

ECONOMIC REGION

Economic Development

Infrastructure: Post-Secondary Education,
Child Care, Workforce and Telecommunications

Energy

ECONOMIC DEVELOPMENT

GOALS

1. Ensure that opportunities to experience, participate in, and benefit from the economy are available to everyone.
2. Improve the health of citizens and businesses by supporting the region's unique geography and landscape
3. Ensure that communities and businesses can rely on employees who are work ready; have strong work ethics and necessary skills in reading, writing, STEM (science, technology, engineering, math), and communication.
4. Ensure that businesses, employees, and communities have access to funding that is achievable and affordable, business costs that are reasonable and appropriate, and an infrastructure that is available and dependable.
5. Facilitate collaboration among Franklin and Grand Isle Counties to address issues that are similar throughout each county and secure the communities' economic future.

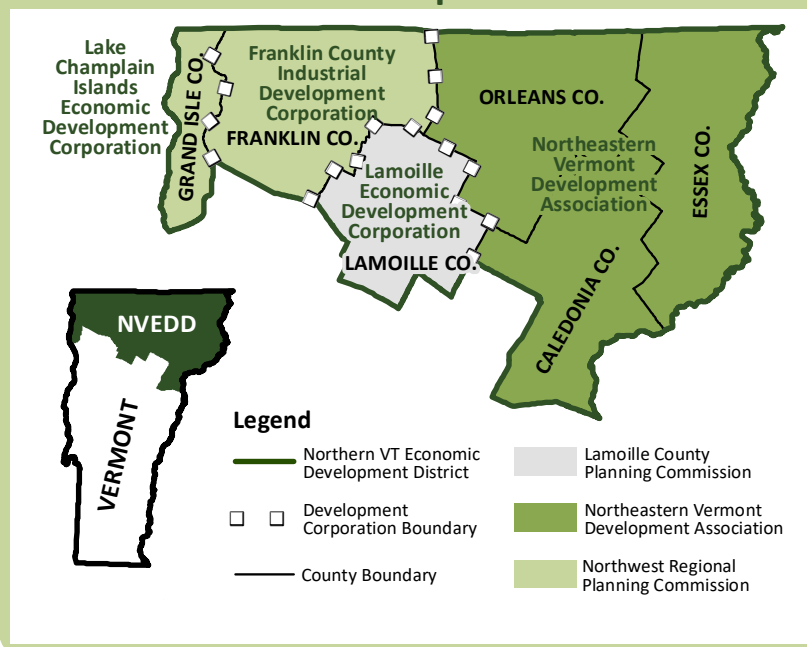
ECONOMIC OPPORTUNITIES AND CHALLENGES

Regional Assets

The Northern Vermont Economic Development District (Map 1) is a district recognized by the U.S. Economic Development Administration that allows access to federal economic development grants and technical support. The district is managed through a consortium of the regional planning commissions and regional development corporations. NRPC serves as the lead organization and fiscal agent.

The Comprehensive Economic Development Strategy for the district involves building a

MAP 1:
Northern Vermont
Economic Development District



diverse economy, creating a competitive advantage for our businesses, and increasing the well-being of our communities. Supporting job growth and sustainability in existing industries and preparing our infrastructure and workforce for emerging industries is an overarching goal. Our success depends on identifying strategic industries for the region and making specific recommendations for the development of a highly skilled workforce to support those industries. Like all counties in Vermont, the health of businesses, employees, and communities in this region depends upon having access to funding that is achievable and affordable, business costs that are reasonable and appropriate, and an infrastructure that is available and predictable.

Businesses continue to struggle with low unemployment rates, the cost of health care, housing availability, and energy; these issues are common throughout the state and New England. Additionally, child care and transportation challenges impact employee availability. The regional assets of Franklin and Grand Isle Counties are strong counterpoints to these challenges and a key to the success of many businesses operating in the region. The following assets are critical to the regional economy:

- The Lake Champlain shoreline
- Tourism and recreational opportunities
- A working landscape and agricultural economy that supports regional food systems and keeps rural lands undeveloped
- Well-planned infrastructure, including industrial parks, a strong transportation network, and a growing broadband network
- Intact town and village centers that include public spaces and are designed to serve pedestrians and cyclists
- Proximity to Canada and major transportation routes
- A wealth of organizations and individuals committed to improving our residents' quality of life (e.g., through housing, transportation, energy, and the environment)
- A long history of state and local commitment to sustainable development as reflected in state law and regional and municipal plans

Two trends may impact the economy in the future—climate change and remote work. All sectors of Vermont's economy—from tourism to forestry, agriculture, maple sugaring, and recreation—will feel the impacts of climate change. "Vermont is expected to attract new residents through climate migration, and Vermont may see an increase in summer 'seasonal climate refugees' as the rise in temperatures nationwide draws visitors looking to escape extreme heat. By 2080, the Vermont ski season will be shortened by two weeks (under a low emissions scenario) or by a whole month (under a high emissions scenario), and some ski areas will remain viable." (Vermont Climate Office, Climate Action Plan 2021) The low emissions scenario is optimistic. The report notes that skiing in Vermont will remain largely viable through 2050 only with the aid of snowmaking. With remote work becoming increasingly common for certain sectors, Vermont is an attractive location due to quality of life. Data and projections on these trends are not readily available, but NRPC will monitor new data and support our communities in planning for potential increases in population.

Table 1 provides an overview of economic indicators in Franklin and Grand Isle Counties. The strong working relationships between private and public sectors—including communities, businesses, planning groups, and educational organizations—have been the catalyst for job creation and building a diversified economy. This growth has transformed Franklin County from a predominantly agriculture-based economy to today's diverse, dynamic industrial and economic base whose high-quality products are driven by leading-edge technologies. Several Canadian companies have located their U.S. operations within Franklin County industrial parks. To strengthen small and large businesses and promote the establishment of start-up businesses and entrepreneurial endeavors in Franklin and Grand Isle Counties, the region requires a strong and predictable infrastructure that encourages new owners and markets to support economic development.

Grand Isle County is the home of hundreds of small and micro businesses, as well as a fully permitted business park in Alburgh for light manufacturing and a privately owned industrial park in Grand Isle (Island Industrial Park), with lots available. According to U.S. census data, Grand Isle County currently exports more than 80% of its working-age population to employment outside the county. The economy is centered on tourism and agriculture, but a growing number of people are establishing home-based professional businesses or telecommuting thanks to the availability of high-speed Internet service.

Workforce

The COVID-19 pandemic resulted in immediate high unemployment rates, topping 14% statewide in the spring of 2020. Since then, Vermont has had a strong economic recovery. The region consistently has an unemployment rate at or lower than the statewide rate. In 2022, the unemployment rate has been under 3%, a sign of a tight labor market.

