# East Central Vermont: What We Want









# SUMMARY

**East Central Vermont: What We Want** is the product of a three-year planning process funded by a Sustainable Communities Regional Planning Grant from the Department of U.S. Housing and Urban Development (HUD) through the Partnership for Sustainable Communities, an interagency partnership consisting of HUD, the Department of Transportation (DOT), and the Environmental Protection Agency (EPA). The program's goal was to support planning efforts that integrate housing, land use, economic and workforce development, transportation, and infrastructure investments in a manner that empowers jurisdictions to consider the interdependent challenges of: (1) economic competitiveness and revitalization; (2) social equity, inclusion, and access to opportunity; (3)energy use and climate change; and (4) public health and environmental impact.

This plan is consistent with the Partnership for Sustainable Communities' six Livability Principles:

#### Provide more transportation choices.

Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.

#### Promote equitable, affordable housing.

Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.

#### Enhance economic competitiveness.

Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets.

#### Support existing communities.

Target federal funding toward existing communities—through strategies like transit-oriented, mixed-use development and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.

#### Coordinate and leverage federal policies and investment.

Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

#### Value communities and neighborhoods.

Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.



Two Rivers-Ottauquechee Regional Commission (TRORC) was the lead applicant for the grant and—with much help from the Consortium for a Sustainable East Central Vermont (Consortium), Southern Windsor County Regional Planning Commission (SWCRPC), our other subgrantees, community volunteers, and consultants—we created this action plan that moves us toward a more sustainable future.

The groundwork for the above-mentioned Consortium was set up before the grant was awarded. Each of the 40 towns in the region were invited to participate, and we sought input from agencies/organizations representing groups that traditionally do not participate in planning activities, especially the elderly and people with lower incomes and disabilities. Once the award was made, the Consortium was formed and guided the direction of this plan. We pursued eight interconnected areas of focus: Economic Development, Our Homes, Energy Use in the Built Environment, Regional Transportation, Healthy Communities, Climate Resilience, Regional Habitat Conservation, and Public Water Supply and Treatment.

This plan strives to support activity that will create a more resilient infrastructure that can withstand climate change, better local/state/federal budgeting for infrastructure needs, improved alignment of public services with private sector needs, a more integrated regional transportation network with fewer overall vehicle miles traveled, a more diverse and equitable demographic pattern, greater concentration of development in previously built areas, improved access to employment, and a pattern and form of land use that is more efficient, affordable, safe, and healthy.

#### HUD Preferred Sustainability Status (PSS)

Our region has been designated as a Preferred Sustainability Status (PSS) community because we received this grant. If any towns or entities within our region's 40 towns are applying for federal grant funding, they might be eligible for two bonus points because they are located in a PSS region. HUD and its partners have committed to awarding these additional points through January 15, 2018. For more information about eligibility, contact TRORC at 802-457-3188.



The work that provided the basis for this planning project and this publication was supported by funding under an award from the U.S. Department of Housing and Urban Development to TRORC on January 15, 2012. The substance and findings of the work are dedicated to the public. The authors are solely responsible for the accuracy of the statements and the interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the government. Printed January 2015.

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## ACKNOWLEDGMENTS

We owe a debt of gratitude and thanks to all the Consortium members, subgrantees, organizations, and individuals who committed their time, energy, and resources to this plan.

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University of Vermont

Vermont Agency of Transportation

Vermont Department of Housing and Community Development

Vermont Department of Environmental Conservation

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Vermont Natural Resources Council

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See page 18

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**PLEASE NOTE:** There are several reports, white papers, and resources associated with this plan. In an effort to conserve paper and make this a more reasonably sized document, we have located these documents in online PDFs and web links available at ECVermont.org.

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New restaurant opening, Randolph, VT | © First Light Studios

Potter, Windsor, VT | © Peanutroaster

**Back Cover:** Fresh veggies at the market, Springfield, VT | © Denise E Photography

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In memory of Kathleen (Kate) Cruickshank

No project of this scale gets done without the mundane but necessary tasks of taking minutes, sending notices, getting a variety of people and groups to collaborate, and odd little tasks that actually make a difference. A lot like life.

Kate Cruickshank spent some of the last years of her life providing such assistance to this project, always cheerily, and with enthusiasm for our work. Kate lived to see our plan produced, and start to be implemented. It is up to us to carry on this work.

# EAST CENTRAL VERMONT: WHAT WE WANT

Deciding what we want is not easy. Our wants are often at odds with themselves. We want to live in the country and enjoy urban amenities. We want quality infrastructure that is inexpensive. We want to drive to work by ourselves but we hate traffic. Until now, we have not had to reconcile these and other competing wants, nor even to acknowledge that some of them are clearly unhealthy.

Now, we find ourselves increasingly facing the consequences of our past choices. Consequences that have been there all along but were masked by a variety of factors, such as an environment (including the atmosphere) that absorbed wastes; freshly built major roads; a large and healthy working-age population; and, most important, cheap energy.

Now, the revenue required to keep our infrastructure in good shape has flatlined at the same time that we must replace large parts of it. The atmosphere has given us notice that we must pay the price for more greenhouse gases in the form of very large repair bills and personal tragedy. Our population may be wiser, but it is also older. Filling up the gas tank (even with the current drop in prices) is still expensive.

The point of this plan is to decide how to address the escalating repercussions of our region's past choices. First, we believe that we should do something. We should not simply continue our historically destructive behavior. Second, we believe that we can, that a plan such as this—developed with input from many, and using good data—creates a strong foundation for action. Last, we have



"The care of the earth is our most ancient and most worthy, and, after all, our most pleasing responsibility. To cherish what remains of it, and to foster its renewal, is our only legitimate hope."

~Wendell Berry, <u>The Art of the Commonplace</u>



come to understand that creating a plan for a single area of concern without considering related areas can be counterproductive and, ultimately, such plans are not sustainable. For example, building low-cost housing in floodplains seems like a win for affordability until it rains. Consequently, this plan explicitly recognizes the interconnections among different areas and uses them to craft more effective change. In fact, we believe any plan that does not create solutions that benefit the economy, the environment, our health, and our quality of life is, in the end, a failure.

Creating a strong economy is rooted in our place—our fields and forests and people. Having a home—whether you are a newly hired worker or a retired one—is also one facet of economic development that is essential to developing a strong community and economy. Making our homes energy efficient enables homeowners and renters to save energy and money while creating less pollution and waste. And efficiency is created not only by those who live in the home but also by where it is. The more these homes can be located near employment and services, the better our transportation system will function and the less it will cost. A transportation system that has us walk, bike, or use public transit more will improve our health and engender communities that are accessible to more of our citizens. Consuming less energy and driving less will reduce

climate change. Building more compactly (but outside of flood areas) will both make us safer and reduce pressure on needed wildlife habitat. Compact development and reinvesting in core areas will not only enable the region to renovate our aging water supply and treatment facilities; doing so will also align with private sector needs and make our villages and downtowns more vibrant. And these vibrant areas will serve as the critical hubs to our economy—an economy that is more efficient, affordable, safe, equitable, and healthy, and one that sustains Vermont's treasured rural landscape of forests, farms, and wildlife habitat.

This is the region we want.



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# ECONOMIC DEVELOPMENT IN A SPECIAL PLACE

VISION: A thriving, equitable, resilient economy that preserves and honors our working landscapes, downtowns, villages, and the environment

The East Central Vermont (ECV) region's 40 towns range from rural areas without any discernible community center to bricked Main Streets with bustling shops, parks, and civic buildings. The Vermont Constitution was written in the region. ECV gave birth to the machine tool industry of the nation and was home to characters of national fame—Calvin Coolidge, Joseph Smith, Samuel Morey, and Justin Morgan—as well as those of more local significance, such as Fred Tuttle and Wilson "Snowflake" Bentley. The region is also part of the larger Lebanon-Claremont (NH) Micropolitan Statistical Area, and our economy reflects a healthy interdependency on New Hampshire's Sullivan and Grafton Counties. There is no metropolitan statistical area in this region, attesting to its truly rural nature.1

Artists and artisans flourish in the region, producing glassware, pottery, prints, and fine furniture. Microbrews, ski trails, fall foliage, maple syrup, and great cheeses all really do exist here. Many of these local products and businesses contribute to our region's sustainability by using local ingredients and utilizing the area's farmland and forestland. But ECV is not just a picture-perfect postcard.\* Companies in the region manufacture a wide variety of products, such as robots for bomb squads and precision plastic parts.



"Since 2012, there have been 600 new jobs created in Vermont downtowns, representing \$100 million in new investment. There have been 87 public improvement projects, representing \$13 million in investment, and 196 rehabilitation projects and 90 housing units."<sup>2</sup>

~Patricia Moulton, Secretary Agency of Commerce and Community Development

\*See the 2011 East Central Vermont Comprehensive Economic Development Strategy (CEDS) for an in-depth analysis of the ECV economy.



#### Livability Principles Addressed

- Provide transportation choices.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate policies and leverage investment.
- Value communities and neighborhoods.

For a rural area, we have excellent access to transportation infrastructure (which also includes public transportation services). Passenger and freight rail, airports, two interstate highways, and a growing high-speed internet network connect us to the world. The region has changed drastically over the years,

but physically it remains a relatively intact, special place that draws visitors from near and far. Vermonters take pride in the land, communities, and products that characterize the state that we call home.

In the fall of 2013, a volunteer group from around the region\* gathered to develop economic development strategies rooted in our assets, strengths, and character. The six core strategies—**Business Support**, **Entrepreneurial Development, Downtown Development, Infrastructure Development, Local/Regional Tourism and Recreation, and Value-Added Products/Arts**—are detailed below.

We are already doing many things right (in October 2014 Vermont's unemployment rate was 4.4%, while the national unemployment rate was 5.8%), but we must take additional action in each area—even if it is just strengthening existing programs. And such efforts must occur within a common understanding of our rich quality of life and the need to manage it as we try to make positive changes in our region.

Our goals, policies, and recommended actions support the efforts of the East Central Vermont Comprehensive Economic Development Strategy (CEDS), Vermont's Farm to Plate Strategic Plan, and the regional plans from the Two Rivers-Ottauquechee Regional Commission (TRORC) and the Southern Windsor County Regional Planning Commission (SWCRPC).

#### **BUSINESS SUPPORT**

This strategy and its three sub-strategies rest on the principle that building existing businesses is the quickest, cheapest, most effective, and longest lasting way to create a stronger economy:

• BUSINESS RETENTION AND EXPANSION: One of the easiest and best ways to sustain an economy is to keep existing quality



\*See page 18 for a list of Economic Development Workgroup members.





Our region is served by many different technical assistance providers; we should consider enhancing the level of coordination among the various providers.

businesses that are good employers in the region. The number of opportunities for job retention and job expansion within existing companies exceeds that of opportunities for recruiting new businesses to our communities. Based on research done by Blane, Canada Ltd., "an urban/suburban community will average 76% of their growth from existing employers. A rural community is even more dependent on the internal growth."<sup>3</sup> While many local businesses are well run, nearly all businesses can be improved. Local businesses-especially if they are small and family run-may lack the ability or knowledge to market themselves, match their services to customers, transfer operations to new owners, expand safely,

reduce waste, or diversify operations. Providing businesses with this training takes time and effort.

- WORKFORCE DEVELOPMENT: Businesses often report that they have a tough time finding quality applicants for jobs, although it is not clear why.<sup>4</sup> We need a better understanding of the disconnect between employees and employers because it could be related to location, pay, housing, skills, training opportunities, or a mix of factors.
- BUSINESS CULTIVATION: Opportunities for business expansion and business recruitment can evolve from the concept and methodology of import substitution. Import substitution is the process of identifying goods and services that are "imported" into the region and have the potential to be produced/provided locally instead. One example is the provision of components for manufacturing local furniture. If the region's manufactures are purchasing parts or fittings in large quantities from companies outside of the area, there may be a business case for expanding an existing company or bringing in a new company to fill that need.

The more that local businesses can meet each other's needs, the better the business climate will be as these profits will circulate in the community. Currently, it is not known what types of businesses are missing in the region that could provide mutual business support. By identifying products and services imported into the area in large volumes, business development strategies can be created.



#### ENTREPRENEURIAL DEVELOPMENT

The region has attracted many budding entrepreneurs, largely because of our quality of life, but we could do much more to attract these creative and energetic individuals and support them throughout the many stages of their businesses. Some of these companies may be small manufacturers, while others are service based. We will win people over based on place, not necessarily price.

Many different technical assistance providers and resources exist in the region; therefore, communities can choose from a number of options when contemplating how to establish entrepreneurial assistance. Usually, the best way to offer such support is through a partnership of existing resources and a group of local mentors who volunteer their time and talent to help new entrepreneurs. Existing resources may include a local Small Business Development Center and entrepreneurial training programs at a local college, such as Vermont Technical College. These can be supplemented by the development of a region-wide business support network that connects entrepreneurs to experts—people who have "been there, done that." A regional entity could also consider creating unique funding mechanisms—such as angel investment clubs or venture capital firmsthat allow local people to invest in local businesses.



#### DOWNTOWN DEVELOPMENT

The region has some thriving downtown areas, with Hartford and Springfield as the primary centers, and a variety of secondary centers-Windsor, Ludlow, Randolph, Bethel, Royalton, Bradford, Rochester, and Woodstock-that provide a ready-built core for business locations. Although these areas often present significant cost and financing issues due to the deteriorating condition of some existing buildings, occasional brownfields,\* a lack of coherent and cohesive development plans, a difficult permitting process for infill development,\*\* building code compliance requirements and a lack of parking (or the perception thereof), our downtowns represent massive public and private investments and remain the best place to keep alight the fires of the economy.

\*A brownfield is a former industrial or commercial site where future use is affected by real or perceived environmental contamination.

<sup>\*\*</sup>Infill development is the process of developing vacant or underused parcels within existing areas that are already largely developed.



By focusing intensive development in these cores, we also protect the surrounding working landscapes and countryside. These outlying areas are important economic drivers in their own right, but they also provide essential benefits (such as groundwater recharge and carbon absorption) and safety benefits (such as flood attenuation, which protects downstream properties). This means that focusing development in our existing core areas provides benefits for sustainability including creating compact settlement patterns in and around our downtowns. This helps minimize sprawl and strip development and reduces demand for driving, enabling the region to avoid adding to its carbon footprint.

#### **INFRASTRUCTURE DEVELOPMENT**

The term "infrastructure" describes all of the built utilities and public services needed by communities and businesses, including—but not limited to—power, water, sewer, storm sewer, streets/roads (including bike lanes), sidewalks, and communication systems.

Despite the need for maintenance and improvements, the region's infrastructure has significant capacity to handle substantial population and business growth that is consistent with state planning goals.\* The region already has a strong road and rail network. Parts of this network are in need of repair, but given the current amount of traffic, it has excess capacity. There are a few limitations on roads such as US4 from Hartford through Woodstock, as a result of its narrow shoulder width, and VT14 in Royalton, due to a narrow underpass with low clearance.

The region's downtowns have plenty of vacant or underutilized space that would allow for significant expansion within the bounds of their developed areas served by water and sewer. Smaller villages need technical and financial assistance to address economic development limitations based on a lack of water/wastewater infrastructure solutions.

## LOCAL/REGIONAL TOURISM AND RECREATION

The region does not have a single mega attraction, such as Walt Disney World. Rather, the region as a whole is a world-class tourist destination. Ski areas and fall foliage are the two traditional anchors, but steady business can be found in the summer, too. More needs to be done to try to diversify attractions and extend tourism times throughout the year, all while maintaining the elusive but precious Vermont brand. The region's air,



<sup>\*</sup>Vermont's 24 VSA 4302(c) state statute has 14 specific goals to encourage appropriate development of all lands in the state. These goals include "To plan development so as to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside," "To provide a strong and diverse economy that provides satisfying and rewarding job opportunities and that maintains high environmental standards...," and "To identify, protect, and preserve important natural and historic features of the Vermont landscape."



greenery, wildlife, landscape, and water form a backdrop that is critical to tourism and recreation, but they are often overlooked and taken for granted.

Attraction diversification is particularly important when considering the impact of climate change, since one of our most important anchors—ski areas—is under threat due to rising temperatures.

#### **VALUE-ADDED PRODUCTS/ARTS**

Artists, artisans, and farmers—makers\* have long found the beauty of the region inspirational. However, "art" is not just the prints of Sabra Field or the beautiful bowls of Miranda Thomas, and "ag" is not just the dairy farmers found throughout the region.

Craftsmanship can be expressed in skillfully made objects, performance, food, and drinks. A growing number of people desire such locally made, high-quality goods. The region is well positioned to supply this demand on many fronts. However, more effort is required to support this creative economy and our working landscapes as well as meld disparate efforts into a stronger whole.

- VALUE-ADDED AGRICULTURE: The region has a strong and growing network of farmers markets, growers, and specialty food producers, but more can be done to increase production and sales to local and wider markets even beyond the ECV region.
- VALUE-ADDED FOREST PRODUCTS: There
   are opportunities to use more raw wood

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"In the past, the state's [Vermont's] economy has been tightly linked to agriculture, natural resources and environment. That interdependency is likely to remain important to talented people and firms across all sectors that are doing business in or considering moving to Vermont."<sup>5</sup>

~Stuart Rosenfeld, Public Policy Research Analyst

products in the region including firewood, semi-finished products such as wood pellets and rough sawn lumber, and high-value finished products such as fine furniture. It's important to sustain the resource base through policies that discourage fragmentation of farmland and forestland and scattered residential development.

• **ARTS:** Both individuals and small companies, such as Simon Pearce, the glassblower, are themselves a draw to the region as well as part of our brand. They are an extremely important, if scattered, segment of the retail trade and must be supported through our actions.

\*See "What is the Maker Movement and Why Should You Care?" on page 9.



## What is the Maker Movement and Why Should You Care?<sup>6</sup>

Welcome to the Maker Movement, an evolution of millions of people who are taking big risks to start their own small businesses dedicated to creating and selling self-made products. In a world of massproduced



products, modern technology has made it easier than ever for a single individual to create and distribute items that are customizable and unique without having middlemen like manufacturers. This growing shift will continue to affect the economy and will likely have big implications on large retailers. It is a special time in history that will have a transformative impact on our future.

Makers will continue to be found in fields ranging from food to crafts to technology. And together, they will push each other forward to invent and build new and innovative things. Many technologies that will drive this growing population are not even built yet. In effect, the maker movement has only just begun.

~ Brit Morin, Entrepreneur & Writer

#### **CHALLENGES**

• VARYING RESOURCES: Looking at the 40town region as a whole can be difficult because some communities have resources that others do not.

- WORKING LANDS: Fragmentation of farmland and forestland and the conversion of working lands to scattered residential development all threaten our land/tourismbased economy.
- HOUSING: Currently, more than 6,300 households in the region have unaffordable housing costs.<sup>7</sup> The region also lacks workforce housing in general. Even though workforce housing is not a public asset, housing access and affordability bring economic benefits. Therefore, we should consider housing to be an investment in infrastructure.
- LOCATION: ECV residents depend on other regions for jobs: More than one-third of the working population works outside the region.<sup>8</sup>
- **POPULATION:** Overall population growth in the ECV region is slower than the state of Vermont as a whole and is projected to decline further through 2030.<sup>9</sup>

#### • WAGES AND INCOME:\*

- Many people are working two jobs to make ends meet.<sup>10</sup>
- Real wages\*\* (per worker) are lower than real wages at the state level, and this gap is growing.
- The region's per-employee wage income rate is 6% to 7% lower than that of the state as a whole.
- The total wage income is significantly lagging behind that of the state, a

\*Unless otherwise noted, "Wages and Income" information comes from the East Central Vermont CEDS.

\*\*Real wages are wages that have been adjusted for inflation, or, equivalently, wages in terms of the amount of goods and services that can be bought.



trend that began in the late 1990s.

- Although the region's adjusted gross income level has been higher than the state's level for some time, this is due to non-wage income such as dividend income from stocks and trust funds.
- **POVERTY:** The following data shows the percentage of people below the poverty level as October 2014:<sup>11</sup>
  - Orange County: 11.9%
  - Windsor County: 10.5%
  - ◆ Vermont: 11.6%
  - United States: 14.5%

Although our region is essentially on par with the state, and we are doing better than the rest of the country when it comes to the number of people living at or below the poverty level, any person living in poverty is one too many. We still consider this issue to be a challenge.

• INFRASTRUCTURE: Public sewer systems whether through a standard treatment system or some type of community system are lacking in many of the region's smaller villages. The supply of water from existing water systems in the region typically is abundant, but main lines are very old or undersized in many areas. Like sewer systems, water systems are not present in many villages. Existing sewer systems are in better shape than water systems because they are newer, but they may need to increase their level of treatment should demand on the systems rise. Electrical power distribution is sufficient in the region, but three phase power for industry may be lacking in places. Many areas have excellent coverage of high-speed internet and cell service, while in some areas it is poor or lacking entirely. Fast access to data and voice is vital for the operation of businesses large and small, as well as to attract employees to our area. Although telecommuting reduces the number of vehicle trips in the region today, the lack of broadband limits the number of residents who can work from home.

These are by no means all the challenges facing the region, but they are important issues. We hope that the following strategies build on our strengths.



## STRATEGIES FOR ECONOMIC DEVELOPMENT

Goal A: Align economic development, community development, and land use policies and plans to create a vibrant, healthy, and equitable region as outlined throughout the ECV: What We Want plan.





#### **BUSINESS SUPPORT:**

Goal B: Value and support existing businesses in the region.		
<b>Policy B.1:</b> Foster the retention and expansion of existing businesses.		
Actions:	Responsible Parties:	
<ol> <li>Assemble a team to lead a regional Business Retention &amp; Expansion (BR&amp;E) effort, identify local businesses, conduct surveys, and make recommendations for follow-up activities.</li> <li>Image Commendations for follow-up activities.</li> </ol>	CCs, DOs, RDCs, SBDCs, and VT Dept of Economic Development	
<b>Policy B.2:</b> Connect existing businesses, or work to create needed busine importation of goods and services.	esses, to reduce the	
Actions:	Responsible Parties:	
<ol> <li>Examine the variety of existing local businesses to determine whether or not there are desirable business gaps that can be filled internally. In addition, develop, a comprehensive action plan to either connect local businesses, support local entrepreneurs to develop new businesses, or recruit new companies to provide such services.</li> </ol>	CCs, RDCs, VT Dept of Economic Development, and Local First Alliance	
▲ 許		
<b>Policy B.3:</b> Recognize businesses for innovation and excellence.		
Actions:	Responsible Parties:	
<ol> <li>Research, design, and implement an award program.</li> </ol>	CCs, LDOs, RDCs, RPCs, and Local First Alliance	
Policy B.4: Support the workforce needs in and near the ECV region.		
Actions:	Responsible Parties:	
<ol> <li>Conduct outreach to determine the specific needs for new hires of local businesses.</li> </ol>	CCs, RDCs, and private businesses	
<ol> <li>Identify existing providers of education and workforce training in and near the region, as well as the types of services offered, their associated costs, and any gaps in training.</li> </ol>	RDCs, SBDCs, WIBs, training providers, state officials, and United Way's	
	Working Bridges	
<ol> <li>Develop a plan to connect prospective employees with training programs aimed at filling workforce needs, including the consideration of cost-share programs, transportation networks, branch campuses, online courses, internships, supported employment for people with disabilities, and public/private partnerships.</li> </ol>	RDCs, RPCs, SBDCs, WIBs, training providers, private businesses, and state	



### **ENTREPRENEURIAL DEVELOPMENT:**

Goal C: Improve the region's capacity to support and sustain the start-up and growth of entrepreneurial ventures.

