VERMONT AGENCY OF TRANSPORTATION

Materials & Research Section
Research Report

EFFICIENCY IN TRANSPORTATION

COMMUNITY AND STATE TRANSPORTATION EFFICIENCY
PLANNING IN VERMONT

Report 2012 – 03

May 2012

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UVM TRANSPORTATION RESEARCH CENTER

for

STATE OF VERMONT
AGENCY OF TRANSPORTATION

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16. Abstract

This report summarizes state plans and local community planning efforts related very broadly to energy efficiency and transportation. This report also includes interview summaries with some Vermont planners and citizens engaged in transportation and efficiency related efforts. The purpose of this report broadly was to summarize this background for more focused additional research.

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Introduction

In this report we summarize state and community level transportation initiatives. The first part of the report reviews state and local plans that relate to sustainable transportation and transportation efficiency at the state and community level. Each plan is described and summarized.

The second part of the report presents interviews with community and RPC leaders regarding local transportation efficiency activities.

The third part of the report presents case studies of two community transportation efficiency related measures, Hinesburg Rides and the Front Porch Forum.

Policies

Sustainable Transportation-related Policies

24 V.S.A. Section 5092

Requires that public transit services be evaluated annually using fiscal and performance
Standards. "Routes that do not meet the standards will be reviewed to determine if the service is needed, and if alternate methods for providing the service might be more efficient and effective" p. 2, Vermont Public Transportation Overview, 2003.

24 V.S.A. Chapter 126, Section 5083

This policy directs the state to make maximum use of federal funds for public transit, in order to provide mobility for transit-dependent people, access to employment, "congestion mitigation to preserve air quality and the sustainability of the highway network," and advancement of economic development objectives.

24 V.S.A. Chapter 126, Section 5090

This policy "requires human service agencies to purchase transportation services from publit transit systems if those services are appropriate fort he clients who use them and are as cost-effective as other alternatives." – Public Transportation Policy Report, 2007, p. 40.

Act 48, 2007

prohibits the idling of school bus engines on school property and encourages schools to enact policies to reduce idling by other vehicles on school grounds as well (from VCCC)

H.527, 2007

The Vermont legislature directed the Agency of Transportation (VTrans) to "examine the feasibility of making public transportation in Vermont seamless, efficient, and user-friendly, with usable connections among in-state and out-of-state points. In this process, the agency shall develop a single overall method of marketing Amtrak, in coordination with all other public transit services."

Climate-Related Policies

The text of these policies can be found in the Appendix of the Climate Neutral Working Group's Second Biennial Report, available at
http://www.anr.state.vt.us/air/Planning/docs/CNWG%202nd%20%20Biennial%20Report%204-2007.pdf

Executive Order #14-03, Climate Change Action Plan for State Government Buildings and Operations

This executive order calls for a reduction in GHG emissions from state government. It directs DEC, BGS, and DPS, with representatives from other agencies, to for a Climate Neutral Working Group (CNWG) to "coordinate, document and encourage" efforts to reduce GHG emissions and produce biennial reports. This EO also directs agencies to purchase efficient devices and vehicles, develop programs for alternatives to SOVs for employees, and investigate renewable energy, among other initiatives.

Executive Order #07-05, Governor's Commission on Climate Change

This EO establishes the Governor's Commission on Climate Change (GCCC) with 6 members appointed by the Governor and administrative support from DEC. It calls upon the GCCC to examine the effects of climate change in Vermont, to produce and inventory of existing actions and to develop recommendations for reducing GHG emissions in Vermont.

Act No. 123, 2005-2006, An Act Relating To Vermont's Participation In The Regional Greenhouse Gas Initiative.

This act supports the Regional Greenhouse Gas Initiative by creating a regional cap and trade program, allocating tradable credits, and appointing a consumer trustee to act as a treasurer/banker of credits.

Act No. 168, 2005-2006, An Act Relating To Establishing Greenhouse Gas Reduction Goals And A Plan For Meeting Those Goals

This Act establishes goals of "reducing emissions of greenhouse gases from the 1990 baseline by:
(1) 25 percent by January 1, 2012;
(2) 50 percent by January 1, 2028;
(3) if practicable using reasonable efforts, 75 percent by January 1, 2050."
It also calls on the Secretary to coordinate with the GCCC to develop a climate change action plan for the state of Vermont and requires all state agencies to consider the effect on GHG emissions with respect to any actions they take.

Land Use and Smart Growth Policies

3 V.S.A. §4020-4021 "all state agency decisions affecting land use should be consistent with the framework of land use goals that encourage a more dense settlement pattern that is conducive to alternatives to the automobile. The Municipal and Regional Planning Development Act specifically supports mixed-use development through engagement of state, municipal, and regional planners in a comprehensive planning process and creation of a regulatory and policy framework to provide guidance to public decisions" – from Comprehensive Energy Plan

Act 112 (Sec 2, 3 V.S.A. §2293) – requires state agencies to encourage smart growth.

S.142; "Act 183" - Designated Growth Centers bill, enacted in 2006, "endorses and supports high-density, concentrated, mixed-use developments for growth centers, specifically supporting them with financial and regulatory incentives"

The Vermont Department of Housing and Community Affairs "manages several grant programs to help support local and regional planning efforts. One example is the Municipal Planning Grant Program. This is a state-funded program designed to support Vermont towns in their municipal planning efforts. The program funds technical assistance for town planning, regulatory, and non-regulatory implementation of plans, encouragement of citizen participation and education, and innovative demonstration planning projects.† Planning grants can sway local municipalities who have the greatest influence in land use projects such as rewriting town plans, updating

zoning bylaws, and continually updating GIS databases. Activities associated with downtown village center or growth centers planning are considered a priority funding activity." – From Comprehensive energy Plan, p 152.

Vermont Downtown Program – "In 1995 Governor Howard Dean announced a new initiative – the Vermont Downtown Program. Administered through Agency of Commerce and Community Development (ACCD), the program works to coordinate state programs and activities, using state projects to bring new private investment to downtown areas" – VTrans 2002 long range plan

Act 250 (1970) has several smart growth criteria: Criteria 9(A) impact of Growth; 9(H) Costs of Scattered Development; 9(K) Development Affecting Public Investments; 9(L) Rural Growth Areas; and Criterion 10 Conformance with Duly Adopted Local or Regional Plan – VT 2002 Long range plan.

Act 115 modifies the Act 250 process.

Land Gains Tax (1973, 1987) – potentially discourages land speculation by taxing profits – VT 2002 Long range plan

Housing Conservation Trust Fund (1987) – "direct investment of state funds in land preservation (farms, natural areas) and affordable housing" - VT 2002 Long range plan

Act 200 (1988) – "created local, regional, and state land use planning goals, including maintaining the historic settlement pattern of compact village and urban centers separated by rural countryside" - VT 2002 Long range plan

Growth Centers Pilot Project (1993-1995) – "affected several state policies, including targeting HUD funds to downtowns" - VT 2002 Long range plan

Interstate Interchange Policy (1999) – encourages appropriate development activities at interstate interchanges - VT 2002 Long range plan

Interstate Interchange Executive Order (2001) – "mandates interagency cooperation to implement the interstate interchange policy" - VT 2002 Long range plan

24 V.S.A., Chapter 76A – Vermont's Downtown Community Development Act (1998- revised in 2002) – creates a process to support revitalizing downtowns through the Downtown Development Board.

Smart Growth Vermont's Summary of Policy and Legislation

For additional policies and legislation, see Smart Growth Vermont's webpage summary, available at http://www.smartgrowthvermont.org/help/policies/

General Transportation Planning & Capital Improvement Documents

Voices of Vermonters: Vermont's Transportation Future, Draft May 10, 2007
Available at
http://www.rsginc.com/vtplan/vermontplan/docs/VT%20Focus%20Group%20and%20Big%20Thinkers%20Report.pdf

This study was conducted in order to inform the development of four scenarios in VTrans Long Range Transportation plan, discussed below. The report summarizes findings from interviews and focus groups with Vermonters about their expected and desired visions of Vermont's transportation future, with a time frame of 25 years.

Findings:
- Public transportation was most frequently cited as a desired mode, followed by rail, road infrastructure, non-motorized transport and air service.
- The primary "driver" of Vermont's future was environmental issues, followed by technology, tourism, fuel prices and supply, and aging population
- Common narratives include:
  - "Fix it first" – in this frame Vermonters envisioned a car-dependent future, and felt that Vermont should invest in maintaining its current infrastructure before building anything new, especially not new roads.
  - "Energy collapse" – with this frame, Vermonters believe they will have to reduce car-dependency due to climate change and limited fuel supply. They see this as an opportunity to change the direction of transportation investment.
- Opportunities identified include the time for change, "Vermont characteristics," education and communication, and giving people options (alternative transportation).
- Obstacles identified include the decision-making process, federal and state funding and laws, and the fact that Vermont is a small, rural state.

Vermont Long Range Transportation Business Plan (LRTBP)

This most recent official version of this plan is from 2002, available at http://www.aot.state.vt.us/planning/Documents/Planning/LRTPfinal.pdf. The state is currently updating the plan and has produced a series of Working Papers to this end. These are available from http://www.rsginc.com/vtplan/vermontplan/reports.htm. Both the 2002 long-range plan and the Working Papers are summarized below.

Vermont Long Range Transportation Business Plan, January 2002

This plan articulates VTrans' vision and goals, reviews activities since the 1995 plan, gives an overview of the public involvement process, discusses Vermont's various modes and makes recommendations.

Public Involvement:
Some of the results of VTrans' survey are worth noting:
- 98% of Vermonters ride in a personal vehicle on a given day
- Daily average drive is 36 mi, up from 32 in 1995
- ¾ of the VMT is in an SOV
- 81% of commuters drive to work alone
- The average one-way distance to work is 15 mi, unchanged from 1995.
- 86% of long-distance trips (>75 mi) are by car, 7% by plane, 4% by bus and <2% other.
- Almost 64% of Vermonter's could not conceive of circumstances that would cause them to drive less, up from 57% in 1995.
- 2/3 Vermonters were satisfied with VTrans allocation of funds, 21% said they would allocate them differently (of that group, 38% said more should go to non-highway programs, while 40% said the share going to non-highway programs should be reduced).
- Top issues: safety (ranked among the top three issues by 72%), environmental protection (53%), preserving landscape and village character (47%) and cost to taxpayers (43%).
- 22% felt VTrans should have a role limiting sprawl and 22% felt that it shouldn't.

Transportation Modes:
- Roads – see report

- Bikes & peds (see VTrans Bicycle and Pedestrian Plan)
  - The State's Bicycle and Pedestrian Program utilizes its annual budget of nearly $6 million to provide system improvements and education and outreach.
  - Current challenges include: the fact that remaining connections are increasingly complicated; funding; integrating bike and ped infrastructure with traditional projects; local maintenance; lack of data
  - Opportunities include: incorporating cross-walks with traffic calming measures; and bike racks on buses expand intermodal connectivity.
- Railroads
  - After the decline of the railroads, the state bought most of the network to preserve it for future use.
  - Passenger - The state has two passenger trains: the Vermonter had approximately 85,000 passengers in 2000; and the Ethan Allen Express had approximately 39,500. At the time of this report, the state was hoping to expand passenger service through the Champlain Flyer, the Albany-Bennington-Rutland-Burlington project, a possible Essex Junction –Burlington service, and Boston to Montreal high speed rail.
  - Freight – almost 7% of Vermont's freight is transported by rail, half of the track is shared with passengers.
  - Oversight: VT owns 340 of the 700 miles of rail; VTrans reactivated the Vermont Transportation Authority to oversee the Flyer; VTrans established a Railroad Enhancement program to leverage private funding for track; the Vermont Rail Council provides insight and advice
  - Challenges include: funding for track improvements; rail crossing safety; Vermont needs to upgrade intermodal facilities and provide clearance for double stacked cars
- Public Transportation
  - Intercity bus – Vermont Transit (now Greyhound) provide intercity transit, but routes have declined
  - Local Public Transportation Providers – VTrans provides funding and support to the 14 providers
    - Advanced Transit – serves Lebanon, White River Junction and Hanover, with 6 fixed-route services
    - Addison County and Transit Resources (ACTR) – provides fixed route and paratransit
    - Chittenden County Transportation Authority (CCTA) – provides fixed route and paratransit
    - Deerfield Valley Transportation Authority (DVTA) – provides transit in rural areas (demand-response?)
    - Green Mountain Chapter – American Red Cross (GMCARC) – provides fixed route, demand response and ride match services to persons with transportation disadvantages in Bennington county.
    - Marble Valley Regional Transit District (MVRTD) - provides fixed route and demand response in Rutland County
    - Northwest Vermont Public Transit Network (NVPTN) – provides fixed route and demand response in Franklin and Grand Isle Counties
    - Rural Community Transportation Inc (RCT) – serves the NE Kingdom and Lamoille County through a transportation brokerage system
    - Special Services Transportation Agency (SSTA) – provided fixed route and paratransit in Colchester and Chittenden county.
    - Stagecoach Transportation Services, Inc. – provides local transportation services and monthly regional services in Orange and North Windsor Counties
    - Stowe Trolley System – operates a municipal transit system
    - Town & Village Bus – serves Springfield, Bellows Falls, Chester, Ludlow, Windsor, Brattleboro, and Stratton Mountain with fixed route, and seasonal employment shuttles, as well as social service transportation

- Town of Brattleboro – contracts with Town and Village bus to provide a single fixed-route service as well as Medicaid and Rideshare programs.
        - Wheels Transportation Services, Inc.- serves Washington and Orange Counties with fixed routed, demand response and other services.
    - o Programs:
        - The U.S. Congress established the Access to Jobs and Reverse Commute Grant program in 1998 as Section 3037 of the Transportation Equity Act for the 21st Century (TEA-21). Vermont uses funding from this program to provide links between low-income people and employment opportunities
        - Title 49 U.S.C. Section 5310 authorizes U.S. DOT, through VTrans, to make grants to private nonprofit corporations and associations to provide transportation services to meet the special needs of elderly persons and persons with disabilities.
        - Americans with Disabilities Act requires communities with fixed-route transit service operated by public bodies to provide complementary paratransit service within a band of three-fourths of a mile on either side of all non-commuter fixed routes.
    - o Challenges: VT needs to provide longer-term funding, so that agencies can expand services.
- Aviation – see report
- Ferry:
    - o Ticonderoga Ferry provides service between Fort Ticonderoga, New York and Larrabee's Point in Shoreham Vermont
    - o Lake Champlain Transportation Company provides three ferry crossings of Lake Champlain – one between Grand Isle and Plattsburg; one between Burlington and Port Kent, and one between Charlotte and Essex, NY.