TABLE 1: The Regional Economy

County Wages (2021)	<p>Average annual wages were less than those of Vermont as a whole:</p> <ul style="list-style-type: none"> Franklin County: \$52,944 Grand Isle County: \$43,567 Vermont: \$56,263
Total Employment (April 2023)	<ul style="list-style-type: none"> Franklin County: 27,302 Grand Isle County: 4,053
Top Three Employment Sectors (2021)	<ul style="list-style-type: none"> Franklin County: Admin/ Waste Services, Healthcare, Accommodation/Food Services Grand Isle County: Retail, Accommodation/Food Services, Transportation
Place of Work: Franklin County Residents (2019)	<ul style="list-style-type: none"> Franklin County: 45.8% Chittenden County: 37.4%
Place of Work: Grand Isle County Residents (2019)	<ul style="list-style-type: none"> Chittenden County: 54.2% Franklin County: 14.6% Grand Isle County: 14.0%
Unemployment (2022)	<ul style="list-style-type: none"> Franklin County: 2.2% Grand Isle County: 2.2% Vermont: 2.1%

SOURCE: Vermont Department of Labor, U.S. Census Bureau OnTheMap Journey To Work data

Ensuring equality in economic success for all current and future residents is a cornerstone of successful economic development. Historically, there are disparities between income, unemployment, and business ownership depending on race, ethnicity, or gender. Because our region has a high percentage of people who identify as white, local data on economic disparities by race or ethnicity is not readily available. Using data for the state of Vermont as a whole demonstrates the current challenges in achieving equitable economic success. Statewide, the average unemployment rate was twice as high for Black and Hispanic Vermonters. The disparity is even greater among males who are Black (12.8 %) and Hispanic (10.8%). Black youth 16-19 had an average unemployment of 22.6%, compared to 4.7% for white youth. (ACS 2018-2022)

The Franklin Grand Isle Workforce Investment Board (FGIWIB) is no longer supported by the State of Vermont, leading to a diffuse approach to workforce development. The need continues to grow for instruction in basic skill sets and specific training and certifications. Industrial maintenance, industrial electricity, CNC setup, and shop print reading are in constant demand by local manufacturers. Adult education programs feature regularly scheduled classes in licensed nursing assistant (LNA), clinical medical assistant, phlebotomy, home health care, and emergency response training. Various small businesses and individuals consistently seek support in financial software, basic computer and office software, child-care provider, and supervisory training. With ever-changing needs and innovations, it is critical that these services remain available to incumbent workers, new employees, and individuals.

The Value of Manufacturing

The number of employers in the manufacturing sector within the region has remained steady during the past ten years, at or around 60.

Manufacturing wages in the past five years have increased by 33%. The Franklin County average manufacturing wage of \$67,277 was well above the average for all employment (VT Department of Labor).

Industrial and Commercial Development

Industrial and commercial development in Franklin County has remained strong during the past two decades with the growth of Perrigo, Beta Technologies, and Northwestern Medical Center (NMC). In keeping with the regional land-use goals, industrial development has expanded almost entirely within previously permitted industrial parks that are in or adjacent to our downtowns and regional growth areas. The region continues to receive interest from businesses based in Quebec that seek a market in the United States. Grand Isle County still struggles to provide public transportation and municipal wastewater, which limits its commercial and industrial growth. The region's vibrant base of manufacturing and agriculture and its expanding base of sustainable agriculture and health-care services are all critical to the health of our communities. We utilize the existing infrastructure, support targeted expansions, and understand the common threads throughout the region that are essential in supporting business and social communities.

Working Landscape

Supporting the unique geography and landscape of the region's counties and providing an environment that supports families and businesses in agricultural endeavors is essential to the health of our communities. Value-added agriculture (changing an agricultural product to a more valuable product) remains important in the region, although total value of agricultural products sold stayed steady or dropped slightly from 2012 to 2017. NRPC, the Franklin County Industrial Development Corporation (FCIDC), Lake Champlain Islands Economic Development Corporation (LCIEDC), Northwestern Medical Center, and others cooperated to form Healthy Roots Collaborative, a local food organization with a mission to provide marketing, business planning, and other support to local food growers and producers. Healthy Roots Collaborative joined NRPC in the fall of 2019, and NRPC provides organizational support for Healthy Roots employees and programs.

Franklin County (24%) and Grand Isle County (2%) represent 26% of state agriculture sales. In 2017, Franklin County farms averaged sales of \$254,614; the figure was \$150,720 in Grand Isle County. Those are a 2% growth and 4% decrease since 2012, respectively. There are areas of sales growth in vegetables, alternative dairy (sheep and goat), value-added products, and other farm income, like agritourism. Farmers markets continue to show community support of agriculture in Franklin and Grand Isle Counties. As of 2022, there are five regular summer markets in the region: Champlain Islands Farmers Market, Northwest Farmers Market, St. Albans Bay Market, Montgomery Farmers Market, and the Swanton Food Truck and Markets. Looking toward the future, of the 1,378 total producers in Franklin County, 328 are new and beginning farmers. In Grand Isle County, of the 196 producers, 62 are new and beginning farmers.

TABLE 2: The Working Landscape Economy

Value of Agricultural Products Sold	The dollar value increased 0.6% from 2012 to 2017 in Franklin County and decreased 5.9% in Grand Isle County over the same period.
Value of Dairy	Milk accounts for 60% to 70% of agricultural product value. Franklin County produced 25.6% of Vermont's total milk production in 2017, more than any other county.
Importance of Maple Syrup	Franklin County produced 39% of Vermont's maple products in 2017—the most in the state. Value of maple syrup produced in Franklin County nearly doubled from 2012 to 2017.
Agricultural Employment	Agricultural employment constituted 3.3% of total employment in Franklin County, and 2.7% of total employment in Grand Isle County in 2021.
Changes in Farm Acreage	From 2012 to 2017, the amount of farm acreage increased by 1.82% in Franklin County and decreased by 1.16% in Grand Isle County.

SOURCE: U.S. Census of Agriculture 2017, VT Department of Labor

The agricultural sector relies heavily on a migrant workforce. Some estimates are that the agricultural sector is supported by 1,000 to 1,500 migrant workers statewide, up to 90% of which are undocumented. We must ensure safety, food access, fair wages, educational opportunities, proper housing, and social supports as crucial components of supporting these workers. (Panikkar, B.; Barrett, M.-K. Precarious Essential Work, Immigrant Dairy Farmworkers, and Occupational Health Experiences in Vermont. *Int. J. Environ. Res. Public Health* 2021, 18, 3675.)

Tourism

Tourism in Vermont is a \$3 billion industry that supports over 30,000 jobs in Vermont, or 10% of Vermont's workforce (VT Dept. of Tourism 2022). In Grand Isle County, the summer population is estimated to be three times the year-round population, and tourism in Franklin County is expected to continue to grow. Accommodations, food service, and retail account for more than 40% of Grand Isle County's private-sector employment. Increasing numbers of Canadian visitors account for a portion of the growth in tourism and bike tourism, and agritourism continues to grow in importance (VT Dept. of Tourism). Growth in bike tourism in the region is expected with increased marketing of the Missisquoi Valley Rail Trail and the completion of the Lamoille Valley Rail Trail.