Policy C.1: Provide assistance to existing and potential entrepreneurs.				
Actions:	<b>Responsible Parties:</b>			
1. Build local economic development capacity.	LDOs, RPCs, SBDCs, and town planning commissions			
<ol> <li>Coordinate a network of resources—including business coaching, financing, permitting assistance, incubators, and youth-mentoring programs.</li> </ol>	CCs, RDCs, RPCs, SBDCs, banks, and youth programs			
3. Create regularly scheduled peer-to-peer networking events for entrepreneurs (including industry-specific support groups).	CCs, RDCs, RPCs, and SBDCs			



### **DOWNTOWN DEVELOPMENT:**

Goal D: Ensure downtowns throughout the region are vibrant, accessible, and economically successful.

**Policy D.1:** Promote infill and redevelopment to enhance the region's downtowns as a first priority for business development.

Actions:	<b>Responsible Parties:</b>
<ol> <li>Create a locally prioritized inventory of the top 10 existing building and lots that are vacant or under-utilized in downtowns and villages where development would meet state, regional, and loca planning goals, and put them in line for redevelopment dollars.</li> </ol>	s LDOs, RDCs, RPCs, and towns
X	
<ol> <li>Review and recommend revisions to zoning bylaws and other land-use guidelines to ensure they actively support vitality in town centers, including infill, adaptive reuse of structures, increased height limits, and density bonuses.</li> </ol>	DOs, RPCs, towns, and state
<ol> <li>Encourage development and revitalization of housing in and near downtowns and villages.</li> </ol>	r RPCs, towns, and state
$\overline{\mathcal{N}}$	
<ol> <li>Provide technical support (such as support with permitting, parking promotion, and expansion planning) and identify funding sources (TIFs, facade improvement funds, brownfield assistance, etc.) for businesses wishing to stay in or relocate to downtowns.</li> </ol>	g, LDOs, RDCs, RPCs, SBDCs, VEDA, and towns
X	



### **INFRASTRUCTURE DEVELOPMENT:**

Goal E: Ensure public infrastructure supports and sustains a viable economy and environment.

Policy E 1: Identify the status of existing infrastructure as well as infrastruct	ture needs and
prioritize realistic and short- to mid-term projects accordingly.	lore needs, dha
Actions:	<b>Responsible Parties:</b>
<ol> <li>Identify areas for near-term development in existing downtowns and villages where water, sewer, power, internet, and roadways have capacity.</li> <li>Image: Comparison of the second second</li></ol>	DOs, RPCs, and towns
<ol> <li>Offer assistance to towns in asset management, capital budgeting, and shared services/purchasing.</li> </ol>	RPCs and VLCT
3. Develop short- and mid-term infrastructure priorities in utility, facility, telecommunications, and transportation elements (including pedestrian and bike infrastructure) in updated town and regional plans.	DEC, RPCs, VTrans, and towns
<ol> <li>Map existing cellular and broadband services in the region, identify gaps, and work to provide coverage in those gap areas.</li> </ol>	RPCs and the VT Telecom Authority
<ul> <li>5. Analyze existing commuter and in-town services, along with public transit, sidewalks, and bike routes, to determine where expansion can take place to better connect employees and employers.</li> </ul>	RPCs, VTrans, and transit providers
<ol> <li>Explore and seek funding for water and sewer upgrades as well as improvements to sidewalks, streetscapes, and public parking in village centers.</li> </ol>	RPCs, towns, and state
Goal F: Provide adequate, affordable, and safe workforce housing for resid	lents—including
those with special needs—near transit lines or job/service centers.	
<b>Policy F.1:</b> Support the development of units within the \$100,000 to \$200,0 well as rental units that fall within the range of HUD's fair market rents in a close to employment and service opportunities.	000 price range, as downtown areas
Actions:	Responsible Parties:
<ol> <li>Review zoning/plans to ensure these types of units are easily permitted, and craft incentives for developers to build in such areas.</li> <li>Image: Image: Imag</li></ol>	DOs, RPCs, UVHC, and towns



2. Draft a housing program that would allow developers to bypass Act 250 proceedings if certain criteria are met.



RPCs, UVHC, towns, state, environmental groups, and public/ private housing providers

#### LOCAL/REGIONAL TOURISM AND RECREATION:

Goal G: Encourage the establishment of diversified attractions that expand tourism and recreation opportunities while respecting the Vermont brand.

**Policy G.1:** Develop a multi-pronged approach for capitalizing on our existing assets on a regional scale.

Responsible Parties:	
CC, RDCs, and RPCs	
CCs, RDCs, and RPCs	
CCs, DOs, RDCs, RPCs, and Local First Alliance	
DEC, RPCs, and watershed groups	
CCs, DOs, LDOs, RDCs, RPCs, Upper Valley Trails Alliance, watershed groups, and local conservation commissions	



### VALUE-ADDED PRODUCTS/ART:

Goal H: Encourage economic growth that supports and enhances our working landscapes and craftspeople.

Policy H.1: Provide supportive networks, facilities, business expertise, and financing for manufacturers of locally made products. **Actions: Agriculture Responsible Parties:** 1. Work with local producers to identify needed processing, storage, RDCs, RPCs, and distribution capacity. Should it be determined that any of UVM, VT Agency these operations are needed in the region, conduct a feasibility of Agriculture, study. and agricultural organizations 2. Identify niche markets that could provide opportunities for new RDCs, RPCs, and expanding producers. UVM, VT Agency of Agriculture, and agricultural organizations RPCs, landowners, 3. Inventory farmland to understand where parcels are available that UVM, Land For could provide opportunities for new farm businesses. Good, towns, and land trusts **Actions:** Forest **Responsible Parties:** 1. Research best practices that establish sustainable wood VT Dept of production limits while still allowing for economic benefits. Forests, Parks and Recreation; UVM: forest products trade and marketing organizations VT Dept of 2. Work with existing processors/producers to limit waste and share processing machinery. Forests, Parks and Recreation; UVM; forest trade and marketing organizations; and **VT SBDC** RPCs, landowners, 3. Inventory forestland to understand where parcels are available that could provide opportunities for new forest businesses. UVM, Land For Good, towns, and land trusts 4. Review subdivision trends and patterns for rates of land RPCs, VNRC, and fragmentation. Determine whether local action (e.g., landowner towns education, zoning regulations, subdivision regulations) can be taken to reduce fragmentation and leave land available for farming, forestry, and other land-based businesses.



<ul> <li>5. Create feedstock* within the forestry community for wood-based businesses.</li> </ul>	VT Dept of Forests, Parks and Recreation; forest trade and marketing organizations; private wood businesses
Actions: Arts	<b>Responsible Parties:</b>
<ol> <li>Survey local artists and artisans to discover what advantages they have and what barriers they face.</li> </ol>	CCs, RDCs, LDOs, and RPCs
R	
<ol> <li>Expand commercial outlets for artists (including identifying areas for public art and arts districts).</li> </ol>	RDCs, RPCs, towns, and CCs
A	

\*Forest "feedstock" refers to a sustainable supply chain of wood materials to produce biofuels.



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#### **ENDNOTES**

- <sup>1</sup> East Central Vermont CEDS Strategy Committee. East Central Vermont Comprehensive Economic Development Strategy. Woodstock, VT. (2011).
- <sup>2</sup> Susan Smallheer. "Vermont downtowns are thriving, Moulton says." Vermont Today. (July 1, 2014).
- <sup>3</sup> Blane Canada Ltd. "Business Retention and Expansion." (2014). Accessed October 2014 from http://www.blanecanada.com/businessretention.html.
- <sup>4</sup> Green Mountain Economic Development Corporation. "Upper Valley Workforce Needs Assessment." Hartford, VT (2014).
- <sup>5</sup> Stuart A. Rosenfeld. "Sustainable Food Systems Cluster, Vermont Style." Regional Technology Strategies, Inc. Carrboro, NC. (2010).
- <sup>6</sup> Brit Morin. "What Is the Maker Movement and Why Should You Care?" *The Huffington Post.* (May 2, 2013). Accessed July 2014 from http://www.huffingtonpost.com/brit-morin/what-is-the-maker-movemen\_b\_3201977.html.
- <sup>7</sup> Vermont Housing Finance Agency. *Housing Needs in East Central Vermont*. Leslie Black-Plumeau and Maura Collins. Burlington, VT. (October 2013).
- <sup>8</sup> See Note 1.
- <sup>9</sup> State of Vermont. Vermont Population Projections—2010 2030. Ken Jones and Lilly Schwarz. Montpelier, VT. (August 2013).
- <sup>10</sup> GBIC (Greater Burlington Industrial Corporation). Creating Jobs and Growing the Economy in Vermont: Economic Development Recommendations. Burlington, VT. (January 2013).
- <sup>11</sup> U.S. Census Bureau. State & County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits. (Last Revised: Tuesday, July 8, 2014). Accessed October 2014 from http://quickfacts.census.gov/qfd/states/50000.html.

# Our Homes

VISION: A diverse mix of housing options that support the economy and contribute to our sense of community



Housing plays a vital role in changing people's lives and communities.<sup>1</sup> Many of our areas are residential in nature and serve as bedroom communities to a few regional job centers.<sup>2</sup> Because our job centers tend to lack housing that is affordable for a wide spectrum of people, those who can least afford housing often live the farthest away from where they work. This has led to an environmentally and financially unsustainable commuting pattern and placed additional strain on disposable income, which, in turn, stifles economic growth.

The intent of "Our Homes," as a part of the East Central Vermont: What We Want sustainability plan, is to provide an action

plan that addresses the need for varied and affordable housing options based on different income levels and needs, while meeting community goals across the East Central Vermont (ECV) region.

Through a variety of reports, surveys, and findings,\* we identified several housing issues in our region:

- The income of thousands of households is not sufficient to cover the cost of housing.
- Many workers cannot afford to live where they work, forcing an unsustainable commuting pattern.
- Young households (both single- and dual-career) have too few options when it comes to available housing stock.
- Seniors living on fixed or limited incomes struggle, especially if they wish to "age in place."
- In some of our towns, people actively work against developing a diversity of housing types, perhaps, in part, due to the misunderstandings commonly associated with "affordable" housing.

Our goals, policies, and recommended actions support the efforts of the regional planning commissions, Twin Pines Housing Trust, Randolph Area Community Development Corporation, U.S. Department

"Housing is the most common form of development in Vermont, yet housing shortages persist in many areas of the state."<sup>3</sup>-Vermont Land Use Education & Training Collaborative

\*Please see endnotes and the on-line resources at ECVermont.org.



#### Livability Principles Addressed

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate policies and leverage investment.
- Value communities and neighborhoods.

of Housing and **Urban Development** (HUD), Vermont Agency of Human Services, Department of Housing and Community Development, Housing Vermont, Vermont Housing and Conservation Board, and Vermont Housing Finance Agency to create and promote better, safe housing that is both affordable to purchase and rent, and is located in areas to minimize private vehicle trips.

## THE IMPORTANCE OF HOMES THAT ARE AFFORDABLE TO THE ECONOMY

Our economic stability and well-being depend on the availability of housing choices for a mix of incomes. We must address the lack of affordable housing near jobs and service centers. By "affordable," we're talking about more than subsidized housing for lowincome residents; we're also talking about housing for skilled workers and professionals whose talents we need for a thriving community. To ensure a robust, supportive, and resilient economy, we must build strong, lasting, and active partnerships between public and private entities, and address how we intend to create homes that will attract and keep young people, families, and businesses in our communities.

Besides creating jobs, affordable housing supports the local economy:<sup>4</sup>

- When affordable housing is under construction or renovation, dollars flow into the surrounding communities from the purchase of building supplies as well as items and services needed by workers on the job.
- When households spend an excessive amount of their income on housing and transportation, it cuts into money available to spend on other critical needs, as well as on products and services outside of necessities.
- Having more housing units increases the tax base, which supports local government.
- Businesses are more likely to locate near communities that enable a skilled and educated workforce to live nearby.<sup>5</sup>



By "affordable," we're talking about more than subsidized housing for low-income residents; we're also talking about housing for skilled workers and professionals whose talents we need for a thriving community.



#### CHALLENGES

- COST AND AVAILABILITY: The East Central Vermont Housing Needs report (see online at ECVermont.org) clearly demonstrates that, like many other areas in the United States, affordable housing is out of reach for many low-income households in our region. Funds available through federal and state programs meet only a fraction of the housing need.<sup>6</sup> As of October 2013, the region was 4,400 units shy of needed housing for low-income residents.<sup>7</sup> However, almost more striking in our region specifically is that moderate-income households are priced out of the market in many locations. In addition, even in those locations where people might be able to afford a decent, energy-efficient house, very little, if any, inventory exists.
- LOCATION AND TRANSPORTATION: Some residents in our region face extraordinary challenges in finding housing that is both affordable and located near jobs and services.<sup>8</sup> Although the typical measure of housing affordability may be that

The percentage of commuters in the East Central Vermont region who travel more than 50 miles to work grew from 13% in 2000 to 21% in 2010.<sup>9</sup>

some distance from where they work. Moving just 12 to 15 miles away from the workplace increases transportation costs enough to far outweigh the savings on housing.<sup>10</sup> Often the lowest paid workers have to travel the longest distances for employment.<sup>11</sup>

The U.S. Bureau of Labor Statistics tracks food, apparel, and housing as basic necessities; therefore, national and state policies work to keep these things affordable.<sup>12</sup> While transportation is essential for getting to work and services for many households, it is neither categorized nor tracked as a basic need. Transportation costs are the second-largest household expense,<sup>13</sup> and, when combined with housing, should not exceed 45% of a

households should spend no more than 30% of their monthly income on housing, this figure does not take into account the cost of commuting. In an effort to find housing that is affordable, many families locate

Windsor CountyOrange CountyHousehold ProfileHousehold ProfileMedian-Income FamilyMedian-Income Family\$53,353 annual income\$53,353 annual income4 people4 people2 commuters2 commuters						
Average costs as a percent of income in this location for Regional Typical Households. Combined: Renter Owner		Average costs as a percent of income in this location for Regional Typical Households. Combined: Renter Owner				
Housing	Transportation + 27% =	Location Affordability	Housing	Tro +	ansportation	Location Affordability 54%
\$13,872	\$14,405	\$28,277	\$13,872		\$14,939	\$28,811

Source: HUD & DOT Location Affordability Portal V.1



family's monthly income.<sup>14</sup> Most families spend far more on transportation than on food, and transportation costs continue to rise.<sup>15</sup> According to HUD's recently released Location Affordability Index (see graphic on previous page), neither Orange County nor Windsor County qualifies as affordable when housing and transportation costs are considered together.<sup>16</sup>

• AGING POPULATION: Our region is getting older, and we are not prepared to accommodate this population on many levels. We need to ensure that the opportunity for a high quality of life is possible at any age. East Central Vermont needs to either support ways for the aging population to stay in their homes for as long as possible, or support the creation of affordable housing options that allow them to stay in or near the communities with which they are most familiar. As of October 2013, the ECV region lacked 675 affordable units for seniors,<sup>17</sup> and this gap will only continue to grow.

Programs that include home repair and home modification,\* eldercare services, transportation, counseling on reverse mortgages, and a sufficient quantity of

Given that nursing home care expenses cost the state millions of dollars annually, Vermont officials would like to accommodate seniors' wishes to remain at home longer.<sup>18</sup>



Safford Commons: A Long Time Coming Woodstock, VT

On November 4, 2013, the Vermont Supreme Court affirmed the decision of the Superior Court that allows three non-profit organizations to construct 29 apartments and eight condominiums.

The permitting process began in 2005, when owners of abutting properties brought cases in both the Environmental and Superior Courts to prevent construction of the homes.

The project will create about 34 local jobs and inject \$7.8 million of construction activity into the economy, while bringing an opportunity for affordable housing to seniors, young professionals, and families.<sup>20</sup>

independent living, assisted living, and nursing home facilities are all needed.

• PERCEPTIONS OF HOUSING THAT IS "AFFORDABLE": Economic prosperity depends on a truly integrated, mixedincome region that offers a variety of housing types. The ability to create affordable housing is hindered by some who continue to put up roadblocks. Strategies for successfully proposing and providing affordable housing need to

\* The The Bipartisan Policy Center Housing Commission suggests that the Weatherization Assistance Program be expanded to include home assessments and modifications for aging in place.<sup>19</sup>



Much of the research suggests that the type of affordable housing matters less than the quality of the properties' design, management, and maintenance.<sup>21</sup>

be addressed, and building community support for affordable housing is crucial.

Common complaints often include residents' presumptions about declining property values, increased traffic, and changing the character of neighborhoods. Educational outreach and a forum that allows objective community concerns to be heard and addressed<sup>22</sup> should be part of the development and review process. Recognizing that, in some cases, negative impressions may be based on experience or actual conditions, education must be supported by efforts to correct either real or perceived problems. (See page 26 for The Center for Housing Policy's "Lessons for Practitioners.")

In general, a strong, consistent, and persuasive campaign that focuses on the importance and benefits of affordable housing to our residents and our economy, while addressing affordable housing stereotypes and misinformation, should be created and utilized.

#### HOUSING NEEDS SUMMARY<sup>23</sup>

The prevailing median home price of \$173,000 during the first six months of 2013 is out of reach for thousands of area households that earn less than the area median income. The scarce rental options in many ECV communities make the search for affordable housing even tougher. Both homeownership and rental housing prices are in part

driven higher by Windsor County's high proportion of vacation homes, which limits the stock available for year-round residents and brings wealthier households into the region to compete for units. In a recent survey of residents, the ECV Sustainability Consortium found that most respondents (74%) believe

#### Who needs housing that's affordable?

"Affordable" housing is typically aimed at low- and moderate-income households that are burdened by high housing costs. These households earn between 50% to 120% of the area median income (AMI).

People working full time and earning 80% to 100% of the median income include legal secretaries, bank tellers, firefighters and law enforcement officers, registered nurses, teachers, and town clerks.

People working full time and earning 50% to 80% of the median income include grocery store cashiers, nurse's aides, security officers, janitors, truck drivers, sales clerks, bookkeepers, fast-food employees, and data entry clerks.





"ensuring housing is available and affordable" is the best tool for the region to use to attract young people and families.

A household that spends more than 30% of its income on monthly housing expenses is considered "cost burdened" according to HUD standards. An estimated 11,000 households living in Orange and Windsor Counties paid this much in 2011 for their housing-related expenses (a combination of their mortgage or rent, utilities, taxes, and insurance). Of those households, an estimated 4,500 spent 50% or more of their income for housing, placing a considerable strain on the funds these residents have available for other basic life necessities. Households with heavy housing cost burdens are likely to be at the lowest end of the income spectrum. Although these challenges are not unique to this region, they are no less confounding for the residents who face them and for the communities these cost-burdened residents call home.

Capitalizing on a variety of available tools and approaches can help local and regional players reach community housing goals. Expanding and revising municipal plans and zoning regulations, pursuing affordable housing funding sources, and providing education and outreach to residents will prove most useful.

The towns of East Central Vermont vary significantly from one another in characteristics such as the existence of zoning, degree of existing infrastructure, proximity to employment and service centers, and level of community support for housing that is affordable. Ultimately, each community's goals and values will determine which tools will most effectively help residents live their lives affordably and sustainably.



## ACCENTUATE THE POSITIVE, MINIMIZE THE NEGATIVE -

#### Lessons for Practitioners<sup>24</sup>

Many Americans, even those who support the development of affordable housing, may nonetheless object when such a development is proposed in their own neighborhood. Fears about property values are often—although not always—misplaced. Taken together, the body of research on this subject suggests concrete ways to minimize both the negative effects and neighborhood opposition to such developments:

- **Design** Affordable housing that is attractively designed and blends with the surrounding neighborhood may be more likely to have no effect or even a positive effect on nearby property values. An attractive design also may be helpful in allaying community concerns about the aesthetics of a proposed development.
- Management Not surprisingly, poorly maintained housing whether privately owned or subsidized has been shown to depress nearby property values. Affordable housing that is well-managed and well-maintained is more likely to have a neutral or even positive effect on surrounding properties.
- **Revitalization** Rehabilitation of distressed properties for affordable housing has proven beneficial to neighboring home values. Neighbors are likely to view quality, affordable housing as preferable to vacant lots or dilapidated buildings.
- **Strong Neighborhoods** As long as it is not overly concentrated, locating affordable housing developments in strong neighborhoods with high home values and low poverty rates is unlikely to have adverse effects on nearby property values. These findings provide support for the emerging trend toward mixed-income housing and communities.
- Concentration Research suggests that distressed areas may benefit from new affordable housing developments that are large enough to overcome surrounding blight. In other neighborhoods, large concentrations of affordable units are best avoided in favor of more moderately sized developments that may limit the negative effects associated with concentrations of poverty. What exactly constitutes a large concentration of affordable housing? Unfortunately the answer so far seems to be "it depends." This, researchers agree, is an important outstanding question.

Clearly, more work needs to be done. However, a greater understanding and appreciation of the evidence to-date could prove helpful in increasing community support for affordable homes.


## STRATEGIES FOR OUR HOMES

#### GOAL A: Provide a mix of housing types that increase community revitalization.

Policy A.1: Preserve and renovate existing housing stock.	
Actions:	Responsible Parties:
<ol> <li>Adaptively reuse non-housing properties to create more hous units.</li> </ol>	ing State, local entities, and private sector
▲ 含	
<ol><li>Renovate existing housing with public and private funding to create more affordable rental and home ownership units.</li></ol>	State, local entities, and private sector
<ol> <li>Increase the number of affordable home ownership units thro shared equity of existing homes in towns where the median h prices and incomes are out of balance.</li> </ol>	ough Towns and private ome sector
<ol> <li>Incorporate, require, and enforce minimum and innovative building energy efficiency and healthy homes standards.</li> </ol>	State and towns
✓ 含 6 2	
<ol> <li>Expand non-profit management services to private new or ex development to ensure properties are well maintained.</li> </ol>	isting RPCs, towns, and housing non-profits
▶ 2 3 3 2	
	more actions
Thi	s symbol 🔍 indicates
the	at the effect of a specific tion is being followed by

#### Acronym used under Responsible Parties:

RPC: regional planning commission

FOCUS AREA ICONS: Some of the actions outlined in this section also serve to further other goals within this plan. Use of these icons indicates those focus areas. Economic Development Our Homes Reducing Energy **Regional Transportation** Habitat Conservation Climate Resilience ()Healthy Communities Public Water Supply PLEASE NOTE: Highlighted actions are already under way! If you would like to take the lead and/or participate in any of these actions, contact TRORC.

a metric. See the Metrics section of this plan for more

information.