General Transportation Issues
- Tourism – accommodating all the visitors to Vermont and providing facilities for bike tours
- Economic Development – Just-in-time production requires more frequent freight movements, and decentralization of manufacturing requires more trips total; infrastructure is key to economic development
- The Natural and Built Environment – issues include: quality (VT's per capita air emissions is about average – p. 76 suggests steps to improve air quality); advanced and alternative fuel vehicles; Act 250; wildlife crossings and fish passages; storm water management (approximately 33% of VT's rivers and streams and 10% of VT's lakes and ponds are degraded, and VTrans has to comply with federal and state laws and permitting); and small towns, villages and downtowns (traffic calming and other efforts to preserve downtown quality of life as congestion and VMT increases).
- Smart Growth – VTrans recognizes that most land use decisions are made at the local level, but tries to apply smart growth practices when applicable.
- Freight-Movement Issues – there are no East-West corridors, weight and clearance limits are limiting; there are limited transload facilities.
- Transportation Planning Initiative (TPI) – outside the Chittenden County Metropolitan Planning Organization (CCMPO) each of the Regional Planning Commissions (RPCs) develops plans and policies as part of a TPI. VTrans needs to help define the future of TPIs.
- Coordination with other state agencies and regional coordination
- Telecommuting – telecommuting did not become the big trend that was expected, but it is growing every year. It is hard to judge the effect that it is having on the transportation system.

Financing Trends – see Working Paper 3 summary, below
Demographic Analysis – See Working Paper 4 summary, below
Implementation Strategies:
- "Manage the state's existing transportation system facilities to provide capacity, safety, and flexibility in the most effective and efficient manner."
- "Improve all modes of Vermont's transportation system to provide Vermonters with choices." (selected recommendations)

- o Keep flexible funds flexible and secure as much funding as possible
- o Identify key intermodal connections, appoint an "intermodal coordinator," consider financial incentives for intermodal connectivity, and use ITS to improve connectivity
- o Bikes and peds – continue to support a coordinator, develop a design manual, consider bikes and peds with transportation improvement projects, the DMV should incorporate bike and ped education into driver licensing, outreach and education
- o Public transportation – maintain funding increases and provide assistance for short-range plans
- o Railroad – preserve and protect rail corridors, and increase rail transportation
- o Traffic calming – continue to implement measures where appropriate
- o Park & rides – explore shared use lots (ie church lots) to expand facilities
- "Strengthen the economy, protect and enhance the quality of the natural environment, and improve Vermonters' quality of life."
   - o AFVs – adopt a policy regarding the use of AFVs as fleet vehicles
   - o Smart Growth – strive to adhere to the state's policies
- "VTrans Performance"

Working Paper 1: State, Regional, and National Transportation Policy Review, Dec 2006

This document reviews VTrans efforts since 2002, including planning efforts (modal planning and capital investment plans, regional planning, and other statewide studies), organizational changes, and safety initiatives. It also reviews national issues in transportation. The two most important national issues are:

- The inadequacy of transportation revenues to fund the highway trust fund (HTF), discussed in great detail starting on page 24. It has a nice table of other funding options p. 27.
- and the increasing importance of freight – international trade is overwhelming ports and it is difficult for roads and rails that serve the ports to keep up.

Other national issues include:
- Changing demographics – aging population, growth of tourism-based economies, and growth in service and information jobs
- Growing awareness of energy and environmental impacts
   - o Higher energy costs are leading to lower gasoline tax receipts and higher construction costs, higher costs of operating public transportation and airplanes
- Growing congestion
- And intercity passenger travel – bankrupt airlines, ups and downs of Amtrak, 9/11's effect on intercity bus service…

(selected) Key findings:
- Need more stable funding
- Need to preserve Vermont's current infrastructure
- Energy cost needs to be a greater consideration in the next Long Range plan
- Congestion may become increasingly important

Working Paper 2: State Agency Issue Review, 2006

The Snelling Center surveyed Vermont agencies and departments for issues that VTrans should take into account for its LRTBP. Six issues – water quality, ghg emissions, smart growth, public transportation, communications corridors and wildlife corridors – emerged from the six agencies that responded (Agency of Natural Resources, Agency of Human Services, Agency of Commerce and Community Development, Agency of Administration and the Department of Public Service and Department of Public Safety).

- Water quality – storm water management and buffers are issues that overlap with VTrans' work. ANR has a desire for "better back roads."
- GHG emissions and Climate Change – vehicles are VT's largest source of greenhouse gas emissions. The issues and reports discussed are summarized under climate change in this document

Perhaps the most valuable part of this document is its appendix with an extensive list of relevant agency documents

Working Paper 3: Financial Analysis, 2007

This document gives an overview of transportation funding in Vermont – where funding comes from, expected revenues and shortfalls, and potential alternative funding mechanisms.

Overview of Transportation funding
- FY 2005, transportation was 7.08% of VT's $3.83 billion budget. For FY 2006, transportation funding was about $354 million (of which $164 million was federal and $173 million was from the State), 8.35% of the budget.
- Federal funding might fall short in FY 09 due to HTF shortfalls.
- VT's transportation is mainly funded through state and federal taxes and fees.
- Federal funds - these usually amount to 40-45% of VT's funding
    - o SAFETEA-LU - With the passage of the federal transportation reauthorization legislation - Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (SAFETEA-LU) in 2005, Vermont expects to receive about $900 million in transportation funding through the life of the bill which runs through 2009.
    - o Earmarks - SAFETEA-LU earmarks for high priority projects in Vermont total $137.8 million to be spent on 30 projects over five years, and Transportation Improvement earmarks for Vermont constitutes $120 million over 5 years – these are not necessarily dependable though. High Priority Programs and Transportation Improvement Programs are earmarks that can provide funding for rail and other specific projects.
    - o Highway Trust Fund – the Federal Highway Administration (FHWA) administers the Federal Highway Trust Fund (HTF). Vermont paid $74 million into the fund in 2005, and was apportioned $133 million. Most of the HTF goes to interstate and bridge maintenance, highways, etc., but some goes to trails and safe routes to school.
    - o Federal Transit Administration (FTA) provides funding for VT's transit system
    - o Congestion Mitigation and Air Quality Improvement (CMAQ) funding may be used for freight and passenger rail projects that meet CMAQ goals.
- State funds come from the state gas tax and taxes and fees on motor vehicles.
    - o The dedicated State Transportation (STP) Fund to provides for transportation appropriations
- Total Transportation expenditures 2005:
    - o 39% infrastructure preservation and maintenance
    - o 17% roadway construction
    - o 14% bridges
    - o 10% alternative modes
- In 2005, a total of $217.9 million of state transportation funds was spent on infrastructure: most on roads; 3% on rail; and 3% on bikes, peds and park & rides combined.

Needs vs. Revenues
- VT is short on funds to match the federal government (short $24 million for '07, '08 and '09 combined)
- The State Transportation Fund may fall short due to reduced driving, vehicle purchase fees and taxes are down due to people buying smaller cars and fuel taxes are not indexed to inflation.
- Base needs (salaries, materials, etc…) are growing faster than the transportation fund leaving less money for projects.

- The report estimates revenues, concluding that Vermont may have a $4.2 billion and $8.7 billion shortfall in funding between 2006-2021.
  - In addition, earmarks may become less prevalent in the future.
  - SAFETEA-LU is trying to allocate funds more fairly based on where funds are generated (called "devolution"), since VT was benefiting from the previous system, this could reduce its funding.

Financing Options
- Traditional tools, such as the motor fuels tax, vehicle registration, licenses and other fees may not be sufficient to keep up with increased costs.
- States are looking into a variety of innovative tools, including sales taxes, indexing taxes to inflation, tolls, taxes based on VMT, property taxes, impact fees, bonds, sales taxes on gasoline, tacking a surcharge to traffic offenses, transportation utility fee, state lottery, congestion pricing, high occupancy toll lanes (allow solo drivers to buy into the HOV lanes with the highest charges during peak periods), privatization and public-private partnerships, etc, etc.

Conclusions & Recommendations
- Most experts believe that a new tax system is likely to be mileage-based, perhaps weighted by the kind of car, but it will probably take 3-5 years for a new system.
- Short-term recommendations (3-8 years)
  - Increase or index the motor fuel tax
  - Increase the taxes on vehicles and fees
  - Impact fees, local option sales tax, or sales tax increase
- Long-term options (9-20 year)
  - Mileage-based tax options
  - Develop rural state funding strategies

Working Paper 4: Statewide and Regional Demographic and Employment Analysis, 2007

This paper gives an overview of Vermont demographics including population characteristics, population change, employment, income and economic trends, and commuting patterns.

- Population characteristics:
  - Between 1990 and 2000, Vermont's population increased 8.2%
  - The population is expected to grow at a rate of .6% for the next 25 years
  - Vermont is growing faster in Northwest and Central Vermont than in the rural counties such as the Northeast Kingdom
  - Vermont has experienced a decline in persons per household since 1980 (2.75 in 1980 > 2.44 in 2000 > projected 2.33 in 2030)
  - Population density is also increasing (8% between 1990 - 2000) - *the map of urban areas, page 6, might end up being close to the density map produced for the optimal transportation system grant.*
  - Vermont's population is aging - the proportion of people over 65 is projected to increase from 13% in 2000 to 24% in 2030
  - Between 1960 and 2000 Vermont's population dispersed away from growth centers.
- Employment, Income and Economic Trends
  - The proportion of Vermont's pop that is employed is increasing (1980=52%; 2000=66%; 2030=78%)
  - The largest sector is the service sector (136,000 in 2000), which is growing. By 2030, it is expected to reach 43% of the work force
  - The second largest sector is retail (65,000 in 2000), which is also growing;

- o manufacturing will continue to decline; and farm employment will decline slightly by 2030.
- o Vermont's average income ($27,680 in 2000) lags in New England ($36,118) and the U.S. as a whole ($29,845), but it is gradually catching up
- o Vermont's population with special needs is growing.
- Commuting Patterns, households without vehicles
  - o In 2000, the majority (65%) of Vermonters commuted to a different town to work; 21.5 commuted to a different county; 6.8% worked outside the state; and 5.7% worked from home. More and more Vermonters are commuting.
  - o Vermonters are increasingly commuting by car, though more are carpooling. Public transportation use remained roughly the same between 1990 and 2000. Travel time increased from 16.5 minutes in 1990 to 21.6 minutes in 2000.
  - o The average number of vehicles per household (1.7) has remained roughly the same.
  - o Vermont's percentage of households without vehicles (6.8%) has declined from 8% in 1990. The majority of households without vehicles earned $15,000 or less in 2000, and the head of the household tends to be older.
- Community Planning
  - o This section, p. 35, summarizes trends and patterns on a county by county level - useful for local planning efforts.

Report Summary and Key findings, p. 37

- This summarizes the findings discussed above, providing a nice, concise overview of Vermont demographics.

Appendix II has commuter data by county.

Working Paper 5: Vision, Goals and Plan Objectives, 2007

This working paper documents VTrans' process to update its mission, goals and objectives. In order to assess the validity of its 2006 goals, VTrans looks at a 2006 public opinion survey, SAFETEA-LU planning factors, and the various modal policy plan goals. This document proposes 2008 planning objectives based on this input, as well as input from an internal working group, executive staff and advisory committee meetings.

The recommended 2008 objectives are:

1. Provide a safe and secure transportation system.
2. Preserve the condition of and manage the state's existing transportation system to provide capacity, safety, flexibility, and reliability to move people and freight in the most effective and efficient manner.
3. Improve and connect all modes of Vermont's transportation system to provide choices for moving people and freight.
4. Strengthen the economy, protect and enhance the quality of the natural environment, facilitate energy conservation, and improve Vermonters' quality of life.
5. Support and reinforce Vermont's historic settlement pattern of compact village and urban centers separated by rural countryside.