The COVID-19 pandemic and associated stay-at-home orders, gathering limits, and testing/quarantine requirements had a tremendous impact on the tourism industry in 2020. In 2022, tourism within the region has rebounded and is growing again. Visitors at the Georgia Information Centers increased by nearly 100% from 2020 to 2021, and rooms and meals tax receipts continue to increase each year. In 2021, the rooms portion of the rooms and meals tax was \$14.2 million in Franklin County and \$3.2 million in Grand Isle County, equivalent to 2019 levels. Compared to the lows of 2020, this is a 300% increase for Franklin County and a 70% increase for Grand Isle County.

Arts, Culture, and the Creative Economy

The creative economy refers to efforts to foster economic growth and development through creativity, cultural heritage, and entrepreneurship, which reinforce the region's unique character and sense of place. The 2021 CreateVT Plan completed by the Vermont Arts Council estimated that 9% of the region's workforce was involved in the creative sector, either full or part-time. Specialty foods and design (graphic design, architecture, landscape architecture, interior/industrial design, printing, etc.) were the two largest creative industries in the region, each at 26% of the creative industry. Specialty foods and performing arts are the two sectors that grew the fastest from 2010 to 2018. (CreateVT Plan)

In 2017, 68.3% of Vermonters attended a visual or performing arts event, putting Vermont in the top ten in the nation. The Vermont Creative Network links creative economy practitioners and partners to supporting a thriving creative economy. NRPC supports these efforts and participates in the regional network.

GOALS AND POLICIES



GOAL

Ensure that opportunities to experience, participate in, and benefit from the economy are available to everyone.

- Provide additional support to municipalities and partner organizations that do not have staff resources to access funding opportunities.
- Support efforts to provide access to economic development funds to communities, businesses, and people who have been historically underserved.
- Support efforts to modify grant match requirements to reflect ability to pay.

- d. Encourage the tracking and reporting of data to measure the impact of economic and community development programs across income, race, ethnicity, disability status, and other measures.
- e. Increase the organized regional marketing capacity for the region, with a focus on unique recreational and tourism opportunities and great places to live.

② GOAL

Improve the health of citizens and businesses by supporting the region's unique geography and landscape.

- a. Increase the production and marketing of local foods, beverages, and natural products as well as expanding access to those products at local and broad-based markets by supporting production and educating and engaging the public.
- b. Promote county assets and quality of life for the citizens of Franklin and Grand Isle Counties, tourists, and recreationists by collaborating with regional brands and local food and beverage markets and capitalizing on the region's proximity to Canada, Chittenden County, and population centers in the northeastern United States.
- c. Support efforts to ensure that the working landscape—including agriculture, forestry, and value-added production—remains a key sector in the region's economy.
- d. Support economic diversity in tourism, transportation, recreation and agriculture to protect against negative economic impacts of climate change.

③ GOAL

Ensure that communities and businesses can rely on employees who are work ready; have strong work ethics and necessary skills in reading, writing, STEM (science, technology, engineering, math), and communication.

- a. All levels of education—both K through 12 and post-secondary—must provide students with basic skills and solid work ethics for the workplace as well as post-high school education and training programs, and they must deliver skill sets that meet the changing needs of business and the rigors of collegiate programs.
- b. All sectors of business, education, public protection, and the community must actively support economic sustainability by educating residents and employees on substance abuse, supporting drug rehabilitation and drug prevention programs, and addressing the crimes often related to drug addiction.
- c. Support efforts to increase opportunities for students and adults to enjoy economic success by entering careers in the trades and licensed trades.

④ GOAL

Ensure that businesses, employees, and communities have access to funding that is achievable and affordable, business costs that are reasonable and appropriate, and an infrastructure that is available and dependable.

- a. Ensure that the existing vibrant base of businesses—including manufacturing, agriculture and related businesses, health care, retail and service industries, home-based businesses, telecommuting, and seasonal and tourist-based businesses—have knowledge of and access to existing resources.
- b. Support efforts to bring in additional public and private resources to expand and upgrade infrastructure, including water, wastewater, broadband Internet, cellular service and energy.
- c. Forge strategic partnerships for creating a full range of housing options across the entire pricing spectrum to affordably house the regional workforce.

5 GOAL

Facilitate collaboration among Franklin and Grand Isle Counties to address issues that are similar throughout each county and secure the communities' economic future.

- a. Encourage public and private investments in the arts and creative economy and facilitate locally designed creative economy projects that build upon the region's cultural heritage and creative assets.
- b. Support collaboration between communities and artists for arts appreciation, arts learning, and arts promotion.
- c. Establish goals for Grand Isle County to improve collaboration among the "islands" while distinguishing each unique community.
- d. Support regional economic development services such as workforce training, public transportation, incubator development, and collaborative marketing.
- e. Ensure that new economic development enhances and supports the region's land-use goals.
- f. Work cooperatively with other regional partners to maintain and improve a quality of life that is necessary to attract and retain the type of talented workforce required for a high-performance regional economy.

INFRASTRUCTURE: POST-SECONDARY, CHILD CARE, WORKFORCE & TELECOMMUNICATIONS

GOALS

1. Make workforce training and post-secondary education available to increase employment rates, job retention, earnings, and occupational skills.
2. Ensure the availability of safe and affordable child care and integrate child-care needs into the planning process.
3. Develop and maintain a high-quality, affordable telecommunications infrastructure that provides the most efficient and effective as well as the least obtrusive system possible.
4. Ensure the availability of broadband access in order to increase economic opportunity and support economic diversity.

ASSETS AND VALUES

Education Levels

Students who never complete high school have a large impact on the region's long-term economic outlook. According to the U.S. Department of Education's National Center for Education Statistics, the median income of persons ages 25 through 34 who had not completed high school was roughly \$26,000.

Grand Isle County residents have educational attainment levels similar to the state as a whole.

Compared to the state, Franklin County has a higher percentage of residents who have completed less than the ninth grade (though that percentage has dropped over the past decade) as well as a lower percentage of residents with a graduate/professional or bachelor's degree (Figure 1).