<b>Policy A.2:</b> Build new, energy-efficient housing stock that promotes compand the efficient use of resources.	oact development
Actions:	Responsible Parties:
<ol> <li>Target new housing development in towns with existing water and sewer infrastructure to reinforce historic settlement patterns.</li> </ol>	Towns, RPCs, housing non-profits,
	and private sector
<ol> <li>Where existing infrastructure is not available, encourage the use of shared water and/or wastewater in applicable areas.</li> </ol>	State, RPCs, and towns
<u> </u>	
<ol> <li>Allow staff-level approval to expedite permitting for accessory dwelling units (ADUs).</li> </ol>	Towns
<ol> <li>Encourage multi-family housing, assisted living facilities, group homes, and senior housing in close proximity to services in village and town centers, or along public transit routes.</li> </ol>	RPCs and towns
<u>▲ 影 》</u>	
<ol> <li>Incorporate, require, and enforce minimum and innovative building energy efficiency and healthy homes standards.</li> </ol>	State and towns
✓ 含 6 2	
<b>Policy A.3:</b> Towns should encourage investment in housing that is afforded of Vermonters.	able to a wide range
Actions:	Responsible Parties:
1. Review current zoning bylaws for barriers to affordable housing.         안 한	RPCs and towns
<ol> <li>Provide incentives to property owners to rehabilitate existing' structures for affordable and workforce housing in town and village centers.</li> </ol>	State and towns
<ol><li>Provide incentives to new property development owners that promote energy-efficient units.</li></ol>	State and towns
	more actions



<ul> <li>4. Develop greater financial and programmatic capacities to support and enhance housing efforts. Utilize and encourage: <ul> <li>Expedited permit review</li> <li>Consolidated permit review</li> <li>Transfer of development rights</li> <li>Cluster development through waivers</li> <li>Planned unit development</li> <li>Inclusionary zoning</li> <li>Management services</li> <li>Density bonuses</li> <li>Accessory dwelling units</li> <li>Adaptive reuse</li> <li>Reduction in development fees</li> <li>Conversion of single-family homes to multi-family homes</li> </ul> </li> </ul>	State, towns, and housing non-profits
<ol> <li>In towns with sufficiently trained staff, adopt "on the record" review* for developments to help with predictability and to minimize time delays.</li> </ol>	Towns
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<ol> <li>Create additional financial resources to supplement the limited supply of federal credits, which can finance the creation of needed housing units.</li> </ol>	State, towns, and private sector
<ol> <li>Apply for Community Development Block Grants in cooperation with affordable housing developers.</li> </ol>	RPCs and towns
<ol> <li>Encourage towns to have State-designated "downtowns," "village centers," "new town centers," and "neighborhood development areas" to trigger housing incentives for developers.**</li> </ol>	State, RPCs, and towns
<ol> <li>Support a fully funded Vermont Housing and Conservation Fund (housing trust fund) and work with existing housing trust</li> </ol>	State, RPCs, and towns
organizations.	

\*"On-the-record" review: Proceedings are recorded, then if later challenges or appeals arise, the process does not have to start over. The towns of Chester, Ludlow, Randolph, Springfield, and Windsor already utilize "on-the-record" review.

\*\*Twenty towns have some kind of state designation already.



#### Goal B: A balance of housing for a mixture of incomes.

**Policy B.1:** Towns must plan for and support housing in proportion to their existing economic opportunities and their capacity for growth.

Actions:	<b>Responsible Parties:</b>
<ol> <li>Coordinate planning and zoning policies in adjacent towns in order to create a more even distribution of housing opportunities.</li> </ol>	RPCs and towns
2. Ensure town policies and regulations align with existing statewide and federal priorities, such as affordable, safe housing that encourages aging in place; accessibility; housing equity fairness; and preserving and protecting the region's agricultural and natural resources.	Towns
<ol> <li>Identify land in core areas and on transit routes that is suitable for development, and work with developers and existing property owners to highlight opportunities for partnership in the development of affordable and mixed-income housing.</li> </ol>	RPCs, state, towns, housing non-profits, and private sector
<ol> <li>Towns should evaluate their role in supplying the region's housing stock by assessing need and capacity for growth.</li> </ol>	Towns and RPCs
<ol> <li>Write strong housing components in the region's municipal plans that are based on current data and proven needs as outlined in the 2013 ECV Housing Needs Assessment.</li> </ol>	Towns and RPCs
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Policy B.2: Expand housing stock.	
Actions:	Responsible Parties:
<ol> <li>Create service-enriched housing opportunities for elders, such as affordable assisted living.</li> <li> <sup>(1)</sup> (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)</li></ol>	Federal, state, regional housing organizations, and private sector
<ul> <li>2. Expand the perpetually affordable housing stock available to the region's lowest income residents of all ages.</li> <li>Image: Image: Im</li></ul>	VT Dept. of Disabilities, Aging and Independent Living, and regional housing authorities

more actions



Goal C: Educate residents so they understand and support the positive impacts of affordable housing.

**Policy C.1:** Raise awareness to combat the common misconceptions surrounding affordable housing.

Actions:	Responsible Parties:
<ol> <li>Help the community to visualize density as it fits within the historic pattern for a town/neighborhood.</li> </ol>	State, RPCs, State, towns, and private
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<ol><li>Continue to educate the public and town officials on the importance of Affirmatively Furthering Fair Housing</li></ol>	State and RPCs
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<ol> <li>Encourage rental registries, additional rental codes or local enforcement of minimum state requirements (11 communities in Vermont already have registries).</li> </ol>	State and towns
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<ol> <li>Create a regional and active affordable housing commission charged with continual attention to the housing issues identified by this plan as well as other organizations within the state.</li> </ol>	State, RPCs, towns, and private sector
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- <sup>19</sup> See Note 6.
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- <sup>21</sup> The Center for Housing Policy. "Don't Put it Here!" Does Affordable Housing Cause Nearby Property Values to Decline? Insights from Housing Policy Research. (Policy Brief Series published between 2008 and 2011).
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<sup>24</sup> See Note 21.

# Reducing Energy Use in the Built Environment

VISION: An engaged Vermont community that sources and consumes energy in a way that is economically secure and environmentally sound

"Vermont is the second most petroleum dependent state in the country due to its high use of heating oil."

~Northeast Biomass Working Group

Energy use in East Central Vermont (ECV), like all of Vermont, continues to be a major challenge in the pursuit of a sustainable future. Nationwide concern about oil dependence has grown since the 1970s oil and energy crises.<sup>2</sup> In the mid-2000s, the price of oil-based fuels rose dramatically, which highlighted the risks of oil dependency. Vermont, like some New England states (but unlike most of the country), is dependent on oil for heating as well as transportation. High fuel costs persist, and the following question remains: How can Vermont reduce its dependence on energy produced beyond its borders?

In 2011, the Vermont Public Service Department produced the Vermont Comprehensive Energy Plan (CEP), which aimed to have 90% of Vermont's energy produced through renewable sources by 2050.<sup>3</sup> This is a lofty goal, and the CEP recognizes that many pieces of Vermont's energy profile must be put into place to reach it. In addition to changing the source of energy, we must also reduce energy use. We must reduce our energy use through changes to our transportation system, land use development patterns, and built environment.

The CEP promotes efficiency and conservation as top priorities in all energy sectors. It recommended creating a



The advantage of energy conservation has been quantified on the local level as tons of air pollutants avoided and dollars saved.<sup>4</sup>



#### Livability Principles Addressed

- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate policies and leverage investment.
- Value communities and neighborhoods.

whole-buildings efficiency road map—including program delivery, consumer outreach, funding and finance mechanisms, and progress metrics—by the end of 2012.<sup>5</sup> This agal was not met.

The CEP supports Vermont's thermal efficiency goals, which were established in 2007 and 2008 under Act 92 (10 V.S.A. § 581):

- Improve 20% of housing by 2017 (more than 60,000 units), and improve 25% of housing by 2020 (about 80,000 units).
- Reduce fuel needs by 25% in building units served.
- Reduce fossil fuel consumption across all buildings by 0.5% per year, leading to reductions of 6% by 2017 and 10% by 2025.
- Save \$1.5 billion on fuel bills through improvements installed between 2008 and 2017.

As of 2013, the state has fallen short of reaching these goals.\*

In support of these priorities, and recognizing the broad scope of issues relating

to a sustainable energy future, this plan element focuses on issues related to energy use in the built environment.

### THE IMPORTANCE OF REDUCING ENERGY USE TO OUR ECONOMY

The economic importance in this case is quite simple. The money our residents pay to heat and power our homes impacts the discretionary\*\* spending money that is left, especially for those of low- and moderateincomes. If building owners and renters took advantage of utilizing more efficient products and took steps to improve building efficiency, they could save 10% to 30% percent on their energy bills,<sup>6</sup> and in Vermont that can mean saving hundreds of dollars a year. While there are many reasons to improve energy efficiency—reducing carbon dioxide emissions, increasing energy security, and relying less on fossil fuels—one of the most



Vermont's housing stock is among the oldest in the United States.<sup>7</sup>

\*Vermont's Public Service Department unveiled the "Total Energy Study." Based on this report, a road map for meeting the state's energy needs with renewables was released in the summer of 2014.8

<sup>\*\*</sup>Discretionary income is what's left once necessities such as food and shelter are deducted from disposable income.<sup>9</sup>



important reasons is to reduce the cost of energy. The money saved on energy, which was mostly going out of state, can then resonate throughout our local economy instead, through spending on goods and services.

#### **CHALLENGES**

Barriers to reaching the CEP's goals do exist. The purpose of this plan element is to identify these barriers, and to provide solutions through policy and action steps that will effectively remove these barriers when properly implemented.

 AGING BUILDING STOCK: Residential homes constitute the majority of Vermont's built environment. As such, residential energy represents 30% of Vermont's total energy consumption (second only to transportation), with heating being the largest energy consumer.<sup>10</sup> Vermont's climate demands heating. However, the state's housing stock is among the oldest in the United States, and the substantial portion of Vermont's housing stock (33%) that was built prior to 1950 is responsible for much of the total heat consumption.<sup>11</sup> These older homes were constructed before high energy costs made many energy conservation practices a priority in the built environment. As a result, a substantial number of homes utilize wasteful amounts of energy and are expensive to

## What is zero net?

"A zero net energy building is one that is optimally efficient and, over the course of a year, generates energy on-site, using clean renewable resources, in a quantity equal to or greater than the total amount of energy consumed onsite."<sup>12</sup>

~Massachusetts Zero Net Energy Buildings Task Force



maintain. According to the Massachusetts Zero Net Energy Buildings Task Force: "With buildings contributing close to 40 percent of greenhouse gas\* emissions and consuming 40 percent of energy in the United States, energy efficiency and renewable energy technologies must become central to the way we design and build."<sup>13</sup>

• INEFFICIENT ENERGY EFFICIENCY

**STANDARDS:** The owners of the region's buildings (both new and old structures) must be guided toward the goal of zero net energy use. The challenge is that even though the state code is modeled after the IECC\*\* (International Energy Conservation Code) for both commercial and residential

<sup>\*</sup>Greenhouse gases help capture and maintain the temperature of the Earth's surface. They include water vapor, carbon dioxide, methane, nitrous oxide, and a variety of manufactured chemicals. Some are emitted from natural sources; others are a result of human activities. Over the past several decades, rising concentrations of greenhouse gases have been detected in the Earth's atmosphere, which leads to an increase in the average temperature of the Earth's surface.<sup>14</sup>

<sup>\*\*</sup>Introduced in 1998, the IECC addresses energy efficiency on several fronts including cost savings, reduced energy usage, conservation of natural resources, and the impact of energy usage on the environment.<sup>15</sup>



buildings, the state code is consistently behind the most current IECC code. Zero net energy use cannot be achieved using current efficiency standards. In addition, there are compliance issues with the Vermont residential building energy code, which is not effectively enforced by the Public Service Department.

To move toward zero net energy use in the built environment, the code must

be substantially improved, and enforced and people must be educated about the code's existence and purpose.

# COST OF IMPROVEMENTS:

The up-front cost of energy efficiency improvements and building-scale renewable energy generation remains a challenge. Despite the demonstrated long-term savings benefits, the cost necessary to significantly reduce energy consumption and add renewables can be a significant barrier to implementation.<sup>16</sup> This is an issue for

all homeowners but especially for lowand moderate-income homeowners—an issue of social equity that transcends the spectrum of energy use. At the commercial and public sector levels, where capital budgets and operating budgets are often set independently of each other, there is no opportunity to use the savings from the latter to defray the former, thus removing the incentive to implement energy improvements. To meet this challenge,



## Vermont's Act 183

"Vermont communities face increasing pressure to meet the seemingly incompatible planning objectives of encouraging growth and preserving the state's rural character. The approval of Public Act 183 in May of 2006 is the most recent step in Vermont's response to that challenge. Act 183 codifies detailed guiding principles for local and regional land use decisions and encourages centralized development through economic and regulatory incentives."<sup>17</sup>

~Vermont Law Review



existing programs (such as PACE\*), funding, and incentives must be improved and expanded. New avenues for funding energy efficiency improvements will need to be developed by both the private and public sectors.

• UNSUSTAINABLE DEVELOPMENT PATTERNS: In the early 1800s, Vermont's settlements were located in the most favorable places and concentrated to make commerce and transportation more convenient. Scattered residential developments did exist, but these were not the homes of commuters these were not the homes of commuters these were hill farms that had little daily traffic.<sup>18</sup> The pattern of development that has occurred in the ECV region over the past 50 years has diverged from the early settlement patterns.

The current sprawl development pattern—characterized by dispersed, automobile-dependent development outside of population centers, along highways, and in rural areas—is not conducive to energy use reduction. We continue to construct the majority of our new buildings (primarily residences) in a low-density pattern, contributing to our continued reliance on private automobiles for most travel and limiting fuel options. A building located within a densely developed village might be able to utilize renewably generated combined heat and power, whereas a building in a rural area would not.

In order to achieve the plan's goals, transportation energy use cannot be ignored as we strive to create more energy-efficient buildings. Essentially, "location matters!" The region should embrace smart growth\*\* which, if properly implemented, "can help communities balance competing demands by



Buildings in the U.S. consume 41% of energy and constitute 40% of greenhouse gas emissions. These percentages prove we've got to improve building energy use if we hope to curb climate change.<sup>19</sup>

\*Property Assessed Clean Energy (PACE) financing is designed to encourage the installation of renewable-energy systems and improve energy efficiency by helping property owners overcome the barrier of high up-front costs. PACE financing effectively allows property owners to borrow money from a local government to pay for renewable-energy systems and/or energy-efficiency improvements. The amount borrowed is typically repaid via a special assessment on property taxes, or another tax or bill, such as a utility bill. The repayment is spread over a long period of time.<sup>20</sup> \*\*Smart growth is a more sustainable way to build and maintain our towns and cities. With smart growth, urban, suburban, and rural communities are built with housing and transportation choices near jobs, shops, and schools.<sup>21</sup>





Building owners often have a limited understanding of the connections between their energy use and potential building problems such as drafts, air quality, and ice dams.<sup>22</sup>

supporting the rural landscape, helping existing places thrive, and creating great new places."<sup>23</sup> In other words, embracing smart growth reduces energy use, which leads to cost savings for both households and municipalities, while creating vibrant communities and taking pressure off our natural resources.

Development that is more effectively directed within and adjacent to historic downtowns, villages, and neighborhoods will reduce the need for motorized transportation. In 2006, via Act 183, Vermont codified its own detailed guiding principles for local and regional land use decisions based upon the smart growth principles. Although communities are not required to plan, those that do are encouraged to uphold planning and development goals that reinforce smart growth principles.

Given the limitations of municipal water and wastewater infrastructure in the ECV region, the state must provide financial assistance, incentives, streamlined permitting, and new technology education to communities to develop or expand public sewer and water systems in order to facilitate greater density and improve the energy efficiency of land use development patterns. Further, communities will need to develop regulations (zoning and subdivision) that require buildings to be sited in a manner that reduces energy use and improves energy conservation.

• EDUCATION: Building owners often have a limited understanding of the connections between their energy use and potential building problems such as drafts, air quality, and ice dams.<sup>24</sup>

When making energy decisions regarding their buildings, owners frequently do not realize or factor in the non-energy benefits that result from weatherization and energy efficiency improvements, such as increased comfort, safety, and financial savings. They may also lack confidence in the return on investment that these improvements can provide.



Another issue is starting and following through with the improvement process, which can be daunting. Owners may not be sure how to start or where to get objective information. If this information is too difficult to find or understand, building owners can get frustrated and give up.<sup>25</sup>

To increase energy literacy, stakeholders at the state, regional, and municipal levels should implement a coordinated educational effort targeting both the public and private sectors. Many towns have energy committees that work toward these efforts; however, a state-wide, coordinated force of energy committees could help the state reach its energy goals.



## VERMONT SMART GROWTH PRINCIPLES<sup>26</sup>

- (13) "Smart growth principles" means growth that:
  - (A) Maintains the historic development pattern of compact village and urban centers separated by rural countryside.
  - (B) Develops compact mixed-use centers at a scale appropriate for the community and the region.
  - (C) Enables choice in modes of transportation.
  - (D) Protects the State's important environmental, natural, and historic features, including natural areas, water quality, scenic resources, and historic sites and districts.
  - (E) Serves to strengthen agricultural and forest industries and minimizes conflicts of development with these industries.
  - (F) Balances growth with the availability of economic and efficient public utilities and services.
  - (G) Supports a diversity of viable businesses in downtowns and villages.
  - (H) Provides for housing that meets the needs of a diversity of social and income groups in each community.
  - (I) Reflects a settlement pattern that, at full build-out, is not characterized by:
    - i. scattered development located outside compact urban and village centers that is excessively land consumptive;
    - ii. development that limits transportation options, especially for pedestrians;
    - iii. the fragmentation of farmland and forestland;
    - iv. development that is not serviced by municipal infrastructure or that requires the extension of municipal infrastructure across undeveloped lands in a manner that would extend service to lands located outside compact village and urban centers;
    - v. linear development along well-traveled roads and highways that lacks depth, as measured from the highway.



# Strategies for Reducing Energy Use in the Built Environment

Goal A: Create a built environment that supports the transition to 90% renewables and reduced net GHG emissions by 90% (below 1990 levels) by 2050.

Goal B: Reduce the long-term economic impact of rising energy costs.

**Policy A.1 & B.1:** Promote tax changes that incentivize energy efficiency and the use of renewable energy in buildings and commercial processes.

Actions:	<b>Responsible Parties:</b>
<ol> <li>Create a system of taxes or fees on non-renewable energy that are used to support the development of energy efficiency and renewable energy at all levels.</li> </ol>	State and federal entities
<ol><li>Eliminate state sales taxes for the next five years on the purchase and installation of renewable energy systems.</li></ol>	State
3. Create an efficiency tax credit process similar to the low-income tax credit, providing funding for community energy projects such as combined heat and power, municipal energy efficiency improvements, or school improvements.	State and federal entities

more actions

This symbol indicates that the effect of a specific action is being followed by a metric. See the Metrics section of this plan for more information.

Acronym used under Responsible Parties: RPC: regional planning commission

FOCUS AREA ICONS: Some of the actions outlined in this section also serve to further other goals within this plan. Use of these icons indicates those focus areas.



**PLEASE NOTE:** Highlighted actions are already under way! If you would like to take the lead and/or participate in any of these actions, contact TRORC.



**Policy A.2 & B.2:** Advocate for the introduction of legislation that mandates the steady increase of efficiency in the built environment with the ultimate goal of achieving carbon neutrality by 2050.

Actions:	Responsible Parties:
<ol> <li>Require the inclusion of annual building energy use and cost in individual properties' Vermont Property Disclosure Forms.</li> </ol>	State
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<ol> <li>Require third-party certification for Residential Building Energy Standards.</li> </ol>	State
<ol> <li>Increase Vermont's Residential Building Energy Standards to meet zero net energy use by 2050.</li> </ol>	State
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4. Mandate zero net energy use in all new state building construction.	State
5. Enforce the Vermont Residential Building Energy Standards	State
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<b>Policy A.3 &amp; B.3:</b> Support the development of funding and financing mea encourage energy efficiency and renewable energy programs as well o greenhouse gas emissions.	chanisms that is reduced
Actions:	Responsible Parties:
<ol> <li>Increase available funding for the weatherization of residential, municipal, and school buildings.</li> </ol>	Federal and state entities
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<ol> <li>Provide funding for building energy audits (consider carbon tax as a funding sources).</li> </ol>	Federal and state entities
<ol> <li>Increase funding (consider using funding from energy tax) to support energy efficiency and renewable energy programs that reduce the financial burden of home ownership for lower-income Vermonters.</li> </ol>	Federal and state entities
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<ol> <li>Promote financing mechanisms that are based on life-cycle cost analysis (LCCA) to ensure that energy efficiency and renewable energy projects are cash-flow positive.</li> </ol>	Federal and state entities and private sector
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<ol> <li>Create funding or financing mechanisms to enable municipalities and schools to more easily invest in renewable energy generation and energy- efficient systems.</li> </ol>	Federal and state entities and private sector
6. Encourage the building inspection industry to include energy performance evaluation as part of building inspections, and encourage banks to use this information when underwriting financing.	Private sector
<b>Policy A.4 &amp; B.4:</b> Develop local and regional land use plans and regulation energy consumption in the built environment and transportation.	ons that reduce
Actions:	Responsible Parties:
<ol> <li>Revise regional and town plans' future land use elements to ensure that most development takes place in core areas as required by state law.</li> </ol>	RPCs and towns
<ol> <li>Review (and revise when necessary) policies and regulations that may create obstacles for developers to more easily build compact, walkable, mixed-use* places.</li> </ol>	Federal and state entities, RPCs, and towns
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<ol> <li>Ensure subdivision designers take reasonable steps to site development so as to maximize energy efficiency and access to renewable energy.</li> </ol>	State, RPCs, and towns
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<ol> <li>Encourage the development of municipal energy codes that are equivalent to or more stringent than state building energy standards.</li> </ol>	RPCs and towns
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<ol> <li>Mandate life-cycle, cost-effective energy improvements in all projects subject to Act 250.</li> </ol>	State and RPCs
projects subject to Act 250.	mo

\* Mixed use development combines two or more different types of land uses.



**Policy A.5 & B.5:** Support the development of educational tools and programs that engage the public and related stakeholders about the importance and advantages of energy improvements in the built environment.