Some of the information from the Public Opinion Survey is worth noting.:

- Vermonters feel that bridge repair and summer highway road repair/ repaving were the top areas that should receive more funding.
- Vermonters favored maintaining existing infrastructure over investing in new roads as a preferred means of curbing sprawl

- Safety is ranked the most important transportation issue, followed by the environment
- The percentage of Vermonters experiencing congestion on their way to work increased from 43% in 2000 to 50% in 2006
- 95% of Vermonters had traveled by vehicle the previous day
- The average distance increased from 36 miles by vehicle in 2000 to 52.5 miles in 2006, 46%
- The use of non-auto modes increased slightly from 2000 (80% walked the previous day; 28% used bike lanes or road shoulders compared to 15% in 2000; 22% used park and rides, compared to 15% in 2000).
- Percentage use of other modes: taxis (14%), public transit bus service (12%), passenger train service (11%), intercity bus lines (11%), and special transportation services for senior citizens and the disabled (4%)
- According to the survey, public transportation has the greatest potential to reduce relance on cars, making it the third priority, behind safety and security, and bridge and summer road maintenance.
- four out of ten Vermonters agree that VTrans should take an active role in limiting urban sprawl, one-third disagree with the statement, and the remaining 28% are neutral.

Working Paper 6: Scenario Development, 2007

This paper defines what scenario planning means in this context, reviews the previous working papers discussing how they contribute to the process, as well as the Big Thinker Report, summarized above, and interviews with national expert. It then describes four possible scenarios - Business as Usual,

Scenarios:
- Business as Usual
    - The population is older, but otherwise looks the same
    - Employment and housing continues to decentralize
    - The supply and cost of oil is volatile, so Vermonters purchase more fuel-efficient vehicles
    - Jobs in the service sector continue to grow, and overall employment grows
    - This scenario assumes that extreme weather stays about what it is today
    - Transportation funding is a problem, as there is less federal and state money to go around
    - (selected) transportation implications:
        - more older drivers, dispersed settlement leads to isolation
- Environmental Change Scenario
    - This scenario is the same in most respects to the previous scenario, except that it assumes VT exceeds national ambient air quality standards for ozone, and that Vermont gets warmer and wetter due to climate change (warmer temperatures contribute to smog, accelerating Vermont's non-attainment).
    - Being designated a non-attainment area will make transportation planning more complex.
    - Global warming, particularly floods, will make it more costly to maintain VT's current infrastructure. It will also affect the economy, particularly tourism and human health
    - Selected transportation implications:
        - Must reduce VMT - leads to more strategies to increase walking, biking, rideshare, etc...
        - Funds for highway capacity restricted
        - Shifts in weather might affect transportation design.
- Energy Crunch Scenario
    - This scenario assumes a permanent and significant increase in the cost of crude oil, which causes gas prices to more than triple. VT Yankee has also been decommissioned without a replacement, so electricity is more expensive, making PHEVs less viable.
    - It becomes more expensive to live out of town, and people start to move into town.
    - Businesses begin to move out of state, though those near rail lines survive.
    - Selected transportation implications:
        - Materials for maintenance more expensive
        - Need different transportation strategies.

- Growth Scenario
  - This scenario assumes growth at a higher rate than the BAU scenario, with two new employment centers creating hotspots in Rutland and St. Johnsbury, and higher in-migration rates.
  - Selected transportation implications
    - Demand to improve infrastructure around hotspot.

Working Paper 7: Summary of Scenario Planning Session, 2007

This working paper summarizes the results of an all-day scenario planning session (with 75 participants representing a cross-section of transportation stakeholders) held in 2007. The purpose of the session was to help VTrans identify policies to meet its five objectives under the preliminary scenarios described above – to help VTrans adapt to changing circumstances.

Business as Usual Scenario (selected themes/recommendations)
- Encourage and promote downtown development and services
- Increase public transit investment and intermodal connections
- Apply smart growth policies to transportation planning and investment
- Find alternative and creative ways of paying for transportation
- Address park & ride needs

Environmental Change (selected themes/recommendations)
- Adjust bridge and culvert size to handle high water
- Preserve wetlands and flood plains
- Provide more intermodal, park and ride and transit options
- Promote alternative fuels
- Support smart growth
- Use IT to inform public of transit options

Energy Crunch (selected themes/recommendations)
- Develop alternative fuels and reduce consumption
- Increase funding for transportation (esp. public transit) with innovative strategies
- Increase rideshare, intermodal connectivity and alternative modes
- Facilitate TOD, Smart Growth and TDM

Growth (selected themes/recommendations)
- Focus more on downtown development, promote mixed-use and reduce sprawl
- Increase TOD and transit
- Maximize existing capacity before building new capacity
- Find a new way to pay for transportation

Crosscutting themes
- **THEME – Role and profile of VTrans** – participants felt that VTrans has a role as an educator on transportation issues, and that VTrans should be a facilitator of inter-agency and inter-jurisdiction cooperation
  - Educational activities include advocating for Smart Growth, educating the public on alternative modes, among other initiatives.
  - Facilitation activities include, coordinating planning between towns, taking an active role in the Act 250 process, and engaging the private sector in transportation planning.
- **THEME – Improve multimodal alternatives –** participants were clear in their desire to see more support for alternative modes.

- **THEME – Land Use Planning –** participants were clear that they wanted to see stronger smart growth planning and corridor planning, and greater regionalism for larger scale projects.
- **THEM E – Evolving Design Standards –** VTrans should consider design standards that reflect the context rather than one-size fits all, and develop design standards for pedestrian and bike facilities, as well as standards targeted at making infrastructure less costly to maintain.
- **THEME – Rail Investment –** participants felt VTrans should invest more in rail
- **THEME - Energy And Climate Change –** "Most participants believed that a fuel (petroleum) energy crisis is "very likely" to occur within the time horizon of the LRTBP and the real cost of transportation will continue to increase." p. 13. Participants felt VTrans should be prepared for this and energy conservation should be an important state objective.
- **THEME – Alternative financing** – participants felt VTrans needed to find an alternative to the gas tax, such as impact fees, public-private partnerships, mileage-based taxes and environmental banks, but no clear alternative emerged.

Appendix A has a list of participants;
Appendix B has power point presentations for the four planning scenarios

VTrans Statewide Transportation Improvement Program (STIP) 2008-2011
Available at http://www.aot.state.vt.us/planning/Documents/Planning/STIP2008-2011.pdf

This document shows how VTrans plans to use its funds over the fiscal period 2008-2011. This document starts to be intelligible on page 5 of the document (p. 10 of the pdf) - Agency of Transportation FY 2008 As Passed – which shows the annual budget. It shows, for example, funding for roadway program development (there are many other road and highway expenses) at $57.8 million, park & rides at $2.1 million, bikes and peds at $6 million, multi-modal facilities at $500,000, public transit at $19 million, and rail at $22 million. Unfortunately, it does not have a similarly clear budget for FY 2009-2011, though it does show 2006 and 2007. It does show investments for specific projects in the coming years, but it would have to be mined carefully to extract such information.

Public Transportation Documents

Vermont Public Transportation Overview, 2003
Available at
http://www.aot.state.vt.us/planning/Documents/Planning/PublicTransportationOverviewDec31final.pdf

This document provides and integrated strategy for public transportation in Vermont, based on previous studies and stakeholder input. It gives an overview of public transportation in Vermont, which is not summarized here, as a more up-to-date version is summarized in Vermont's Public Transportation Policy Plan, 2007, below. This is the first attempt at a coordinated approach to public transportation:

> "The Vermont Agency of Transportation (VTrans) is interested in developing a coordinated, seamless transportation network throughout the state, with capital investments made in a systematic fashion, and with operations supported by a stable and predictable combination of fare box revenues, public investments, and private support where applicable" p. 1

Overview of Public transportation in VT – see the summary of Vermont's Public Transportation Policy Plan, below.

- Public Transportation Funding –
    - Vermont spends more than many states on public transportation, ranking 21 on a per-capita basis.

- o Sources - Public transportation funding comes from: the Federal Transportation Administration, under several different programs in 49 USC Chapter 53; and congressional earmarks. It needs more dedicated funding for operations.
  - o Previous studies – Previous studies, including the Transportation Revenues and Programs Study, January 2002, Chittenden County Transit Funding Study, January 2003 recommend alternative revenue sources (such as vehicle fees), and establishing a regional transportation authority with taxing authority to move the local share away from property taxes.

Recommendations:
- Local public transit – restructure services based on evaluations and improve connectivity with commuter and interstate services
- Commuter transportation – continue to improve rail to make it suitable for passengers, increase emphasis on commuter bus (esp in VT 7 and 15 corridors), coordinate with park and rides, assess public-private partnerships with employers, investigate using local transit to feed into commuter transit.
- Intercity transportation – evaluate the sustainability of having 2 corridor passenger rail services to NYC, a western rail passage should connect Burlington and Bennington, explore public-private partnerships for intercity bus.
- Intermodal facilities – develop a statewide strategy and improve connections

This document contains public comments on the recommendations, as well as additional information on funding. The info on funding is somewhat out-of-date, however, and therefore not included in this summary.

Vermont's Public Transportation Policy Plan, VTrans 2007
Available at http://www.aot.state.vt.us/publictrans/Documents/Final%20Report%208Feb07.pdf

This extensive (200 page) document provides an extensive overview of policy objectives, commonalities and differences between the 2007 and the 2000 plan, stakeholders, public transportation services, demographics, performance framework, key issues for Vermont.

The introduction notes several new developments since the 2000 plan: increasing emphasis on reducing GHG emissions, an aging population with an emphasis on "aging in place," and increasing emphasis on affordability (which might be attained through transit).

Public Transportation Services in Vermont
- Local Transportation –
  - o Vermont has a mixture of fixed, flexible and demand-response services, with CCTA running most of the fixed-route services
  - o Under 24 V.S.A., section 5092, routes have been evaluated since 2003 based fiscal and performance standards. Those routes that don't meet the standards will be reviewed to determine if the service is needed or if an alternate route might be better.
- Commuter and Intercity Transportation –
  - o Commuter Rail – The state-supported Vermont Transportation Authority ran the Champlain Flyer between Charlotte and Burlington from 2000-2003. This service was meant to be the start of commuter rail expansion in NW VT. The train failed, however, due to high costs (higher insurance rates than anticipated) and low ridership. Other commuter rail services are still under consideration, including Burlington to Essex Junction, Essex Junction to St. Albans, Essex Junction to Montpelier and Burlington to Middlebury and possibly Rutland.

- o Commuter bus (town-to-town service during peak hours) has grown significantly in recent years - six public transportation providers operate a total of eleven commuter bus services in Vermont, including the St. Albans Link express, a Burlington to Middlebury commuter bus, and the LINK, a bus between Burlington and Montpelier
- o Other commuter services:
  - There are 27 Park & Ride facilities in the state, but only 7 have active transit service. There are 9 new facilities in the works. VTrans is trying to incorporate transit amenities into the design of future facilities.
  - Vermont Rideshare/Ride match service (I believe this is out-of-date with the new Go Vermont).
- o Intercity Bus
  - Intercity Bus has traditionally been provided by the private sector by Vermont Transit/Greyhound, but it has declined significantly in the last few years. Service between Burlington and Bennington and between Newport and White River Junction has been discontinued.

Demographics

This section describes the factors that determine the population that public transportation would ideally serve. These include the population density of seniors (65 and over) and youth (age 5-17), median age, household income and vehicle ownership, Medicaid recipients, and employment centers. The maps on pages 11, 13, 14, 16, and 18 illustrate these areas. This analysis shows that many of the areas that need service have it, but several areas are underserved.

Performance Framework

There are tradeoffs between serving the most people possible and serving the neediest populations. VTrans has an obligation to see that the funds it oversees are spent wisely and therefore tracks public transit through performance measures. Transit providers are required to provide a legislative report (with boardings per hour and per mile, cost per hour and per mile, and cost per passenger). Service standards for the legislative report vary depending on whether the service is urban, small town fixed-route, small town deviated fixed route, rural routes, ski area fixed route or rural demand response. Benchmarks used to rate performance are based on a national peer review. Providers are also required to file service indicator reports (with boardings per service day, farebox/total cost, fare per passenger, miles and hours per service day, percent revenue hours and percent revenue miles).

VTrans recommends altering the performance framework, so that the standard of "success" means the national average performance. And for cost measures, the "acceptable" standard is twice the peer average. VTrans also recommends altering the route categories – renaming "ski area routes" "Tourism services," combining the small town categories, and adding commuter routes and volunteer driver services. Finally VTrans recommends altering the performance measures:

- Productivity:
  - o Urban: boardings/mile
  - o Small town, Rural, Demand Response, and Tourism: boardings/hour
  - o Commuter: boardings/trip
- Cost-effectiveness – VTrans believes that cost per passenger (gross operating costs) is a more accurate measure than cost per mile or per hour.
- Local-share – providers need to generate at least 20% of revenue from non-state and federal sources.

