background checks. At the current time, even if they pass these checks with another organization, they still need to go through them again with the transit provider. Under this action, a single, statewide background check process would be established and funded so that all organizations that utilize volunteers could make use of a single round of background checks, at least for a range of time until they would need

[57] It should be noted that in cases where an agency van can carry several riders at once, it can be more cost-effective than individual volunteer driver cars providing separate trips for each of those passengers.

to be updated. This new process could potentially be developed by SerVermont, Vermont's State Service Commission. In the immediate term, when VPTA conducts checks on a driver for Medicaid transportation, they should run all checks at that time, so the driver can volunteer for other programs without additional checks required.

2. **Create a check box on Vermont vehicle registration forms to sign up as a volunteer driver**
   Most Vermonters don't know about the opportunity to serve as a volunteer or may find it difficult or cumbersome to sign up as one. Adding a check box to the vehicle registration form makes the first step in the process very easy. It would then be up to the volunteer coordinators at the transit providers or other volunteer organizations to contact the individual and complete the process.
3. **Establish non-monetary incentives for volunteer drivers**
   The Personal Mobility Account program mentioned above offers one way that people can receive tangible benefits from volunteering without any cash changing hands, in that drivers could accumulate ride credits by driving, which they could use later when they can no longer drive themselves. Community recognition, celebrations and events are also effective means of providing non-monetary incentives to participate as a driver. It is not allowed to provide cash (other than mileage reimbursement) or material goods (such as tires) to volunteers and still have them be considered volunteers by the IRS.
4. **Increase marketing budget and collaborate with partner organizations**
   Transit providers advertise for volunteer drivers from time to time, and this helps to bring in new recruits. Increasing the budget for this advertising and using other available channels, such as social media and public radio, can help increase awareness of the volunteering opportunities. In a number of regional E&D meetings, partner organizations indicated a willingness and interest in helping to recruit new volunteers.
5. **Share best practices**
   Some agencies and regions in Vermont have had greater success than others in attracting and retaining volunteer drivers. Community pride and engagement—the sense that we all need to take care of each other—is integral to bringing more volunteers into the program. The methods used at the more successful agencies can be shared with others in the state. One example is to develop a two-tiered system of volunteer engagement: the first tier is similar to how most volunteers working with transit agencies currently function, by providing door to door service for riders; the second tier would be to serve clients with greater needs, including accompanying them into a medical center, etc. The second tier would be a collaboration between transit providers and other community organizations that have individuals interested in this more engaged volunteerism.

Expand Access to Healthcare

Vermont's State Health Improvement Plan, published in December 2018, recognizes the critical role that transportation plays in the health of Vermonters. Healthy communities are interconnected and public transit helps to support an active lifestyle and social interactions that promote personal health. Public transit is also a major factor in promoting health equity as it provides access for low-income households and for individuals that cannot or choose not to drive. Vermonters spend about 25% of their income on transportation, and using transit is a far more affordable alternative to owning and operating a personal vehicle. About 7% of Vermonters of driving age do not have access to a personal vehicle. Public transit allows people to engage in essential life activities while preserving their income for other important purposes.

Beyond this broad role that transit plays in public health, it also provides essential access to health services for those who are not able to drive themselves. Since April 2017, VTrans has been actively working to

improve access to healthcare through a program called Rides to Wellness, funded by a grant from the Federal Transit Administration. Using the federal funds as seed money, the program sought to demonstrate to hospitals and health centers that spending money on transportation so that patients did not miss their non-emergency medical appointments because of a transportation barrier (car broke down, no money for gas, ride fell through, etc.) has a significant positive return on investment and improves health outcomes for their patients. The ultimate goal is for these healthcare providers to sustain the program by investing their own funds, once they realize the financial and health benefits.

Starting with two pilot sites, the program is poised to expand to four pilot sites in Autumn 2019. If the theory is borne out in practice and the healthcare providers sustain the investment, the funding pool for access to healthcare will have been expanded, thereby allowing for overall service to be expanded. It should be noted that community health centers in Vermont are all actively engaged in ensuring that their patients have transportation access to health services. The Rides to Wellness program seeks to build on those activities and propagate them to all healthcare providers in the state.

The Rides to Wellness concept is very much in line with the Accountable Care Organization (ACO) model for healthcare funding that is expanding in Vermont. This effort seeks to replace the fee-for-service model with one that emphasizing minimizing the total cost of care and improving health outcomes. It is possible that healthcare providers that are participating in the ACO program could apportion a segment of the overall funding allocation available under the ACO to transportation. A successful Rides to Wellness program would be strong evidence that this is a worthwhile way to use these funds.

Another area of emphasis to improve access to healthcare is to maintain ongoing communication between transit providers and primary care organizations. Transportation is often an afterthought when appointments are scheduled, and while Rides to Wellness can help to reduce barriers, coordination of appointments with existing bus schedules and grouping of patient appointments to promote shared rides when demand response service is necessary can have a significant impact on reducing the transportation cost of getting those patients to the medical facility. Reducing the cost of each trip can stretch scarce resources much further, making service available for more people.

Expand Access to Employment

At every Regional Forum held during the PTPP, the issue of access to employment was raised as an urgent need. It has also come up in the context of the Rides to Wellness program, because if someone loses their ability to get to work and thus loses their job, their health and overall wellness can quickly enter a severe downward spiral. For both long-term stability of employment and stopgap needs when a car breaks down, assistance with job access is a critical means of helping people help themselves and avoid a crisis which will ultimately be much more expensive to resolve.

Several actions are worth implementing to improve the ability of low-income Vermonters get to jobs:

1. **Increase awareness of ridesharing options through Go Vermont**
   The Go Vermont program actively promotes carpooling and vanpooling as ways to get to work. The more people that sign up with Go Vermont, the more opportunities there are for ridesharing. It is likely that if gasoline prices were to spike, interest in ridesharing would spike with it. In the meantime, linking Go Vermont to green activism, saving money, and social interaction can help encourage greater participation. Additional budget for marketing would also increase awareness of Go Vermont, a necessary step toward encouraging solo drivers to consider other travel options.