Educational attainment varies significantly by race and ethnicity. Accurate regionally specific data is not available, but statewide data shows a disparity in educational outcomes. Native Americans fall well below that of any other measured group, with only 5.2% having a bachelor's degree. Asian Vermonters have the highest levels of bachelor's degrees but also the highest percentage of people who did not finish high school. (ACS 2018-2022)

Post-Secondary Education and Workforce Development

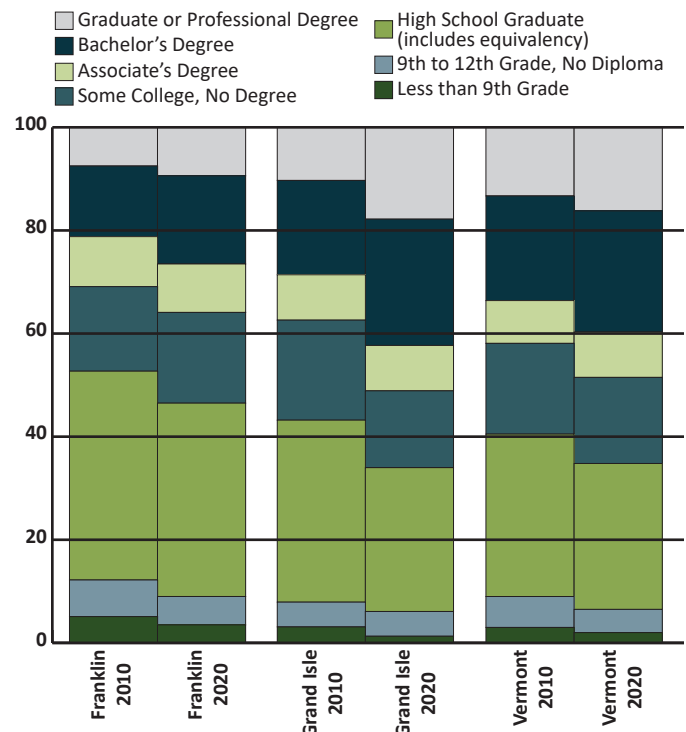
The phrase “post-secondary education and workforce development” describes the knowledge, skills, and behaviors essential for high school graduates to be prepared to enter college and the workforce and to compete in the global economy. Post-secondary education and workforce development curriculum assumes that students are ready and able to demonstrate reading and math literacy without the need for remediation. Table 3 shows the educational attainment of the region’s residents.

Workforce development is hard to measure, but it is extremely important to the continued prosperity of the region and for maintaining and attracting new business and industry. Incumbent employees who receive on- the-job training are, in general, promoted and receive higher wages. Newly trained employees who move into new positions create backfill openings for entry-level workers. The Vermont Training Program (VTP) provides comprehensive resources to prepare Vermont’s workforce for new and enhanced positions. The VTP offers funds for the training of new hires and incumbent workers. Training can fall into categories such as on-the-job, classroom, or other specialized training. Grants can cover up to 50% of the training cost.

Vocational education is offered at the Cold Hollow Career Center in Enosburg Falls and at a number of high schools. Northwest Technical Center in St. Albans City also serves students in grades 10 through 12 who are interested in technically oriented careers, and it also offers classes for adults. Both serve as regional technical educational centers, accepting students from other school districts.

The Community College of Vermont offers educational services through a network of 12 sites around Vermont, including a campus in St. Albans City. Numerous degree programs and individual classes are also available online. The college is part of the Vermont State Colleges system, and it provides degree and non-degree programs to more than 9,000 students statewide.

FIGURE 1: Educational Attainment - Residents Ages 25+ Franklin & Grand Isle Counties, VT



SOURCE: U.S. Census Bureau 2010 Census & 2016 - 2020 American Community Surveys

TABLE 3: Educational Attainment by Race and Ethnicity

	White	Black	Asian	Other	Two or More Races	Hispanic
High School Graduate or Higher	94.8%	83.7%	83.5%	92.2%	95.5%	94.7%
Bachelor's Degree or Higher	44.5%	35.7%	52.0%	34.6%	45.2%	58.0%

SOURCE: ACS 2018 - 2022

Vermont Adult Learning (VAL) is a nonprofit organization that provides educational services for adults ages 16 and older who are not enrolled in high school. VAL provides General Educational Development (GED) preparation and testing as well as instruction in reading, writing, and STEM. VAL also helps students in a number of related areas, including driver's licenses, citizenship applications, and basic computer skills.

Many colleges and universities serve the region's residents in locations throughout the state, in neighboring states, and in Canada, including the University of Vermont and Champlain College in nearby Burlington, four Vermont State University campuses, and St. Michael's College in Colchester, along with nearby Canadian institutions such as McGill University in Montreal. In addition, numerous accredited online colleges and universities are available to the region's residents. Online educational opportunities provide an alternative for students who cannot attend classes in the traditional campus and classroom environments. Ensuring that the region's residents have access to such educational opportunities is essential to the economic health and prosperity of northwestern Vermont.

Child Care

Quality child-care services provide important benefits to a community and the region by contributing to early-childhood development, enhancing children's social skills, and resulting in more economically productive careers, as well as great personal and community civility (see Table 4 for data on overall need for services). Additionally, child-care services enable parents of young children to work, which reduces employers' recruiting and training costs for new employees following turnover due to parents' inability to obtain adequate child care.

According to the Vermont Department of Children and Families' 2019 market rate report, the average cost for full-time center-based care in the St. Albans district is \$239.50 per week for infants and \$227.00 per week for preschoolers, lower than the statewide averages. However, there is a significant gap between the current child-care subsidy rates and the market rates for care, especially for children younger than age three, and state subsidies vary widely depending on childcare facilities' ratings. This places an outsized burden on large families, who have to pay a higher copay, and those living far from a highly subsidized facility.

The number of child care providers in the region changes regularly, but there is a consistent gap between child care that is needed and child care that is available. In 2021, data from Let's Grow Kids estimated that an additional 1,000 children could be served if care was available. This need is especially true for infants and toddlers, since not all child care providers serve that age group (Table 4).

TABLE 4: Estimated Need and Supply of Child-Care Services in the Region

	Franklin County	Grand Isle County
Number of Children Birth to 12 Years	6,136	689
Number of Children Who Require Regulated Child-Care (estimated)	3,988	448
Number of Children Five Years Old or Younger	3,007	319
Proportion of Licensed Providers Serving Infants and Toddlers	64%	50%

SOURCE: VT Agency of Human Services

BROADBAND

Information technology is integral to fulfilling the economic needs of residents and businesses in the region. Telecommunications is the communication of information through various media. Information is transmitted in

numerous formats (e.g., voice, data, graphics, images, and video) over various media (e.g., copper wires, fiber-optic cable, air, and space). While this section focuses on broadband, it is important to note the region still has large geographic areas where cell phone service is unavailable or inadequate.

Broadband technology is a necessary component of the region's economic development. Broadband services can help increase residents' access to educational opportunities and resources, provide an interactive online marketplace for consumers, expand the customer base for businesses, facilitate access to higher-skilled employment opportunities for residents, enhance medical capabilities for health-care providers, provide access to health resources for the public, and contribute to increased productivity in the workplace. In addition, broadband services promote a sense of community through various online forums and encourage civic participation. Civic organizations can provide services to a greater portion of the communities they serve and create opportunities for new services.

The federal standard for broadband speed is 25/3 megabits per second (Mbps) of download/upload speeds, while the State Telecommunications Plan 2021 calls to increase the standard to 100/100 Mbps. The Vermont Department of Public Service has an estimate of the proportion of every town and city's buildings served by five tiers of internet service measured in Mbps of download/upload speeds. It should be noted that the actual speeds per premise are often below the advertised rate. Table 5 summarizes the five tiers of service and the number of premises served by each level within the region, as well as the underserved. (VT Department of Public Service, November 2022)

Existing types of broadband services in the region include cable, DSL, fiber-optic, satellite, mobile wireless, and fixed-point wireless. Broadband companies serving the region are Comcast Communications LLC, Consolidated Communications, DirectTV (600 MHz), FirstLight, Franklin Telephone, GlobalNet, Hughes Network Systems, Starlink, AT&T Mobility, Verizon Wireless, Sprint Nextel, T-Mobile, Mansfield Community Fiber, Viasat, and VTel Wireless. Coverage gaps can be found in nearly all municipalities. The most current view of broadband availability may be found at <https://publicservice.vermont.gov/content/broadband-availability>.