Key Issues in Vermont

- Funding:
  - o Federal Funds – Most federal funding comes from FTA or FHWA flexible funds – VT is a leader (ranked 3rd) in allocating flexible fund to public transit
  - o State funds – many of the FTA programs require a 20% match, half of which typically comes from the state (the other 10% is local)

- o Local funds – municipalities are required to match transit, but their only source of revenue is the property tax, because the Legislature does not authorize any other taxes to be used. This is a problem.
  - o Distribution of funds – VTrans current policy is to continue to distribute funds based on historical allocations and work on developing a simple allocation formula.
  - o Capital replacement – VTrans calculates that it's been spending roughly $3 million a year on vehicle replacement, when the need is at about $4 million, causing a backlog of old vehicles.
- Demographics
  - o The major demographic trend for transportation consideration is the aging population. The disabled population is also likely to grow. The teenage population will shrink relative to the overall pop. Poverty and auto-less households are hard to forecast.
- Transit Oriented Development – VTrans wants to take a more active role in TOD
- Human Service Coordination – experience has shown that coordinated efforts between public transportation providers and human service agencies are more successful at providing greater mobility than parallel efforts. 24 V.S.A. Chapter 126, section 5090 requires human service agencies to purchase transportation services from public transportation. AHS spends roughly $18 million on transportation, half of which is spent on coordinated transportation. VTrans would like to increase this coordination wherever possible.
- Energy and Environment
  - o Climate change is an increasingly important issue
  - o The cost of fuel is also an important issue – public transportation enables Vermonters to save, but the cost of fuel is making operating public transit more expensive.
- Intercity travel and regional connections – intercity bus has recently declined (thought VTrans is working on restoring service between Burlington and Bennington) and there are frequency-of-service issues. Private buses used to provide services to collect riders for a longer trip but, with decreasing regulation, they have dropped shorter trips. This means that a full trip is often not provided by a single carrier. Through its *ConnectVermont* initiative, VTrans is working towards implementing integrated trip planning.

Implementation Plan:
- VTrans will continue to **monitor route performance**, and address routes that are consistently underperforming
- **Funding**
  - o Volunteer driver hours will count for local match
  - o VTrans will work with providers to increase local support for transi
  - o VTrans will be more flexible with its state operating funds
  - o VTrans will work with providers to develop a capital replacement plan
  - o VTrans will evaluate the potential of an energy tax credit to incentivize businesses to invest in transit.
- **Demographics**
  - o Vtrans will assist smart growth and TOD planning and encourage developers to contact transit agencies before the start of the review process to coordinate
  - o Revise the Traffic Impact Evaluation Guide to include transit solutions
  - o Review Act 250 applications taking into account all modes of transportation
  - o Revise criteria for new public transportation routes (New Starts) to reflect the benefit of services that support TOD.
  - o Support expanded volunteer driver networks in rural parts of the state
- **Human Services Coordination**
  - o Educated transit providers and HS stakeholders about the benefits of coordination
  - o Develop a method for allocating costs
  - o Develop reporting and performance measures that capture the value of coordination
  - o Develop a coordination plan for the state

- **Energy and Environment**
  - o Add new services and improve efficiency and convenience to attract new riders
  - o Promote low emissions technologies
  - o Evaluate an energy tax credit program for businesses to encourage them to support transit
- **Intercity bus and regional connections**
  - o Continue to expand park and ride capacity
  - o Work towards implementing "integrated long distance rural trip planning"
  - o Facilitate service coordination between local and intercity providers.

The appendices (particularly the summary of public transportation providers) might be a useful resource:
Appendix 1: National Policy Research and Peer Analysis
Appendix 2: Summary of Public Transportation Providers
Appendix 3: Policy Issue Papers
Appendix 4: Performance Results 2006 and 2005
Appendix 5: CCMPO Public Transportation Policy Statements

VTrans 2008 - Legislative Report: A Study Regarding the Regional Connectivity of Vermont's Public Transportation System

Pursuant Act 75 of 2007, Section 45 (d)
Available at http://www.aot.state.vt.us/publictrans/Documents/Section%2045%20Full%20Rpt%2001-14-08.pdf

The purpose of this study is to explore options to increase the connectivity of Vermont's public transportation system. The options presented include physical options, information/marketing options and organizational options. In addition to the summary of options and recommendations below, this document has good information on the connectivity of Vermont's public transportation network.

Physical options
- Amtrak – the analysis looks at several different scenarios for Amtrak, including discontinuing all or some lines. VTrans notes that while costs of Amtrak are easy to quantify, the benefits are difficult to quantify, and that Amtrak serves a specific population that might be alienated if service were discontinued
- Intercity Bus – Intercity bus has been experiencing a significant decline. There are several options to preserve and enhance intercity bus, including operating subsidies to a private provider, capital investments in passenger facilities, park and rides, etc.
- Other modes –
  - o Not much can be done about airports
  - o Vermont could pursue statewide operation of its regional bus service, which would offer connections between town centers, increasing state mobility.
  - o Shared-ride service can be provided by taxis and shuttles, vanpool and carpool programs through GoVermont can help

Information/Marketing Options
- Information – possibilities include using the internet to provide trip planning capabilities (Maine is leading on this), and GoVermont, which provides information on local and inter-regional carpool, vanpool, public transit, park and ride and bike and ped info.
- Marketing – marketing of Amtrak is limited by the limited service – VTrans looked into other ways to market Amtrak (such as underwriting public radio).

Organizational Options
- Public Transportation in Vermont is divided into many different players that don't always coordinate as well as possible. VTrans provides three options for increased coordination

- o Emphasize regional cooperation and provide staff and technical assistance to regional providers
- o Create a state-wide umbrella organization (or a few regional organizations) to improve coordination by taking over administrative functions of the local agencies. This org could also operate long-distance commuter services
- o Consolidate all local entities into a statewide entity or several regional entities.

Recommendations and Next Steps
- Marketing:
  - o pursue additional coordinated marketing with Amtrak, market Amtrak to VT residents, and collect demographic data to design future Amtrak marketing.
  - o Consider consolidated marketing for all public transit, possibly under GoVermont
- Analysis of rail:
  - o Conduct full economic study of VT rail quantifying more costs and benefits
  - o Continue to pursue purchase of DMU equipment
- Public Transportation
  - o Conduct a cost/benefit study of alternative modes of delivering public transportation
  - o Consider options for organizational change in the delivery of services
  - o GoVermont can help reinvigorate ride share and broad-based marketing
- Intermodal facilities
  - o Double park and rides in the next decade
- Information
  - o Continue to cooperate with Maine and NH on ConnectVermont, develop Go Vermont with web-based access to transit, and identify resources necessary to incorporate Vermont's transit into Google Transit.

Rail Documents

State Rail and Policy Plan, 2006

Available at http://www.vermontrailroads.com/VRPP.htm

This highly detailed report gives a history of rail in Vermont, inventories and assesses the current state of rail in Vermont, analyzes future needs and outlines performance measures for rail investments. It lays out priority investment and implementation plans.

Industry Trends:
- The country is moving from 234,000 pound rail cars to 286,000 pound rail cars – much of VT's track and bridge infrastructure is insufficient to accommodated the heavier cars
- Intermodal freight is increasing. Vermont's vertical clearance in bridges and tunnels is inhibiting growth because it does not allow for double stacked cars
- Vermont is now dominated by short line and regional railroads, which allows them to adapt to changing conditions but makes them less financially stable.

Rail system inventory and overview:
- VT has 749 miles of right-of-way, 453 of which are owned by the state.
- A map of the 10 railroads operating in VT is on page 10 of the pdf (ES-3 of the document)
- 378 miles are short line/local, the Guilford Rail system (totaling 219 miles in VT is considered regional), and the 3 miles of Canadian National are considered Class 1.
- Freight – freight tonnage originating out of state has decreased, but it has increased in-state (primarily because of Omya, Inc). Rail tonnage is expected to increase between 44 and 55% by 2020.
- Passenger – Amtrak operates two routes (the Ethan Allen Express from Rutland to NYC and the Vermonter), but the future of these is uncertain Amtrak is considering cutting them due to infrastructure

decline. Also federal funding is uncertain. If Amtrak cuts service, VTrans might acquire diesel multiple units (DMU) to run on the Amtrak Vermonter route between St. Albans and New Haven.

Rail System Condition:
- **Track** – between class 1 and class 3, with operating speeds ranging from 10 – 40 for freight and 15-60 for passengers. Inspection found that track conditions are consistent with operating speeds.
- **Bridges** - in need of improvement – just to get them in good operating condition for lower weights would cost $38 m.

System Initiatives:
- **Carload** - Vermont would like to upgrade its bridges and upgrade track to accommodate the higher weight cars. However, this would cost $118 mm for the entire track. A map of priority rail car improvements is on page 43.
- **Clearance** - VT would also like to improve its clearance to accommodate double stacked cars. A map of priority clearance improvements is on page 48.
- **Transload Freight facilities -** the Rutland Rail Yard, the Burlington Rail Yard and St. Albans Rail Yard do not fully meet the needs of the railroad or the community – VTrans supports upgrading or creating new facilities.
- **Passenger Rail –** The first priority is to sustain existing routes. The ABRB route between Hoosick and Burlington and the NECR – Burlington Branch between Essex Junction and Burlington are second priority routes.

Funding:
- **"**Typically federal funding for rail projects has come from Congestion Mitigation and Air Quality Improvement (CMAQ), Transportation Enhancements, Rail-Highway Crossing Program (the so-called Section 130 program), High Speed Rail Development, New Starts, and other programs."
- Funding for rail is discretionary, which means that projects need to compete with each other at a national level. Unlike highway, no state is guaranteed anything.
- VT also gets some funding through earmarks

Implementation
- The document describes the prioritization process, tracking performance measures and specific implementation actions. These actions support the system initiatives, above.

Boston to Montreal High-Speed Rail Planning and Feasibility Study, VTrans 2003
Available at http://www.aot.state.vt.us/Planning/BostonRail.htm

In 2000, the Federal Railroad administration designated the Boston-Montreal rail route as a High-Speed Rail Corridor (HSRC) to reduce road and air traffic along that route. The purpose of this study is to determine whether HSRC service is feasible along this corridor. This report documents phase 1 of the study, which identifies institutional and policy issues, develops preliminary ridership projections and inventories basic infrastructure elements.

The ridership results are optimistic. A mid-speed rail would be optimal, with ridership expected at 683,667 and revenue from fares at $34,614,601. The corridor would require substantial infrastructure improvements, but these would be compatible with existing and future passenger and freight operations. The analysis concludes that ridership and fares is sufficient to warrant phase II of the study.

Bike and Ped Documents

VTrans Vermont Pedestrian and Bicycle Policy Plan, Wilbur Smith Associates, 2008
Available at http://www.aot.state.vt.us/planning/PBPP.htm

The plan outlines visions, goals and objectives, gives an overview of the current bike and ped system, and provides a future direction, detailing current and future actions of the organizations involved (VTrans, the

Vermont Bicycle and Pedestrian Program [VBPP] and regional planning entities), and measure to evaluate the performance of their efforts.

Current Status of Bike and Ped Activities

- "Vermont has an extensive network of facilities that support walking and bicycling activities including 13,700+ miles of state and local roadways, over 50 miles of bike lanes, over 350 miles of signed bicycle routes, over 100 miles of shared use paths and rail trails; hundreds of miles of sidewalks and an extensive network of hiking and mountain biking trails" – p. 12
- The VBPP implements most of the policy plan. Nested within the Local Transportation Facilities (LTF) division of VTrans, this enables them to work with regional entities, which must initiate many of the efforts.
- VTrans is working to collect data on bike and ped use.

Implementation Plan

- The executive summary provides a detailed but concise list of actions for each entity involved. Actions are divided into current actions, strategic actions and long-term actions. See pages ES-3 to ES-7 (pp. 7-12 of the pdf).

Vermont Bicycle Commuter's Guide, Vtrans

Available at
http://www.aot.state.vt.us/progdev/Documents/LTF/BicycleCommuterGuide/VTBicycleCommuterGuideFinal.pdf

This is an educational document which both encourages bike commuting and provides bike commuters with information on bike basics, how to outfit a bike and rider, safe and legal biking practices, bike locks and a safe bike checklist, among other information.

Energy-Related Documents

The Vermont Transportation Energy Report 2007, Vehicles, Fuels and Fuel Use in 2006, Vermont Clean Cities Coalition

Available at http://www.uvm.edu/~cleancty/pdf/VTEnergyReport.pdf

This document provides a good background the many plans and policy reports below. It covers fuel consumption, vehicle miles traveled (VMT), emissions, vehicle numbers, alternative transportation, efficient vehicles, transportation demand management (TDM) and state policies and non-profit actions.

DPS Draft Comprehensive Energy Plan, 2009

Available at http://publicservice.vermont.gov/planning/CEP%20%20WEB%20DRAFT%20FINAL%206-4-08.pdf

This plan documents Vermont's current energy use, current initiatives, and makes recommendations to move Vermont towards "affordable, clean, and reliable energy supply." It makes six over-arching recommendations, including transforming the passenger vehicle fleet. Section VI of this 270 page document deals with transportation and land use. Transportation recommendations include:

- Strategy M – Fuel Economy and Emissions Standards
  - o CAFÉ (corporate average fuel economy) standards - regulate miles per gallon, were updated in the Energy Independence and Security Act of 2007. Recommendation 36 calls for continuing to support CAFÉ standards and advocating for tougher standards.
  - o LEV (Low emission Vehicle) standards – regulates tailpipe emissions, initially adopted by California, but other states may follow. Recently states tried to regulate GHGs under LEV standards, but EPA ruled against them. Current LEV standards also prohibit diesel passenger

vehicles from being sold in VT. Recommendation 37 is to continue to adopt the most stringent LEV standards available.