Actions:	Responsible Parties:
<ol> <li>Create outreach programs/materials for the public and private sector (including mortgage companies and Realtors) that discuss life-cycle costing and the economic advantages of energy efficiency in buildings.</li> </ol>	State, RPCs, and private sector
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<ol> <li>Create programs for the public and private sector that educate people (including K–12 students) about renewable energy, energy efficiency, and the dangers that GHGs and non-renewable energy sources pose to our future.</li> </ol>	State, RPCs, Supervisory Unions, and non-profits
3. Support the formation, coordination, and activities of local energy committees.	State, RPCs, and towns
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# **REGIONAL TRANSPORTATION**

VISION: A sustainably funded and maintained transportation system that allows us to travel without driving as much, and is accessible to all Vermonters

For too long, rural transportation planning has been directed at "effect management." This type of management is based on the assumption that professionals must simply calculate the anticipated growth in traffic and then decide how the transportation network should be built to meet

In September of 2013, the average price of gasoline surpassed \$3 per gallon for the 1,000th consecutive day. That's never happened before.<sup>1</sup>

capacity. No attempt was made at "cause management"—to shape the location or type of growth, to provide modal choices, or to focus more on optimizing the available capacity of the transportation system instead of simply building more roads. Transportation plans must now recognize the interactions between a multi-modal transportation network, its land use context of residential and non-residential development, economic development policies, and the environmental effects of transportation systems.

Both regional planning commissions that serve the East Central Vermont (ECV region (Two Rivers-Ottauquechee Regional Commission [TRORC] and Southern Windsor County Regional Planning Commission [SWCRPC]) have created regional transportation plans and transportation planning programs, but they must be revised to address this new way of viewing transportation planning.

ECV is considered "developed rural"<sup>2</sup> and the primary mode of transportation is the car.<sup>3</sup> The predominant land use pattern consists of a few regional job and service centers surrounded by homes scattered across the countryside.

This pattern of development, and even the location of many of our roads, is much the same as it was before the automobile. But in recent decades, long commutes have become the norm.

Over the last few generations, cars became much more affordable. Concurrently, fuel



We start with a dilemma: We encourage long commutes by our very nature.



#### Livability Principles Addressed

- Provide more transportation choices.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate policies and leverage investment.
- Value communities and neighborhoods.

became cheap and abundant, giving rise to the idea that where we live didn't matter because we could just drive to everything.

The commute is no longer affordable in many ways: Long commutes require a greater percentage of the family income to go toward gas and vehicle maintenance; they increase air and

water pollution; and they reduce leisure and family time. The state and individual towns ultimately must deal with the wear and tear on roadway infrastructure, and we all must deal with the health and climate consequences of greenhouse gas emissions.

Our plan aligns with the mission of the Vermont Agency of Transportation (VTrans): To provide for the movement of people and commerce in a safe, reliable, cost-effective, and environmentally responsible manner. The purpose of this plan is to identify policies and actions to achieve a more sustainable transportation system in keeping with the desired outcomes of the ECV planning effort, including but not limited to:

- A more integrated transportation network with fewer overall vehicle miles traveled;
- Greater concentration of development in

previously built areas;

- Better local, state, and federal budgeting for infrastructure needs; and
- A pattern and form of land use that is more efficient, affordable, safe, and healthful.

Residents of Windsor and Orange Counties traveled more than 1 billion miles in 2009, using more than 60 million gallons of gasoline that's more than 600 gallons and 16,000 miles per person. More than three-quarters of



"Since the 1970s the state has promoted development policies and programs that maintain and enhance Vermont's historic development pattern of compact centers surrounded by a rural landscape."<sup>4</sup>

~Vermont Department of Housing and Community Development



commuters in the region drive to work alone, while just 10% carpool. Almost 8% of the region telecommutes, which is greater than the percentage of commuters walking, biking, or using public transportation combined (at 5%). Just one-third of commuters work and live in the same town, while one-fifth commute to other towns in the region.<sup>5</sup> Bike paths, bus transit, and other transportation options are limited, though some commuter transit routes exist.

The TRORC and SWCRPC regional plans both point out that scattered and uncoordinated residential development continues to expand into rural areas, and commercial development has taken the form of automobile-dependent strip development along highways. These trends both limit residents' transportation options and increase their transportation costs.



The percentage of commuters in the East Central Vermont region who travel more than 50 miles to work grew from 13% in 2000 to 21% in 2010.<sup>6</sup>



Source: TRORC, 2012

### THE IMPORTANCE OF TRANSPORTATION TO THE ECONOMY

Of course, transportation networks and opportunities bring us benefits-especially economic benefits.\* Transportation networks allow Vermonters to commute to work and fulfill their other needs, such as shopping, connecting with friends, and seeing family. Critically, transportation networks allow Vermont businesses to function. Vermont's roads carry most of its visitors: In 2005, 13 million visitor trips brought in more than \$1 billion and supported more than 36,000 jobs in the state.7 However, we benefit economically from more than just motor vehicle use on roads: Bicycling and walking generated more than \$80 million and supported over 1,400 jobs in 2009.8

\*The East Central Vermont Comprehensive Economic Development Strategy (CEDS) includes infrastructure projects needed to support economic development initiatives.

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Transportation modes that reduce Vermont's greenhouse gas emissions can also bring benefits of lower carbon emissions and cleaner air. Rail travel, for example, is more energy efficient than single-occupancy vehicles. (Ridership on Vermont's two Amtrak lines—the Ethan Allen Express and the Vermonter—increased more than 50%



between 2006 and 2010. suggesting there may be cost benefits to rail as well.<sup>9</sup>) Similarly, shipping goods by rail also has carbon benefits: Freight railroads can transport one ton of freight 469 miles on one gallon of fuel.<sup>10</sup> Studies also indicate that freight is four times more energy efficient than shipping by truck.11

#### CHALLENGES

It's no secret that funds for expanding or even maintaining our transportation infrastructure are tight. In 2013, Vermont faced a transportation funding shortfall of approximately \$30 million, and in 2014 and beyond, the shortfall will be over \$200 million per year. The Federal Highway Trust Fund

Source: TRORC, 2012



is billions of dollars in debt.<sup>12</sup> To achieve a more sustainable future, we must consider transportation options that cost less in terms of both money and other impacts we don't pay for directly. These impacts include the following areas:

• HABITAT AND FARMLAND: Scattered development and the roads that serve developed areas fragment the large parcels of land needed for farming, forestry, recreation, wildlife habitat, and other natural resources. In addition, thousands of

## top 10 commuting destinations



Transportation and mobility are key contributors to quality of life and economic growth.



animals are killed each year on roads in the state, and culverts designed only for rapid water drainage prevent the movement of aquatic species.

• AIR AND WATER QUALITY: Driving impacts our air and water quality. Our water is affected by gas, oil, and other runoff from roads and parking lots; failing culverts

and roadside ditches: and road salt, among other factors. Vehicles also contribute chemicals to our air that can increase respiratory illness, cancers, and other diseases. Transportation generates about 45% of the state's greenhouse gasesmaking it the sector contributing the most to climate change in Vermont.13

 HEALTH: When driving is the only choice, we walk and bike less and get less exercise. A lack of convenient non-motorized transportation choices affects our physical activity and our health. Many studies have found that when people live in communities that have a mix of shops and businesses within easy walking distance (generally considered one-quarter of a mile), they have a lower risk of obesity than residents of communities without these services close by. People living in the most sprawling areas weigh six pounds more than those living in

### **Complete Streets**

In 2011, the State of Vermont enacted the Complete Streets law to ensure that the needs of all users of Vermont's transportation system—including motorists, bicyclists, public transportation users, and pedestrians of all ages and abilities—are considered in all state and municipally managed transportation projects and project phases.<sup>14</sup>



"Complete Streets will look different in rural communities than they do in more urban counterparts, and care should be given to ensure rural roadways are not one-size-fits all or overly suburban in nature. For example, roads surrounded by agricultural use may be "complete" by simply providing wide shoulders to allow safe bicycling and walking and providing connections to regional trail and public transportation networks."<sup>15</sup>

~National Complete Streets Coalition



more compact areas.<sup>16</sup> According to the U.S. Centers for Disease Control, 25% of adults in Vermont were obese in 2011/12,<sup>15</sup> and obesity-related health problems cost Vermonters an additional \$141 million each year.<sup>16</sup> Fortunately, we do have choices about our land use patterns, and we can help change these patterns—and the health of our state—over time.

- COMMUNITY: Relying on driving can make it harder to stay connected with family, friends, and neighbors. Our transportation choices affect our social well-being. Having places where it is easy to run into neighbors and friends can increase our sense of community and give us a sense of belonging.
- ACCESS: Finally, those who cannot use or afford reliable personal vehicles may have difficulty operating in society.\* This presents serious challenges for people below the driving age, people who no longer drive, people with certain disabilities, low-wage workers, and people in poverty, among others. In the Southern Windsor County region, this may be as much as half of the population.<sup>18</sup>
- HOUSING: People are living farther away from where they work.<sup>19</sup> Why? For some, it is a matter of personal choice; but for many, it's a matter of affordability and availability. More people are spending more time driving farther to reach their employment



than in years past, and the towns whose residents have the longest commutes also have some of the lowest per-capita income levels in the region.

Some residents of the region face extraordinary challenges finding housing that is both affordable and located near their jobs and needed services. In 2013, the prevailing median home price of \$173,000 was out of reach for thousands of area households. The region's extremely low rental vacancy rate also makes the search for housing tough.<sup>20</sup>

• **COST BURDEN:** While housing costs may appear to be more affordable in areas farther from work centers, the cost of transportation rises substantially the farther from work a person and/or family may move. Moving just 12 to 15 miles away from the workplace increases transportation costs enough to far outweigh the savings on housing.<sup>21</sup>

\*According to the U.S. Census, approximately 2% of ECV households have no vehicle. While this percentage may seem low when you look at the total population, one must consider that many ECV households without cars are not necessarily close to jobs or services. For example, when the towns of Windsor and Hancock are considered on their own, 11.4% of Windsor households and 10.2% of Hancock households have no vehicle.



To move toward a more sustainable future, we need a transportation system that increases transportation options, reduces vehicle miles traveled, and promotes more efficiency. This can only be achieved by changing our land use based on our new understanding of the connection between land use and transportation, increasing transit funding and services, and building better infrastructure for safe walking and bicycling.



# STRATEGIES FOR REGIONAL TRANSPORTATION

Goal A: Improve infrastructure to accommodate local accessibility to daily needs.

<b>Policy A.1:</b> Implement and support transportation practices the and enable travel with less driving.	at promote energy efficiency
Actions:	Responsible Parties:
<ol> <li>Advocate for funding and policies that support integrated transportation planning, land use, and fuel efficiency.</li> <li>Image: Comparison of the support of the suppor</li></ol>	RPCs and local partners
<ol> <li>Incorporate ECV park-and-ride priorities into the VTrans Co Program and Budget as well as bicycling and walking fac (sidewalks, crosswalks, bus stops, bike lanes, bike racks) wi villages and downtowns that connect settlement and cor growth centers, or apply for funding through the Municipo and Ride Program.</li> </ol>	apital RPCs, VTrans, and ilities towns thin nmercial Il Park
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<ol> <li>Amend regional plans to require investment in transportat infrastructure and services by commercial developments increase bicycling, walking, or transit, or provide the nece rights-of-way to allow later investment in those facilities.</li> </ol>	ion RPCs to ssary
	more actions
Acronym used under Responsible Parties:	This symbol indicates that the effect of a specific action is being followed by
FEMA: Federal Emergency Management Agency RPC: regional planning commission VTrans: Vermont Agency of Transportation	a metric. See the Metrics section of this plan for more information.
<b>FOCUS AREA ICONS:</b> Some of the actions outlined in this section agas within this plan. Use of these icons indicates those focus and	also serve to further other



PLEASE NOTE: Highlighted actions are already under way! If you would like to take the lead and/or participate in any of these actions, contact TRORC.



<ol> <li>Identify investments in park-and-ride lot improvements in the ECV Park-and-Ride Needs Assessment.* These locations should also be considered for installation of electrical vehicle charging stations.</li> </ol>	State
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<ol> <li>Continue investment in public transportation and ride-share programs to reduce the region's dependency on single- occupancy vehicle trips.</li> </ol>	VTrans
<ol> <li>Increase rail (both freight and passenger) service and usage in the area by maintaining the existing system and expanding business opportunities for rail/truck connections and tourist travel.</li> </ol>	VTrans, rail providers, towns, and RPCs
<ol> <li>Increase the simplest form of commuting—telecommuting— through provisions of more widespread high-speed, broadband service.</li> </ol>	RPCs
<b>Policy A.2:</b> Reduce travel by single-occupant vehicles (SOVs) and reduct traveled (VMT).	e total vehicle miles
Actions:	<b>Responsible Parties:</b>
<ol> <li>Provide technical assistance to towns to plan for and implement Complete Streets principles, increase density and mixed uses in areas of compact settlement, and foster transit-oriented development along major roads in rural areas.</li> <li>Image: Image: Imag</li></ol>	RPCs
<ol> <li>Increase coordination to ensure a seamless ECV-wide transit system along all state highways.</li> </ol>	RPCs, VTrans, and transit providers
<ol> <li>Increase funding for more robust transit services that encourage increased ridership.</li> </ol>	State

\* The ECV Park-and-Ride Needs Assessment is available online at ECVermont.org

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#### Goal B: Ensure our transportation system is accessible to all Vermonters.

**Policy B.1:** Promote accessible para-transit and demand response transit services (door-to-door or curb-to-curb) for elders and persons with disabilities.

Actions:	Responsible Parties:
<ol> <li>Increase federal, state, and local funding levels for existing services for elders and persons with disabilities in the ECV region.</li> </ol>	RPCs, VTrans, and health care agencies
2. In order to contain future costs for para-transit and demand response services, put regional policies in place mandating that new multi-family housing, assisted living facilities, and health and human service facilities be located in proximity to services in village and urban centers or along public transportation fixed routes.	RPCs
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<ul> <li>3. Ensure that new affordable housing and assisted living facilities in the region provide a mobility plan that evaluates existing sidewalk and transit facilities, as well as how mobility needs of residents (including but not limited to the elderly and persons with disabilities) will be met.</li> </ul>	Housing providers, design review boards, Zoning Boards of Appeal, Act 250 District Commission
4. Continue to coordinate between agencies in providing	Human service
transportation services for elders and persons with disabilities.	agencies, transit providers, and RPCs
5. Work with area human services agencies to develop educational materials regarding the enhanced quality of life when older people and people of all ages with disabilities live in their own homes and can access the wider community via a reliable transportation system.	VTrans and human service agencies
<b>Policy B.2:</b> Improve transportation infrastructure and services to facilitate travel of adolescents.	the independent
Actions:	Responsible Parties:
<ol> <li>Identify needed infrastructure to better support "Safe Routes to School"* activities.</li> </ol>	Towns and schools
2. Create a prioritized list of low-cost solutions that would provide safe transportation connections among schools, recreation areas, and other adolescent destinations.	RPCs, schools, and towns

more actions

\*A national program focusing on improving children's safety while walking and bicycling to and from school



3. Seek grants to develop higher-cost solutions to support the Towns and RPCs independent travel of adolescents as needed.

4. Work with schools to ensure students better understand the transit Transit providers services available.

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#### Goal C: Provide a sustainably funded, built, and maintained transportation infrastructure.

**Policy C.1:** Encourage construction, maintenance initiatives, or policies that help to minimize the cost of maintaining local road networks.

Actions:	Responsible Parties:
<ol> <li>Develop capital improvement plans that address paved and gravel road maintenance costs.</li> </ol>	Towns and RPCs
<ol> <li>Maintain roads and bridges in fair to good condition, and design new transportation facilities to be flood resilient.</li> </ol>	Towns, RPCs, VTrans, and FEMA
<ol> <li>Consider options to reduce winter maintenance costs, including but not limited to downgrading state and town winter road maintenance policies, combined with a public information campaign to alter traveler expectations of snow removal. Alternative approaches to traditional snow removal and road salt could lead to improved aquatic habitats.</li> </ol>	Towns
<ol> <li>Identify dead-end Class 3 town roads that serve few structures and investigate reclassification to Class 4 in order to reduce town expenses.</li> </ol>	Towns and RPCs
<ol> <li>Identify any local bridges that are redundant and can be abandoned or removed, and those that need not be rebuilt if destroyed.</li> </ol>	Towns and RPCs

more actions



Goal D: Design a transportation system that has minimal impacts on wildlife habitat, farmland, hydrology (water flow), and water quality.

Policy D.1: Avoid habitat disruption.	
Actions:	<b>Responsible Parties:</b>
1. Avoid fragmentation of large blocks of habitat and farmland.	VTrans and towns
<ol> <li>If habitat disruption is unavoidable, include features that help animals cross the corridor.</li> </ol>	VTrans and towns
<ol> <li>Shield animals from noise, runoff, and visual impacts of construction.</li> </ol>	VTrans and towns
<ol> <li>Take special care if the habitat of a threatened or endangered species is involved.</li> </ol>	VTrans and towns
Policy D.2: Lessen impacts on the water supply.	
Actions:	<b>Responsible Parties:</b>
<ol> <li>Divert stormwater away from sensitive habitats by utilizing innovative design technologies that mimic natural hydrology that treats the water before discharge into waterways.</li> </ol>	VTrans and towns
<ol><li>Reduce parking space requirements for commercial uses and minimize the use of impervious surfaces for parking.</li></ol>	VTrans, towns and major employers
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#### **ENDNOTES**

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- <sup>3</sup> East Central Vermont Sustainability Consortium and Vermont Natural Resources Council. Transportation Choices for Sustainability: Transportation, Land Use, and Energy in a Rural Region. (2013).
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- <sup>5</sup> Rita Seto. Road Travel Patterns in the TRORC Region. Two Rivers-Ottauquechee Regional Commission (2012).
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- <sup>7</sup> Economic and Policy Resources, Inc. The Travel and Tourism Industry in Vermont: A Benchmark Study of the Economic Impact of Visitor Expenditures on the Vermont Economy — 2005. Prepared for Vermont Department of Tourism & Marketing. (2006).
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- <sup>10</sup> Vermont Agency of Transportation, Rail Division. "Freight Services." Accessed September 22, 2013, from http://rail.vermont.gov/freight.
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- <sup>12</sup> Section 40 Committee on Transportation Funding. Vermont Transportation Funding Options Section 40 Act 153 (Final Report). State of Vermont. (2013).
- <sup>13</sup> Vermont Agency of Transportation. VTrans Climate Change Action Plan. (June 2008).
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- <sup>16</sup> Barbara A. McCann and Reid Ewing. Measuring the Health Effects of Sprawl: A National Analysis of Physical Activity, Obesity and Chronic Disease. Smart Growth America, Surface Transportation Policy Project. (September 2003). Accessed September 19, 2013 from http:// smartgrowthamerica.org/documents/HealthSprawl8.03-summary.pdf.
- <sup>17</sup> Centers for Disease Control and Prevention. "Adult Obesity Facts." (2012). Accessed September 2013 from http://www.cdc.gov/obesity/data/adult.html#Prevalence.
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# HEALTHY COMMUNITIES

VISION: An East Central Vermont where healthy choices, mobility, and social connectedness are a part of community life for everyone

Communities where residents feel connected to neighbors, have a sense of belonging, have safe options for walking and being active, and have easy access to healthy foods are communities where people enjoy greater health and well-being.

The way we design our towns can encourage or discourage physical activity. The concepts of healthy design and walkable communities are prevalent in land use planning. Land use "prescriptions" can

improve health and social connections for people of all ages and backgrounds.\*

Towns need to take action to support a community where healthy choices are easy choices. This is an integral component of the East Central Vermont's (ECV's) plan for long-term sustainability and economic well-being. Through town plans, we can help build a place where healthy living is a byproduct of everyday living.

The ECV region as a whole must work toward the overarching goal of creating inclusive, accessible communities for all generations and population segments.

### THE IMPORTANCE OF HEALTH TO THE ECONOMY

Health care costs consumed 18% of our gross domestic product (GDP) nationally in 2012<sup>1</sup> and are estimated to grow to 30% of GDP by 2040.<sup>2</sup> These costs threaten the economic vitality of our communities by consuming



"Healthy places are those designed and built to improve the quality of life for all people who live, work, worship, learn, and play within their borders where every person is free to make choices amid a variety of healthy, available, accessible, and affordable options."<sup>3</sup> ~*Centers for Disease Control and Prevention* 

\*See "Promote Physical Activity" on page 72 for examples of land use "prescriptions."


#### Livability Principles Addressed

- Coordinate policies and leverage investment.
- Support existing communities.
- Value communities and neighborhoods.

resources that otherwise could be invested in schools, businesses, town safety, and infrastructure.

Chronic health conditions (such as diabetes, heart disease, cancers, and asthma) and

unhealthy behaviors (such as poor diet, sedentary lifestyles, and misuse of tobacco, alcohol, and drugs) can negatively affect school and workforce productivity. This, in turn, inhibits the competitive advantages of local businesses, decreases the region's appeal to businesses looking to set up in or relocate to the area, and channels economic activity away from the local economy and into health care services.

#### CHALLENGES

Municipal policies and practices can have an effect on the following health concerns: obesity-related chronic diseases; tobaccorelated diseases; alcohol- and drug-related health problems, injuries, and crimes; mental illness-related health problems; and child care.

## OBESITY-RELATED CHRONIC DISEASES:

Obesity\* has been a growing problem across the nation for the past 20 years.

Diseases caused or worsened by obesity include high blood pressure, high cholesterol, Type 2 diabetes, heart disease, stroke, gall bladder disease, osteoarthritis, sleep apnea, and some cancers.<sup>4</sup>

While Vermont has a lower obesity rate compared to many other states, 25% of Vermonters ages 20 and older were considered obese in 2010 and 35% were considered overweight. In addition, 12% of children ages 2 to 5 and 10% of 9th to 12th graders in Vermont were considered obese, while 13% were considered overweight.<sup>5</sup>

Obesity affects people from all racial and ethnic backgrounds as well as all income and education levels, but

Vermont consistently ranks highly as one of the healthiest states in the nation.<sup>6</sup> Our state is awash with recreational opportunities, locally sourced and healthy food products, and a clean, natural environment. However, it also faces continued battles with substance misuse, mental health issues, limited access to primary care physicians, and a general lack of walkable communities.

\*Overweight and obesity ranges are determined by using weight and height to calculate a number called the "body mass index" (BMI). BMI is used because, for most people, it correlates with their amount of body fat. An adult who has a BMI between 25 and 29.9 is considered overweight. An adult who has a BMI of 30 or higher is considered obese. A child's weight status is determined using an age- and gender-specific percentile for BMI rather than the BMI categories used for adults because children's body composition changes as they age and varies between boys and girls. For children and adolescents (ages 2 to 19 years), overweight is defined as a BMI at or above the 85th percentile and lower than the 95th percentile.<sup>7</sup>



people of lower socio-economic status are disproportionately affected.<sup>8</sup> In 2008, 21% of Vermonters with incomes 2.5 times above the federal poverty level were obese compared to 28% of those 2.5 times below the federal poverty level.<sup>9</sup>

Research shows that one of the most effective ways to prevent obesity and improve outcomes for those who are overweight is to create opportunities for healthy eating and physical activity and make them accessible to everyone in the community. For example, these can include publishing the nutritional information of menu items in restaurants, limiting the portion sizes of unhealthy food items, ensuring grocery stores and farmers' markets are located close to low-income populations, making healthy foods part of school lunches, making roads safe for pedestrians and bikers, implementing policies that promote physical activity at work sites and schools, and limiting unhealthy food outlets near youth-focused and low-income areas.