In August 2020, NRPC assisted Enosburgh Town, Fairfax, and Montgomery in the creation of the Northwest Communications Union District and then provided technical and administrative support to the organization during the first two years. The Northwest CUD (dba Northwest FiberWorx) now encompasses 21 municipalities in the region plus Milton in Chittenden County. Currently, utilizing state and federal broadband funding sources, they are active in planning and designing a community-based fiber-optic network that will provide universal access to all homes and businesses in the region (<https://www.nwfiberworx.com>). The focus is on unserved and underserved areas. The first construction phase is scheduled to begin in 2023.

TABLE 5: Five Tiers of Internet Service

Internet Connectivity 2022	Service Locations Franklin County	Percent Served or Better	Service Locations Grand Isle County	Percent Served or Better
100/100 Mbps or Greater	3,149	13.7%	5	0.1%
100/20 Mbps	17,897	77.7%	3,808	59.4%
25/3 Mbps	18,250	79.29%	4,421	69.0%
25/3 Mbps (includes wireless)	18,938	82.2%	4,676	72.9%
4/1 Mbps	22,740	98.7%	6,248	97.5%
Lacking 4/1 Mbps (underserved)	295	1.3%	163	2.5%

SOURCE: VT Department of Public Service, November 2022

GOALS AND POLICIES

① GOAL

Make workforce training and post-secondary education available to increase employment rates, job retention, earnings, and occupational skills.

- a. Support efforts by the regional technical centers and others to provide training that is based on employer-defined skill standards and essential academic learning requirements.
- b. Promote efforts to provide individuals with the skills, knowledge, and abilities required to improve economic well-being and respond to changing workforce needs.

② GOAL

Ensure the availability of safe and affordable child care, and integrate child-care needs into the planning process.

- a. Municipal plans should include the future need for and supply of child-care services, assess whether local barriers exist for the provision of needed services, and develop action programs to reduce any local barriers.
- b. Municipal land-use and development regulations should authorize child-care services in appropriate locations convenient to households and employers.
- c. Employers, schools, and community organizations should collaborate to ensure that affordable, quality child-care services are available to meet the different needs of households.

③ GOAL

Develop and maintain a high-quality, affordable telecommunications infrastructure that provides the most efficient and effective as well as the least obtrusive system possible.

- a. Support FiberWorx, the Northwest region's Communication Union District, in its effort to complete last mile build-out of broadband infrastructure in the region in unserved and underserved areas.
- b. Promote Internet provider programs that offer reduced-cost broadband plans for families who qualify for the free or reduced-cost lunch program. Advocate for the expansion of these programs to more Internet providers.
- c. Support state agency plans to strategically improve infrastructure that supports improved cellular service coverage in the region.
- d. Ensure that the telecommunications system and related infrastructure fit within the character of the area as defined by the local and regional plans.
- e. Consolidation of new telecommunications facilities on existing sites is preferred over the development of new sites. New telecommunications equipment and towers shall be sited in the least obtrusive and least ecologically sensitive areas possible.

④ GOAL

Ensure the availability of broadband access in order to increase economic opportunity and support economic diversity.

- a. Support the development of a telecommunications infrastructure that enhances employment and business opportunities, high-quality education, lifelong learning opportunities and telehealth.
- b. Promote affordable, universal access to high-speed broadband and emerging telecommunications technologies.
- c. Identify and inventory specific technology infrastructure needs, such as telecommuting hubs and Wi-Fi hotspots.

ENERGY

GOALS

1. Ensure all residents have equitable access to the benefits and an equitable share of the burdens of the energy transition.
2. Use demand-side management to handle the expected doubling of electric energy demand in the Northwest region by 2050.
3. Reduce annual regional fossil fuel needs and fuel costs for heating structures and foster the transition from nonrenewable fuel sources to renewable fuel sources.
4. Hold vehicle miles traveled per capita to 2011 levels through reducing the share of single-occupancy vehicle (SOV) commute trips, doubling the share of pedestrian and bicycle commute trips, increasing public transit ridership, and focusing regional development in or near existing growth centers and villages.
5. Significantly increase region-based passenger rail trips and double rail freight tonnage in the region by 2050.
6. Increase the share of renewable energy in transportation by increasing the use of renewable and less carbon-intensive fuels.
7. Increase the renewable energy generation capacity in the Northwest region with new solar, wind, and hydro generation capacity by 2050.

REGIONAL ASSETS AND OPPORTUNITIES

In 2017, NRPC completed the Northwest Regional Energy Plan, a pilot project funded by the Vermont Department of Public Service. The intent of the project was to complete in-depth energy planning at the regional level while achieving state and regional energy goals (Figure 2)—most notably, the goal to have renewable energy sources meet 90% of the state’s total energy needs by 2050 (known as the 90 x 50 goal). The energy element of this regional plan consists of this energy section and the full Northwest Regional Energy Plan, included by reference and available at www.nrpcvt.com. While the energy chapter is a high-level overview of NRPC’s energy goals and policies, the energy plan takes a comprehensive and detailed look at the region’s energy context. The regional energy plan meets the standards required for an enhanced energy plan and therefore gives NRPC increased deference in Act 248 proceedings. The requirements for enhanced energy plans can be found in Appendix I of the regional energy plan. The outline of the full regional energy plan can be seen in Table 6.

Since the development of NRPC’s regional energy plan, there have been several statewide planning efforts that will inform NRPC’s future energy planning. In 2020, the legislature passed the Global Warming Solutions Act,

which sets specific required emissions targets for the state. The Climate Action Plan (CAP), written in 2021 by Vermont's Climate Council, sets out pathways to achieve these emission targets, as well as addressing how to ensure an equitable transition and climate resilience. In 2022, the state updated its Comprehensive Energy Plan (CEP). The CEP included an increased focus on ensuring an equitable climate change transition and three updated sector goals for thermal, transportation, and electric sectors.

NRPC expects to adopt a new regional energy plan in 2023 that further addresses these new statewide planning efforts and new regional considerations. This chapter of the regional plan similarly includes a focus on equity and a just transition for all residents to the green future.