2. **Engage employers in helping to fund job access transportation**
   There are a number of ways that transportation services could be established that are partly or wholly funded by employers. Similar to Rides to Wellness, a JobRides program could be established, perhaps with seed money from the state and federal governments, to provide stopgap money for job transportation when someone suddenly loses their normal means of commuting. The program could target low-income individuals or clients of community action programs. Working through the chamber of commerce or other economic services agency, employers could be asked to fund a share of the program to allow their employees to receive benefits. The positive return on investment would be derived from lower attrition and reduced turnover rates, which would save the employers in advertising and training costs.
3. **Create the "late bus" for shift workers**
   In non-urban areas that have some public bus routes, the services typically shut down in the early evening at the end of the traditional afternoon peak period. Employees who work later, or have second or third shift jobs, are unable to make use of these bus routes because there is often no service between 6:30 p.m. and 6:00 a.m. While it would be cost-prohibitive to operate the entire local bus system for several extra hours to accommodate the shift workers (since overall demand is much lower in the late evening), it may be possible to operate a limited service that operates on a demand-response or subscription basis. The vehicle operated could range from a minivan to a bus, depending on the level of demand. Employers who complain about the difficulty of finding workers for later shifts could be a source of funds for at least the local match portion of this transit service. Participating employers would advertise the availability of the late bus to existing and potential workers and help to identify employees interested in this service. They would provide detailed information on their origin and destination locations and desired travel times, so that a reasonably efficient route could be designed. With modern software, such as that used for microtransit, an efficient path could be developed in real time so that no one would have to be on the bus for an inordinate amount of time. The service could be scaled as necessary to meet the demand. It could also operate on weekends and holidays when the regular transit system is not running. It is likely that some of the riders will eventually buy their own cars as they establish themselves in their jobs; this should be seen as a positive.
4. **Expand partnership with Good News Garage**
   The Agency of Human Services contracts with Good News Garage (GNG) within the Reach Up program to offer transportation support to individuals in need. VTrans should build a relationship with GNG to explore a partnership in the JobRides program and other initiatives to help low-income individuals maintain and improve their quality of life.
5. **Create partnerships with TNCs where available**
   Transportation Network Companies, such as Uber and Lyft, have developed partnership with transit agencies in many parts of the US. While currently available only in portions of Vermont, TNC drivers could serve as another resource for people to get to and from work when regular transit routes are not operating. Funding for these rides could be a combination of public and private dollars, and the rides could be limited to low-income individuals, as suggested above for the JobRides program. A sliding-scale pricing mechanism could be instituted to allow for employees to save money to be able to repair their own car rather than spending all of their funds on rides.

Expand Local Connections

Fixed-route bus services, particularly in urban areas, serve a well-defined corridor and provide access to those within easy walking distance of a bus stop, usually considered to be one quarter mile, though some people are willing to walk farther. Even a relatively dense transit network, though, cannot provide such

convenient access to all homes or workplaces within the broader service area. Park & Ride lots can promote access from a much wider area, but they usually best serve the "home" end of the transit trip.

Many urban and suburban areas that have fixed-route bus service have tried to tackle the "first mile/last mile" problem through various means. Densely-populated areas may have feeder bus service, while some large employers operate shuttle vans to and from a transit station (usually on a rail system). In recent years, many areas across the US have experimented with bike share or e-scooter systems[58], which allow a rider to rent a bike or scooter at low cost from a docking station or just on the sidewalk and ride to their destination, leaving the bike/scooter at another docking station or sidewalk. Such a program could include electric bikes.

Vermont has limited experience with these systems, including Greenride Bike Share in Burlington (ongoing) and Bird scooters in Montpelier (Fall 2018). Winter conditions in Vermont are a barrier to these type of systems running year-round, but for at least a portion of the year, bike and scooter systems can solve the first mile/last mile problem for those riders who are able to use these vehicles comfortably and safely.

Microtransit is another solution being tried in an increasing number of areas. It is essentially a technology-enabled demand-response service that schedules rides in real time. Ride requests are either made on a smartphone or by calling into a reservation center (for those who do not have smartphone access).[59] A database algorithm aggregates these ride requests into a driver manifest in real time and communicates that immediately to one of the vehicles on the road that can accomplish the trip most efficiently. Depending on the number of vehicles in service, the size of the service area and the level of demand, most requests could be accommodated in 15 minutes or less. Microtransit can be implemented either as software managing the operations of an existing demand response system of a transit provider, or as a complete package from a vendor including software, vehicles and drivers to operate them.

The service zone defined in a microtransit system can expand the access of a bus route to a much wider area. If the zone is centered on a transit station (such as the new intermodal transit center in Montpelier), anyone living or working with 2-3 miles of the station can have convenient rides to or from work or home. A pilot project for Montpelier is in the planning stage as of November 2019.

Expand Access to Available Seats in Transit Vehicles

Most demand-response trips operated in Vermont—either with agency vans or volunteer driver cars—are funded by programs with specific rider eligibility requirements, primarily E&D and Medicaid. Most transit provider treat these trips as exclusively open to clients of these program, even though there are no state or federal regulations preventing these trips from also carrying members of the general public. Indeed, federal E&D regulations state that it is allowable to carry non-elderly and non-disabled riders on these trips, provided that general public riders do not displace a rider who is eligible under the E&D program.[60]

It is rare that all of the seats on these vehicles are filled with riders. In the short term, transit providers should implement a policy that if a non-eligible rider has origin and destination locations within a short distance, say a tenth of mile, of where eligible riders on a van/volunteer trip are already scheduled to go, that non-eligible rider should be allowed to ride in the vehicle, provided that there is available capacity. For example, if an older Vermonter has a medical appointment at a health clinic and has scheduled a ride to get

[58] https://www.bts.gov/topics/passenger-travel/bikeshare-and-e-scooters
[59] As mentioned elsewhere, technology-based solutions require universal cellular coverage in Vermont, which does not currently exist.
[60] See FTA Circular 9070.1G, page VI-3 and VI-4

there and back through the E&D program, and it so happens that their neighbor who is less than 60 years old also has an appointment at the same clinic around the same time, that neighbor should be allowed to share the ride. The non-eligible rider could be asked to pay a fare or a "suggested donation" of $2 or other appropriate amount. (This amount would be worked out in advance when the eligible rider would have told the reservationist that their neighbor would also like to ride on that trip.)

In the longer term (see section below about the next generation in ride scheduling), a "client-pay" mechanism would be in place for all transit providers so that members of general public would have the ability to gain access to demand-response trips that are currently seen as off-limits to them. Appropriate fees for non-eligible riders would be determined based on a locally-developed policy, and these would be incorporated into the smartphone-based ride request app.

Support VPTA to Become a Viable Statewide Broker

The Vermont Public Transportation Association serves many functions not only as the collective voice of the seven transit providers in the state, but since 2012 it has acted as the broker to the Department of Vermont Health Access to provide non-emergency medical transportation (NEMT) in Vermont.

While it has served these functions, it has only a limited capacity to "broker" trips directly. Brokering trips means to find the most cost-effective means of providing that trip, whether by agency van, volunteer driver, taxicab or some other means, and then to assign the trip and handle the payment for it. All of the trips operated under the NEMT contract are dispatched and delivered by the transit providers that are the members of VPTA.

The PTPP has a long-term recommendation to transition to a wholly new demand response scheduling system (see page 86 below), but in the near term, there are cases where it may be more efficient for VPTA to broker and coordinate some trips directly rather than having the transit providers handle this function in its entirety. Trips that cross jurisdictional boundaries can be problematic for regional transit providers, and opportunities for coordination can be lost. Routine trips that are already handled by the individual providers would continue to be handled that way, while new clients and long-distance, cross-boundary trips could be handled by VPTA to determine the most cost-effective way of serving that demand. It would also provide a one-call, one-click service for new clients or those who are experiencing problems.