• TOBACCO-RELATED DISEASES: Tobacco use is the number-one cause of preventable death in the United States. The diseases caused by tobacco are serious health problems and include chronic obstructive pulmonary disease (COPD), ischemic heart disease, stroke, emphysema, and lung and other cancers.<sup>10</sup> Secondhand smoke also threatens the health of those who are exposed by causing problems such as asthma and upper respiratory infections.



Sharon, VT, has prohibited smoking and the use of tobacco products at town-owned properties, in town-owned buildings, and in town-owned vehicles.<sup>11</sup>

20% and 16% of adults in Orange and Windsor Counties, respectively, smoked in 2010. These percentages are higher than the statewide rate of 15%.<sup>12</sup>

As is the case at the national level, the number of adult smokers in Vermont has decreased over time, from 95,000 in 2000 to 75,500 in 2010. However, disparities among the population exist. In Vermont, 31% of very-low-income adults, 35% of uninsured adults, 39% of individuals who did not graduate from high school, and 38% of adults with mental illness smoke cigarettes.<sup>13</sup> Among adults who smoke, most began smoking before the age of 19.<sup>14</sup> In 2011, there was a 13% reduction in the number of 9th to 12th graders who smoked.<sup>15</sup> 15% and 17% of 9th- to 12thgrade students in Windsor and Orange



Counties, respectively, reported smoking cigarettes in the previous 30 days.<sup>16</sup>

The reduction in tobacco use is largely attributable to the introduction of clean indoor air laws, restrictions on where people are allowed to smoke, and restrictions on tobacco advertising. Sharon, a town in the ECV region, has prohibited smoking and the use of tobacco products at town-owned properties, in town-owned buildings, and in town-owned vehicles.<sup>17</sup> This policy and others like it help protect others from exposure to secondhand smoke as well. Other strategies include providing workplace support for cessation, increasing the price of cigarettes through tax hikes, and limiting tobacco sales to minors as well as their exposure to smoking.

• ALCOHOL- AND DRUG-RELATED HEALTH PROBLEMS, INJURIES, AND CRIMES:<sup>18</sup>

Alcohol often plays a major role in many preventable injuries and fatalities including motor vehicle crashes, suicides, domestic violence, and unintentional injuries. In addition, it contributes to chronic diseases and cancers. Research shows that the earlier someone starts to use alcohol, the more likely he or she is to develop future alcohol dependence. For that reason, drinking at a young age is especially problematic.

Approximately 60% of 9th to 12th graders in Vermont have reported using alcohol; 11% of youth ages 12 to 17 said they have binged on alcohol (five or more drinks of alcohol in a few hours); and 9% of 6th to 8th graders reported drinking before the age of 11. During the past decade, the highest percentage of individuals reporting binge drinking (50%) occurred in the 18- to 25-year-old range.

Approximately 40% of 9th to 12th graders in Vermont have used marijuana, and 24% surveyed had used it in the previous 30 days. 20% of individuals ages 18 to 25 reported marijuana use in the previous 30 days, while only 6% of individuals ages 26 and older reported using the drug in the same time period. Based on these figures, Vermont has one of the highest rates of marijuana use among young people in the country. Additionally, 8%, 10%, and 14% of 9th to



The Drug-Free Communities Support Program (DFC) is a Federal grant program that provides funding to community-based coalitions that organize to prevent youth substance use.

"It is wiser to prevent a disease than to face its consequences at a more advanced stage."<sup>19</sup>

~Partnership for Prevention





"Vermont has one of the highest rates of marijuana use among young people in the country."<sup>20</sup>

 ${\sim}Vermont\ Department\ of\ Health$ 

12th graders reported using inhalants, hallucinogens, and prescription drugs, respectively.

Often, individuals with drug and alcohol addiction problems do not receive the treatment they need. In fact, 7% of Vermonters who need such treatment do not receive it, which affects their ability to live truly healthful lives.

In addition to schools providing education and parents delivering clear messages to their children about alcohol and drug use, recent research has shown that changing community environments such as limiting access to alcohol, increasing enforcement of existing laws, and changing community norms regarding alcohol—can reduce rates of underage alcohol use. In addition, price increases through tax hikes and restrictions on advertising can reduce alcohol use and make it easier for people recovering from addiction to stay sober. We expect similar strategies to be true for marijuana use; therefore, policies that restrict its availability and maintain community norms around non-use are important to prevention among young people. Getting these policies in place sooner than later is particularly important in light of the fact that, like other states, Vermont is considering the legalization of marijuana.

MENTAL ILLNESS-RELATED HEALTH

**PROBLEMS:**<sup>21</sup> Mental health is defined as a state of successful mental function and performance that results in productive activities, fulfilling relationships with others, and the ability to adapt to change and take on challenges. The term "mental illness" refers to all diagnosable mental disorders that contribute to disability, pain, or death. Mental disorders include depression, bipolar disorder, bulimia, anorexia, obsessive-compulsive disorder (OCD), autism, schizophrenia, and drug and alcohol abuse, among many others.

Depression is a common mental disorder. It is often associated with other chronic health conditions such as cancer or heart disease. In Vermont, 23% of adults have been diagnosed with a depressive disorder compared to 17% of adults nationwide.<sup>22</sup> Overall, women in Vermont more often report feelings of sadness or helplessness than men (27% in women, 18% in men).<sup>23</sup> In Vermont, both men and women with college degrees and higher incomes are less likely to report a depressive order.<sup>24</sup>



Unfortunately, without treatment, some mental illnesses lead to suicide. In Vermont, there were 13

Towns can implement strategies to help promote inclusion, making community members feel valued in an effort to prevent or reduce the negative effects of mental illness.

suicide deaths per 100,000 people in 2009.<sup>25</sup> An individual's suicide also creates a potential mental health issue for friends, family, and the community as they cope with the loss.

Towns can implement strategies to help promote inclusion, making community members feel valued in an effort to prevent or reduce the negative effects of mental illness. These strategies may also include specific training to help community members and town employees recognize and respond to mental illness.



From the standpoint of physical well-being, child care programs can help children avoid sedentary behaviors and reinforce good eating habits.<sup>26</sup> • CHILD CARE: Safe and affordable child care provisions are a vital component in the upbringing of our region's children. Such provisions bolster our sustainability by making the region an enticing place to raise families. Child care services run the aamut of recreational opportunities outside of standard schooling for kindergarten through high school-age children, and range from infant and toddler day care facilities to after-school activities and social centers for teenagers. These services increase the number of opportunities for learning and socialization outside of family and academic circles, and provide safe havens that prevent social disengagement and antisocial behavior.<sup>27</sup> Additionally, from the standpoint of physical well-being, these programs can help children avoid sedentary behaviors, and reinforce good eating habits.28

Six of the 40 towns (15%) in the ECV region lack any form of licensed or registered child care facilities (Bridgewater, Granville, Hancock, Pittsfield, Plymouth, and West Windsor). Consequently, around 536 children ages 14 and under do not have in-town child care opportunities (registered or licensed).<sup>29</sup> Therefore, families must travel to neighboring towns or job centers to find



adequate services. Although no statistics exist, many other children do not have convenient access to care, or there may be insufficient providers in their town.

#### **MULTIGENERATIONAL PLANNING**

Vermont is one of the oldest states populationwise. The current middle-aged population (composed of individuals ages 45 to 64) is large, and the aging of this population group will create a 42% increase in Vermont's elderly population (individuals ages 65 and over) by 2017.<sup>30</sup> Healthy lifestyles have a greater influence than genetic factors on avoiding age-related decline in physical and mental health and on the well-being of persons over 65. In addition, well-being can be promoted through sustainable aging in place, which involves helping older residents remain in their community while also addressing the longterm economic, social, and health needs of both current and future generations at every age.

In August 2013, the Vermont Agency of Commerce and Community Development produced a study on population projections through 2030 for each county throughout Vermont.<sup>32</sup> The ECV region is poised to see a large increase in the number of elders over the next two decades. Assuming a slightly higher rate of net migration, Orange and Windsor Counties are projected to see 130.8%



"Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity."<sup>31</sup> ~World Health Organization

and 105.8% increases in the 65+ population, respectively. Furthermore, the majority of age cohorts\* below 65 are expected to see decreases in population.<sup>33</sup>

Nationwide, a large number of the people entering the 65+ age category are part of the "baby boomer" generation. These baby boomers want to age in place.<sup>34</sup> "Aging in place" means that older adults can live as independently as possible as members of the community of their choice. For some, this means growing older in the home where they have lived for a long time; for others, it means transitioning to a more appropriate and supportive setting but remaining in their community. "During a lifetime, people

## Creating an age-friendly environment benefits everyone, including younger people, older people, and people with disabilities.

develop connections to place and form important social relationships within

\*"Cohorts" are groups of subjects who have shared a particular event together during a particular time span (e.g., a birth cohort is a group of people who were born in a specified calendar period).<sup>35</sup>



"Given that nursing home care expenses are currently costing the state millions of dollars annually, Vermont officials would like to accommodate seniors' wishes to remain at home longer."36

their neighborhoods and communities. Sustaining these relationships plays an important role in aging well."<sup>37</sup>

According to the American Planning Association, aging in place requires "safe, walkable neighborhoods, a complete range of services nearby, an opportunity for civic engagement, affordable and mixed use housing, and adequate

~Vermont Housing Finance Agency

transportation opportunities."<sup>38</sup> These same conditions promote health for other age groups as well. In fact, many of the elements for aging in place can also benefit families with young children and young adults.

# CHALLENGES TO MULTIGENERATIONAL PLANNING

Many towns within the ECV region are very rural and do not have the appropriate infrastructure or an adequate range of available services to support aging in place. Many residents depend upon singleoccupancy vehicles for transportation. Furthermore, many homes are located outside of a town, village, or city center, which means services are farther away and elderly residents are more difficult to reach in case of emergency. Another large challenge the region faces is its aging housing stock. Not only does this place a cost burden on many residents due to the inherent energy inefficiency of older houses, but it also creates an accessibility challenge. Many older homes were not designed with ramps, handrails, or other accommodations that allow elders to age in place.

Additionally, many seniors over the age of 65 have some form of functional limitation.\*<sup>39</sup> Consequently, many have less independence than before. Elders who age in place are often isolated in their homes because they can no longer drive themselves, and alternative modes of transportation are limited.



Engaging in multigenerational planning will benefit all age groups and result in healthier, more viable communities throughout the region.

\*According to the World Health Organization, a functional limitation is any health problem that prevents a person from completing a range of tasks, whether simple or complex.



## WHAT DOES MULTIGENERATIONAL PLANNING LOOK LIKE?

Multigenerational planning comprises several essential components such as ensuring that all age groups have an opportunity for community and civic engagement; access to a variety of affordable housing options; access to adequate transportation; safe, walkable neighborhoods; and access to essential goods and services.

- CIVIC PARTICIPATION: Civic participation is critical to healthy communities. Elders and youth should be involved in open and public discussions in order for both groups to share their outlooks. Elders can offer a historical perspective along with background knowledge about the community gained from years of living there. Furthermore, civic engagement "helps seniors live longer, healthier, and happier lives."40 Younger folks can bring energy and a fresh perspective. Getting involved in a public planning process helps young people develop a sense of citizenship and fosters personal development.<sup>41</sup> Additionally, they can learn a lot about their own community, and meaningful participation helps them feel valued by their community.
- AFFORDABLE HOUSING: Ensuring access to affordable housing is also vital in multigenerational planning. Many young adults struggle to find a place of their own due to financial concerns and end up either moving back in with their parents after college, never moving away, or leaving the area entirely for less expensive



"Home sharing offers the benefits of affordable, sustainable, diverse housing, aligned with our new sharing economy."<sup>42</sup>

~American Planning Association

communities. The picture is even more complicated for elders. To age in place successfully, elders need a variety of housing options, including options that support those who are fully independent and options for those who require assistance with daily life.

Housing options throughout the ECV region should be affordable, safe, accessible, and adaptable for people of all ages and abilities. Moreover, homes should be designed to allow different types of families to live in the same home over time by installing technologies, devices, and systems that assist with aging in place.<sup>43</sup> Fortunately, a wide variety of housing types already exist here, but more should be developed:

 Accessory dwelling units (ADU)—also referred to as accessory apartments,



second units, or granny flats—are additional living quarters on singlefamily lots that are independent of the primary dwelling unit.\* ADUs are permitted in Vermont.<sup>44</sup>

- Home sharing offers the benefits of affordable, sustainable, diverse housing. It could enable millions of renters to live in affordable, decent, already existing homes, and in some cases, help the elderly age in place.<sup>45</sup>
- Cohousing is collaborative housing where residents actively participate in the design and operation of the neighborhood. Residents commit to living in a community while maintaining a private residence.<sup>46</sup>



"A shift to active transport (walking and cycling) and rapid transit/public transport combined with improved land use can yield much greater immediate health 'co-benefits' than improving fuel and vehicle efficiency."<sup>47</sup> ~World Health Organization • TRANSPORTATION: Because the ECV region is primarily rural, access to adequate transportation is extremely important. Seniors wishing to age in place and young people are both deprived of their independence when they do not have access to public transit. Public transit providers offer services for elders and persons with disabilities, ranging from public bus routes to dial-a-ride services for medical appointments. However, though Vermont is relatively generous with funding for these programs, there is not nearly enough money to meet the travel needs of all those who are aging in place. General public transit routes are limited and can create barriers for people without transportation.

As with housing, providing a range of transportation services is vital to ensure an efficient system. Just as important, however, is ensuring that the transportation systems maximize connections to critical land uses such as housing, health care, and human services.<sup>48</sup> This can be facilitated by promoting compact land uses—putting housing, services, jobs, and shopping in close proximity—wherever possible so that transportation services are easier to provide. It is also important to ensure that the transportation infrastructure (e.g., sidewalks, crosswalks, bus stops/shelters) is designed with elders in mind. For example, make sure crossing signals are programmed with enough time for people of all abilities to cross.49

\*Accepted U.S. Department of Housing and Urban Development (HUD) definition



## SAFE, WALKABLE NEIGHBORHOODS AND ACCESS TO ESSENTIAL GOODS AND

**SERVICES:** Finally, it is extremely important for all ages that our communities are designed to be safe and walkable and contain access to essential goods and services. Planning for an aging population has often been limited to ensuring enough nursing home space and age-appropriate housing. The ECV region should move away from this self-imposed restriction and toward a more inclusive planning strategy.

Planning policies should promote a universal design that allows seniors, and all other age groups, to easily get around, have access to activities and services, and participate in the community. Locating services near housing and transportation options allows those seniors who can live independently to do so. Sprawling, dispersed services and shopping not only are costly to governments and residents, but they also detract from residents' quality of life. As communities are redesigned to allow seniors to age in place, it is important to ensure that drop-off and pick-up locations are safe: from providing adequate lighting around neighborhoods, to maintaining or installing sidewalks, to installing ramps and handrails where previously there were only stairs.

## **PROMOTE PHYSICAL ACTIVITY<sup>50</sup>**

**DESIGN & DESTINATION:** Land use patterns can impact how much community members walk.

- Integrate street and pathway connectivity.
- Ensure the proximity of housing, schools, transportation, jobs, and community resources.

**INFRASTRUCTURE:** Infrastructure can facilitate increased exercise and physical activity.

- Create adequate sidewalks.
- Provide access to well-maintained parks.

**SAFETY:** If community members feel safe in their neighborhood, they are more likely to go outside and walk.

- Use crosswalks.
- Use signal lights.
- Implement traffic calming strategies

Although allowing our elderly population to age in place offers many benefits, engaging in multigenerational planning will benefit other age groups as well and result in healthier, more viable communities throughout the region. Through a variety of measures, towns can do a lot to promote a healthy, safe, and accessible community for all its residents (see page 73).



## WHAT TOWNS CAN DO

Towns play an important role in implementing many of the strategies that are known to reduce the health challenges we face.

- Community Involvement
  - Ensure that under-represented populations are engaged in town decision-making.
  - Establish municipal health and wellness commissions.
  - Use town communications to share health promotion information to residents.
  - Manage town facilities to maximize recreation and socialization.
  - Ensure compact development patterns.



Planning charette, Bradford, VT

- Health Impact Assessment Utilize Health Impact Assessment concepts in town decision-making.
- Municipal Law Enact ordinances that limit the prevalence of tobacco, alcohol, and unhealthy foods.
- **Policy** Establish policies that:
  - Restrict the use of tobacco and other substances on town-owned properties and at town-sanctioned events.
  - ► Support cessation from or treatment of substance abuse.
  - ► Address the needs of residents with mobility barriers.
- **Zoning** Create zoning that encourages active lifestyles, access to healthy food, and prevents dispersed development.

**HEALTH IMPACT ASSESSMENTS** — Health Impact Assessment (HIA) is a means of assessing the health impacts of policies, plans, and projects in diverse economic sectors using quantitative, qualitative, and participatory techniques.

HIA helps decision-makers make choices about alternatives and improvements to prevent disease/injury and to actively promote health.<sup>51</sup>



## STRATEGIES FOR HEALTHY COMMUNITIES

Goal A: Ensure community health issues are integrated into all local and regional policies and planning.		
<b>Policy A.1:</b> Plans and policies must address and positively advance the health, well-being, and multigenerational needs of communities.		
Actions:		Responsible Parties:
1. Add a health criterion to Act 250 requiring Health Impact Assessments.	t	State
<ul> <li>2. Work to revise Vermont's planning statute (24 VSA 4302) the alth as a goal.</li> </ul>	to include	State
온레		
<ol> <li>Ensure local and regional plans include a chapter specific about health, and weave health goals and policies through chapters.</li> </ol>	ically Jghout all	State, RPCs, and towns
μ <sup>Ω</sup>		
<ol> <li>Implement zoning and policies to promote mixed-use, we communities in village centers, downtowns, or growth centers</li> </ol>	alkable enters.	Towns with assistance from
		RPCs
<ol> <li>Improve public transportation links to recreational center region, particularly for areas identified as being underserv recreational opportunities.</li> </ol>	rs in the ved by	VTrans
		more actions
<b>Acronym used under Responsible Parties:</b> FEMA: Federal Emergency Management Agency RPC: regional planning commission VTrans: Vermont Agency of Transportation	This symb that the action is a metric. section o information	ol indicates effect of a specific being followed by See the Metrics f this plan for more on.
		to findle on other or
<b>FOCUS AREA ICONS:</b> Some of the actions outlined in this section also serve to further other goals within this plan. Use of these icons indicates those focus areas.		
Economic Development Our Homes Reducing En	iergy	Regional Transportation
Realthy Communities Climate Resilience 🕖 Habitat Conservation 🔂 Public Water Supply		
<b>PLEASE NOTE:</b> Highlighted actions are already under way! If you and/or participate in any of these actions, contact TRORC.	would like	to take the lead



6. Create pedestrian and bicycle master plans.	Towns and RPCs
<ul> <li>7. Work to make street crossings safer by ensuring curb cuts are manageable, signage is clear, and there is sufficient time for residents of all physical capabilities to cross the street.</li> <li>Image Street Street</li></ul>	VTrans, transportation advisory committees, RPCs and towns
8. Create town health committees that include people of all ages and backgrounds.	Selectboards
<ul> <li>9. Provide technical assistance to communities during road construction projects to ensure that Complete Streets principles are integrated wherever possible.</li> <li>Image: Image: Image:</li></ul>	RPCs, VTrans, and Vermont Department of Health
Goal B: Ensure healthy eating and physical activity are ingrained in our co	mmunifies.
Policy B.1: Support and enable access to healthy food and physical act	ivity.
Actions:	Responsible Parties:
<ol> <li>Identify and create opportunities to make healthy foods more affordable and available.</li> </ol>	State and non- profits
<ul> <li>予 经</li> </ul>	
2. Offer recreational programs or partner with neighboring towns to offer shared recreational opportunities.	Towns
<u>2</u> }	
3. Support multipurpose senior centers that provide home- delivered meals, and congregate meal programs that follow Older American's Act nutrition guidelines and that provide transportation, exercise opportunities, and other healthy aging	Towns and non- profits
programs.	
programs.	
<ul> <li>4. Promote shared use agreements that allow everyone to use public buildings for physical activity.</li> </ul>	Towns
4. Promote shared use agreements that allow everyone to use public buildings for physical activity.	Towns
Inclusion programs.         Image: A state of the st	Towns
<ul> <li>A. Promote shared use agreements that allow everyone to use public buildings for physical activity.</li> <li>5. Support farmers' markets and farm stands.</li> </ul>	Towns
A. Promote shared use agreements that allow everyone to use public buildings for physical activity.       Solution       5. Support farmers' markets and farm stands.	Towns Towns



6. Promote local, healthy food use in schools, child care centers, restaurants, senior centers, and other similar institutions.

State, supervisory unions, and nonprofits

Supervisory unions and child care

centers/providers



7. Require physical education in schools at all grade levels, including preschool.



Goal C: Ensure community policies and practices support emotional, behavioral, and mental health as well as social well-being.

**Policy C.1:** Implement community actions and policies and make investments to help prevent substance abuse.

Α	ctions:	<b>Responsible Parties:</b>
٦. کیک	Implement zoning, policies, or ordinances that further good health to ensure the well-being of our young people (see page 73).	Towns with assistance from health organizations, and
		RPCS
2.	Promote early prevention programs that address causes of addiction and promote addiction recovery support services.	Health organizations and
ŝ		non-profits
3.	Provide education and public involvement opportunities when siting recovery support services in communities to ensure proper locations and community support.	Towns



**Policy C.2:** Address mental health issues by educating governmental officials and the general public.

Ac	tions:	<b>Responsible Parties:</b>
1.	Promote training in evidence-based mental health approaches, such as Mental Health First Aid or PEARLS (a Program to Encourage Active, Rewarding Lives for Seniors).	Health organizations and non-profits
٤ <u>ک</u>		
Policy	y C.3: Support the provision of affordable, high-quality child care thro	bughout the region.
AC	tions:	<b>Responsible Parties:</b>
1.	ctions: Conduct child care needs assessments.	Responsible Parties: Towns, RPCs, and
AC 1. දිදි	ctions: Conduct child care needs assessments.	Responsible Parties: Towns, RPCs, and non-profits
۸۵ ۱. <u>آ</u> 2.	Conduct child care needs assessments. Review zoning regulations (if adopted) to determine whether child care providers are encouraged to be located in town.	Responsible Parties: Towns, RPCs, and non-profits Towns and RPC





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# CLIMATE RESILIENCE

#### VISION: Climate-resilient economic, social, and natural systems

Climate change is already occurring on a global scale, and humans are causing most of it; this idea limit emissions, Vermont's climate will probably feel like that of southern Ohio. If we take no

is no longer seriously debated by the scientific community. Global temperatures for every month in the past 28 years have exceeded the historic average temperature.<sup>1</sup> Arctic sea ice is rapidly decreasing in the summer,<sup>2</sup> possibly leaving us with a nearly ice-free Arctic as early as 2016.3 The ocean, even the deep ocean, is warming.4 The overall warming of the planet will continue due to current and past emissions of greenhouse gases (GHGs) and their longevity in the atmosphere. Even if we were to eliminate all GHG emissions in the near future, this action alone would not return us to a cooler climate for a thousand years.<sup>5</sup> In fact, in our children's lifetime, even if we take major action today to



**Enhance Resilience:** Manage stormwater; plan for new development; conserve land and discourage development along river corridors; protect people, buildings, and facilities

~Vermont Agency of Commerce and Community Development



#### Livability Principles Addressed

- Support existing communities.
- Coordinate policies and leverage investment.

action, it will feel more like northern Georgia.<sup>6</sup>

This chapter centers on actions we can take to be resilient to anticipated changes that will occur under

the best-case scenario, as well as additional adaptation actions prudent in the face of continued emissions, which would only worsen the effects.