FIGURE 2: State and Greenhouse Gas Emission Goals

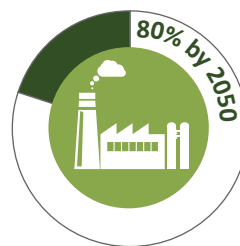
**Global Warming Solutions Act:
Requirements for Reducing Greenhouse Gases**



Not less than 26% from 2005 greenhouse gas emissions by January 1, 2025, pursuant to the State's membership in the United States Climate Alliance and commitment to implement policies to achieve the objectives of the 2016 Paris Agreement

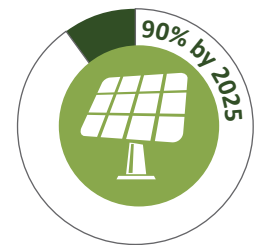


Not less than 40% from 1990 greenhouse gas emissions by January 1, 2030, pursuant to the State's 2016 Comprehensive Energy Plan



Not less than 80% from 1990 greenhouse gas emissions by January 1, 2050, pursuant to the State's 2016 Comprehensive Energy Plan

**Increasing
Renewable
Energy**



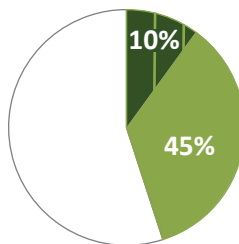
Meet 90% of Vermont's overall energy needs from renewable sources by 2050

CURRENT ENERGY USE AND GENERATION

NRPC has been tracking and analyzing energy generation and consumption data since the creation of the region's enhanced energy plan in 2017. The COVID-19 pandemic has made accurate data collection in recent years difficult, so trends around energy usage and other important data points might be distorted.

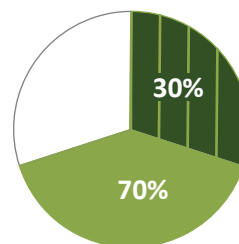
FIGURE 3: State Comprehensive Energy Plan Goals

**Transportation
Sector**



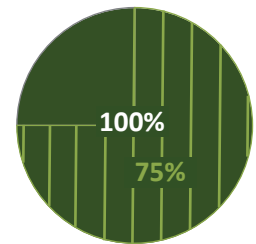
Meet 10% of energy needs from renewable energy by 2025, and 45% by 2040

**Thermal
Sector**



Meet 30% of energy needs from renewable energy by 2025, and 70% by 2042

**Electric
Sector**



Meet 100% of energy needs from carbon-free resources by 2032, with at least 75% from renewable energy

TABLE 6: Northwest Regional Energy Plan Outline (available at www.nrpcvt.com)

Section I	Executive Summary
Section II	Introduction
Section III	Regional Energy Supply and Consumption
Section IV	Targets for Energy Conservation, Energy Use and Electricity Generation
Section V	Strategies to Achieve Regional Targets
Section VI	Feasibility, Challenges and Conclusions
Appendix A	Regional Targets - Energy Conservation and Renewable Generation
Appendix B	Known and Possible Constraints - Used to Create Regional Energy Generation Maps
Appendix C	Regional Generation Maps
Appendix D	Planning Process
Appendix E	List of Acronyms and Phrases
Appendix F	Summary of Existing Renewable Generation Facilities in the Northwest Region
Appendix G	Summary of Municipal Energy - Analysis and Targets

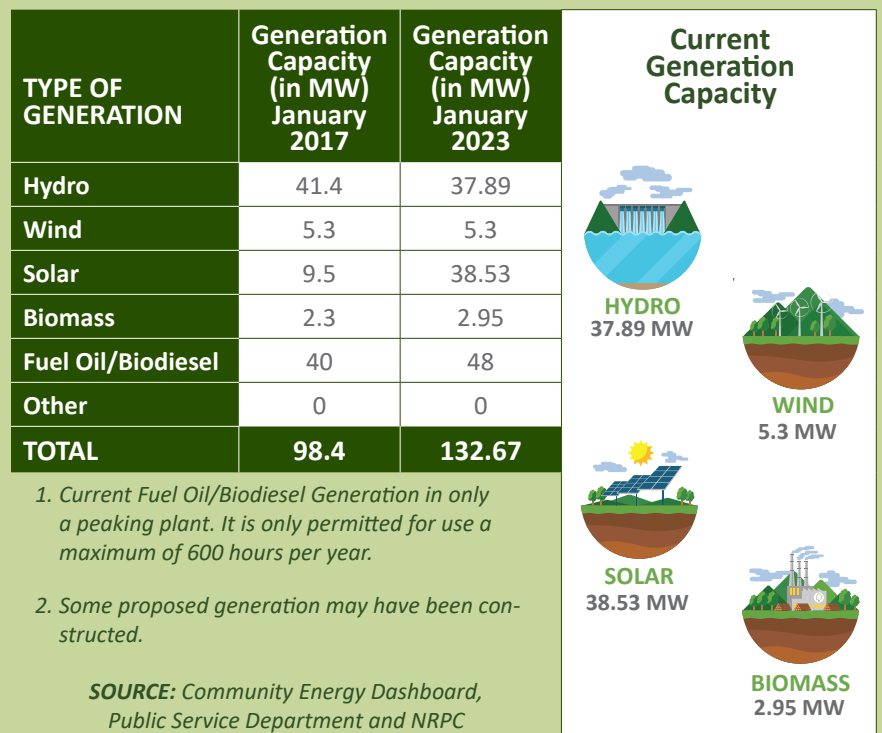
SOURCE: Northwest Regional Energy Plan

Despite the complications with data, a few trends have remained clear throughout the past several years. Residential electricity use has increased, a trend most likely caused by the increasing use of technology like electric heat pumps to heat and cool homes, electric cars, and other electrification technologies that allow residents to move away from fossil fuels and instead use electricity for more of their energy needs. In generation trends, solar installations have been increasing, both as commercial projects and smaller, home-based projects. Given environmental concerns with new hydro projects and the incompatibility of industrial wind with regional constraints, solar has been the primary form of new renewable energy generation in the region within the past five years.

ENERGY USE AND GENERATION - FUTURE TARGETS

Energy Conservation

In 2017, the NRPC worked with the Vermont Energy Investment Corporation (VEIC) to create targets for energy conservation and renewable energy generation. The energy saved via conservation and improved efficiency was targeted to equal approximately 3.5 trillion BTUs by 2050. NRPC is currently working with VEIC to create updated targets and measure our progress

FIGURE 4: Regional Generation Capacity

toward these goals. Conservation and improved efficiency are planned through a variety of means, including increased use of efficient materials during construction and weatherization of existing structures. Most prominently, improved efficiency is targeted through the use of electric vehicles for transportation and electric heat pumps for space heating. The resulting increase in regional electricity demand means that electricity generation in the region will also need to increase.

Energy Generation

NRPC plans to set new renewable energy generation targets as part of an upcoming update to the Northwest Regional Energy Plan.

A substantial part of the Northwest region's efforts to set renewable electricity generation goals involved the creation of regional energy generation guidelines and maps. The regional energy generation guidelines and maps, combined with the other sections of the NRPC regional plan, provide parameters for the development of new solar, wind, hydro, and biomass energy generation facilities in the Northwest region. The maps provide a macro-scale look at different factors that impact the siting of renewable generation facilities, including generation potential. NRPC will analyze the results of the maps and targets to ensure that NRPC has allowed for sufficient renewable electricity generation in the region while avoiding undue adverse impacts upon known and possible constraints. (These constraints are specifically identified in Appendix B of the regional energy plan.)