- Strategy N - Other Efforts To Improve Operationalefficiency Of New And Existing Vehicles
  - Recommendation 38 Evaluate opportunities to encourage vehicle efficiency through targeted incentives. Initiatives discussed include changing the income tax incentive to reward all vehicles (not just hybrids) that get 30 mpg and better, using best-in-class incentives for fleets, or using feebates to encourage the purchase of fuel-efficient vehicles.
  - Recommendation 39 – encourage proper vehicle maintenance through information dissemination and efficient technologies. Options include proper vehicle maintenance and inspection (working with inspectors?), educating drivers about vehicle maintenance and tire inflation, educating consumers about low rolling resistance tires and low viscosity oil.
  - Recommendation 40 - Continue to encourage efficiency in the heavy-duty diesel fleet. This recommendation is focused mainly at reducing idling in diesel vehicles. VT already has a law against idling school buses, but it might be possible to encourage the commercial fleet to idle less as well.
- Strategy O - Support R&D And Outreach To Improve The Efficiency Of Plug-In Hybrid Vehicles
  - Recommendation 41 - Encourage PHEV (Plug-in Hybrid-Electric Vehicle) technology. Specific actions include encouraging research into the effects of PHEVs on the electric grid, ensuring that metering and rate designs are in place to improve the load profile of VT, educational and outreach campaign, and the state should lease or acquire PHEVs.
- Strategy P – Shift Transportation Fuel Demand to Low Carbon Fuels
  - Recommendation 42 - Evaluate the potential for a state or regional Low-Carbon Fuel Standard. A low carbon fuels standard requires a reduction in the greenhouse gas intensity of fuels without picking winners. Specific actions include continuing to work with the New England Governors/Eastern Canadian Premiers (NEG/ECP) to investigate the feasibility of a LCFS for Vermont and the region
- Strategy Q – Facilitated Renewable Fuel Demand
  - Recommendation 43 Encourage biodiesel use in commercial heavy duty vehicles. Specific recommendations include promoting existing guidebooks and technical assistance on biodiesel and adopting the Governor's tax reduction on biodiesel.
  - Recommendation 44 - Evaluate costs and benefits of encouraging reformulated or oxygenated fuel as a way to support the use of ethanol as an additive. Vermont has banned MTBE, but it doesn't require an oxygenate – if it did, it would act as an ethanol mandate. Specific ethanol strategies include: considering a differential tax; finding ways to measure the current amount of ethanol in gasoline; and evaluating the costs and benefits of requiring reformulated gasoline.
- Strategy R – Encourage Alternatives to Single Occupancy Vehicles (SOV)
  - Recommendation 45 - Consider energy implications in land-use planning by facilitating mixed-use, public transit-oriented development that limits sprawl. Specific actions include: encouraging downtown development through current/expanded programs, incentives and support for down towns; and targeting incentives to projects that facilitate transit service.
  - Recommendation 46 - Encourage increased public transit ridership by supporting targeted expansion of services throughout the state. Funding is the major challenge for public transportation. One way to get around this might be to give employers tax credits for providing transportation for their employees to leverage private funds. Another way would be to increase connectivity of VT's network without increasing the overall service.
  - Recommendation 47 - Maintain and increase the development of Park-and-Ride facilities around Vermont and support their usage by public transit providers. Specific action include studying where best to expand and improve lots and increasing public transportation facilities at park and rides and coordinating schedules with the commute.
  - Recommendation 48 – increase participation in rideshare/vanpool programs – implement the recommendations from VTrans' Rideshare and Vanpool review

- o Recommendation 49 Support the Vermont Telecommunications Authority efforts to facilitate advanced communication networks that allow for telecommuting. Actions include ensuring a reliable telecommunications network and providing outreach and information regarding telecommuting.
- Strategy S - Better Use And Efficiency Of Vermont's Rail Networks
  - o Recommendation 50 - Facilitate improved use of railroads for the movement of freight shipments around the state through strategic investments in infrastructure upgrades. Specific actions include: acquiring funding to upgrade VT's rail to accommodate higher weights and double stacked cars and improving intermodal facilities; and collaborating with NEG/ECP and private companies to improve the connectivity of rail.
  - o Recommendation 51—Facilitate increased passenger rail ridership levels. Specific action include: continuing to support Amtrak and working with NEG/ECP to improve connectivity; and supporting freight to ensure successful passenger rail.
- Strategy T – Encourage efficient vehicle trips through economic incentives/disincentives.
  - o Recommendation 52 Encourage companies, organizations, and institutions to offer commuter benefits programs. Specific actions include: supporting employers seeking to offer commuter benefits (such as pre-tax dollars on public transit, telecommuting, preferential parking, etc…); and the state of VT should lead by example.
  - o Recommendation 53—The State should support AOT   consideration of alternative forms of transportation funding**.**

This report also makes recommendations for reducing energy from the State's transportation. Most of these recommendations are discussed in the Climate Neutral Working Group reports and the BGS State Agency Energy Plan, summarized below.

BGS State Agency Energy Plan - 2005

Available at http://www.bgs.vermont.gov/sites/bgs/files/pdfs/BGS-VTStateEnergyPlan.pdf

This report lays out plans to reduce state agency energy use. Its discussion of transportation energy is divided into two parts – state fleet (state owned vehicles and employee owned vehicles used for state business) and commuting.
1. State fleet – BGS gives a number of recommendations, some of which are already initiated/implemented, including using efficient and appropriately-sized vehicles, considering requiring appropriate maintenance procedures, investigating the use biodiesel blends, expanding education and tracking of idling, increasing video and teleconferencing, promoting van- and carpools, considering establishing shuttle bus routes between state facilities, and site planning to facilitate public transportation.
2. Employee commuting – this is responsible for 23% of state emissions. BGS recommends a number of initiatives (many of which are the same as in the first CNWG Biennial Report) including educating employees on the costs and environmental consequences of SOVs as well as alternatives, creating a Transportation Demand Management (TDM) committee, surveying employees on commuting, investigating other telecommuting policies to see what might be appropriate for Vermont, and exploring the feasibility of new shuttle routes,

Local Power: Energy & Economic Development in Rural Vermont. The Vermont Council on Rural Development Roundtable Conference, 2006

Available at http://www.vtrural.org/files/2006%20Summit%20Report%209.28%20FINAL.pdf

The Vermont Council on Rural Development, charged with increasing the coordination between state and federal policies in Vermont, convened a conference of 350 people to discuss ways to address energy shortages and climate change through "expand[ing] energy as an economic sector." The bulk of the conference focused on electricity, but one group discussed transportation and biofuels. Recommendations from that group include creating a biofuels mandate (requiring an increasing percentage of biofuel blended with transportation and heating

fuel), conducing pilot projects to demonstrate the feasibility of in-state biofuel production, and creating an efficiency utility for liquid and transportation fuels.

Climate Change Documents

Governor's Climate Action Plan – Report and Appendices

Final Report – 2007
Available at http://www.anr.state.vt.us/air/Planning/docs/GCCC%20Final%20Report_pages%201-10.pdf

In 2005, Governor Douglas's Commission on Climate Change (GCCC) began a process to come up with strategies to reduce emissions form the 1990 baseline by 25% by 2012, 50% by 2028 "and, if practicable using reasonable efforts, 75% by 2050." This report briefly discusses climate background and the GCCC process. The GCCC, a small group appointed by the Governor, created a larger plenary group to come up with recommendations. The plenary group created technical working groups for the various sectors to help it analyze and evaluate the options. The plenary group came to near consensus on 38 recommendations. According to the GCC, however, these recommendations need more analysis and discussion before being fully adopted. The GCC's final report therefore recommends 6 overarching actions to be taken first: building on VT's energy efficiency and renewable energy potential; keeping farms, farms and forests, forests; reducing emissions in a renewed transportation system within and between vibrant town centers; educating and engaging Vermonters about climate change; leading by example; and the Vermont Climate Collaborative – a partnership of VT's gov't, academic and private sectors.

1. Building on VT's energy efficiency and renewable energy potential
    a. Expand VT demand management strategies beyond electricity and natural gas, particularly to heating oil
    b. "explore viable mechanisms and insure the necessary research to stimulate investment in strategically located renewable energy facilities, such as wind turbines, with a focus on the needs of local communities."
2. Keeping farms, farms and forests, forests
    a. Encourage local food and forest products with marketing
    b. Protect farms and forests
3. Reducing emissions in a renewed transportation system within and between vibrant town centers
    a. Look for new revenue sources that could serve as incentives for reduced travel or LEVs
    b. Expand and improve intercity bus and rail service (both passenger and freight) and intermodal connectivity
    c. Plan to enhance town centers.
4. Educating and engaging Vermonters about climate change
    a. Insure the implementation of the new Center for Climate and Waste Reduction within ANR, which can disseminate info about reducing GHG emissions, create incentives for good environmental behavior and examine the unintended consequences of existing policies
    b. Work with the Department of education to make sure that future Vermont teachers are environmentally literate, and incorporate environmental thinking into different subject areas.
5. Leading by example
    a. Create a climate change cabinet to coordinate efforts across state agencies and to review the 38 recommendations of the plenary group.
    b. Transform VT's fleet to high efficient vehicles
    c. Develop an internal carbon offset program
6. Vermont Climate Collaborative – a partnership of VT's gov't, academic and private sectors
    a. Ensure that the critical climate research and outreach is conducted
    b. Pursue the potential of the green economy

> c. Ensure objective analysis of environmental issues
> d. "Ensure that the collective resources of the state are coordinated and effectively deployed for energy efficiency"

Appendix 1: Executive Order

This is Governor Jim Douglas's 2005 executive order creating the Governor's Commission on Climate Change.

Appendix 2: Plenary Group Recommendations and Appendices

Available at
http://www.anr.state.vt.us/air/Planning/docs/GCCC%20Appendix%202_Plenary%20Group%20Recommendations%20&%20Appendices.pdf

This 295 page document describes in detail the inventory and projections of the GCCC, background information on the various plenary groups and sub technical working groups, methods for quantification and the 38 recommendations identified by the plenary group, etc. Due to the broad nature and length of the document, this summary focuses on the Transportation Land Use (TLU) context, the TLU working group and TLU recommendations.

Transportation Emissions Background:
- "GHG emissions from transportation fuel use have risen steadily since 1990 at an average rate of slightly over 1.1% annually.
- "Gasoline-powered vehicles accounted for about 82% of total transportation GHG emissions in 1990 and 78% in 2005" but they are expected to decline as a percentage due to California light duty vehicle standards
- "Transportation emissions are determined by technologies (types of engines and vehicles), fuels, and activity rates. Activity rates, in turn, are determined in part by population, economic growth, and land use choices that affect the demand for transportation services." Accordingly, policies fall into three categories: (1) Improving vehicle fuel efficiency; (2) reducing the carbon intensity of fuels; and (3) reducing activity rates

TLU Recommendations
There are 9 TLU recommendations, which could total a 59.4% reduction from the business as usual (BAU) scenario. These options are discussed in greater detail in section G-2 (page 147 of the pdf).

TLU-1 Compact and Transit-Oriented Development Bundle - This policy option would encourage denser downtown, mixed use, transit-oriented development through supporting municipal planning, strengthening state-level planning, reforming regulatory impediments, and altering transportation planning to incorporation alternative modes.
TLU-2 Alternatives to Single-Occupancy Vehicles (SOVs) – this policy option would shift passenger transportation to alternative modes through expanding transit routes, increasing park & ride lots, expanding vanpooling and carpooling, improving the coordination of modes, improving access and conditions for bikes and peds, and performing public outreach.
TLU-3 Vehicle Emissions Reductions Incentives – the major incentive discussed would be a "feebate" wherein the state charges a fee for less efficient vehicles and gives a rebate for more efficient vehicles.
TLU-4 Pay-as-You-Drive Insurance – this option would require car insurance providers in Vermont to offer pay-as-you-drive insurance wherein insurance costs are calculated on a per-mile basis.
TLU-5 Alternative Fuels and Infrastructure – this option would introduce a low carbon fuel standard (LCFS), which would reduce the GHG-intensity of transportation fuels 10% by 2028, to Vermont.

TLU-6 Regional Intermodal Transportation System – Freight and Passenger – this option would increase the access and frequency of intercity rail and bus and providing intermodal connections.
TLU-7 Commuter Choice/Commute Benefits – this policy option involves working with employers to offer incentives not to drive a single occupancy vehicle, including reduced free parking, free transit passes, allowing periodic telecommuting, etc.
TLU-8 Plug-in Hybrids - this was incorporated into TLU-5 as a compliance option.
TLU-9 Fuel Tax Funding Mechanism – this option would provide an alternative to a gas-tax funded transportation system, providing additional revenue on a per gallon basis, through feebates, a per mile basis, a per carbon unit basis, or per freight car. This is meant to raise revenue for the options above, not to reduce emissions.

Appendix 3 – Deliberation Matrix

This document, available at http://www.anr.state.vt.us/air/Planning/docs/GCCC%20Appendix%203.pdf, provides a framework for assessing and evaluating the 38 plenary group options.

Appendix 4 – Quick Tips for Vermonters

This document, available at http://www.anr.state.vt.us/air/Planning/docs/GCCC%20Appendix%204.pdf, presents a variety of recommendations to citizens for reducing their carbon footprints.