Under this recommendation, VTrans will offer financial and organizational support for VPTA to enhance its ability to broker trips. This could include new software and training as appropriate.

Expand Funding Pool Overall

In surveys and meetings, the call for more service generally was heard very clearly. In rural areas, people wanted bus routes serving more towns. In urban areas, people wanted more frequent service and longer hours. For demand response transportation, people wanted more types of trips served, so that, for instance, older adults could have more social interactions and not be limited to just medical and shopping trips. The trip limits on E&D riders in some regions of Vermont (see chapter 4) are purely a function of inadequate funding. Expanding access to available seats as described above will help address these needs to some extent, as more people can make use of vehicles already in service, and donations or fares can help pay for additional service.

As noted elsewhere in the PTPP, for the recently completed Fiscal Year 2019, in addition to the $6.2 million in federal transit money that Vermont received (exclusive of money that goes directly to Green Mountain Transit for the Burlington urbanized area), the state transferred nearly $20 million in federal highway dollars

into the transit program and spent nearly $8 million in State funds from the Transportation Fund (fuel taxes and registration fees). VTrans also aggressively pursues—and has been successful in winning—federal funding for innovative programs and pilot projects through competitive grants.

The Vermont congressional delegation does everything it can to maximize federal transportation dollars coming to Vermont. The State could choose to transfer even more money from the federal highway program[61] and spend more State dollars on public transit. The Section 40 legislative study conducted in 2014-2015 looked at various means to increase the available of non-federal and State funding. Those avenues could be explored more aggressively to make local dollars more available. Several of the action items above suggested ways to increase private sector participation in funding public transit.

In addition to these, contributions from educational institutions and ski resorts have helped fund public transit in both the urban and rural portions of the state. Any time that one of these employers or organizations proposes a large capital expenditure for expanding parking capacity, the local transit provider should make the strongest case possible that spending that money instead on public transit is a wiser long term investment.

Outreach and Raising Awareness

The issue discussion of public awareness of transit in chapter 3 included several concepts for raising the visibility of public transit and changing transit's image in the public consciousness. Those concepts form the core of the recommended initiatives below.

Continue Investment in Go Vermont

As mentioned in prior recommendations, the Go Vermont website and information center is the State's primary portal for information about transit and shared-ride services. VTrans has worked assiduously for years to enhance the capabilities of the site and to advertise its presence to the traveling public. The State's *Comprehensive Energy Plan* includes four primary recommendations for public transit and they are all related to Go Vermont and its focus on transportation demand management:

1) Expand the Go Vermont website and increase its use for events.
2) Research a state pilot program for parking cash-outs to decrease single occupancy vehicle commuting.
3) Continue supporting employer programs to encourage carpooling, vanpooling transit, walking, and biking for employees' commute trips.
4) Continually investigate software and other technology improvements to make taking transit easier and increase rideshare, vanpool, carshare, and other options.

Three specific actions are recommended here to further improve the site's functionality and visibility.

1. **Increase marketing and promote links from others**
   VTrans should continue to invest in the capabilities of the website and to increase the marketing budget, making sure that other organizations that generate trips, including hospitals, institutions,

[61] There are restrictions as to the use of "flexed" federal highway funds such that it may not be possible to transfer more highway funds into the E&D program, given the current levels of expenses for administrative costs, capital and preventive maintenance. These are the only types of costs that flexed highway funds from the Surface Transportation Program can be used for—not regular operations. The rest of the transit program outside of E&D could potentially make use of additional flexed highway funds if they were available.

large employers and large retail outlets, include links to Go Vermont on their websites. Anytime a website in Vermont has a "Get directions" link, instead of taking the user to Google Maps or the like, it should take them to Go Vermont so that the user sees all transportation options, rather than just driving directions.

2. **Create interactive map of bus routes**
   VTrans should incorporate an interactive map showing all of the bus routes in the state. The page on bus services (https://www.connectingcommuters.org/bus-info/bus-providers/) currently has a map divided up into service regions with no representation of the actual bus routes. If users want more information on the bus services, they must leave Go Vermont by clicking on a link to one of the provider websites. This map should be replaced by one that is pannable and zoomable and shows all of the actual bus routes. It would include local, commuter and intercity bus routes. If the user then wants more detailed information about a specific route, a link would be offered to the provider website for schedule and fare information. While the trip planner function of Go Vermont incorporates all of these services, some people prefer to look at a map and decide for themselves how to travel. Furthermore, the map will show a significant amount of connectivity for most parts of the state, thereby promoting the overall goal of raising awareness of how much service is currently operated. Future enhancements could include a layer showing accessible walking paths to bus stops; passenger amenities at bus stops including shelters, seating, lighting and bike racks; and ultimately real-time information on the locations of buses running on the routes.
3. **Explore new program models and staffing structures for Go Vermont**
   In spite of contracting out several portions of the program, Public Transit staff is still heavily involved in the oversight and development of Go Vermont. Given the numerous other responsibilities that belong to the Public Transit section and the importance of further growth of Go Vermont, it may make sense to establish a new "home" for Go Vermont within VTrans, including dedicated staff resources. Go Vermont is not strictly a public transit function; it also touches upon many program areas within VTrans, including intercity transportation, park & ride lots, transportation demand management, information technology, and highway efficiency.
4. **Consider a standalone app for Go Vermont**
   While Go Vermont currently has a mobile-friendly website, additional features and functionality may be possible if a standalone smartphone app were created. An app would make the service more easily accessible on a smartphone, rather than having to navigate to a web page through a browser. It would make this resource more relevant and accessible to Millennials and younger people.

Document Stories of the Value of Public Transit

In the modern age, little spreads information better than a short video featuring people telling their own story. When it comes to explaining how a service works to newcomers, or generating support for funding local transit at a Town Meeting such short videos of current users of public transit explaining how it makes a difference in their lives would likely be much more effective than agency staff trying to make the case.

VTrans should consider allocating a portion of its planning funds or seek a grant from the Community Transportation Association of America, AARP or other organization, to produce a series of short videos in all the regions of Vermont. The transit providers would identify individuals willing to tell their stories by asking E&D riders and posting signs on bus routes seeking volunteers. Then a staff person and videographer would conduct the interview on a bus, van or volunteer driver vehicle. It would be important to have local interviews for each region, as many parts of Vermont are relatively insular and would see someone living on the opposite side of the state as not as relevant or compelling.

These videos could be incorporated into the Go Vermont website and then made available at Town Meetings across the state when local funding proposals are being discussed. Widespread distribution of the videos would have the double benefit of raising awareness of existing services and increasing support for local funding.