A full-blown mitigation strategy was beyond the scope of this project; therefore, this chapter intentionally does not deal with mitigation efforts to lessen climate change, extremely important as they are, because adaptation will be required regardless. Critical efforts are still needed to lessen the drivers of future climate change—primarily, undertaking drastic reductions in GHG emissions-to avoid locking in more serious climactic changes that would have catastrophic results for humankind. Some other plan elements, such as Reducing Energy Use in the Built Environment and Regional Transportation, contain recommendations for actions and policies that will further the mitigation of greenhouse gases.

Climate change has brought, and will continue to bring, changes throughout the world. Of greatest interest here are the changes expected in the East Central Vermont (ECV) region. Although the nature of future impacts can only be estimated, these estimates are not simply guesses; they are the results of careful studies by states, universities, and non-profits, and they are specific to Vermont and New Hampshire.

## THE IMPORTANCE OF CLIMATE RESILIENCE TO THE ECONOMY

Climate resilience is simply old-school business practice facing a new problem. For any economy to be strong, its members must look at trends and expected future conditions and



"A resilient Vermont is better prepared for and able to more effectively manage and bounce back from natural disasters and climate-related shocks, and the risks they pose to our economy, environment, and social wellbeing."<sup>7</sup>

~Institute for Sustainable Communities



adjust accordingly. Flat-screen TVs are now the norm, and the same goes for increased flooding. But the flat screens and floods of the future will not be the same as those of today. As experts in the climate change field acknowledge, resilience measures are needed now simply to deal with the present impacts of past greenhouse gas emissions. Current emissions are locking in even more extreme changes to come; therefore, proactive adaptation measures will have to take those into account. By doing so, we will not only help to keep our roads intact, our forests healthy, and our buildings comfortable, but we will also keep our economy much stronger.

### CHALLENGES

We must plan for the changes we can reasonably expect. It is important to consider the many impacts of climate change: <sup>8</sup>

- TEMPERATURE: An increase in average winter temperatures will lead to warmer winters with less consistent ice and snow cover. An increase in maximum summer temperatures will lead to persistent heat waves and increased drought. Heating needs will lessen but cooling needs will increase.
- **PRECIPITATION:** Overall precipitation will increase—but even more important, that precipitation will likely occur in shorter, more intense bursts. Having more intense summer storms and less winter snowpack will increase drought conditions.
- HUMAN HEALTH: Stressors to human



## Vermont's climate is likely to feel like that of southern Ohio in our children's lifetime.

health (such as heat exposure, increased allergens, new and worsening insect-borne diseases, and algal blooms/cyanobacteria) will multiply.

• INFRASTRUCTURE: Physical systems such as roads, drainage, cooling systems, the electric grid, and water supplies will be challenged, particularly by extreme weather events.



- AGRICULTURE AND FORESTRY: Colddependent species will languish while heat- and drought-tolerant species will thrive. Maple sugaring will become difficult. The number of oak trees will increase while the number of spruce trees will decrease. Invasive species will increase in number and kind.
- HABITATS: Plants and animals at the southern end of their range will be squeezed out, and southern species will move northward. Less mobile species will migrate more slowly than highly mobile ones. Alpine communities will migrate upward or perish. Cold water species will be under strain as waters warm.
- ECONOMY: Recreational activities dependent on cold winters, such as skiing and snowmobiling, and related retail and service industries will suffer. Summer recreational activities may increase.

To enable a resilient ECV region, we need to understand the probable impacts of climate change. In addition, we must incorporate adaptation strategies into our practices so we're ready to manage, and recover quickly from, a range of uncertain weather events.



### **HOW RESILIENCE IS CREATED**

Julie Iffland, Executive Director, Randolph Area Community Development Corporation (RACDC) (Excerpted from the RACDC 2013 Annual Report)

**Resilience isn't created on the day of a disaster**, **it's revealed**. We miss the point of the "best and worst" stories following Tropical Storm Irene if we figure that the "best" responses were lucky and the "worst" just unlucky. What we were the day before the disaster will determine in larger measure how we respond the day after, so the best way to prepare for the worst is to constantly strive to be our best.

We hope our worst days are behind us, of course, but as they say in the military, "A hope is not a plan." So this year's theme is community resilience, and the role that community development can play in building community life that is strong but flexible, with roots that can hold us up in any storm.

So what is the best way to build a balanced, healthy and enduring and resilient community and economy?

"Promote from Within." It's great to have one big business with lots of jobs...until they leave. The most resilient economy may be the one with many small to medium, "home-grown" businesses. Freedom Foods, LEDdynamics, Neighborly Farms, Royal Butcher, Wall-Goldfinger, Magee Office Products, DuBois & King, Vermont Castings, and NAVA Bio-Fuels are just a few of the businesses we have thanks to neighbors with a good idea. When we support local people who have already invested in local talents and in the community, we not only encourage that business, but inspire other local people to turn their passions and ideas into business opportunities.

**Focus on attracting talent, not just business.** If the talent wants to live here, the business will follow, and the leadership necessary to steer your community will also be here. So goes this theory. What attracts talent? The same things that make communities vibrant and livable: arts and culture; good food; a healthy and attractive environment; good schools and outlets for young people; safe and affordable housing; competent public officials, social gathering places; community spirit; and good infrastructure, including high speed telecommunications capacity.

**Build on your strengths & use what you have:** "Asset-based planning" may be the straightest line to success because communities, like people, do best when they play to their strengths rather than trying to mimic the success of others. The more renewable the assets, the more sustainable the success because waste is always costly. Vermont Castings is a great example of a company that took the concept of wood heat, second nature to any Vermonter, and turned it into a world-renowned brand that's still going strong today.

**Promote What You Stand For:** Vermont is associated with purity, beauty, authenticity, neighborliness, and quality, because as a group we tend to value those ideals and lead with them. The growth in the Vermont brand attests to the fact that values can be the foundation for the most enduring kinds of economic development.

**Don't leave anyone behind.** Everyone has something to offer and everyone needs help at one time or another. What binds a community together is compassion and common purpose. We can't forget to measure success in terms of the Gross Domestic Health and Happiness as well as the Gross Domestic Product.

**Treat others with respect**, even when you disagree with them. There is increasing evidence that respect is key to a healthy community. In disaster, relationships and trust may be the only building blocks around. **Good neighbors are the bridge that never falls down!** 



## STRATEGIES FOR CLIMATE RESILIENCE

Goal A: Create a region able to withstand current and future climate changes with limited detrimental effects.

**Policy A.1:** Infrastructure shall be designed and built to withstand anticipated demands caused by climate change within their design life, and so as not to increase damage elsewhere.

Actions:	<b>Responsible Parties:</b>
<ol> <li>Culverts and bridges shall be rebuilt/installed and designed to at least meet the VTrans Hydraulics Manual and the Vermont Agency of Natural Resources (ANR) Stream Alteration Standards.</li> </ol>	State and towns
<ol> <li>When roads are severely damaged by flooding, consider relocating or discontinuing them instead of repairing them in place. Such decisions should be made in advance through mitigation plans.</li> </ol>	State and towns
<ol> <li>Use the latest projections for storm intensity and frequency when revising flood maps so that regulations take into account climate changes.</li> </ol>	FEMA
<ol> <li>Apply stormwater retention standards to all new projects that are expected to generate off-site flows in watersheds with more than 10% impervious cover.</li> </ol>	State and towns
	more actions

#### Acronyms used under Responsible Parties:

ANR: Vermont Agency of Natural Resources FEMA: Federal Emergency Management Agency RDC: regional development corporation RPC: regional planning commission This symbol indicates that the effect of a specific action is being followed by a metric. See the Metrics section of this plan for more information.

**FOCUS AREA ICONS:** Some of the actions outlined in this section also serve to further other goals within this plan. Use of these icons indicates those focus areas.



**PLEASE NOTE:** Highlighted actions are already under way! If you would like to take the lead and/or participate in any of these actions, contact TRORC.



<b>Policy A.2.:</b> Buildings and landscaping shall be designed to function amid anticipated climate changes.		
Actions:	Responsible Parties:	
<ol> <li>Identify existing homes and businesses at serious risk of flood damage, and prioritize them for mitigation actions such as elevation/relocation or purchase and demolition.</li> </ol>	ANR River Management, RPCs, and towns	
2. Consider climate shifts when planting municipal public trees and choose more suitable southern species.	Towns	
3. Incorporate cost-effective cooling designs, including plantings, into new buildings or renovations requiring Act 250 approval.	State and Natural Resources Board	
🗡 🖄 🚰 🚊 🔌		
<b>Policy A.3:</b> Base climate adaptation or resilience efforts on thoughtful an locally relevant data.	alysis and the use of	
Actions:	Responsible Parties:	
<ol> <li>Public efforts at adaptation/resilience should always use a three- part analysis to determine if the best solution is to retreat from the threat, actively fight the threat, or strengthen facilities or systems to withstand the threat.</li> </ol>	Local, state, and federal agencies	
<b>Policy A.4:</b> All construction in mapped flood zones and river corridors is d a minimum, any construction in these zones must result in No Adverse Im	liscouraged, and at pact.*	
Actions:	Responsible Parties:	
1. Do not build emergency service facilities, wastewater treatment plants, power substations, and municipal buildings in special flood hazard areas unless they are floodproofed or elevated to at least two (2) feet above the base flood elevation and designed to withstand erosion risk.	State, towns, and utilities	
	more actions	

<sup>\*&</sup>quot;No Adverse Impact floodplain management takes place when the actions of one property owner are not allowed to adversely affect the rights of other property owners. The adverse effects or impacts can be measured in terms of increased flood peaks, increased flood stages, higher flood velocities, increased erosion and sedimentation, or other impacts the community considers important. Communities promote responsible floodplain development through community-based decision making." See http://www.floods.org/index.asp?menulD=349&firstlevelmenulD=187&siteID=1 for more information.



<ol> <li>Establish a system of stormwater retention credits so that heavily developed areas that cannot reasonably meet retention standards can purchase credits from other areas.</li> </ol>	State
3. Conduct watershed-level planning to evaluate natural and constructed flood storage options upstream of existing areas of concentrated development that are at risk of flooding.	Towns, ANR, and RPCs
4. Set a minimum standard for local flood regulations requiring new construction to be at least one foot above base flood; prohibiting new buildings from being located in FEMA-designated floodways; and prohibiting new principal buildings from being located within 50 feet of the top of banks of streams and rivers, except in downtowns and villages.	State
<ol> <li>Local land use bylaws should contain river corridor/fluvial erosion hazard and No Adverse Impact provisions.</li> </ol>	Towns with assistance from
	KF CS
<b>Policy A.5:</b> Recognize and plan for threats to the natural environment an from climate change.	nd human health
Actions:	<b>Responsible Parties:</b>
<ol> <li>Enact mandatory statewide standards to reduce surface water heating by protecting streamside vegetation, requiring vegetation of rip-rap areas, and reducing runoff from impervious surfaces in order to protect cold water fisheries and reduce flood erosion and nutrient loading (which can feed algal blooms).</li> </ol>	State
2. When planning land conservation projects for rare/threatened/ endangered species, take into account expected habitat shifts to ensure the viability of projects over time.	ANR and non- profits
3. Monitor public health threats from climate change, including disease vectors and temperature impacts, so prophylactic actions	Vermont Department of
can be taken based on sound data.	Health
can be taken based on sound data.	Health
can be taken based on sound data.	Health



<b>Policy A.6:</b> Economic development activities must take into account experimente and carbon limits.	pected changes in
Actions:	<b>Responsible Parties:</b>
<ol> <li>Long-term economic development strategies should begin to turn their focus away from activities that are snow and ice dependent and look to new opportunities that warmer weather may bring, while also being sound in a carbon-limited environment.</li> </ol>	RDCs, RPCs, and state.
<b>Policy A.7:</b> When planning resilience efforts, consider the ability of ecosy climate resilience and withstand climate change themselves.	stems to both aid in
Actions:	<b>Responsible Parties:</b>
<ol> <li>Recognize the flood protection value and aquifer recharge value of wetlands.</li> </ol>	ANR, RPCs, and towns
2. When planning conservation efforts, consider the likely effects of climate change on shifting habitats and species composition.	Land trusts and ANR
3. Study threats to ecosystems from climate shifts because they may have large economic impacts.	ANR



#### **ENDNOTES**

- <sup>1</sup> Andrew Freedman. "Record Heat in June Extends Globe's Streak to 340 Months." Climate Central. (July 18, 2013). Accessed December 2013 from http://www.climatecentral.org/news/ june-extends-globes-warm-streak-to-340-months-16258.
- <sup>2</sup> National Snow & Ice Data Center. "A slow and bumpy climb." Artic Sea Ice News & Analysis (2013). Accessed December 23, 2014 from http://nsidc.org/cryosphere/seaice/environment/ trends.html.
- <sup>3</sup> "What ocean heating reveals about global warming." RealClimate. (September 25, 2013). Accessed January 2014 from http://www.realclimate.org/index.php/archives/2013/09/whatocean-heating-reveals-about-global-warming/.
- <sup>4</sup> Wieslaw Maslowski, Jaclyn Clement Kinney, Matthew Higgins, and Andrew Roberts. "The Future of Arctic Sea Ice." Annual Review of Earth and Planetary Sciences. Volume 40: 625-654. (May 2012). Accessed January 2014 from http://www.annualreviews.org/doi/full/10.1146/annurevearth-042711-105345.
- <sup>5</sup> Susan Solomon, Gian-Kasper Plattner, Reto Knutti, and Pierre Friedlingstein. "Irreversible climate change due to carbon dioxide emissions." *Proceedings of the National Academy of Sciences (PNAS)*. Volume 106. No. 6. (February 10, 2009).
- <sup>6</sup> Vermont Agency of Natural Resources Climate Change Adaptation Framework. Tetra Tech. (May 31, 2013).
- <sup>7</sup> "Vermont's Roadmap to Resilience: Preparing for Natural Disasters and the Effects of Climate Change in the Green Mountain State." Institute for Sustainable Communities, (2013). Accessed December 23, 2104 from http://resilientvt.files.wordpress.com/2013/12/vermonts-roadmap-toresilience-web.pdf.
- <sup>8</sup> See note 5.

# HABITAT CONSERVATION

## VISION: Informed and considerate participants in a landscape with viable, interconnected natural communities

Overall, the state of Vermont is approximately 80% forestland.<sup>1</sup> The East Central Vermont (ECV) region is very similar, also consisting of approximately 80% forestland. However, the region is by no means a simple arrangement of four-fifths forest monocultures and onefifth commercial, industrial, and residential land. Rather, it is a patchwork of villages, rural residential areas, commercial and industrial areas, working landscapes, forest types, and successional stages.\*

The ECV region covers 40 towns that fall into the following biophysical regions (with definitions from Conserving Vermont's Natural Heritage<sup>2</sup>). The majority of the region falls into the Southern and Northern Vermont Piedmont zones; however, some of the region's western portions fall into the Southern Green Mountains zone.

Natural communities descriptive of the Southern Vermont Piedmont zone include Mesic Maple-Ash-Hickory Forest, White Pine-Red Oak-Black Oak Forest, Dry Oak-Hickory-Hophornbeam Forest, Pitch Pine-Oak-Heath Rocky Summit, Riverside Outcrop, Silver Maple-Ostrich Fern Riverine Floodplain Forest, Sugar Maple-Ostrich Fern Riverine Floodplain Forest, Red Maple Forest, Black Gum Swamp, Hemlock Swamp, River Mud Shore, Calcareous Riverside Seep, Rivershore Grassland, and Buttonbush Swamp.<sup>3</sup>



Preserving habitats is essential to preserving biodiversity.4 ~MarineBio

**SOUTHERN GREEN MOUNTAINS:** A broad plateau is dotted with a few dominant peaks and several ski areas. The climate is cool and rainfall is relatively high. Northern hardwoods, spruce, and fir dominate, and there are a

\*Successional stages refer to the observed changes in an ecological community over time.



#### Livability Principles Addressed

- Coordinate policies and leverage investment.
- Support existing communities.
- Value communities and neighborhoods.

number of small lakes and ponds.

NORTHERN VERMONT PIEDMONT: Calciumrich soils combine with a cool climate to support mixed forests and northern white cedar swamps, fens, and other interesting natural

communities in this region. The uplands have fine agricultural soils but a short growing season.

**SOUTHERN VERMONT PIEDMONT:** Calcium-rich soils and rolling hills make this a good place for agriculture. The climate is average for Vermont except in the extreme southeast, where it is quite warm. Northern hardwoods and red oak dominate the vegetation.

Vermont has not always enjoyed a primarily forested landscape as it does today. When European settlement occurred, the state was almost entirely forestland; but in the 18th and 19th centuries, most of the state was cleared at least once for timber or agriculture.<sup>5</sup> Forests were re-growing during most of the 20th century. However, in recent years, a reversal of the reforestation trend has led to an overall loss and fragmentation of forest cover for the first time in a century.<sup>6</sup> Another important aspect of the early settlers' legacy is that our waterways were used for transportation and energy production. Effects of that use (e.g., the lack of buffers on certain stretches of rivers due to the location of village centers

immediately adjacent to rivers and streams) are still being felt today.

While the term "habitat" makes many people think of forested landscapes, there are many other forms of habitat. Wetlands, streams, ponds, lakes, rivers, riparian zones,\* grasslands, and transition areas are all important habitats. Another way to look at habitat is in relation to the elevation at which it exists. Some of the rarest natural communities in Vermont exist above 3,000 feet, and about 88% of this high-elevation land is conserved. On the other hand, much of Vermont's biodiversity occurs in the lowlands. However, the lowest elevations are the least conserved; 10% of land with an elevation of 0-600 feet is conserved, and 13% of land with an elevation of 600-2,000 feet is conserved. Furthermore, lowlands have been impacted by denser development and include other important areas such as



\*Riparian zones refer to ecosystems located along water's edge.



floodplains and riparian buffers. These are important considerations when dealing with habitat conservation in Vermont.

### **HABITAT DEFINED**

The term "habitat" is defined as a geographical unit that supports the survival and reproduction of a species.<sup>7</sup> This unit is composed of vital natural systems and communities that provide the species with food, water, shelter, and reproductive sites. The natural systems consist of water, nutrient, and energy cycles; the interactions between these cyclical processes and organisms; and the prominent landforms important to the species (e.g., cliffs, caves, seeps, rocky outcrops, ridgelines, slopes, and hollows). The natural communities consist of all the other organisms that interact, directly or indirectly, with the species. Not all habitats are created equal. The vitality and resilience of the natural systems can vary greatly. And the greater the connectivity among natural communities, the greater the quality of the habitats they inhabit. With these definitions and attributes in mind, it becomes apparent that the protection of habitats for many of our wildlife species is best achieved by facilitating a mosaic of interconnected natural systems, natural communities, and habitat blocks in our region. Where included in this plan element, the term "mosaic" refers to the idea of connectivity and ensuring that the region has a robust system of habitat blocks connected by intact wildlife corridors, healthy natural systems, and intact natural communities. Additionally, the use of the word "mosaic" is meant to emphasize that having a healthy



habitat involves paying attention to our natural resources at the species, community, and landscape scales.

## THE IMPORTANCE OF HABITAT CONSERVATION TO US AND THE ECONOMY

Goods and services vital to human health and livelihood that are provided by nature are often referred to as ecosystem services. Many of these goods and services, while critical to the economy, are often overlooked in planning and decision making and viewed as free, public goods.<sup>8</sup>

Large tracts of intact habitat and the species they support offer many ecosystem services\* that we rely on in our daily lives. From air and water purification to waste decomposition, flood control, pollination, nutrient recycling, natural cooling, carbon sequestration, a home for animals, biodiversity, and recreational opportunities, the natural habitats found in Vermont provide many of the services that the residents and visitors of Vermont enjoy.

\*Ecosystem services refer to the positive benefit ecosystems provide to human well-being.



- **RECREATION:** The intact habitats of Vermont provide countless recreational opportunities. The scenic beauty of Vermont's habitats is enjoyed through many different activities, including biking, hiking, skiing, snowmobiling, boating, hunting, fishing, and wildlife viewing.
- TOURISM: Recreational opportunities and the scenery of Vermont draw thousands of visitors to the state and millions of dollars in revenue to Vermont businesses. Tourists come to view the foliage every fall, followed by skiers in the winter, and then hikers, boaters, and cyclists in the spring and summer. All of these visitors come to



The scenery of Vermont draws thousands of visitors to the state and millions of dollars in revenue to Vermont businesses. Vermont for its natural beauty, which is derived from its large areas of rural land. In 2011, tourism had the following positive impacts on the Vermont economy:

- \$1.7 billion in direct spending
- \$275 million in tax and fee revenues
- Support for approximately 39,000 jobs<sup>9</sup>
- FLOOD RESILIENCE: Floods are an important natural event, and natural habitats are much better equipped to deal with flood events than any man-made solution. Forests and wetlands are a natural buffer to annual flood events. Natural areas absorb water rather than creating stormwater runoff filled with pollutants, which is a problem in towns and cities with large areas of paved ground. Wetland ecosystems naturally remove toxins from the flood waters that filter through them in addition to providing space for excess runoff. Forests also play a part in flood resilience, with trees, plants, and forest soils reducing runoff and erosion.
- WATER PURIFICATION: In addition to flood control, as water passes through intact natural habitats, plants remove toxins from water, and this natural filtration provides Vermont with exceptional water quality in its groundwater. Furthermore, intact habitats slow the flow of water, allowing for groundwater recharge.

### **CHALLENGES**

With an increase in commuters, single occupancy vehicles, trucking, and sprawl, Vermont's economy has been moving slowly toward a service, commercial, and light



industrial focus.<sup>10</sup> Much of the development in recent years has occurred in rural and suburban areas rather than in established villages and urban communities. This shift has led to increased pressure for conversion of undeveloped land. In addition to thinking of development in the traditional sense (i.e., clearing an area to build), it is important to realize that habitat is also threatened by land uses and stewardship practices (e.g., clearing additional land for a view, agriculture, and damming a wetland for a pond). The following are some of the ways in which habitat can be compromised.