First Biennial Report of the Climate Neutral Working Group – 2005
Available at http://www.anr.state.vt.us/air/Planning/docs/CNWG_1st_Biennial_Report.pdf

This document provides a GHG inventory (for 1990 and 2003) and makes recommendations to the Governor on ways the State Government can reduce its carbon footprint. Transportation-related recommendations include:
- buying efficient, appropriately-sized vehicles for the state fleet;
- increasing video and teleconferencing, expanding and tracking the anti-idling campaign;
- convening a subgroup to come up with strategies to reduce emissions from the non-passenger vehicles;
- convening a subgroup to evaluate and implement transportation demand management (TDM) strategies;
- Surveying state employees to determine the levels of non-SOV commuting;
- And establish a code for telecommuting as a recognized work activity

Second Biennial Report of the Climate Neutral Working Group – 2007
Available at http://www.anr.state.vt.us/air/Planning/docs/CNWG%202nd%20%20Biennial%20Report%204-2007.pdf

This report reviews some of the progress VT State Government has made (such as adding 25 Civic Hybrids and 75 Ford focuses to the fleet, starting cost modeling for an intercomplex Central Vermont Shuttle Service, developing a complementary no idling campaign, regular maintenance of non-passenger fleet, and B5 use) and makes additional recommendations for reducing its carbon footprint. Transit-related recommendations include:
- Establishing an exploratory committee to:
  - work with Green Mountain Transit Agency (GMTA) and the Chittenden County Transportation Authority (CCTA) to identify opportunities to make state employee commuting more efficient;
  - Explore the possibility of creating an unlimited access (UA) (free ridership) program for state employees.

In order to arrive at these recommendations, the Climate Neutral Working Group also conducted an analysis of home to work commuting for Vermont State Employees:
- The average round trip is 33 miles.
- This document has interesting maps showing the commutershed on page 17.

VTrans Climate Change Action Plan

June 2008, Available at
http://www.aot.state.vt.us/planning/Documents/Planning/VTransClimateActionPlanfinal1.pdf

VTrans developed the plan based on the transportation-related recommendations of the GCCC report. The plane has three major focus areas: reducing GHG emissions from the transportation sector; protecting Vermont's transport infrastructure from the effects of climate change; and reducing VTrans' operational emissions.

1. Reducing GHG Emissions from the transportation sector:
    a. Promoting the development, availability and use of cleaner burning bio-fuels
        i. VTrans is supporting research into a low carbon fuel standard, demonstrating the viability of biodiesel by using B5 in its fleet, participating in S. 209 biodiesel study, and Chittenden County buses, supported by VTrans, run on biodiesel.
    b. Increasing vehicle efficiency
        i. VT Low emissions vehicle program – VT has adopted CA emission standard, which include standards for GHGs, reducing GHG emissions by 30% by 2016 (pending EPA approval).
        ii. Research – support for TRC
        iii. Vehicle Purchase Incentives – would support feebates depending on current market activity.
        iv. Consumer education – support vehicle technology choices through labeling, etc. and education on vehicle maintenance
        v. Unnecessary vehicle idling – promote dissemination of info, policies and regulations on idling.
    c. VTrans Vehicle Efficiency Strategies
        i. Continue using SPR money for LEVs
        ii. Participate in VT Clean Cities
        iii. Model fleet management energy efficiency, such as anti-idling (as well as several policies from DPS's comprehensive energy plan.)
    d. Increasing the efficiency of the transportation system
        i. VMT reduction – this report appears to take issue with aspects of the GCCC's VMT reduction goals, stating that reducing VMT in a rural state is extremely challenging, and much VMT comes from tourists, which we wouldn't want to jeopardize. The report suggests that "reducing *the rate* of growth may be a more realistic approach." (p. 7).
        ii. Expand access to and the quality of alt transport through intermodal connections, improving public transit ("an examination of the transit delivery system, coordinated transit provider services, new software and technology capable of facilitating more efficient operations…"
            • Park and Ride – VT has 27 facilities and 15 projects in development stages; VTrans is also giving grants for municipal park and rides.
            • Rideshare/Vanpool – increase participation in the state carpool and vanpool programs, and support third-party vanpool providers through a coordinated Go Vermont program
            • Biking and walking – incorporate biking and walking into VTrans projects, sustain current programs that encourage biking and walking and promote incorporation of bike and ped into town planning
            • Passenger rail – goals: increase passenger rail use by 200% by 2028. Strategies: upgrade equipment, improve frequency and travel time,, increase marketing, expand rail service to VT's western corridor, improve connections to Montreal and Boston, etc…
            • Rail Freight – increase freight by improving infrastructure
            • Intercity Bus- "continue to examine the feasibility of local transit service providing the in-state inter-city service previously provided by Vermont Transit including the expansion of commuter service."
        iii. Employee and other commuter programs

- 23% of all VMT in state is from work commutes.
- Continue support of "way to go" week.
- Go Vermont: Vtrans will work with employers to reduce commuter miles, share self-service software with Maine and NH, eliminate some of the requirements for vanpools, market van and carpools, and invest in public-private partnerships.
  iv. Land use planning and TOD
- VTrans has a number of strategies to support TOD including TOD research through the MPO and TIP programs, directing enhancement dollars to downtowns and growth centers and targeting downtowns and growth centers as transit priority areas. It also lists a number of strategies outlined in the 2007 transit policy plan.

2. Protecting VT's transport infrastructure from the effects of climate change
   a. VTrans looks at Union of Concerned Scientist Northeast Impacts Reports as will as Wake, C. (2005) *Indicators of Climate Change in the Northeast* to determine what might occur in Vermont
   b. VTrans draws from a TRB research paper, available at http://onlinepubs.trb.org/onlinepubs/sr/sr290summary.pdf, which discusses DOT adaptation challenges nationally.
   c. VTrans strategies include:
      i. "Establish a clearinghouse for transportation-relevant climate change information. This might include a task force…"
      ii. Weather projections based on an order of magnitude basis rather than a static projection
      iii. Identify infrastructure critical to performance that is vulnerable to climate change, and focus adaptation on critical corridors.
3. Reducing VTrans Operational Impacts on Climate Change – strategies include
   a. Updating and assessing the successes of VTrans State Agency Implementation Plan to reduce energy use
   b. Work to educate staff
   c. Participate in the Climate Neutral Working Group Process
   d. Continue biofuels use
   e. Continue to support Way to go
   f. Increase agency participation in the state rideshare program
   g. Reduce/eliminate paper use and storage space needs (for files)
   h. Investigate telecommuting and reduced work week options

Land Use and Smart Growth Documents

Vermont Brownfield Site List, 2008
Available at http://www.anr.state.vt.us/dec/wastediv/sms/RCPP/pubs/Brownfield_Sites_List.pdf

State of Vermont Smart Growth 2007 Progress Report, Vermont Smart Growth Collaborative
Available at
http://www.smartgrowthvermont.org/fileadmin/files/publications/SMARTGROWTH_PROG_REPORT.pdf

This report evaluates Vermont's policies to determine the extent to which they are helping (or undermining) the state's smart growth policies. It is intended to update, rather than supplant, the 2003 report, which can be found at http://www.smartgrowthvermont.org/fileadmin/files/publications/SGProgressReport.pdf . The 2003 document evaluated VTrans Smart Growth policies. It commended VTrans for the proportion of its Surface Transportation Program funds that it spends on Transportation Enhancement Grants, which can fund bike and ped facilities, protect open space etc. It disapproved of the emphasis on new highway capacity, however, as this detracts from the smart growth solution. The authors also felt that funding for public transportation and bike and ped facilities should be increased. The 2007 update ranked VTrans role in smart growth as declining because transit funding has remained roughly the same, bike and ped funding has fallen, and the Safe Routes to School Program replaced the Bicycle and Pedestrian Program, which may mean a decrease in the commitment to alternative modes.

This document reviews and evaluates other agencies and policies as well.

Transportation and Land Use Connections: Experiences from Northwest Vermont, 2007

Available at http://www.transportation-landuse.org/

The comprehensive Northwest Vermont Project (2003-2007) assessed projected population growth, municipalities' ability to manage growth, and model tools and strategies to plan for future growth. The project, documented in this report, looks at each county in the region separately, utilizing different tools for each. Tools used include Build-Out Analysis, Development Constraints Analysis, Visual Analysis, Scenic Resources Overlay District, Planned Unit Development, Cost of Community Services Study, Road Standards, and Access Management. The report presents each tool in detail, in order to help with future planning studies.

Vermont Data Links

Vermont Indicators On-line

Available at http://maps.vcgi.org/indicators/profiles.cfm
This database provides profiles or transportation data as well as other information for all of Vermont's cities and towns.

The Vermont State Data Center

Available at http://crs.uvm.edu/census/data.cfm
This database provides census information for Vermont cities and towns.

Vermont Department of Health: Inventory of Resources Related to Health for Cities and Towns in Vermont

Available at http://crs.uvm.edu/townhealthresources/
This database has information on street and trail amenities (sidewalks, crosswalks, bike lanes, speed bumps, etc…) as well as other health related amenities (such as athletic fields) for each town in Vermont.

2. Interviews with Transportation Efficiency stakeholders at the community level.

Deb Sachs: 10.9.2009

Colchester: ARRA grant—idling, eco-driving curriculum incorporated into driver's ed, purchasing hybrid for driver's ed. VT Driver's Safety and Traffic Education Association

ARRA awards posted—Chris Campbell, Senator Sanders

Purchase of electric vehicles—town fleet, driver's education

Dan Bradley—Burlington Public Works
E2C2—franchising DPW pickups, auto capture lots (Jen Green, Greg Strong, Sandrine Thibeault) ARRA grant

VECAN trying to get a pulse on what LECs are doing (building efficiency, Button Up, lightbulbs)
Way to Go Commuter Challenge
Drive traffic to GoVermont
Vanpool i.e. Autumn Harp

Brattleboro- Paul Cameron, boosting Beeline use

Institute for Sustainable Communities, Elaine Wang
Christine Forde, MPO
Dan Bradley
Peter Keating
Bryan Davis

Chapin Spencer, Local Motion
Brian Costello, Colchester Energy Committee

VNRC- James Sharpe- calling energy committees

Deb Sachs 10.23.2009

Need to characterize the problem by defining "transportation efficiency"
VECAN guidebook with TDM activities from 1998
Mitigation vs. adaptation

Spring Hill Solutions- Greg Strong—doing cost-benefit analysis of strategies for efficiency

ICLEI software- transportation emissions inventory software—could state make these metrics widely available? (VMT, fuel efficiency) other key indicators

What are the cost-savings associated with decreased VMT?
Benefits of connecting community organizations
Understanding actor's roles

EPA—building efficiencies and actions

MPO—way to go database

Jennifer Wallace-Brodeur 10.28.09

Transporting the Public- project update

Re-orienting the transportation system away from roads/bridge focus to access and mobility

Currently drafting report based on policy ideas/initiative s that came out of various work groups
Organizations are signing on to principles to show support
Potentially funding an advocacy coalition for policies/principles with other orgs (VEIC, VNRC, SURDNA)
Major items on policy agenda: Complete Streets; strengthening Growth Center policies; implement permitting that creates connections between new developments and access to multi-modal options; defining "volunteer driver" to protect volunteers against losing their auto insurance
AARP is supporting H457 which is a charter change to integrate CCTA and GMTA as one organization

Others to talk to: SmartGrowth; Burlington Legacy Project (Jennifer Green)

What organizations needs: information/strategies to tackle transportation efficiency; metrics- how do we know if we've been successful? How do we measure that?

Other resources: AARP Transportation Survey

Jennifer Green, Burlington Legacy Project 11.4.09

BLP has anti-idling campaign (funded by VCF), currently revising policy to make year-round instead of seasonal, reduce time allowance from 5 minutes to 3 minutes, increase fines from $12 to $50 (includes Jim Flint, Mary Sullivan, Deb Sachs)

Larger statewide anti-idling task force: Rebecca Ryan (American Lung Association), Johanna Miller (VNRC), Jim Flint – trying to make policy statewide

Climate Leadership Foundation- funded through SERNAC fdn and Blackstone. In conjunction with ISC (Steve Nicholas), Christine Forde (MPO), Meredith Burkett (CCTA), Dan Bradley (DPW) to be part of models of action around transportation energy reduction. Working on employee commute strategy especially for Burlington City Employees and those in downtown area i.e. library, firehouse, etc.
 Need data, i.e. on parking—how much is spent? How are spaces utilized? On students: how much do they drive in city?

Energy Efficiency Block Grant: $15k for CarShare VT membership CEDO pilot employee work trips will also get personal access 18 months to designate BG$

Burlington Climate Action Plan: being updated based on Portland OR as model
8 working groups
170-200 reccs
Analysis by Spring Hill Solutions (Jon Greaser and Greg Strong) some CBA- complete early 2010, plan complete by April 20 2010

**Netaka White, Vermont Sustainable Jobs Fund
11.20.09**

Vermont Biofuels Initiative (2004): organized/managed by VSJF with support from Leahy/DOE. $3m committed/anticipated funds + $2m in match from private/other by 2011 through Biomass/EERE funds- non-competitive

2004- biodiesel project + VT Fuel Dealers Association, DPS, Biofuels Association (now part of REV)

VSJF- accelerate commercial biodiesel interest and use in VT

Feed & Fuel project: VSJF provides funding/technical support (either in-house or referrals) for biofuels so farms can reduce fossil fuel use. Research on feasibility of sunflower, soybean, canola as biofuel. Reduce reliance on importing meal and feed products

In 2009, gave $ to support two original farms

VT Biofuels Initiative help farmers purchase equipment/infrastructure needs to create biofuels
-oilseed/biodiesel production
- commercial biodiesel blending facilities
- more flexibility for sourcing and favorable pricing and blend types

Champlain Oil Co. have commercial fleet system for biodiesel, increasing capacity up to 250,000 gallons of biodiesel B5, the highest biodiesel blend manufacturers support

In-state production of biodiesel can meet 5% of vermont's fuel/heating needs

VTrans purchases from D7C

Biocardel has 4,000,000 gallon production capacity per year

REV has a biofuels working group to discuss moving forward on biofuel policy and marketing to end-users, fuel dealers, etc. (VT Fuel Dealer's Assoc./Matt Coda, REV Executive Director and a Board Member, General Manager of Biocardel, Peter Bourne, Scott Gordon/Green Tech,)

Evan's of Lebanon/White River Jct does blending

There are smaller farms producing their own (scale)
Brookfield/ NewTech Energy is looking at capacity
Businesses i.e. Sticks and Stuff produce own- 30-40,000 gal/yr
Backyard biodiesel production
Greasecar conversions
Commercial fleets

Regional representative of oilheat industry create new fuel standard- ultra-low sulfur, 2% biodiesel and ratchet up. Individual states are submitting legislature in lieu of federal legislation (state-by-state). Northeast regional standard to begin by 2011.