Encourage All Transit Providers to Establish an "Ambussadors" Program

For people who have never used public transit, boarding a bus for the first time can seem daunting. Many transit providers have ongoing or occasional programs to pair new riders with "bus buddies" who will ride with them to allay their fears. Since some members of the public associate the term "bus buddies" with schoolchildren, VTrans recommends an "Ambussadors" program be an ongoing initiative for all transit providers.[62]

An Ambussador would do outreach to senior centers, employers, housing complexes or any other populations where transit service may be underutilized due to a lack of understanding of how transit works, or fears about the riding experience. The Ambussador, who could be an agency staff member or a volunteer, would explain how to ride and then be available to ride one-on-one with anyone who feels the need for a companion for the first ride or two.

This program has the dual benefit of helping individuals to overcome their fears of riding and helping to spread the word about the existence of transit services. Time and again, word of mouth is shown to be one of the most effective ways of raising public awareness of a service, much more able to penetrate the blizzard of information in the public realm than standard advertising or social media.

Continue and Expand Partnerships and Activities to Raise Awareness

Partner organizations in the public and private sectors each have communication channels to their members and constituents. VTrans should continue and expand efforts to develop reciprocal relationships with these partners so that all parties become more informed about existing and future services offered. Most of these partners have been mentioned already in the context of other recommendations:

- AARP Vermont
- United Way of Northwest Vermont
- Other State agencies (DAIL, Agency of Commerce and Community Development [ACCD])
- Vermont League of Cities and Towns
- Vermont Human Resources Association
- Community Transportation Association of America
- E&D partner organizations
- Local elected officials

Create Informational Brochure: "How Transit Works in Vermont"

While most Vermonters and visitors are aware that there is some public transit in the state, few really understand how it works and how the various transit operators—mostly private, non-profit entities—relate to VTrans and vice versa. A brochure, available in print form and online, could explain the basics of public transit, including the types of services available, the roles of VTrans and the public and private transit operators, as well as partnerships with human service agencies and other non-profits. The brochure could

[62] See this article for concrete steps to developing a travel training program.

also be used as a means to publicize the existence of volunteer driver programs and explain the value and rewards of being a volunteer driver. The brochure would point to Go Vermont as the best source of additional information.

Engage with Public Media to Spur Discussion and Raise Awareness

In July 2019, the PTPP was the subject of an hour-long show on Vermont Public Radio's call-in show, *Vermont Edition*. VPR found the episode to be very successful, with a greater-than-normal call volume and many engaged listeners. A follow-up inquiry has already been sent, proposing additional shows with a more detailed look at specific topics including the following:

- "Conversations on Aging in Vermont" - VTrans and DAIL officials, perhaps with AARP and Area Agencies on Aging, would dive deeper into the challenges the state faces with our aging population.
- "Microtransit and the future of rural service" - Microtransit could be a model for other small towns and rural areas, combining new technology, volunteer drivers, and existing transit agencies.
- "Rural and village development and its relationship to transportation" - What do Vermonters want the state to look like? Rural sprawl or vibrant towns and villages? How can a change in land use patterns, supportive of and supported by public transit, have a real impact on greenhouse gas emissions in Vermont?
- "Transportation and Public Health" - The role that public transit plays in maintaining healthy communities, a healthy lifestyle, and access to healthcare.

Public transit has the potential to play a much more significant role in many aspects of the lives of Vermonters. Having this discussion in the public square makes an expanded role more feasible.

Using Technology to Move to Next Generation of Ride Scheduling

The proliferation of smartphone technology and the rise of transportation network companies offer the promise of changing the paradigm for demand response transportation. For decades, obtaining a demand response ride has required calling the transit provider at least a day in advance, making a reservation, negotiating the pick-up and drop off times and then hoping that the vehicle arrives within the allowed 20-30 minute window. On the transit provider side, the process involves taking the request, entering it into a scheduling system (either manual or automated), generating a driver manifest, sending that to the driver (either on paper, or more recently on tablet computers), and finally operating the trips, trying to accommodate any last-minute changes.

Companies such as Via, TransLOC, Uber, Moovit and others are offering an entirely new model of scheduling rides under the concept of microtransit (described above). The service is available now and in operation in dozens of cities in the US and around the world. However, the real paradigm shift would come by expanding the rider interface of the microtransit model to cover all modes of public transit and to handle all transportation funding programs. That is to say, if someone requests a ride from point A to point B, this next generation software would be able to show all of the options available and the prices and travel times associated with each. These options could include the following:

- Regular bus routes
- Flexible bus routes (route deviation services)
- Transit agency vans
- Volunteer drivers overseen by the transit agency

- Participating taxi companies
- TNC drivers

In rural areas where volunteer drivers and agency vans may be the only nearby options, the software would send out the trip request to all volunteer drivers in the area, many of whom may be sitting at home. Among all who respond to the request within a short amount of time (say, 3 minutes), the software would assign the trip to the driver who could accomplish the trip most efficiently. At the same time, the software would be looking for any other trip requests that could be grouped with that first one, so that the driver could carry two passengers instead of just one. If an agency van is already in operation in that area, the software would likely assign the rider to the van, rather than calling another vehicle (the volunteer driver) into service.

The system would also need to be able to handle multiple ways to pay for the trip. If the rider is eligible for Medicaid transportation and the trip is to a health care location for a medical visit, then the charge would go to Medicaid. If the rider is over 60 or has a disability, the trip would be charged to the E&D program. If the rider is not eligible for any of these (or other) subsidy programs, then the rider would be charged directly for the trip. If Personal Mobility Accounts are created as recommended above, the payment could come directly from the rider's account. The software would track the costs incurred for each program or individual and then process the billing accordingly.

None of the parts of this new model are infeasible with currently available technology. However, putting all of the pieces together and working with a vendor to coordinate all of the transportation resources and funding programs would be a significant effort. This type of system also assumes universal cellular and broadband access, which does not currently exist in Vermont. The potential for increased mobility and increased efficiency is very large, though, especially if there were to be a major expansion of the volunteer driver pool resulting from some of the initiatives described earlier.

The PTPP recommends that VTrans begins planning for this transition to a next generation system, so that it can be implemented in the next five to ten years. In the immediate term, VTrans should work with other state agencies to help ensure that universal cellular access is available when this system is ready to go online.

Long-Term Land Use Planning and Investments

Work with State, Regional and Local Entities to Promote Efficient Development

Having vibrant town and village centers, where many people live, work and play, is strongly supportive of public transit. The more people that are within walking distance of a bus stop, the more efficiently a bus route can operate and the more cost effective a service can become. In the rural areas of Vermont, if more people lived in clusters in village centers rather than being spread in the hills, bus routes connecting towns together would be much more viable. Within those village centers, more trips would be possible by walking, and more local shops and eateries would be economically viable because more people would be close by. For older Vermonters, living in such a place would remove the strictures on meeting life's essential needs and social interactions, because short trips could be accomplished on foot or inexpensively via transit.