NRPC is committed to achieving its wind generation targets, but only through the construction of appropriately scaled wind generation facilities. Based upon the analysis in the regional energy plan (see Appendix II), the region generally does not have suitable locations for the construction of industrial or commercial wind facilities development, and therefore these types of facilities do not conform to this plan. For the purposes of this plan, NRPC will consider any wind facility with a tower height in excess of 100 feet (excluding blades) to be considered an industrial or commercial wind facility.

While the state goals focus specifically on solar, hydro, and wind, other renewable generation methods exist and may be appropriate for the region. The upcoming regional energy plan update will address these alternative generation methods in more detail.

CHALLENGES AND OPPORTUNITIES

Achieving energy conservation goals will require heavy reliance on the choices of individual consumers in the region. The region's thermal efficiency goals are similar. Incentives, education, and other programs that promote relevant changes can help encourage individuals to make these choices. Small-scale energy production goals and conservation goals require broad citizen participation in order to be achieved. Because citizen and consumer participation will be an important component of the success of this plan, NRPC will continue to work with our regional energy and climate committee to support the creation of municipal energy committees and support community engagement programs.

Achieving transportation-related energy goals is more straightforward. One of NRPC's core functions is coordinating transportation planning for the region. Therefore, NRPC is well suited to be a key player in achieving goals and implementing strategies for transportation. Given NRPC's role in transportation planning in the region, there is opportunity for NRPC to be a leader in transportation implementation actions.

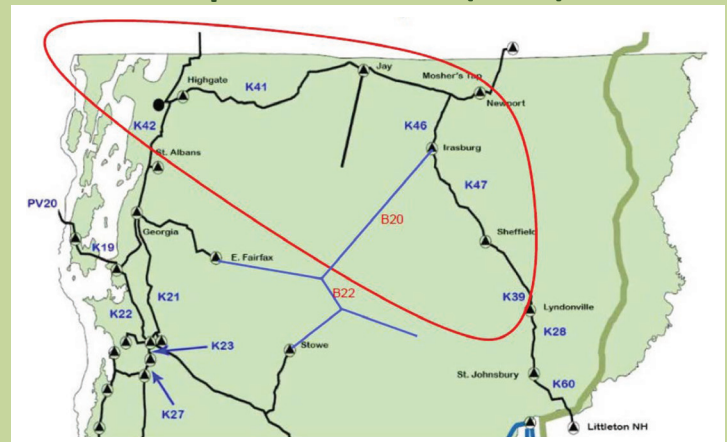
There are several challenges to successful plan implementation, including challenges pertaining to how the electric grid operates. The region's renewable generation goals are challenged by grid capacity constraints.

In a large portion of northern Vermont, known as the Sheffield-Highgate Export Interface (SHEI), the electric transmission grid was historically built to deliver energy from elsewhere to a relatively small population. As a result, there is limited transmission capacity for renewable generation in the SHEI. Currently, the SHEI contains much of the northern tier of our region. As more renewable generation is sited in the region, the constrained region may expand. To meet our regional renewable generation goals, this issue will need to be addressed through strategic improvements to the transmission system, non-transmission strategies such as battery storage, and increasing load (demand) for electricity within SHEI.

Other challenges include the need to balance “baseload” and “intermittent” electricity generation along with storage to ensure grid reliability, as well as inclement weather, which can threaten electricity service. Additional challenges include:

- Environmental concerns when developing new hydro generation
- Lack of solar generation during winter and night hours
- Lack of sufficient biofuel or ethanol technologies and research
- Lack of site-specific guidelines for solar and wind generation facilities
- Potential for large, out-of-region owned renewable energy generation facilities with limited benefit to the region
- Lack of residential building energy standards (RBES) and commercial building energy standards (CBES) outreach and enforcement
- The limits of regional planning commissions’ jurisdiction

MAP 2: Sheffield-Highgate Export Interface (SHEI)



SOURCE: https://www.vermontspc.com/library/document/download/5995/VELCO_SHEI_Study_FinalReport.pdf (page 4)

NOTE: The area in red is the Sheffield-Highgate Export Interface

Equity and Affordability

Successfully reaching NRPC’s energy goals and policies will require both economic and environmental costs. The equity issues related to who will bear those costs is of continuing concern to NRPC. Moving forward, NRPC is committed to proactively working to include equity in our energy and climate planning and ensuring representation of frontline communities who are most impacted by climate change. We recognize that the benefits and burdens of climate planning have not always been evenly distributed and that a just and sustainable transition requires that all residents have equitable access to the benefits and an equitable share of the burdens of the energy transition.

The transition to a more sustainable region will have both costs and benefits. The efficiency of green technologies offers savings for consumers as seen with electric vehicles, electric heat pumps, newer appliances, residential solar, etc. These technologies often have a higher upfront cost or require upfront investment, making them more difficult to access for residents with lower income. Low-income workers in Vermont also tend to work in industries that are more susceptible to the effects of climate change, such as tourism and agriculture, and are often disproportionately impacted by natural disasters like flooding. Integrating equity into every decision we make around energy and climate change will help to ensure NRPC’s work benefits all residents and works to close the equity gap instead of increasing it. Vermont’s Climate Council created Guiding Principles for a Just Transition, which will ensure consistent and integrated application of equity assessment to all of NRPC’s work.

Guiding Policy Statements

NRPC readopts these overall statements of policy to affirm its commitment to meeting state and regional energy goals and to satisfy the determination standards established by the Vermont Department of Public Service:

1. Support conservation efforts and the efficient use of energy across all sectors.
2. Reduce in-region transportation energy demand, reduce single-occupancy vehicle use, and transition to renewable and lower-emission energy sources for transportation.
3. Increase the use of energy conservation practices in site planning and development and support patterns and densities of concentrated development that result in the conservation of energy.
4. Review the development and siting of renewable energy resources in the Northwest region that are in conformance with the goals, strategies, standards, and maps contained in this plan.

Additional goals, policies, and implementation steps will guide the Northwest region in achieving energy conservation and renewable energy generation targets. These have been specifically identified for the following categories: electricity conservation, thermal efficiency, and transportation. Goals and policies in other areas of the regional plan related to local food production and consumption, land-use patterns, natural resource protection, utilities, and other areas also support implementation of the energy goals. Implementation steps can be found in the introduction of this plan and the Northwest Regional Energy Plan in Appendix II.

GOALS AND POLICIES



GOAL

Ensure all residents have equitable access to the benefits and an equitable share of the burdens of the energy transition.

- a. Use the Vermont Climate Council's Guiding Principles for a Just Transition (Appendix J of the regional energy plan) to proactively work toward equity in our energy and climate work.
- b. Promote and support incentive programs for low-income and rural residents and other frontline communities to ensure equitable access to the economic benefits of energy-efficient technologies.
- c. Ensure environmental justice as defined by the EPA when determining regional conformance of energy generation projects.
- d. Promote widespread access to education on energy transition opportunities and advocate for equitable access to such opportunities.
- e. Encourage policy makers to consider equity issues outside of Vermont when making decisions about our energy future.