Addison County Regional Planning Commission
Rick Kehne

- Grant application out right now for two electric car charging stations that would be located here at our office for anyone to use. We are in downtown Middlebury, so it is an ideal location for them Our intent is to begin getting in place the infrastructure to such alternative modes of travel.

- Continuing work on mini-park and ride system in the county. Kevin and I will be doing a study this year that will help ideally locate then P&R's based on LEHD data and the journey to work flows that we can extrapolate from it.

- Continually work with ACTR (Addison County Transit Resources) to improve transit service throughout the region…and beyond. A few years ago, we sponsored a strategic study to find how and where we needed to implement improved service. Part of the results of that study are being implemented now. Bus service between Vergennes and Middlebury, and between Bristol & Middlebury has been redesigned to cut headway time to ½ hour to better meet the needs of the riding public.

- In the process of implementing service along the VT 118 corridor into Chittenden county.

- Promote and support local development in and about village centers, and we are actively supporting the inclusion of bike/ped access along roadways. A bike shoulder is currently being engineered along the VT 39 corridor between Cornwall and Middlebury.

- On the local front, Middlebury is doing a tremendous amount thru the Middlebury Area Global Warming Coalition (MAGWAC). The select board tasked them with finding ways to dramatically reduce green house gas emissions over the next 10 years. Laura Asermily is a good contact for more information on that front (lasermily@yahoo.com).

Bennington County Regional Commission
Rex Burke

Circulating to staff for input and review

Central Vermont Regional Planning Commission
Steve Gladzuk

- Active in organizing and promoting the Way to Go! initiative for the past three years.

- Presented and promoted public transportation, Go Vermont and Way to Go! at several Regional Energy Committee Workshops over the past couple of years.

- Supported the Climate Action 350 Bicycle Ride, which focused on increasing awareness and support for the Central Vermont Regional Path.

- Supported 10 schools to participate in the Safe Routes to School Program. and continue to support after the first year if requested, by providing maps, traffic counts, and sidewalk studies.

- 12 park & ride lots in the region, monitor use on a quarterly basis.

- Maintain a list of potential park & ride lot locations.

- Developed a micro-simulation model for Downtown Montpelier (Sychro/SimTraffic) which resulted in intersection optimization recommendations, and is used in evaluating traffic impacts of major developments.

- Conducted three roundabout studies in the Region, which has resulted in two being constructed.

Chittenden County Metropolitan Planning Organization
Michelle Boomhower

Chittenden County Regional Planning Commission
Charlie Baker

Forwarded to Michelle Boomhower

Lamoille County Planning Commission
Bonnie Waninger, Amanda Holland

- Sidewalk construction (Johnson, Morristown, Stowe)

- Hyde Park roundabout

Northeastern Vermont Development Association
Doug Morton

- Hardwick- petition to encourage selectboard to bring transit route between Hardwick and Montpelier

- Buy-in pools considered for municipalities but not realized

- Potential to bring carsharing service to are with E&D funding, place at elderly housing facilities

- Siting facilities: mobile Methadone clinics, portable dialysis units, cancer centers

Northwest Regional Planning Commission
Bethany Remmers

- Bakersfield and Franklin plan to construct sections of sidewalk in the spring of 2010.

- Fairfield and Georgia are interested in completing sidewalk feasibility studies though funding has not been secured.

- The Town of Swanton recently completed a recreation path that travels through the village.

- Lamoille Valley Rail Road line is being converted to a all-season, multi-user rail trail which will run from St. Johnsbury to Swanton.

The NRPC recently received an Energy Efficiency and Conservation Block Grant (EECBG) to complete several transportation:

[From EECBG Draft Work Plan]

Activity 2: Transportation Demand Management

- Conduct a Park and Ride needs assessment.

- Continue to support "Safe Routes to Schools" activities, including on-going efforts in Franklin and Fairfax and support for other communities that want to join the program.

- Develop transit, bike and pedestrian plans for regional and sub-regional growth centers, including the proposed Georgia South Village.

- Expand promotions of the "Way to Go" Commuter Challenge

Activity 4: Energy Efficiency in Public Buildings and Services

- Hire a contractor to conduct energy audits in 20-30 public buildings throughout the region. Audits will identify opportunities to improve electrical and thermal efficiency in these buildings.

- Conduct a street lighting analysis in 1-3 village areas to identify opportunities to improve the efficiency of street lighting.

- Utilize approximately $20,000 to fund implementation based on the recommendations of the above studies.

Rutland Regional Planning Commission
Susan Schriebman

- Applied for enhancement projects for sidewalks and are working on sidewalk project in West Rutland and developing a multi-use path along East and Otter Creek in Rutland City.

- Traffic calming project in Fair Haven in conjunction with Safe Routes 2 School includes constructing bulb outs.

- New Park and Ride initiatives in Rutland Town, West Haven and Castleton also will include some solar lighting in the latter 2 towns.

- The Rutland Region has the Rutland Area Physical Activity Coalition (RAPAC- website is www.rapac.ifo) that is made up of the Health Dept., Recreation Dept, RPC, Hospital and other interested people. They have a program called Walk Rutland (www.walkrutland.com) that is a walking program.

- The RRPC has also promoted the annual Way to Go Challenge to reduce carbon emissions.

Southern Windsor County Regional Planning Commission
Tom Kennedy

Two Rivers-Ottauquechee Regional Commission
Chuck Wise

- Hartford- Shut off 30% of street lights

- Woodstock- electric/ cowpower pus between village and national park. May not be energy efficient if it is displacing other modes. Federally funded.

- Always trying to create multi-modal environments by encouraging development in places where it already exists.

3. Case Studies

3.1 Hinesburg Rides, Hinesburg, VT

The Town of Hinesburg, Vermont is located approximately 15 miles south of Burlington, Vermont, with a population of 4,340. A few years ago, Karla Munson, a long-time town resident of 35 years, a member of the Village Steering Committee, and the future Program Coordinator of Hinesburg Rides, sensed a need for a more formal public transportation system to provide transportation services to Hinesburg's residents. Seeing many empty seats on the elderly and special needs buses stopping in and passing through the town, Munson wondered if it would be possible to coordinate with these transportation providers in order to service Hinesburg's needs.

Scheduling and programming conflicts made it infeasible for the providers to service Hinesburg, however, one of providers suggested that the town could survey its residents to determine its transportation needs. Although the survey response was low, it indicated a need for some public transportation to serve the town's elderly and youth populations. Munson found, "From the questionnaire, we knew that in Hinesburg there are people who need to go to Lantmann's [the local grocer], the grocery store, bank, doctor, that didn't have a way and had to depend on someone else to take them." Munson also made inquiries regarding transportation needs with local agencies such as the Visiting Nurses Association and the Champlain Valley Agency on Aging.

A public meeting was held to discuss Munson's findings. The meeting was attended by over 120 people, including many town residents as well as representatives from the state's transportation agency (VTrans), the county's public transportation authority (CCTA), one of the elderly and special needs providers (SSTA), and local churches and schools. As a result of the meeting, VTrans recommended that Hinesburg apply for an upcoming United We Ride federal grant. In 2007, the Town of Hinesburg won the grant and created Hinesburg Rides (HR), a community program with three branches:

1. The Volunteer Driver program – providing rides to those without other transportation options (particularly the elderly & disabled);
2. The Commuter/Carpool program – promoting various forms of ridesharing; and
3. The Employer Partnership program – working with local and regional employers to improve transportation options for their employees.

At present, HR operates a successful Volunteer Driver program with State, Town, and private funding, and organizational support (i.e., dispatching and billing) from the SSTA.

3.1.1 Volunteer Driver Program

The Volunteer Driver program encountered early challenges attracting volunteers despite outreach and advertising in the community newspaper, the Hinesburg Record, attendance at community events where they distribute brochures and flyers posted at local businesses, doctor offices, and community bulletin boards. So, Munson, "just started calling people that I thought would be good drivers, and they all agreed to do it." When thinking about a criteria for volunteer drivers, Munson looked for "people that would have the time and interest and were publicly minded people, mostly couples." Munson also contacted people who were retired that might have the time to volunteer, were dependable, and had reliable vehicles. Munson said drivers volunteer because, "I think they felt there was a need there to help the people."

Munson became a notary in order to work with SSTA to perform background checks (SSTA administers and covers fees for checks) and car inspections, and then became the first volunteer driver along with her husband (riders do not submit to a background check). There are currently about 10 volunteer drivers. Volunteer drivers can request mileage reimbursement for trips, but Munson reports this rarely happens. Although SSTA matches

drivers and riders for the Volunteer Driver program, residents in need of a ride often contact Munson first, as Munson notes, "because, being local, they felt more comfortable with that." Alternately, riders can contact SSTA directly, who in turn contact the volunteers to find an available driver. Munson thinks the main reason people contact HR for rides is, "I think they don't have another way, they have to depend on other people to take them. This was an organized way of doing it without asking friends or family."

In the program's first year, there have been approximately 100 rides completed, with many repeat riders. Many of the residents requesting rides have physical disabilities or cannot drive because they are elderly. The majority of rides have been for doctor appointments and physical therapy, as well as requests to go on errands to do grocery shopping, bank, and drug store. Riders can request to go to more than one destination (Munson has driven one rider to the bank, drug store and doctor on one trip), which is agreed to before the trip. Munson finds, "You know your people after a while. You know she needs to do multiple things while you're out."

In some cases, a volunteer driver will drive more than one person. Munson recalls, "That just happened because this fellow from St. George [a neighboring town] had to go to the hospital and then a woman needed a ride to Fletcher Allen and we combined trips. It worked out fine, neither knew when they would be done but we had lunch in between, the girl and I."

Volunteer drivers keep track of hours and miles, and Munson sends out monthly emails requesting information from drivers on who they drove, where, and trip length. If there are no volunteer drivers available to provide a requested ride, then SSTA tries to provide service with their vans. Failing that, HR has some funding dedicated for taxi service which SSTA will coordinate for the rider. Riders are expected to provide at least 24-hour notice when requesting a ride. Additionally, the program will not set up repeat rides for commuting purposes, although they will try to match residents through the carpool program when they receive these requests.

Initially, the Volunteer Driver program only served Hinesburg residents. However, the program needed more riders to be viable and it was decided they would expand to St. George, which does not have any money specifically allocated for transportation, as well as residents of towns that surround Hinesburg, especially those on the Huntington, Charlotte or Shelburne borders.

3.1.2 Challenges and Opportunities

Creating a redundant program in the community is one challenge HR faced when creating the Volunteer Driver program. Local churches, for example, offer informal volunteer driving for their members although they have also been integral in doing outreach for HR. Munson remembers, "I went to St. Jude's committee and said to really make our program successful, some of these groups have to give up their own program."

As some volunteer drivers are not being used every month, Munson is increasing the program's marketing to attract riders by, "always put articles in the Hinesburg Record, the Burlington Free Press, Vermont Centennial Paper. We're putting together a flyer to go out to all the residents. A repeat ad to go in the Record. Just keep pounding the streets, so to speak." A local school also contacted HR to inquire about setting up rides for children with special needs, as the town was no longer operating a vehicle for this purpose. The HR program was unable to accommodate this request. They also cannot accommodate group requests, although Munson would like to see the town offer a van or small bus service.

The Web site for Hinesburg Rides (www.hinesburg.org/hinesburg_rides.html) offers program overviews and contact information regarding the programs offered, but Munson thinks most participants find out about the program through word-of-mouth or through the Town Clerk. There may be an opportunity to expand the program through the site by incorporating the Commuter/Carpool program database on the site, but Munson is unsure how

receptive residents would be to participating through the site. "I think a lot of it would have to be pushed on people because they are so set in their ways to get in their cars and go. And we're trying to push that, try it out one day a week. And we found out a lot of people would carpool 1-2 days a week and then go their separate ways."

With the Volunteer Driver program underway, HR is now focusing on the Commuter/Carpool program. The program has attracted 70-80 people, who indicate their destination and morning and evening departure times when signing up, through a community carpool week hosted by HR in Fall 2008. Residents of Starksboro and Bristol, two neighboring towns of Hinesburg, also participated as they drove through Hinesburg on their way into Burlington. The main challenge facing the program is how to match people and track the data. Munson notes, "Dawn was manually trying to match up people and send emails saying, ok, so-and-so goes to UVM [The University of Vermont] every day, why don't you get in touch with each other." She's just not really sure because the data hasn't come back about how many matches have taken place and how it's worked out. HR recently receive a Transportation Action Grant (TAG) to partially address this issue by conducting data collection on the program.