While this vision would achieve progress for many of the goals and policies stated in the PTPP as well as many other State planning documents[63], there are significant barriers to realizing the vision, mostly relating to a lack of affordable housing. The first barrier is the **lack of water and sewer infrastructure.** In many Vermont towns, it is currently impossible to build more housing in a village center because there is no

[63] See Vermont's *Comprehensive Energy Plan*, especially section 8.4.2 beginning on page 143.

available capacity in the existing water and sewer systems. Many of these systems are also near or past the end of their useful life and are in need of replacement and upgrades. The first step must be planning work to identify priority investments in this critical infrastructure, followed by the allocation of funds to begin construction of upgrades and capacity expansion.

Once the infrastructure capacity exists to allow for new housing, developers must be encouraged to **build new housing** in walkable locations and at an appropriate scale, incorporating accessibility features and ensuring that at least a portion of any new development is reserved for low- or limited-income residents. This may require public-private partnerships and subsidies in some cases as well as updating of local zoning regulations to enable a variety of housing types within the downtown and village centers. Updates to Act 250 should allow for fast-tracking village center developments that meet all of these criteria. With the cooperation of municipalities, infill housing and conversion of garage spaces to accessory apartments can happen quickly without a long regulatory process. Some zoning changes may be necessary.

Housing alone does not make a village vibrant. **Development for other activities** such as shopping (food and household items), daycare, health services, banking, restaurants, and other small scale employment is essential to a vital and functioning town. In many Vermont towns, old buildings exist that can be rehabilitated to accommodate these uses. In other cases, new buildings would need to be constructed.

As discussed earlier, a **regional transit provider should always be included** in early discussions of new housing or other developments. Input is needed as to the location of the developments, so that they can be served efficiently by existing and planned bus routes, as well as the design of the facility, so that accessible bus stops are incorporated when appropriate, and driveways and entrances would not prohibit service by a bus or van, when that type of front door service would be appropriate.

Of course, this is a simplified version of a lengthy and complex process. But if these steps are taken, it would go a long way toward making transit service in rural areas more viable and reducing dependence on automobiles all across Vermont. Other than conversion of the fleet to electric vehicles, this type of transformation of the landscape, coupled with an expansion of rural transit services linking village centers to each other, would be the most effective way to reduce greenhouse gas emissions in the state.

VTrans cannot alone carry out the steps to bring about this future land use vision, but it can help advocate for these type of investments at the regional and local level and support State and federal funding to promote these land use changes. Specific action items that VTrans and others can pursue to promote these actions include maintaining focus on two objectives in the Long Range Transportation Plan (numbered 6.1 and 6.2 in the LRTP document[64]) that connect transportation to land use planning and investment. These objectives are as follows:

- Maintain and strengthen the vitality of Vermont's villages and downtowns.
  - Support transportation improvements and services assessed as critical to enhancing and connecting downtowns and villages
  - Coordinate planning, project development, and implementation with ACCD in support of State Designated areas
- Make transportation investments that promote active transportation and reduce social isolation.
  - Support downtown and village investments that improve the viability and safety of active transportation

[64] https://vtrans.vermont.gov/sites/aot/files/planning/documents/planning/2040_LRTP_%20Final.pdf (see page 64)

- Strengthen the coordinated provision of public transit services with Medicaid and other social service program transportation needs
- Conduct health impact assessments for selected transportation projects, programs, and policies and apply what is learned to future investments

The 2012 PTPP also included several recommendations on this topic that are still relevant today:

1. **More active role for MPO/RPCs in facilitating transit and associated pedestrian considerations in Act 250 reviews and local land use decisions**
   Specific activities include:
   a. Revising local zoning codes to be consistent with state planning goals and legislation to gear new development toward areas that can be served by transit; include Complete Streets legislation and VTrans bike/pedestrian policies
   b. Linking transit considerations into the permitting process before the permit is issued; coordinate with local municipalities, transit operators, and VTrans
   c. Educating Act 250 boards and Regional Coordinators on creating a transit-friendly environment
   d. Bringing transit considerations into the Act 250 review process. Participate in Act 250 hearings to advocate for transit
2. **Provide guidance and assistance to local municipalities to incorporate appropriate transit elements in all site planning, design, construction activities**
   Work with local municipalities as they review and approve local projects to ensure developers build transit elements into projects including: bus pull outs, pavement markings (including cross walks to serve transit stops), bus stop signage, shelters, etc. Create process for VTrans staff to review Regional Transportation Plans to ensure transit adequately addressed.
3. **Develop guidance and direction for VTrans to incorporate appropriate transit elements in all its planning, design, construction, and maintenance activities**
   Work with planners/engineers designing transportation facilities to build transit elements into all projects including: bus pull outs, pavement markings (including cross walks to serve transit stops), bus stop signage, shelters, etc.

Invest in Workforce Development to Maintain Transit Provider Staffing

Suppose that federal, state and local governments as well as the private sector decided that a major increase in transit funding was warranted and allocated funds to double the amount of transit provided in Vermont. At this point in time, even if they had enough buses available to run much more service, the transit providers would not be able to use all of that money because there are not enough bus drivers available, nor enough mechanics available to maintain the bus fleet.

There is a national shortage of bus operators and mechanics affecting large urban operators as well as small urban and rural providers.[65] The average age of drivers and mechanics is significantly higher than the average age of the workforce overall,[66] and as these workers retire, there are not nearly enough young people with the background—or apparently, the interest—in filling these positions. It has also been difficult to find experienced and qualified personnel to fill management and executive positions at transit agencies.

[65] https://www.citylab.com/transportation/2018/06/why-wont-anyone-drive-the-bus/563555/ among many other articles
[66] https://www.metro-magazine.com/management-operations/article/735512/touting-agency-career-ladder-key-to-recruit-bus-technicians?utm_source=email&utm_medium=enewsletter&utm_campaign=20191008-NL-MET-Express-BOBCD191002004&omdt=NL-MET-Express&omid=1004749687&oly_enc_id=6345H9988623E1K

FTA funding is available under Section 5314 to assist with workforce development. VTrans should work with colleges and universities, such as Vermont Technical College, to establish programs to train drivers and mechanics. The Vermont legislature should also consider allowing people who acquire commercial driver's license (CDL) credentials while serving in the military to easily qualify for a passenger transportation endorsement with an appropriate level of training.

Support Electrification of the Transit Fleet

The 2016 *Comprehensive Energy Plan* discusses in great detail the electrification of the vehicle fleet in Vermont. While public transit overall has a positive impact on reducing greenhouse gas emissions by increasing shared rides and reducing automobile trips (especially in more urbanized areas), that impact can be magnified by replacing diesel buses and vans with electric vehicles.

VTrans, working with the transit providers, has begun the procurement of electric transit vehicles. Experience with these initial vehicles on the hilly terrain and in winter conditions will guide future procurements, with the ultimate goal of substantially reducing greenhouse gas emissions from transit vehicles.