- **DESTRUCTION:** Forests, wetlands, and open land are destroyed each year in Vermont as developments and new roads and houses are created in their place. For the first time in years, we are losing forested land. And while wetlands are more strictly regulated, the Vermont Fish and Wildlife Department estimated that we have lost about 20 acres of wetland annually since 1995.<sup>11</sup> Deer wintering yards, stands of mast-bearing trees, and wildlife corridors are some of the key areas that must be protected to preserve their important role in the life cycle of many species.
- INTRODUCTION OF INVASIVE EXOTIC SPECIES: Invasive exotic species pose one of the biggest threats to Vermont's habitats. Exotic species are those that are introduced, either intentionally or accidentally, to an ecosystem or a geographic region where they do not occur naturally. They become a problem when they start aggressively outcompeting

natural species and proliferate to the point where they vastly alter natural communities and habitats. Invasive species literally can take over an entire ecosystem by slowly outcompeting naturally occurring species. Some invasive species started as garden plants or were used in landscaping projects, and then they rapidly spread to flood plains, abandoned farms, or construction sites where the soil recently had been disturbed and offered a place for these aggressive species to spread. Examples of invasive exotic species that are a problem in Vermont are Eurasian watermilfoil, purple loosestrife, common buckthorn, Japanese knotweed, and Morrow's honeysuckle. Aquatic invasive species are a problem as well, with species such as the zebra mussel and the mute swan now appearing in Vermont. Rusty crayfish are an example of a local, invasive aquatic species. They often outcompete native crayfish for resources and destroy aquatic plant beds.

 DEGRADATION OF WATER QUALITY/ AQUATIC HABITAT: Aquatic habitat is affected by the changes in land use and the resulting degradation of water quality. Soil erosion is one of the bigger problems related to water quality in Vermont. When conversion of any kind occurs, whether it's a tilled field, building a new road, poor woods road management, or clearing a field right up to a stream bank, soil is loosened and introduced into the water. The resulting siltation of streams negatively affects multiple levels of the aquatic ecosystem. Silt that settles to the bottom can suffocate incubating eggs



and the young of many fish species and destroy the habitat of stream invertebrates, which are important in the aquatic food chain. The greater amount of suspended materials in streams absorb more solar radiation, increasing water temperature. This reduces the oxygen capacity of the water, leading to poorer habitat quality for cold water species such as the native brook trout. Another problem with having more suspended solids in the water channel is reduced visibility, which results in reduced quality of and less efficient foraging and feeding conditions, harming the fitness and survival of many species.

Even worse than the runoff from disturbed soils is the runoff created by impervious surfaces that don't absorb or filter any water. Gravel roads, paved roads, and other concrete surfaces such as parking lots and urban centers create large amounts of highly polluted runoff that flows directly into waterways with minimal or no filtration or obstruction. When water runs over areas with vegetation and soil, pollutants such as heavy metals, pathogens, pesticides, sediments, and excessive nutrients are naturally filtered out of the surface flow before they can taint the waterways. Impervious surfaces such as paved roads and town centers also absorb more radiant heat, and the runoff from these areas picks up the heat and transfers it to the water bodies. Higher water temperatures can cause stress and even death in many native species of aquatic life.

Another danger to water quality arises

from changes in stream flow and shape due to human activity. Clearing and development in floodplains alter the amount of runoff as well as the quality and timing of surface flow. Roads, houses, and other hard surface land uses in a floodplain also result in a stream that is trapped in its channel. This prevents the natural meandering of a stream and leads to fluvial erosion hazard flooding and a deeper channel, which changes sedimentation and flow rates.

- FRAGMENTATION: Habitat fragmentation is a major threat to habitat quality in Vermont. Increased fragmentation from housing and commercial development, the growing number of roads, and road usage and power lines reduces the size and accessibility of suitable core forest habitats. Core forests are defined as areas untouched by human development. Any road, clearing, or other development creates edge habitats that reduces suitability for many species of flora and fauna. The smaller the core forest, the smaller the number of species that can use the forest habitat. In the case of wideranging large wildlife such as bears, moose, and bobcats, a fragmented habitat is often not enough to support any individual animals. These species need interior forest habitats to be successful, and the increased incidence of edge habitat leads to their declining numbers.
- **CONNECTIVITY:** Habitat connectivity is an issue closely related to fragmentation. Roads, houses, and human activity all





Landscapes with (A) high and (B) low degrees of connectivity. Corridors are particularly important for wide-ranging species whose habitat needs are not accommodated by a single patch of suitable habitat.

act as barriers to wildlife movement. It is important to have connected corridors of quality habitat—both within towns and across the landscape, between municipalities—that link important habitats/ ecosystems that are essential in the life cycle of many species. Places such as wintering areas, breeding grounds, and essential food sources are all being closed off to wildlife movement from roads and human activity. Other important factors are the spread of genetic material and the reduction of population isolation. When it is time for young animals to depart from maternal care, they must be able to safely move to other suitable habitats away from their natal range. Connectivity is especially important for larger species such as bear, moose, deer, and bobcats that require a large home range.

LOSS OF PUBLIC APPRECIATION FOR ENVIRONMENT: It is important that we try to increase the public's appreciation of and connection to the land. The natural habitats of Vermont offer so much to the public, and it is necessary to increase the public's knowledge and appreciation of ecosystem services. Increased appreciation and connection to the land will create more interest in stewardship and conservation.

Much has been written about the decreasing amount of time children and adults spend outdoors experiencing the natural world. "Nature deficit disorder" is a phrase coined to describe the youth who grow up without playing outside or actively observing nature—spending too much time sitting at computer screens and instead experiencing life through keystrokes and video images. The physiological and emotional consequences of this trend are manifested in poor health and a lack of understanding about human impacts in the ecosystem.

Responsible stewardship depends upon an informed public able to make choices that consider sustainability in a broad ecosystem context. Connecting people to land through hands-on experiences will help them learn about the systems of which they are a part. This, in turn, will lead to support for a mosaic of healthy, intact habitats.



## HOW DO WE KNOW WHAT TO PROTECT?

Certain areas throughout the ECV region warrant special attention because they have been recognized for their critical importance in the continued health of the region's ecosystems. Examples of these areas include floodplain forests, wetlands, migratory stopover areas (waterfowl and upland), mast forests, prime and statewide agricultural soils, roadless core forests, rare and endangered species habitats, wildlife corridors, high-elevation areas, and riparian corridors. (Please note that this list is not comprehensive but rather is used to provide examples of important areas.) Some of these areas already have been mapped and can be found by looking at the Agency of Natural Resource's Vermont BioFinder or the Natural Resources Atlas.

USING THE CONSERVED LANDS DATA LAYER IN THE NATURAL RESOURCES ATLAS: Hundreds of thousands of acres of land in Vermont have been conserved. These properties can be the foundations for planning that supports an interconnected network of habitat. However, maps of conserved lands should be used cautiously:

- Conserved lands may include land subject to permanent protections as well as land subject to temporary restrictions and land owned by municipalities or public groups that may not have a mission of habitat protection.
- Conservation easements are permanent restrictions on how and where a parcel of land may be developed. In some

cases, depending on the nature of the easement, the allowed uses may involve fragmentation or other land use practices (agriculture or forestry) that may have negative impacts on certain species or habitat types.

It is also important to note that prioritizing conservation efforts for habitat protection is particularly dynamic as natural communities extend across multiple boundaries and jurisdictions, and changes in one part of the system may compromise the value of another. Therefore, the impact of any land use decision must consider the local and regional context; conversely, protection initiatives must be flexible enough to respond and adapt as individual parcels are developed or altered.

The following page offers a framework to help make decisions on a local level.



## PRIORITIZING PROTOCOL FOR CONSERVING LAND

- 1) Gather information about the existing landscape elements:\*
  - Wildlife habitat features (e.g., seeps, swamps, marshes, fens and bogs, vernal pools, beaver ponds, mature forests, early succession forests, unique groves of plant species, rich forests, mast stands, den sites, winter yards, game trails, road-crossing sites, caves, nursery and refuge trees, large cavity trees, ledges, and cliffs).
  - Forest cover types (e.g., hardwoods, evergreen softwoods, mixed forests, seedling and sapling regeneration areas, early successional meadows, and shrub lands).
  - Natural communities (e.g., mesic maple-ash-hickory forests, silver maple-ostrich fern riverine floodplain forests, and calcareous riverside seeps).
  - Contiguous forestlands (e.g., core forests and forest blocks).
- 2) Inventory (i.e., map and tabulate) the existing wildlife habitat features, forest cover types, natural communities, and contiguous forestlands.
- 3) Spatially assess the composition of the habitat features, cover types, natural communities, and contiguous forestlands:
  - Which ones are vital to specific wildlife? Without species-specific vital elements on the landscape (e.g., winter yards for ungulates, den sites for bobcats, and bog communities for bog lemmings), those species' populations cannot be locally viable.
  - Which ones are critically important to a variety of wildlife species? Some landscape elements provide critical resources to many species (e.g., mast stands, seedling/ sapling regeneration areas, wetlands, and rich forests).
  - Which ones are rare? Local rarity is a general criterion for prioritizing habitat protection because those habitats, despite being used by a variety of species, are of such limited availability. They exist in low numbers across the landscape (e.g., red maple-black gum swamps and rich fens).
  - Which ones are under-represented in the contiguous forestlands? Representativeness is another general criterion for prioritizing protection because under-represented habitats in protected areas will likely limit wildlife populations (e.g., floodplain forests and marshes).
- 4) Assess the connectivity among the habitats:
  - Does a network of forest or other pertinent cover connect the habitats to each other? The ability of wildlife to move among seasonal feeding and breeding habitats is ecologically important. The ability for gene exchange among populations of wildlife is evolutionarily important.
- 5) Make planning and management decisions that do not fragment forests and that minimize habitat loss, thereby maintaining an interconnected mosaic of wildlife habitats. These may include regulatory (e.g., zoning bylaws, subdivision regulations) and nonregulatory strategies (e.g., Use Value Appraisal, estate planning). Decisions also may be influenced by municipal plan policies that provide guidance in regional review processes, such as Act 250.
- 6) Re-gather, re-inventory, re-assess, and re-plan locally and regularly.

<sup>\*</sup>Go to ECVermont.org for a list of some sources to help with gathering information about the existing landscape elements.



## STRATEGIES FOR HABITAT CONSERVATION

Goal A: Our natural heritage is known and valued by all, and these shared community values guide decision making.

**Policy A.1:** Educational efforts and conversations that create understanding and shared community values will be a high priority.

Actions:	Responsible Parties:
<ol> <li>Develop and offer ecological literacy programs, specific to each sub-region, for a broad audience.</li> </ol>	Schools, RPCs, Vermont League of Cities and Towns, ANR, and towns
2. Ensure that every public school has easy access to a natural area for hands-on, environmental education and healthy, outdoor activities. Conduct an inventory of town forests, conservation areas, and other natural areas that are either currently or could be used for this purpose.	Schools, RPCs, towns, and town conservation commissions
<u> </u>	
3. Build an understanding of our natural heritage by encouraging collaborative relationships, involving experts in our region wherever possible in environmental education.	Schools, RPCs, and non-profits
$\Diamond$	
	more actions

This symbol indicates that the effect of a specific action is being followed by a metric. See the Metrics section of this plan for more

### Acronyms used under Responsible Parties:

ANR: Vermont Agency of Natural Resources RPC: regional planning commission

**FOCUS AREA ICONS:** Some of the actions outlined in this section also serve to further other goals within this plan. Use of these icons indicates those focus areas.



and/or participate in any of these actions, contact TRORC.


**Policy A.2:** Decision makers will utilize high-quality data about the region's natural resources to inform local and regional land use planning, prioritization, and decision making.

Acti	0.0051			Posponsible Parties:
ACII	UIIS.			Responsible Fullies.
I. D ha tra re Se Ca gr	ocument the distribu- abitat corridors, and ack changes in the e sources inventory. Pri- nap formats so that the eek opportunities to co ommissions, regional overnmental organize	tion of natural communit other important resource nvironment over time thr ovide results in accessible ey can be utilized in a re collaborate with municipe conservation partnership ations to gather and sha	ies, forest blocks, es in our region, and ough a natural e database and egional context. al conservation os, and non- re data.	Towns, RPCs, and town conservation commissions
<b>)</b>	aming what informa	tion and (or platforms als	and wavist la a	
Z. D Bi	oFinder) and what lo	cal and regional informa	ition is needed.	ANR
٥ ا				
3. Se ci re	eek grant opportunitio ommunities, forest blo esources throughout t	es to map the distributior ocks, habitat corridors, ar he region.	n of natural nd other natural	Towns and RPCs
Ø				
4. M	lonitor and assess trer onnectedness among	nds that pose risks to the g natural communities ar	health of and nd habitat blocks.	Towns and RPCs
27 A	D)			
5. U: U <sup>:</sup>	se data to prioritize re tilize both scientific ar	presentative, critical, and community values to	id at-risk areas. assign priorities.	ANR, RPCs, and towns
Ø				
Goal B:	Our region-wide mos	aic of natural communiti	es habitat blocks a	nd wildlife
connect	livity corridors remain	diverse, healthy, and in	terconnected.	
<b>Policy</b> utilized	<b>B.1:</b> The full range of d to achieve this goal	tools (e.g., voluntary, reg	gulatory, and plannir	ng strategies) will be
Acti	ons:			Responsible Parties:
1. U <sup>.</sup> ei a	tilize area/state expe nsuring intact natural nd implement these t	rts to identify the most su resources in the region, ools.	itable tools for and then develop	Town conservation commissions, RPCs, towns, and VT Fish and Wildlife Dept.
<b>Y</b>				
2. M re a	ake information abo esources, priorities, an nd state decision ma	ut the natural resource in d protection strategies a kers.	iventory, risks to ivailable to local	ank and KPCs
Ø				
				more actions

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3. Work with individual towns to incorporate these tools into municipal RPCs

plans and regulations, and facilitate community outreach efforts to ensure that the identified tools are utilized at the local level. 4. Update municipal plan policies to reflect the importance of natural RPCs and towns communities and to propose locally appropriate solutions for protecting them. ည် Policy B.2: Conservation will be utilized as a key tool for protecting natural communities, wildlife habitat, and other natural resources. It will be a collaborative effort between local leaders and landowners. **Actions: Responsible Parties:** 1. Prioritize conservation, knowing that other benefits such as tourism, RPCs, towns, and recreation, and employment will flow from an intact, healthy town conservation mosaic of habitats. commissions 2. Utilize prioritization of representative, critical, and risk areas as well ANR, RPCs, and as the Prioritizing Protocol to understand how priority resources fit towns within the regional mosaic. Use this information to identify areas that are critical to the mosaic and to plan conservation projects accordingly. Conservation projects shall be temporally dynamic and locale dependent. 3. Identify and develop adequate financial resources to protect State, RPCs, and natural communities and other high-priority natural resources. towns 4. Incorporate conservation funding into local capital planning and Towns and RPCs programs. 5. Advocate for state and federal agencies to increase the amount RPCs, towns, town of funding in this area. conservation commissions, state, and federal entities.

more actions



Goal C: The economic and health values of intact ecosystems and ecosystem services, and the true cost of compromising them, are guiding principles in community and individual choices.

**Policy C.1:** Strategic planning, municipal actions, and regulations will be evaluated in terms of their contributions to or detractions from ecosystems and ecosystem services, and will only undertake actions that standardize protection.

Actions:	<b>Responsible Parties:</b>
<ol> <li>When developing town plans, consider the economic and health value of intact ecosystems and ecosystem services, and the true cost of compromising them.</li> </ol>	RPCs, town conservation commissions, and
<u>▶</u> ② ◇	
2. Municipalities will be strongly encouraged to evaluate their actions and investments for their impact on our environment.	Towns
<u> </u>	
<ol><li>Develop case studies demonstrating the value of ecosystem services and make these available to assist decision makers.</li></ol>	RPCs
※ 23 0	
<ol> <li>Consider sharing roadside mowing devices, and coordinate to schedule mowing during times that minimize impacts to nesting birds and minimize the spread of invasive species.</li> </ol>	Towns
$\mathbb{A}$	
<b>Policy C.2:</b> Recognize landowners for the ecosystem services provided b good stewardship and management.	y their land through
Actions:	Responsible Parties:
<ol> <li>Implement methods of recognizing landowners for practicing responsible stewardship resulting in the provision or maintenance of ecosystem services.</li> </ol>	Land trusts, RPCs, and towns
$\mathbb{A}$	
<b>Policy C.3:</b> Local and regional plans, policies, and regulations will be writ minimal or no impacts to areas with prioritized natural resources.	ten to ensure
Actions:	<b>Responsible Parties:</b>
<ol> <li>Consider this policy when updating local and regional plans, regulations, and other policies.</li> </ol>	RPCs and towns
$\mathbb{A}$	
2. Implement tools that promote infill by concentrating dense, mixed- use developments in villages or existing settlements, and maintain a rural countryside that supports ecological functions and a working landscape.	RPCs and towns
🗡 🏠 👌	
	more actions



**Policy C.4:** Renewable energy projects will be supported if they provide benefits to the economy and do not fragment forests, wildlife habitat, or wildlife connectivity.

Actions:	Responsible Parties:
<ol> <li>Update local and regional plans in order to identify clear standards to guide the siting and/or harvesting practices for renewable energy facilities.</li> </ol>	Towns and RPCs
$\overline{\mathcal{A}}$	
<ol> <li>Update local and regional plans in order to provide guidance regarding how renewable energy developments will be evaluated in terms of both their economic benefits and whether development fits into or enhances the larger mosaic.</li> </ol>	Towns and RPCs
$\mathbb{A}$	



### **ENDNOTES**

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- <sup>9</sup> Summary information adopted from Benchmark Study of the Economic Impact of Visitor Expenditures on the Vermont Economy - 2011. Prepared by Chmura Economics and published by the Vermont Department of Tourism & Marketing. (April 2013).
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# PUBLIC WATER SUPPLY & TREATMENT

VISION: Plentiful and clean water, treated as the precious resource it is



"Managing the supply and availability of water is one of the most critical natural resource issues facing the United States and the world."

~U.S. Environmental Protection Agency

The East Central Vermont (ECV) region is mostly rural. Consequently, most water supply and wastewater treatment in the region is handled via private wells and septic systems on each property. However, this section focuses on the municipal provision of potable water and wastewater treatment.

Areas of more concentrated development, such as downtowns, require at least public water supply or public sewer, as private wells and wastewater disposal systems must not be located too close together in order to avoid contamination of the water supply. Currently, approximately half of the 40 towns in the region have some municipal water systems, and approximately 15 have municipal wastewater systems—though, in general, they serve only a small geographic area of any of these towns. Many villages where one would think there is sewer or water do not have such infrastructure.

Where public systems do exist, they tend to be small systems.\* These small municipal systems supply about 37% of the total state population.<sup>2</sup> This is very different from the rest of the nation, where small community systems serve only 9% of the total population.<sup>3</sup>

### **PUBLIC WATER SUPPLY**

Deep wells drilled into bedrock provide most of the region's public water supply, but shallow gravel wells are also still in production. Wells draw from surrounding groundwater aquifers and, in general, we tend to enjoy plentiful and clean groundwater. During extended drought periods, such as 1968–1969 and 1998–1999, some private wells did have to be drilled more deeply.

Although water utilities prefer to operate their treatment facilities at a relatively constant rate, water system demands usually vary throughout the day. In general, it is cheaper to operate fewer wells with a smaller water treatment system and use storage such as water tanks and reservoirs operated in fill and draw operations throughout the day to accommodate variations in water supply and demand. Time-of-day variations in energy pricing may influence when wells and pumps are operated.

\*Those systems that serve communities with populations of fewer than 10,000 people are considered "small" systems.



#### Livability Principles Addressed

- Support existing communities.
- Coordinate policies and leverage investment.

To provide sufficient pressure, the water level in a storage facility must be maintained within a specific range. Water must also be cycled weekly to prevent

excessive aging and sedimentation. The

available supply must satisfy the maximum daily demands of the community, not only to meet consumer demand, but also to meet the fire-flow demand. Generally, the same water that supplies domestic taps also supplies fire hydrants.<sup>4</sup>

**Municipalities** must follow specific flow and pressure requirements for fire hydrants. Generally, the minimum residual pressure on each fire hydrant under flow conditions is to be at least 20 pounds per square inch (psi).<sup>5</sup> In addition to fires, other emergencies such as power outages, equipment failures, water main breaks,

and temporary loss of water supply facilities can result in an insufficient water supply within the distribution system. Storage provides a mechanism for delivering water under such emergency conditions.

Municipalities with water systems near production capacity can curb additional infrastructure costs in the short term by implementing water efficiency programs, such





as installing water meters and water-saving devices. These programs reduce operating costs as well as the need to develop new supplies and expand the water infrastructure. Water efficiency programs also lessen the need for withdrawal from limited fresh water supplies.<sup>6</sup> By using less water, less energy is consumed to treat, heat, and dispose of water.<sup>7</sup> Financial surpluses from these efficiency upgrades can be set aside to build cash reserves for use in the future.

Several areas in the ECV region have already seen reduced demand for municipally provided water as a result of factors such as the implementation of watersaving devices in new construction and upgrades to low-flow toilets in residential and commercial property renovations. A few towns have also experienced lower than average use of municipal water services based on their changing demographics in moving toward a more tourist-based economy. Water system operators in these areas note lower daily demands for water and sewer services with spikes during weekends and holiday periods when tourists are in town. This puts a huge demand on town wells and reservoirs to keep up with this temporary, increased population. Although water systems can use storage to increase the amount of water available, it can be problematic for treatment plant operators to maintain minimum quality standards for discharge of sporadic high wastewater flows.

Ensuring an adequate water storage supply in the ECV region is an ongoing effort. Several towns have more than enough



Several towns have seen a reduction in the demand for municipally provided water as a result of water-saving devices.

storage, while others can barely meet minimum state requirements for pressure and storage capacity. Most towns have sufficient well production capacity. Infrastructure improvements will be needed to both maintain current systems and enable more dense development where desired.

### **PUBLIC WASTEWATER SYSTEMS**

Early designs of wastewater treatment facilities in our region utilized combined sewer systems (CSSs) to carry sanitary sewage from domestic, commercial, and industrial sources. In addition to sewage, the single pipes conveyed stormwater drainage from rainfall or snowmelt. Some of the larger towns in the region have at least some CSSs, but the exact extent is not known due to incomplete system mapping. In dry weather, the flow in a CSS consists of domestic sewage, commercial



waste, and groundwater infiltration, and this is not a problem. However, during periods of significant rainfall or snowmelt, stormwater runoff can create much higher flows that exceed the capacity of treatment facilities. When capacity is overloaded, a CSS discharges untreated waste directly to surface water bodies, which is known as a combined sewer overflow (CSO). CSOs are not a good thing because they carry not only stormwater but also untreated waste. This issue only affects a few areas in the region; decadeslong ongoing efforts have worked to minimize the problem by separating sewage and drainage systems and better managing them.