3.1.3 Volunteer Drivers

3.1.3.1 Sue McGuire

Sue McGuire's family has lived in Hinesburg for three generations. She is one of seven children, and has 14 cousins on her father's side alone— many of whom still live in the area along with their children. Sue and her husband met Karla at a local restaurant one day who asked them to consider becoming volunteer drivers for HR. Although they did not know anyone else participating in the program, Sue and her husband agreed to participate because, "We have the time, we're both retired and it sounded like it would be good to do for people."

In general, the McGuires are contacted by SSTA for rides, although occasionally Karla will call for a last minute substitution. On average, they are contacted every two to three weeks, and seldom provide multiple rides in one week. When the McGuires or other volunteers are not available for a late request, SSTA will offer their van service, but McGuire thinks, "None of the elderly people really like the bus— they like it better when it's us because we can chitchat." The rides provided by the McGuires have been almost exclusively doctor appointments to South Burlington, about 12 miles away. While the longest trip she's provided was about 35 miles roundtrip, McGuire thinks she would be willing to drive as far as Middlebury or St. Albans, Vermont (approximately 30-40 miles each way).

When McGuire does provide rides, she said SSTA will let her know the duration of the trip. For shorter trips, she will often wait for the rider and drive them back to Hinesburg, but for longer trips she will run errands and pick up the rider on her way back. Occasionally, McGuire notes, on longer trips she will drop the rider off and run errands, and coordinate with her husband to pick up the rider. On one occasion, McGuire said, "I brought a lady out for an appointment and SSTA said it would be about an hour and half, but when I brought the woman in she said it is going to be like two and a half, three hours so I did some shopping, went to lunch… and when I got to lunch she [the rider] called and said she was ready, which was closer to what SSTA said."

Overall, McGuire describes her experience with HR as very positive. She's, "enjoyed chatting with all these people." Her riders are exclusively elderly who cannot drive because of frailty or loss of eyesight. But she does not think people participate for the social interaction as much as they prefer it to riding the SSTA bus. McGuire says, "It's a good program and I feel good about it. Makes you feel good to be doing something for the community. I like getting to know some of these older people that I wouldn't see otherwise." The only advice McGuire has for improving the program is to increase the advertising and marketing to recruit riders, as, "probably those who need it most know about it least."

3.1.3.2 Carrie Fenn

Carrie and Dave Fenn have lived in the Hinesburg area for 14 years, and have known Karla Munson for 9. They participate on the town's energy committee, and were concerned about the town's transportation problems—in particular, the lack of public transportation. Before HR started, Fenn only knew of one person in the town offering rides for residents as a fee-for-service. The Fenns found out about the Volunteer Driver program through the Hinesburg Record, the monthly community newsletter, and decided to participate because the program dovetailed with their concerns around energy and transportation.

SSTA generally contacts Fenn four to five days in advance to set up a ride, and although she's never driven anyone she previously knew, she has driven the same person more than once. At the time of this project, Fenn had not been contacted for a ride in over a month. Most of the rides she provides tend to be 30-35 miles, and she does not ask for mileage reimbursement. Usually, Fenn notes, "The people I've driven have needed to do things like go to physical therapy or the doctor's; I drove somebody into Burlington to have their taxes done." On one occasion, though, Fenn says, "A woman that I know had an accident and couldn't drive but had to go to physical therapy. She was in such bad shape, people were bringing her food, and she'd been feeling like she'd asked for enough. And she was interested in getting Hinesburg Rides going."

Fenn, along with Sue McGuire, thinks the program would benefit from increased publicity to serve a large portion of Hinesburg residents. One thing Fenn has considered when trying to understand why rider participation is not higher is individual comfort level with using the service. Fenn says, "I was thinking, if we were to let go of our second car, and had one car, and then all of a sudden one of us needed a ride, would we feel ok about calling? And that would be a move, I think, towards the right direction, because it's more like car-sharing as opposed to having two cars because we live in the country. That would be a direction I'd like to go in terms of trying to promote it."

Overall, Fenn has also found her experience volunteering with Hinesburg Rides to be positive. Her favorite aspect of participating is meeting new and interesting people, and learning a little bit about their lives—if they have to go to physical therapy, why? She says, "It's been fun. I've enjoyed doing it. People are interesting in various ways. It's good."

3.1.4 Riders

3.1.4.1 Sahra Aschenbach

Sahra Aschenbach, a Vermont resident for 49 years, initially heard about Hineburg Rides through a friend who saw a flyer at the library. Aschenbach contacted the town clerk for more information, and decided to use the Volunteer Driver program as way to get to doctor, dentist, and eye and ear doctor appointments, as Aschenbachhas macular degeneration and is legally blind. However, Aschenbach does not use the program for grocery shopping as she has a friend to take her—a "grocery shopping chauffeur." For Aschenbach, HR is available for practical purposes, she says, "I don't use it to socialize. It seems a lot to ask of someone to take me to socialize."

However, Aschenbach has met new people through HR, as well as re-connecting with people like Sue McGuire, who works with Aschenbach's son on local theater projects. Of the drivers, Aschenbach particularly appreciates the services of one driver who, "is retired and sort of given his life to service. I think Henry is the best driver Karla's got, because he goes out of his way to shovel the snow for me, he'll shovel the stairs if it snowed while we were out, he'll get firewood for me if I say 'oh I have to get firewood,' he'll say, 'I'll get you some.' He'll stop at the store, take me to Lantmann's [a local grocery store]. He's just very friendly." The SSTA services are more like those of a public bus, with limited interaction between driver and rider.

Aschenbach, who gave up driving in December 2008, finds that she is "much more community minded now that I can't get around by myself." She had cut back on her driving significantly before that, though, when her doctor, "started saying you can't do this, you are legally blind and if you get in an accident it's going to be really hard on your insurance. My daughter said, you can't do this, you can't see the shadows. And you would be the one suffering most if you ever hit someone. My church is a mile and a half away so it was quite a temptation but I don't anymore. They pick me up."

Aschenbach works from home and has two adult children in the area who are also available to drive her. But, says Aschenbach, "I was one of those super-independent women… I pretty much knew how to take care of myself. I had to learn how to ask for help. And I have to say Hinesburg Rides has made that very easy. SSTA has also made that very easy. You call and schedule through them and they call Hinesburg Rides and schedule a ride." If there is no one available to drive, SSTA will assign a van to pick up Aschenbach, but there is less flexibility—Aschenbach would not ask the SSTA drivers to stop on a way back from an appointment to do an errand, as opposed to HR drivers who will wait if an appointment runs late—"Hinesburg Rides provides friendliness from your neighbors. It's just a comfortable thing…. I don't know what I would do without them."

Generally, Aschenbach will contact a friend or family member for a ride before asking HR, and has been requesting fewer rides as her needs are fewer. The farthest distance she would consider asking a Hinesburg driver for a ride would be Essex Junction [approximately 15 miles], but would be comfortable calling Karla to see if HR would be willing to take her farther if necessary. Aschenbach has also used the Vermont Association for the Blind and Visually Impaired for transportation services.

As with Munson, McGuire, and Fenn, Aschenbach thinks HR would benefit from more advertising—"For whatever reason, I think most of the population of Hinesburg has never heard of them." Otherwise, she has been very happy with the services provided by HR, saying, "I'm just really, really grateful for these people, because I would feel really shut in if I didn't have really generous people who are willing to drive me where I need to go. It's just an amazing thing. They're all so kind."

3.1.4.2 Helen Francis

Helen Francis is a lifelong resident of Hinesburg who found out about HR from her daughter, who works in Hinesburg Village and whose husband used it to get back and forth from doctor appointments. Francis decided to use it when she needs to go to the dentist and when she had her income taxes filed because she does not drive, and there is only one licensed driver in her household. She does not know anyone else using the services, nor has she met anyone new through the program. Francis does not use the services often because her daughter or granddaughter will provide rides for Francis and her husband, and she has never used SSTA's van services. The main challenge has been providing 24-hour notice, as Francis notes, "You can't call for a today for a ride, which makes it a little unhandy." Otherwise, she has had an overall positive experience with the program.

3.2 FrontPorch Forum, Burlington, VT

In 2000, Michael and Valerie Wood-Lewis moved to Burlington, Vermont from Washington, D.C. and were having trouble getting to know their new neighborhood and community. Valerie remembered from childhood bringing cookies to new neighbors, and decided to bake cookies for her neighbors—but instead of using paper plates, she put them on china so the neighbors would have to bring them back over and meet them. But the plan didn't work—Michael and Valerie's neighbors simply left the plates on their porch and as Michael recalls, "We were just kind of dumbfounded. But we've come to find out, nine years later, these aren't bad people— they're just busy. We stepped out of bounds culturally; this was not something that was done."

The next effort for the Wood-Lewis family was to start an online neighborhood forum, Front Porch Forum (FPF), with a mission to help neighbors connect and foster community within the neighborhood. Over the next six years they adjusted how the service worked and the guidelines around the theme of helping neighbors connect and build community. Neighbors came to Michael with different questions about how the forum was to be utilized: "So is it OK for me to sell my used car? ...Is it OK for me to talk about politics, say I support the mayor?" They decided neighbors would not be allowed to post anonymously and added first names to posts, but when a new neighbor noted they did not recognize people by first name, FPF added last names and eventually street names (but not full addresses) to the posts.

"The ice was broken." Michael remembers, "[Y]ou started to feel connected to the neighborhood, you started to feel neighborhood again was a central component to their life. And it wasn't because they were spending more time on the computer, to be clear, but it was because when using the computer they started to feel a pull back to the neighborhood. Neighborhood messages would pop up that were conducive to if you were out gardening or getting the mail or picking up litter."

Front Porch Forum is now countywide with a network of 130 online neighborhood forums and recently opened their first forum in Addison County, in the town of Starksboro. Over the past several years, nearly 13,000 households signed up for a neighborhood forum, nearly 20% of Chittenden County and 40% of Burlington. In some rural areas such as Huntington, Hinesburg, and Westford, there is 50% or greater household participation rate.

To participate in FPF, residents need an email address, access to a computer and Internet, and residence in a neighborhood served by FPF. Michael analyzed one neighborhood and found that nearly 50% of members posted to the forum in the previous six months, which he notes, "is remarkable because most social media, Web 2.0 sites, only 1-10% are contributing the large share of the content. Most people lurk passively, pass through, just tune in. But on our service, people are engaged. I think that because of the basic design—small scale, among neighbors, it's safe, people are clearly identified, it's usually by default something most people are interested in because it's happening right near them."

Each forum has FPF neighborhood volunteers, who are "boosters," working to recruit members, add posts from other neighborhoods, and encourage appropriate behavior. The neighborhood volunteers share an online neighborhood where they exchange tips as well as messages, so if there is a message one volunteer would like distributed to other neighborhoods they can pass it on through this forum. Volunteers do not moderate or censor posts.

"The reason people stay," Michael says, "is community connection. People join because someone told them to— they have an immediate problem they need to solve…. People respond [to their post] and they stick around." It usually takes repeated exposure to the service before people will sign up, whether by reading an article, seeing a flyer, or getting an email. Michael says, "That was a hard lesson to learn. When we launched countywide, we tested four neighborhoods. We thought, we'll put the word out once, we'll have 100% sign up… and five people signed up. I asked people about it and they said 'What? I don't remember. I get a lot of junk.' It's so hard, people are so bombarded with messages—advertising, media, YouTube, there's so much it's hard to get people to stop. We found the way to do it is from friends and neighbors telling them."

3.2.1 Challenges and Opportunities
One challenge for FPF has been tracking and analyzing data from the messages posted on the neighborhood forums. Because all posts are submitted either through the Web site or by email, messages are not tracked by topic, although Michael reports they see a number of positing that deal with transportation. The trade-off, and

perhaps the part of the reason FPF has been so successful, is that the service is simple to use—email is "the most ubiquitous distribution." Collection of this type of data is additionally challenging, Michael notes, because, "if someone posted that they need a ride to Montpelier every day, you might see one response back on the forum, but the person might get five responses in her inbox, one phone call, or five or eight people approach her at country store, elementary school, on the sidewalk. How do you track that electronically?" He is also eager to create a software package to market and sell to organizations so the program can be replicated in other communities.

FPF, from a social capital perspective, has the ability to improve community relations. In one instance, Michael notes, an FPF user, "told me he had a neighbor two doors down with a bumper sticker of the opposite political affiliation. He thought his neighbor must be a jerk, had to be. Then on FPF, he realized, 'oh that's the guy using FPF for practical stuff—to sell a stove, or offering advice on how to use a table saw. He finally contacted him about something and they got to talking and realized the have a lot in common, they just disagree on politics. Now he sees him as a person and a neighbor." In another case, a neighbor saw children harassing a group of Somali Bantu women in their neighborhood and posted the incident on FPF. The neighborhood response was outrage, and one in particular decided to act on the incident by passing out cameras to women in her neighborhood for a multi-generational, local art show. She used FPF to solicit participants and attract people to the show. Michael adds, "It's hard not to be optimistic in my role as moderator because on a local community level people do good, and if you give them a way to do more good, easier, much happens."

From personal experience, Michael also finds that FPF can help individuals and families reduce their carbon footprint—the local car share program has located a car in their neighborhood and neighbors participate in dinner and tool-sharing co-ops. "We give through a great trade network of material things in our neighborhood. It started through FPF but as we get to know people it happens directly. Instead of driving to a store to buy something or to an agency to give something away, because we're living in a vibrant community, neighbors stop by and offer to pick something up and save us a trip." In difficult economic times, this is a boon for neighbors who use FPF to trade, give away hand-me-downs, or exchange services through the forum.