6. IMPLEMENTATION PLAN

This chapter presents an action plan for VTrans and its partners to implement the recommendations of the PTPP over the coming decade. The recommendations from the prior chapter are organized into implementation timeframes and the responsible parties for each action are identified. Very brief descriptions of each action item are presented here; for more detail, see chapter 5. Additional recommendations carried forward from the 2012 PTPP, which are, in most cases, ongoing concerns, are marked with an asterisk (*). These carried-forward recommendations were not specifically described in chapter 5. See the 2012 PTPP for more detail.

This action plan also encompasses those strategies and projects that were identified through development of the Human Service Transportation Coordination Plan (HSTCP) as potential solutions to service gaps and challenges for older adults, people with disabilities, and individuals with lower incomes. Strategies and projects included in the HSTCP—and priorities among them—provide a guide to use of federal Section 5310 funding during the planning timeframe covered by the PTPP and HSTCP. Transportation projects that are supported with federal Section 5310 funds must be included in the HSTCP, "as strategies, activities, and/or specific projects addressing an identified service gap or transportation coordination objective articulated and prioritized within the plan"[67]. HSTCP strategies and projects are included below and in the regional needs assessments (Appendices C through M).

Two tables are provided at the end of this chapter. The first shows all of the actions in the implementation plan below, but in the order they appear in chapter 5, with notations on responsible parties and implementation priority. The second table summarizes the human service transportation strategies and projects identified in each region and notes their location in each regional document.

Immediate Term (First Year)

Funding and Management of Transit Program

- **Continue to seek additional State and federal funding**
  VTrans Public Transit staff and many partners will work with Vermont's congressional delegation, the Vermont legislature and VTrans executive staff to maximize the funding available for public transit from FTA grants and formula programs, flexible highway funds, and State appropriations.
  ⇒ *VTrans Public Transit staff supported by Planning and other partners*
- **Implement enhanced Route Performance Report for State Fiscal Year 2020**
  A new format including two efficiency measures will provide more information than in past reports, and focusing on one performance measure—cost-effectiveness—should allow the results to be clearer and easier to understand and act upon.
  ⇒ *VTrans Public Transit staff*
- **Implement revised New Services criteria**
  For the next solicitation for new service proposals, a set of five criteria is proposed to evaluate the proposals, replacing a more general statement about how proposals will be rated.
  ⇒ *VTrans Public Transit staff*

[67] FTA C 9070_1G, Enhanced Mobility of Seniors and Individuals with Disabilities Program Guidance and Application Instructions, 6/6/14; page V-1.

- **Continue to conduct statewide vehicle and equipment procurements***
  This recommendation, carried forward from the 2012 PTPP is an ongoing effort to maximize the efficiency of procuring vehicles and equipment.
  ⇒ *VTrans Public Transit staff in partnership with transit operators*
- **Continue to update statewide vehicle guidelines in coordination with Transit Asset Management Plans***
  Federally-required Transit Asset Management Plans have implications for fleet planning and maintenance. VTrans will continue to coordinate with transit providers and update its guidance to remain in compliance with the federal regulations.
  ⇒ *VTrans Public Transit staff*
- **Expand access to available seats in transit vehicles**
  Making more use of available seats can address some of the unmet needs identified in the PTPP at little or no additional cost. VTrans will work with transit providers to allow for maximum flexibility and coordination so that resources are used as effectively as possible.
  ⇒ *VTrans Public Transit staff in cooperation with VPTA and transit providers*

Partnerships and Planning

- **Establish working committee with AHS to address transportation related aging in Vermont**
  The working committee would be led jointly by VTrans and DAIL and include representatives from other state and regional organizations with a stake in issues of aging. It would be tasked with identifying short, medium and long range actions that need to be taken to prepare for the likely increase in transit demand as the Vermont population ages.
  ⇒ *VTrans Public Transit and Planning staff in coordination with DAIL and others*
- **More comprehensive planning through the E&D Committees**
  This recommendation includes adoption of annual workplans by E&D committees and an (annual or bi-annual) statewide E&D meeting to share information and best practices, and address issues that affect all regions. See Appendix O for a workplan template.
  ⇒ *VTrans Public Transit and Planning staff in cooperation with RPCs, VPTA, transit providers and partner organizations*

Technology and Raising Public Awareness

- **Continue to support technology improvements for transit***
  VTrans has been making significant efforts to improve mobility and efficiency through deployment of technology such as real-time passenger information and automated scheduling software for paratransit. These efforts will continue and others will commence as funds become available and opportunities present themselves.
  ⇒ *VTrans Planning and Public Transit staff in partnership with transit operators*
- **Continue investment in Go Vermont**
  Several specific actions are recommended for continued enhancement of Go Vermont. The following two are recommended for immediate implementation:
  - Increase marketing and promote links from others
  - Create interactive map

  ⇒ *VTrans Public Transit staff*

* indicates ongoing program carried forward from 2012 PTPP

- **Develop basic informational brochure explaining "How Transit Works in Vermont"**
  A brochure, available in print form and online, would explain the basics of public transit, including the types of services available, the roles of VTrans and the public and private transit operators, as well as partnerships with human service agencies and other non-profits.
  VTrans Public Transit and Planning staff
- **Engage with public media to spur discussion and raise awareness**
  Public transit has the potential to play a much more significant role in many aspects of the lives of Vermonters. Having this discussion in the public square, collaborating with Vermont Public Radio through its call-in show *Vermont Edition*, makes an expanded role more feasible.
  VTrans Public Transit and Planning staff in cooperation with AHS and other agencies

Short Term (Year 2 through 4)

Policy Updates

- **Pass legislation to incorporate revised policy goals into statute**
  The PTPP recommends revised language for the policy goals in 24 V.S.A. Section 5083. The Vermont Legislature should consider these goals to align the statutes with the results of this PTPP.
  ⇒ *VTrans Public Transit staff and Vermont legislature*
- **Continue to maintain monitoring and reporting on policy 20% of each provider's operating budget be generated from "local sources"***
  Prior versions of the PTPP discuss the local share of transit funding at length. The current PTPP recommends continuing to monitor local funding and support the transit provider in establishing strong ties to their communities.
  ⇒ *VTrans Public Transit staff through the Route Performance Review process*
- **Encourage transit providers to undertake Transit Development Plans (i.e. short-range service plans completed every 5-6 years) for all transit providers***
  The requirement for periodic short-range transit plans was removed from statute in 2011. While some providers have continued to update their transit plans in the years since, some have not. VTrans supports service planning and may consider requiring providers to produce plans periodically.
  ⇒ *VTrans Planning and Public Transit staff in coordination with RPCs*

Coordination with Land Use Planning

- **More active role for MPO/RPCs in facilitating transit and associated pedestrian considerations in Act 250 reviews and local land use decisions**
  This recommendation includes revising local zoning codes to be consistent with state planning goals, linking transit considerations into the permitting process before the permit is issued, and bringing transit considerations into the Act 250 review process.
  ⇒ *MPO, RPCs, VTrans Planning staff, municipalities*
- **Provide guidance and assistance to local municipalities to incorporate appropriate transit elements in all site planning, design, construction activities**
  VTrans staff will work with local municipalities as they review and approve local projects to ensure developers build transit elements into projects. VTrans staff will create a process to review Regional Transportation Plans to ensure transit adequately addressed.
  ⇒ *VTrans Planning in cooperation with RPCs*