GOAL

Use demand-side management to handle the expected doubling of electric energy demand in the Northwest region by 2050.

- a. Encourage public utilities to move all customers to smart rates (i.e., charging higher rates during peak demand times), with mitigation of any differential effects of smart rates on low-income customers.
- b. Encourage the legislature and/or public utilities to create programs that promote the use of energy storage systems for individuals and system-wide. Using electric storage systems may reduce peak demand and provide emergency backup power.
- c. Support public utilities' efforts to increase customers' knowledge of their energy use. This may happen

through increased outreach to and education of customers, but it may also occur through the use of new technology, such as real-time monitoring of energy use.

- d. Support the efforts of Efficiency Vermont to promote the selection and installation of devices, appliances, and equipment that will perform work using less energy (e.g., those with ENERGY STAR certification). This includes “load controllable equipment.”
- e. Encourage HVAC and weatherization providers to join the Building Performance Professionals Association of Vermont (BPPA-VT) to provide holistic energy advice to Vermonters.
- f. Support and encourage school participation in Vermont Energy Education Program (VEEP) activities that foster an educational foundation geared toward energy savings.

③ GOAL

Reduce annual regional fuel needs and fuel bills for heating structures and foster the transition from nonrenewable fuel sources to renewable fuel sources.

- a. Support efforts to transition residential and commercial sectors from nonrenewable sources such as heating oil and propane to biofuels, biomass, and electric heat pumps.
- b. Support changes that create simplified financing for fuel switching that links bill payments, home equity, and public sector incentives.
- c. Support the use of geothermal heating and cooling systems for new residential and commercial construction in the region.
- d. Support programs that provide assistance to all households, including low-income households, to weatherize their homes.
- e. Endorse the use of Downtown and Village Tax Credit programs to complete weatherization projects in the region’s designated areas.
- f. Support the creation of additional sustainable forest industries and biomass-related industries in the region to supply local biomass users.
- g. Support greater state enforcement of existing state energy codes to ensure that all renovations of existing structures are energy efficient and meet current standards.

④ GOAL

Hold vehicle miles traveled (VMT) per capita to 2011 levels through reducing the share of single-occupancy vehicle (SOV) commuter trips, increasing the share of pedestrian and bicycle commute trips and public transit ridership, and focusing regional development in or near existing growth centers and villages.

- a. New public and private transportation infrastructure shall be designed and built to interconnect with existing adjacent land development(s) and with adjacent lands that have the potential for future land development. This will ensure more efficient traffic patterns and bicycle and pedestrian movement within the region.
- b. Support efforts to make regional transit authorities like Green Mountain Transit statutory parties to all Act 250 applications in the region.
- c. Require a public transit stop for all residential and large commercial land developments subject to Act 250 if a stop is not currently available.
- d. Support planning for municipal streetscape improvements and on-street parking in state-designated village areas. This may require some cooperation with the Vermont Agency of Transportation in some villages due to the existence of state roads.
- e. Support municipal efforts to plan for future compact development that includes opportunities for

walking, use of public transportation, and other forms of transportation that are an alternative to the single-occupancy vehicle. Municipal efforts may include capital budgeting, streetscape plans, revitalization plans, or adoption of an “official map” (as outlined in 24 V.S.A. Chapter 117, to identify future municipal utility and facility improvements, such as road or recreational path rights-of-way, parkland, utility rights-of-way, and other public improvements) by the municipality.

- f. Support changes to public transportation funding in the state that alters how public transit routes are funded. Support efforts for state funding of public transportation routes that serve stops on federal and state highways (in a similar manner to the existing highway funding system) and require municipal funding primarily for public transportation routes that serve local roads.
- g. Work with regional employers to identify and encourage programs to reduce single-occupancy vehicle commuting by employees. Share best practices and encourage recognition of successful programs.
- h. Support increased funding for expansion of public transit into Grand Isle County and the region’s rural areas.

5 GOAL

Increase region-based passenger rail trips and rail freight tonnage in the region by 2050.

- a. Support the extension of Vermonter service to Montreal.
- b. Support increased rail freight service to the region.
- c. Expand intermodal connection opportunities for passengers and freight.

6 GOAL

Increase the share of renewable energy in transportation by increasing the use of renewable and less carbon-intensive fuels.

- a. Require all commercial, industrial, and multifamily developments subject to Act 250 to provide electric vehicle (EV) parking spots and at least one electric vehicle charger with associated infrastructure.
- b. Continue to support Vermont Agency of Commerce and Community Development (ACCD) grant opportunities for municipalities to install EV charging stations, infrastructure, and supply in designated areas.
- c. Support financial incentives for municipalities that develop direct current (DC) fast EV charging stations.
- d. Support the development and creation of biofuels production and distribution infrastructure in the region.
- e. Support the efforts of municipal fleet operators to replace inefficient vehicles with more efficient vehicles, including heavy-duty vehicles that operate on biofuels.

7 GOAL

Increase the renewable energy generation capacity in the Northwest region with new solar, wind, and hydro generation capacity by 2050.

- a. Support the development of individual home and community-based renewable energy projects in the region through the following programs: Vermont Small Scale Renewable Energy Incentive Program, Vermont Clean Energy Development Fund, and tax and regulatory incentives, including net-metering.
- b. Support changes to net-metering rules and other regulatory tools to provide financial incentives in order to encourage siting of renewable generation facilities on the built environment (such as parking

structures and rooftops) and other disturbed lands (such as former landfills, brownfields, or gravel pits). Support changes to net-metering rules that disincentivize development on land identified in this plan as a location with known and possible constraints. Encourage multiple uses in conjunction with the development of renewable generation facilities, such as grazing of livestock, recreation, or parking. Support efforts to make net-metering more accessible to low-income residents.

- c. Continue to support the Standard Offer Program to foster deployment of diverse and cost-effective renewable energy resources, and support the evaluation of this program to determine if the program should be extended or changed.
- d. Support efforts by local utilities and private individuals to maintain and upgrade existing renewable electric generation facilities and necessary distribution and transmission infrastructure in the Northwest region and the state.
- e. Support the development of additional methane digesters on farms in the Northwest region, especially those that utilize manure from multiple farms and/or food waste.
- f. Support the creation of incentives for locating new renewable energy generation facilities within a half-mile of three-phase distribution line or electric transmission line infrastructure. Ensure new transmission lines and three-phase power lines associated with renewable energy projects do not create forest fragmentation or have an undue adverse impact on necessary wildlife habitats, ecological systems, and water and/or air quality.
- g. Development and siting of energy generation facilities shall be in conformance with the goals, strategies, standards, mapping, and other information contained in the entire regional plan. Standards of review for known and possible constraints (see Appendix B of the regional energy plan) will be used in evaluation of conformance.
- h. Wind facilities with a tower height in excess of 100 feet (excluding blades) shall not be considered to be in conformance with this plan.