More common for our towns is the need to ramp up treatment of wastewater due to sporadic high flows from seasonal visitors while maintaining the stringent discharge requirements for effluent. Generally speaking, short-term variations in wastewater flows at a typical municipal wastewater treatment plant follow a reliable daily pattern—one peak flow in the late morning and another in the evening. Wastewater system operators are very much in sync with these routine patterns and can reliably and efficiently treat effluent because their systems are built to absorb these daily ups and downs.

However, in towns with a significant transient population, it is difficult to build and operate a system to handle the much larger weekend flows they may receive, and it is often necessary to use more chemicals, such as chlorine, in the disinfection process at the end of a busy weekend compared to the rest of the week. To help alleviate the need for additional chemical treatment, future wastewater system upgrades in such towns could include flow equalization and additional short-term storage of treated effluent. This would benefit these particular communities by providing consistent microbial activity to break down harmful pathogens in the effluent without the need for excessive chlorination. Another alternative would be to implement ultraviolet or UV disinfection an expensive option, but one that can be retrofitted in an older facility.

## THE IMPORTANCE OF WATER SUPPLY AND TREATMENT TO THE ECONOMY

Our homes and businesses rely on the provision of a nearly constant supply of clean, fresh drinking water at a price they can afford. They also need the same ability to dispose of wastewater to some form of treatment system. Loss of either of these for even an hour causes problems. Without them, in as little as a day, some businesses must shut down. In the future, the biggest concern will be maintaining such services because doing so will undoubtedly



Towns need to ramp up treatment of wastewater due to sporadic high flows from seasonal visitors.



require cost increases. Smart land use planning, efficient use of systems, and more long-term budgeting will help to make this daunting task more manageable.

### CHALLENGES

- SUPPORT FOR COMPACT GROWTH: Despite a state planning goal that supports compact growth, the growth that takes place in the region continues to mainly occur in a scattered manner in rural areas. The lack of public water and wastewater systems in more developed areas, especially villages, is a major obstacle to additional growth within them. In addition, there is generally insufficient development pressure, regulatory constraints, and local desire to drive the construction of new systems in such areas.
- AGING SYSTEMS: Small municipal water systems in the ECV region serve roughly 32,000 residents on any given day. However, this number can double on weekends and during holidays due to the significant influx of visitors. These population surges pose substantial challenges to water system operators trying to maintain an adequate potable water supply, and to wastewater treatment system operators trying to manage effective effluent treatment. In addition to these cyclical demand and supply challenges, many towns in the region have limited financial resources with which to maintain or expand systems.8

Every four years, the American Society of Civil Engineers (ASCE) issues a Report

Ensuring an adequate water storage supply in the ECV region is an ongoing effort. Several towns have more than enough storage, while others can barely meet minimum state requirements for pressure and storage capacity.

Card for America's Infrastructure for each state, which grades the condition of the state's infrastructure, including drinking water and wastewater infrastructure, among other facilities. ASCE's most recent report card (2013) gave Vermont a C- in drinking water facilities and a D+ in wastewater infrastructure.<sup>9</sup> These scores are similar to those of other New England states, which, like Vermont, have underground infrastructure, primarily for water supply, that is often more than 100 years old. ASCE estimates that over the next 20 years, Vermont's municipalities will need to spend a staggering amount on replacing or upgrading water supply systems (\$453 million) and wastewater infrastructure (\$281 million) that is reaching the end of its useful life.<sup>10</sup> There is no substate, regional breakdown available in the report card, but it stands to reason that the ECV region needs tens of millions of dollars in improvements to the current system. However, the majority of the work needed in the region on water supply and wastewater treatment systems is to simply maintain current capacity and quality requirements. There are several areas where extending existing systems or building



new systems would both enable more dense development and alleviate possible water quality concerns. Should funding ever be made available for extensions and/or new systems, we must be very strategic in placement of these systems so that they do not contribute to sprawl, and we must always be aware of long-term maintenance costs to municipalities.

Our main issue is that the region's systems are almost or already past their design lives. Cast-iron pipes were laid in the late 19th century for both sewage and wastewater conveyance, and they have an average life expectancy of 120 years. Ductile iron pipes were introduced in the 1950s, the beginning of a time of population regrowth in the region, and were marketed as an improvement over their cast-iron predecessors. However, they only have a life expectancy of 50 to 75 years due to corrosion. After the Clean Water Act was passed in 1972, the federal government increased water pollution spending to give Vermont municipalities the money they needed to install or significantly upgrade their water treatment facilities. In many cases, those facilities haven't been upgraded since.11

As is clear from the pipes' "expiration dates" as well as the time frame since major federal funding allowed major system upgrades, significant portions of Vermont's underground pipe networks and treatment systems are near the end of their useful lives.



 GEOGRAPHIC ISOLATION: Because many of the towns in our region grew around a public water source, systems were and are still independent from town to town. This means that each system is unique and geographically separated. One town can have a strong water supply with excellent pressure while another town located a few miles away can have contamination issues and lack of recharge into the well. Challenges also persist in the fringe areas of these systems because developable land



often exists just outside of the service area of these systems. New wastewater systems cost millions of dollars, and it is generally impossible to split them among several towns due to this geographic separation of population centers.

• INFILTRATION AND LOSS: Many wastewater treatment facilities in our region face infiltration problems from both leaks into sewer pipes (which often aren't under pressure) and older built connections that funnel stormwater from impervious surfaces such as rooftops, roadways, and parking lots into combined sewer and storm water lines.



ASCE estimates that over the next 20 years, Vermont's municipalities will need to spend a staggering amount on replacing or upgrading water supply systems (\$453 million) and wastewater infrastructure (\$281 million) that is reaching the end of its useful life.<sup>12</sup> Towns with CSSs have been active in identifying the sources of stormwater, which mainly arises from catch basins connected to sewer lines. Other sources have been more difficult to quantify and include rooftop drains that are still physically connected to the wastewater system as well as sump pumps that are primarily used in the spring to clear rising water in basements.

Although infiltration into potable water supplies can happen and is a cause for concern due to health reasons, water systems (which operate under pressure) generally face the opposite problem—loss of potable water from leaking pipes due to age, damage from frost, or other causes. Water is expensive to pump and treat, and such losses represent wasted money. If systems are not properly gauged, these losses can go undetected for years. Large leaks in main lines can and have caused the undermining of roads in the region.

MAPPING OF INFRASTRUCTURE: Much of Vermont's underground infrastructure lacks quality mapping. Water system operators are often unsure of where the pipes actually lie underground—a consequence of non-standardized record keeping in the late 1800s to early 1900s, when there were no requirements to keep construction maps or designs on file. This initially was not an issue because information was passed on directly from the public works director to trainees and apprentices, many of whom would work in these positions for their entire lives. However, after 100 years—which is the



age of pipes in some of the ECV region this information can and has been lost forever. Often, a pipe is only found after a significant issue arises. Several operators in the ECV region admit that 10% to 15% of the underground infrastructure in their town is not fully known.\* Many maps of town systems cannot accurately indicate the size of water supply or wastewater lines nor their age or location relative to other structures.

• COSTS: Water and wastewater systems are capital-intensive operations. However, the price that residents and businesses pay for water supply and wastewater treatment has generally not reflected the full cost of such services. When municipalities fail to raise sufficient funds to cover the cost of rehabilitating their systems, upgrades are put off and decay problems accumulate. The condition of municipal water infrastructure is an equal-opportunity crisis, plaguing both relatively affluent communities and those mired in economic hard times. Major upgrades, or even large maintenance projects, can cost millions of dollars.

The money for capital improvements to replace or expand these systems has generally come from three sources: federal aid, pay-as-you-go financing (i.e., revenue from taxes), and borrowing or bonding. For large upgrades to infrastructure, such as pump station or wastewater treatment facility construction and replacement, the primary form of financing is through warranted municipal government obligation or revenue bonds combined with user rates (e.g., pay-as-you-go). For smaller infrastructure obligations, many system operators over the past few decades have simply requested a flat percentage increase of 5% to 10% to their operating budget each year. This is what their predecessors taught them to do, and surprisingly it has worked for anticipated replacement of underground piping and aboveground treatment works that are approaching the end of their useful lives. However, this method will not likely continue to maintain the needed finances. A funded reserve account would provide a buffer and help system operators avoid abruptly increasing fees when they incur a large capital expenditure.

Many small communities in Vermont have also relied on federal grants in the past, but the flow of such grants has decreased



A funded reserve account would provide a buffer and help system operators avoid abruptly increasing fees when they incur a large capital expenditure.

\*From interviews conducted by Two Rivers-Ottauquechee Regional Commission staff



substantially from past levels. In 1978, 78% of wastewater infrastructure was funded by the federal government; that figure has dropped to less than 3% today.<sup>13</sup> Since this original influx of funding, municipalities have incorporated the full maintenance and future replacement costs for their systems into their current charges, meaning their systems are degrading and they will not have funds to replace them without additional state or federal aid, both of which are declining.



# STRATEGIES FOR PUBLIC WATER SUPPLY & TREATMENT

Goal A: Municipal water and wastewater systems have long-term budgets and are well capitalized. Policy A.1: Create capital budgets and reserve accounts for municipalities' water and wastewater facilities. Actions: **Responsible Parties:** 1. Draft municipal plans that identify and prioritize future capital Selectboards, town improvements/repairs, and estimate costs and means of financing budgeting entities, in accordance with 24 V.S.A. Chapter 117. and RPCs 2. Offer capital budgeting workshops and training throughout the **RPCs** region. 3. Every town with a water and wastewater system should designate Selectboards/ a reserve capital account. towns Goal B: Municipal water and wastewater systems are well maintained and efficient. Policy B.1: Ensure drinking water is protected and used efficiently. **Actions: Responsible Parties:** 1. Educate people about the value of water and the importance of Towns, water wise stewardship and efficiency. operators, RPCs, and state more actions

> This symbol indicates that the effect of a specific action is being followed by a metric. See the Metrics section of this plan for more information.

Acronyms used under Responsible Parties:

RPC: regional planning commission





2. Adopt water efficiency programs/codes at the state or local level to reduce the demand on municipal water systems.

State and towns with assistance from RPCs

	from RPCs
<b>Policy B.2:</b> Discourage development near public water supplies to protect contamination.	ct them from
Actions:	Responsible Parties:
<ol> <li>Work to explore re-classification of community water systems from Class III to Class II, which offers a greater level of protection from specific developments that are detrimental to water quality.</li> </ol>	Towns, ANR, Vermont Department of Health, and Vermont Rural Water Association
<b>Policy B.3:</b> Ensure water and wastewater system managers have the date manage their systems.	a needed to
Actions:	Responsible Parties:
<ol> <li>Seek grant opportunities to map water and wastewater distribution systems throughout the region.</li> </ol>	Towns, RPCs, and ANR
<ol> <li>Municipal plans shall have an inventory of sewer and water systems that identifies current and projected capacity gaps.</li> </ol>	Towns with the assistance of RPCs
<ol> <li>Assess water pressure in main lines to meet fire-flow requirements required by the state.</li> </ol>	Water operators, towns, and private engineering firms
<ol> <li>Conduct periodic auditing of all water and wastewater distribution systems to calculate infiltration and losses.</li> </ol>	Towns
<ul> <li>5. Conduct a cost-benefit analysis of system repairs and report any system losses to system users and stakeholders to support informed decision making.</li> </ul>	Towns, private engineering firms, and state
<ul> <li>6. In areas with high stormwater inputs, inspect all properties that are hooked up to treatment for possible inputs from roof drainage and sump pump drainage.</li> <li></li></ul>	Towns

more actions



Goal C: New or expanded water or wastewater service areas or capacities further compact settlement as well as increase community vitality and energy efficiency.

**Policy C.1:** Ensure wide public input is utilized when new or expanded water or wastewater areas are under consideration.

Actions:

Responsible Parties: Towns, neighboring

towns, and RPCs

1. Establish new or expanded water or wastewater service areas or capacity as part of the town and regional plan process with wide public input, and ensure all are designed to reinforce state and regional planning and development goals.





### **ENDNOTES**

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- <sup>10</sup> See Note 9.
- <sup>11</sup> Taylor Dobbs. "Outdated And Overlooked, Vermont Sewage Treatment Plants Damage Waterways." (December 10, 2013). Vermont Public Radio. Retrieved June 2014 from http:// digital.vpr.net/post/outdated-and-overlooked-vermont-sewage-treatment-plants-damagewaterways.
- <sup>12</sup> See Note 9.
- <sup>13</sup> Mark Pearson. U.S. Infrastructure Finance Needs for Water and Wastewater. (n.d.). Rural Community Assistance Partnership. Retrieved September 2014 from http://www.rcap.org/sites/ default/files/rcap-files/Infrastructure%20Finance.pdf.

# METRICS

## LOOKING TOWARD THE FUTURE

Plans are grounded in the past and present, but they are inherently about the future. Some people view plans as a sort of "pre-decision" about what to do if something happens. However, policy-based plans, such as this one, seek to shape the future as well—to try to make certain things happen. Planning at its heart believes we can create change.

Although we can affect change, some changes are out of our control. Current projections regarding population, climate, jobs, age, and energy provide us with some information to aid in our planning, but in other areas we have very few details to guide us. However, we have a good idea of where we are now and the direction we want to go.

### **SNAPSHOT**

Overall, the region is currently similar to many other areas of Vermont. Our land is rural and mostly tree covered, though forest coverage has largely stopped growing in acreage. Farmland dominates the larger valley floors, and farms are actually increasing in number, led by small operations. Development remains slow, but scattered homes and driveways continue to slowly fragment fields and forests.

Our people are nearly entirely white racially, are older than the national average, and are smoking less but gaining weight. As a region, we are only slowly gaining population, but not children, and so our smaller schools are closing and our working-age population is shrinking. For many reasons, it would be ideal to increase our racial diversity, attract younger people, and lose a few pounds. We enjoy a relatively healthy economic environment and our economy is stronger than the national average; we owe much of this to the neighboring area of western New Hampshire, to which we are bound economically. (Our eastern edge and the adjacent area of New Hampshire share an identity known as the Upper Valley.) Tourism is a significant, but not overwhelming, part of the economy, and vacation homes constitute a large portion of the housing stock.

Many of the homes we live in are older than we are, are too expensive (based on our incomes), and are heated by oil or gas. Vacancy rates are very low. Despite conservation efforts, we use about the same amount of energy per household as we have for the past decade. Most of us don't live within walking distance to work, and so to get there we largely drive alone. We have limited access to transit, but the transit services we do have are well used and increasing. To move away from our reliance on fossil fuels, we will need to "button up" our buildings, develop more dense communities, and keep increasing transit options and fuel efficiency.

Telecommuting is a surprisingly strong trend and it saves a considerable amount of driving, but our digital access to broadband and cell service across the region ranges from excellent to barely existent. Our traditional infrastructure (e.g., roads, schools, and sewers) generally has excess physical



capacity, but it is in need of significant maintenance to continue to function well. A large amount of infill development could occur in our downtowns without requiring expansion of services. We have lots of surface and groundwater, it is relatively clean, and flooding represents our greatest natural hazard.

### **SCENARIO PLANNING**

One planning tool that we can use to understand and appreciate the impact of policies or trends is scenario planning. Scenario planning can take two forms: to test the effect of different actions, such as various policies, on a single set of conditions; and to see the effect of a range of conditions on an action. In more urbanized areas, it can be used to estimate the impact of improvements such as new rail lines or very large developments; however, our level of change is nowhere near this scale. The policies and recommended actions found in this plan are the result of the first kind of scenario planning. They all arose from a goal (such as using less energy in buildings) and then were crafted to achieve the desired future condition (for example, by insulating our homes better).

This plan's policies and actions have also undergone a rudimentary version of the second kind of scenario planning, in which the plan was tested against two futures beyond that which is expected—an optimistic, highgrowth future where things get much better than expected, and a more pessimistic future where they get worse. This is a useful exercise because if a policy or an action is beneficial both when things are going well and when they are not, the plan will create positive changes regardless. For example, if a policy of fixing all roads is dependent on high tax revenue, it will not succeed if revenue falls; but a policy of not replacing bridges that are rarely used will have good results whether revenue rises or falls.

### **METRICS**

Metrics are just ways of measuring things. The reason we measure is to know where we are and perhaps where we've been, and to see if desired changes take place over time. Below are a large number of metrics associated with the subject areas this plan covers, and we plan to follow these in the future. Some of these metrics have been associated with an action in this plan, and consequently they have a symbol next to them and an associated reference that links back to a specific action in the plan. By reviewing these metrics in years to come, we hope to see links between this plan and actual changes that occur in the region.

These metrics all have recent or current values, and some include past data to show trends. Sometimes the trends are in our favor, but many times they are not. Because the goal of this plan is to help bring about a desired future, each metric presents the estimated effect of this plan (illustrated by an up arrow or a down arrow or next to the metric). A few metrics have no arrow because they involve more than one variable, such as the different means of transportation to work.

The full set of data and graphs can be found online at ECVermont.org. Some metrics



also contain projections that assume current trends continue. Although this can be very speculative, we have tried to look out 10 and 20 years in the future.

We should note that nearly all of the estimated effects of this plan are qualitative, in that they have a direction but usually not a number. For example, we can say with some confidence that building park-andride lots will increase carpooling, but we don't—and can't—say that exactly 143 more people will carpool because of this action. This qualitative-over-quantitative approach is partly due to budget constraints (as data modeling can get expensive), but it's also due to the region's size and the inability to model with much accuracy many of the metrics. The region is simply too small or the trends are too weak to provide inputs into models that can make accurate predictions. Even many measurements of current conditions, such as the American Community Survey, below the county scale are too inaccurate to use.

The full set of metrics can be found on the following pages. The metrics we chose were based on several factors: They represent key aspects, have available data, and should be trackable over time. A few were required by our grant programs. Some metrics are at the town level, but many are only useful or available at the county level. For ease of data measurement, the ECV region uses Orange and Windsor County data as the proxy for the whole region, even though the ECV region (made up of towns served by TRORC and SWCRPC) actually contains Pittsfield in Rutland County, and Granville and Hancock in Addison County; and does not contain Orange, Washington, and Willimastown in Orange County, nor Weston in Windsor County.

**Please Note:** Color coding in the following Metrics table refers to actions within the **East Central Vermont: What We Want** plan that will be measured going forward.

- Economic Development Our Homes Energy Use in the Built Environment Regional Transportation Healthy Communities Climate Resilience Habitat Conservation
- Public Water Supply & Treatment

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Metrics	Section Reference	Action	Change
People and Health			
Educational attainment for adults			
Age cohorts/median age by county			$\checkmark$
Percentage of adults/adolescents who are considered obese by county	<mark>بک</mark>	B.1.6, B.1.7	V
Percentage of adults/adolescents who smoke by county			V
Percentage of county population who have low incomes and limited access to grocery stores	<mark>ک</mark> ک	B.1.1	V
Habitat			
Acres of conserved land/public land in region		D.1.1	
Percentage of new development inside designated downtowns and villages	Ê	A.2.1, A.3.2	
Same as above	R	D.1.3	
Same as above	Ø	C.3.2	
Climate Resilience			
Numbers of structures in special flood hazard areas and river corridors by town		A.2.1, A.4.5	V
Energy	-		
Residential energy use per household, both counties		A.2.3, A.3.3	$\checkmark$
Same as above	2	A.1.4, A.3.3	V
Number of homes with oil as the primary heating fuel by type by county			$\checkmark$
Total commercial/industrial energy use for Orange/Windsor counties			N/A
Electrical-generating capacity by county			

more metrics



Metrics	Section Reference	Action	Change
Economic Development			
Income distribution by county			
Median household income by county			
Annual rooms and meals tax by county	A	G.1.2, G.1.3	
Agricultural direct sales by county	<mark>دیک</mark>	B.1.5	
Number of farms by county			
Annual payroll and number of businesses by industry sector, by county			
Infrastructure			
State and local bridge conditions in region			
Towns with capital reserve accounts for water supply, wastewater, or transportation	- The second sec	A.1.3	
Same as above		C.1.1	
Percentage of structures served by broadband		A.1.7	
Same as above	A	E.1.4	
Towns with duly adopted capital budgets and programs	the second se	A.1.3	
Same as above		C.1.1	
General local government debt-to-revenue ratio			V
Our Homes			
Percentage of housing units by county that are affordable to households earning 80% of the Housing and Urban Development Area Median Family Income, by owner and renter		A.1.2, B.2.2	
Percentage of households by town spending more than 30% of income on housing, by owner and renter		A.1.3	
Number of local bylaws revised to minimize obstacles to housing that is affordable	2	A.4.2	

more metrics

Metrics	Section Reference	Action	Change
Homes (Continued)			
Same as above		A.2.3, A.3.1	
Same as above	$\nearrow$	F.1.1	
Average residential sales price compared to median income by county			
Total number of year-round housing units	ŝ	A.1.1	
Transportation			
Number of park-and-ride lots at interstate exits	ļ	A.1.2	
Number of park-and-ride parking spaces		A.1.4	
Number of towns that have a transit stop	Ģ	A.1.5	
Annual transit ridership		A.2.2, A.2.3	
Same as above	<del>ری</del>	A.1.5	
Vehicle miles traveled per capita by county		A.1.7	
Same as above	<mark>کَہ</mark>	A.1.6	V
Means of transportation to work by county		A.2.3	N/A
Per-capita transportation-related CO2 emissions by county		A.1.7, A.2.3	$\mathbf{\nabla}$
Governance			
Percentage of towns with regionally approved town plans			
Percentage of towns with zoning			
Percentage of towns with subdivision regulations			
Percentage of towns with flood regulations			
Percentage of towns with local emergency operations plans			
Percentage of towns with local hazard mitigation plans			
Total participants in ECV plan development			
Number of public announcements in all media during ECV plan development			

Metrics	Section Reference	Action	Change
Governance (Continued)			
Number of plan policies/recommendations acted upon by incorporating into other plans or implemented by responsible party		A.4.1	
Same as above		A.1.2	
Same as above	A	A.1.1, A.1.2, A.1.3, E.1.3	
Same as above	Ø	B.1.3, B.1.4	
Same as above	<mark>برک</mark>	A.1.3	
Same as above	2	B.1.5	

# NOT THE CONCLUSION

Although the printing and adoption of this plan signal an end, it is only an end to the plan's creation process. A plan is really more of a beginning, a starting point. Just as a map is a guide for a trip, this plan was made to provide some direction, education, or encouragement so that we—as well as you and others—can move toward a more sustainable future. For change to happen, the many agencies and organizations that contributed to this plan must take ownership of its pieces and use them in their own work and we hope you will do the same. We need to keep the plan on our desks, not our shelves. We must put its words into action.

#### Let's begin.

"There are many prizes awarded and much prestige afforded to the adoption of plans but almost no prizes and no prestige to their effective implementation. That is backwards. A plan is only as good as its implementation. **A good plan that is not implemented is a waste of money and a fraud on the public.** 





Downtown Randolph, VT



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# East Central Vermont

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what we want