- **Promote town and village center development, including infrastructure investments**
  VTrans staff will work with planners/engineers designing transportation facilities to build transit elements into all projects including: bus pull outs, pavement markings (including cross walks to serve transit stops), bus stop signage, shelters, etc.
  ⇒ *VTrans Planning in cooperation with RPCs, ACCD and municipalities*

Partnerships and Planning

- **Continue investment in Go Vermont**
  In the Short-Term period, additional enhancements are recommended for Go Vermont:
  - Explore new program models and staffing structures
  - Consider a standalone app

  ⇒ *VTrans Public Transit staff*
- **Support VPTA to become a viable broker**
  VTrans will offer financial and organizational support for VPTA to enhance its ability to broker trips to allow for better cross-jurisdictional coordination and improved efficiency. This could include new software and training as appropriate.
  ⇒ *VTrans Public Transit and Planning staff in cooperation with VPTA*
- **Invest in workforce development to maintain transit provider staffing**
  VTrans should work with colleges and universities to establish programs to train drivers and mechanics. The Vermont legislature should also consider changes to the law so that people who acquire commercial driver's license (CDL) credentials while serving in the military can easily qualify for a passenger transportation endorsement with an appropriate level of training.
  ⇒ *VTrans Public Transit, planning, and research staff in cooperation with VPTA and transit providers*

Expansion of Transit Access

- **Establish Personal Mobility Accounts**
  A Personal Mobility Account (PMA) would allow individuals to make use of public transit services for whatever trip purposes they desired. It is recommended that the concept be pilot tested with people who are currently eligible under the E&D program, but later be expanded to the general public. To supplement public funds from an expanded Ticket to Ride program, private funds could come from the individual or family members/friends/community supporters.
  ⇒ *VTrans Public Transit staff in cooperation with transit providers*
- **Spur growth of volunteer driver programs**
  Several specific actions are recommended to expand volunteer driver programs:
  - Streamline the background check process to allow for one series of background checks for all volunteer opportunities in Vermont; work with SerVermont
  - Create a check box on VT vehicle registration forms to sign up as a volunteer driver
  - Establish non-monetary incentives for volunteer drivers
  - Increase marketing budget and collaborate with partner organizations
  - Share best practices

  ⇒ *VTrans Public Transit and Planning staff in cooperation with Vermont legislature, transit providers, area partners, and SerVermont*

- **Expand access to healthcare**
  In seeking to expand the relationship with the healthcare sector, VTrans will promote public transit's role in improving public health in Vermont and expand the Rides to Wellness program statewide, encouraging financial participation from healthcare providers. Transit agencies will work to increase communication and coordination with healthcare providers to allow for more efficient grouping of trips.
  ⇒ *VTrans Public Transit staff and transit providers*
- **Expand access to employment**
  At every Regional Forum held during the PTPP, the issue of access to employment was raised as an urgent need. Specific actions are recommended to enhance access to employment:
  - Increase awareness of ridesharing options through Go Vermont
  - Encourage employers in helping to fund job access transportation
  - Create the "late bus" for shift workers
  - Expand partnership with Good News Garage
  - Create partnerships with TNCs where available

  ⇒ *VTrans Public Transit and Planning staff*
- **Expand local connections (i.e. first mile/last mile)**
  Study and promote pilot projects for improved local connections, including bike share, scooters, flexible bus service and microtransit.
  ⇒ *VTrans Planning staff in cooperation with RPCs and municipalities*

Raising Public Awareness to Increase the Use of Public Transit

- **Encourage all transit providers to establish an "Ambussadors" program**
  An Ambussador would do outreach to senior centers, employers, housing complexes, etc. to explain how to ride transit and then be available to ride one-on-one with anyone who feels the need for a companion for the first ride or two
  ⇒ *VTrans Public Transit staff, transit providers, RPCs, area partners such as local Energy Committees*
- **Document stories of value of public transit**
  VTrans should consider allocating a portion of its planning funds, or seek a grant from the Community Transportation Association of America, AARP or other organization, to produce a series of short videos in all the regions of Vermont. These videos would feature people telling their own story explaining how public transit makes a difference in their lives.
  ⇒ *VTrans Public Transit and Planning staff in cooperation with transit providers*
- **Continue and expand partnerships and activities to raise awareness**
  VTrans should continue and expand efforts to develop reciprocal relationships with partner organizations in the public and private sectors who each have communication channels to their members and constituents.
  ⇒ *VTrans Public Transit and Planning staff*

Long Term (Year 5 through 10)

- **Develop statewide policy and program guidance for managing major capital investments***
  The 2012 PTPP had several recommendations to develop policies and program guidance documents regarding major capital investments. These include the following:

- Continue to develop guidelines for investing in maintenance/storage facilities and promote shared regional vehicle maintenance facilities where appropiate*
- Continue to develop guidelines for investing in passenger facilities and amenities*

  ⇒ *Transit operators, VTrans Planning and Public Transit staff with RPCs, and municipalities*

- **Support fleet electrification**
  VTrans, working with the transit providers, should continue the procurement of electric transit vehicles, learning from experience with these initial vehicles on hilly terrain and in winter conditions

  ⇒ *Transit operators, VTrans Planning and Public Transit staff*

- **Develop next generation of ride scheduling**
  VTrans begins planning for this transition to a next generation system that would use the rider interface of microtransit to cover all modes of public transit and to handle all transportation funding programs. VTrans should begin planning for this transition and should work with other state agencies to help ensure that universal cellular access is available when this system is ready to go online.

  ⇒ *VTrans Public Transit and Planning staff in cooperation with transit providers and other state agencies*

Summary Tables: Implementation Plan and HSTCP Projects

Table 9 below presents a tabular summary of the implementation plan. The recommendations are organized in the order they appear in chapter 5, rather than being organized by phase as they were immediately above.

One of the federal requirements for a locally developed public transit—human services transportation plan is the identification of potential strategies, activities, or projects to address unmet needs and service gaps for the target populations, and local priorities among them.[68] The purpose of this information is to provide a guide to the use of Section 5310 funding. All projects that are supported with Section 5310 funds must be included in a coordinated plan.

As part of the public and stakeholder outreach conducted for the PTPP and the HSTCP, regional forum participants were asked about both service gaps and challenges in their region and potential solutions. Table 10 shows the solutions—strategies and projects—identified in each region as being desirable ways to address the transportation challenges faced by older adults, people with disabilities, and individuals with lower incomes in their communities. If a particular solution does not have dots showing in one or more regions, that does not mean that the solution is inappropriate or not recommended for that region; it just means that it did not come up as a solution during the Regional Forum discussion or among other comments received. Statewide strategies that are eligible for Section 5310 funding and could help to address service gaps and challenges, which are among the strategies noted above, are also shown in.

Higher priority solutions are indicated with a green dot, medium priority solutions are show in yellow, and lower priority solutions are show in red. Priorities among statewide strategies are tied to implementation timeframes; immediate term strategies are shown as higher priorities in Table 10, with long term strategies shown as lower priorities and short term strategies in the middle. The final row in Table 10 shows the page number in each regional needs assessment that contains documentation of the local identification of strategies and projects.

[68] FTA Circular 9070 1G, Enhanced Mobility of Seniors and Individuals with Disabilities Program Guidance and Application Instructions, Chapter V, Section 2 (b) (3) and (4)

Table 9: Summary of Implementation Plan

		Responsibility (P=primary, S=supporting)							Implementation Phase		
Theme	**Recommendation**	**VTrans Public Transit**	**VTrans Planning**	**Transit Providers/VPTA**	**VT Legislature**	**MPO/RPCs**	**Other State Agencies**	**Municipalities**	**Immediate (first year)**	**Short (years 2 through 4)**	**Long (years 5 through 10)**
Policy/Program Management	Update statutory policy language	S	S		P					X	
	Enhance performance measurement	P							X		
	Revise New Services criteria	P							X		
Addressing Aging Vermont	Establish working committee with AHS	P	S				S		X		
	More comprehensive planning for E&D	P	S	S		S	S		X		
	Establish Personal Mobility Accounts	P		S						X	
Expansion of Transit Access	Spur growth of volunteer driver programs	P	S	S	S		S			X	
	Expand access to healthcare	P		S			S			X	
	Expand access to employment	P	S							X	
	Expand local connections	S	P			S		S		X	
	Expand access to available seats	P		P					X		
	Support VPTA to become viable broker	P	S	P						X	
	Expand funding pool overall	P	P	S	P	S		S	X	X	X

		Responsibility (P=primary, S=supporting)							Implementation Phase		
Theme	**Recommendation**	**VTrans Public Transit**	**VTrans Planning**	**Transit Providers/VPTA**	**VT Legislature**	**MPO/RPCs**	**Other State Agencies**	**Municipalities**	**Immediate (first year)**	**Short (years 2 through 4)**	**Long (years 5 through 10)**
Outreach and Raising Awareness	Continue investment in Go Vermont	P							X	X	X
	Document stories of the value of public transit	P	S	S						X	
	Establish "Ambussadors" programs	P		P		S				X	
	Expand partnerships to raise awareness	P	P							X	
	Create brochure "How Transit Works in VT"	P	S						X		
	Engage with public media	P	P				S		X		
Next Generation Ride Scheduling	Begin planning for new scheduling system	P	S	S			S				X
Land Use Planning	Active role for MPO/RPCs in facilitating transit in Act 250 reviews and local land use		P	S		P		P		X	
	Guidance for municipalities for transit elements in all site planning and design		P			P		S		X	
	Promote town and village center development		P			P	P	P		X	
Long-term investments	Invest in workforce development	P	P	S						X	
	Support fleet electrification	S	S	P							X
	Develop policy for major capital investments	P	P								X
	Develop guidelines for maintenance/storage facilities and passenger facilities	P	S	P		S		S			X

		Responsibility (P=primary, S=supporting)							Implementation Phase		
Theme	**Recommendation**	**VTrans Public Transit**	**VTrans Planning**	**Transit Providers/VPTA**	**VT Legislature**	**MPO/RPCs**	**Other State Agencies**	**Municipalities**	**Immediate (first year)**	**Short (years 2 through 4)**	**Long (years 5 through 10)**
Ongoing actions carried forward from 2012 PTPP	Conduct statewide vehicle and equipment procurements	P		P					X	X	X
	Update state vehicle guidelines in coordination with Transit Asset Management Plans	P							X	X	X
	Support technology improvements for transit	P	S	P					X	X	X
	Monitor and report on local share of budgets	P							X	X	X
	Reinstitute requirement for Transit Development Plans for all providers	P	S	P		S				X	X

Table 10: HSTCP Strategies, Activities, and Projects—Priorities by Region

Strategy/Activity/Project	State-wide*	Addison County	Southwest Region	Chittenden County	Central Vermont	Lamoille County	Northeast Kingdom	Northwest Region	Rutland County	Southern Windsor County	Upper Valley	Southeast Region
Expanded/Enhanced Planning												
Working committee with Agency of Human Services	●											
More comprehensive E&D planning	●											
Information and Awareness												
Go!Vermont promotion and enhancement	●	●		●	●	●	●	●	●	●	●	●
Trip reservations/planning assistance						●	●				●	●
Continue and expand partnerships and activities to increase awareness	●	●		●			●	●	●	●		●
Encourage transit "Ambussadors" programs/travel training	●									●		
Create "How Transit Works in Vermont" brochure	●								●	●		
Service Enhancements												
Extended service hours		●	●	●	●	●	●	●	●	●	●	●
First/last-mile options	●		●	●		●						
Expanded service areas		●		●	●	●	●	●		●	●	●
More eligible trip types			●	●	●	●	●	●	●	●	●	●
Out-of-county or out-of-region services		●	●		●	●	●	●				●
Expanded access to health care	●	●										
Expanded access to employment	●	●	●	●		●	●	●			●	
Vehicle replacements and fleet expansions	●											
Complements to Existing Network												
Use of available seats	●			●	●	●	●	●				

Strategy/Activity/Project	State-wide*	Addison County	Southwest Region	Chittenden County	Central Vermont	Lamoille County	Northeast Kingdom	Northwest Region	Rutland County	Southern Windsor County	Upper Valley	Southeast Region
Volunteer driver program enhancements	●			●	●	●	●		●	●	●	●
Flexible voucher programs/Expanded Ticket to Ride		●					●			●	●	
Personal Mobility Accounts	●	●						●				
Partnerships with TNCs	●								●			
Accessibility Improvements												
Sidewalks or curb cuts	●	●		●	●	●			●	●	●	●
Accessible signals or signage						●	●			●		●
Bus shelters	●	●	●	●	●		●	●		●	●	●
Technology												
Next generation scheduling/dispatching software	●											
Online trip reservations	●									●		
Mobile information, reservations, real-time vehicle location (apps)	●	●		●	●	●	●	●	●	●	●	●
Automatic Vehicle Location (AVL) systems	●			●	●		●	●			●	
Scheduling/dispatching software						●				●		
Tablets on vehicles												
Page Numbers in Regional Needs Assessment Appendix		C-15-18	D-15-18	E-16-22	F-16-20	G-14-20	H-14-20	I-15-19	J-13-18	K-15-20	L-14-18	M-12-17

*Priorities among statewide strategies are determined by implementation timeframes. Immediate and short-term strategies are assumed to be higher priorities than long-term strategies.