

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 fuel needs and fuel bills for heating structures and foster the transition from nonrenewable fuel sources to renewable fuel sources.
4. 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 downtowns, existing growth centers and village centers and areas.
5. Increase region-based passenger rail trips and 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 2024, NRPC completed an update to the 2017 Northwest Regional Energy Plan, a pilot project funded by the Vermont Department of Public Service. 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.

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 made accurate data collection difficult, so trends around energy usage and other important data points in the relevant years might be distorted. Despite the complications with data, a few trends have remained clear. 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.

FIGURE 2: State and Greenhouse Gas Emission Goals**Global Warming Solutions Act:
Requirements for Reducing Greenhouse Gases**

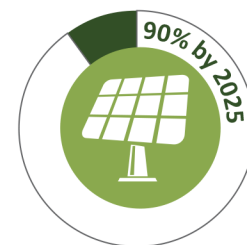
Not less than 26% from 2005 greenhouse gas emissions by January 1, 2025, pursuant to the State's membership in the United States Climate Alliance and commitment to implement policies to achieve the objectives of the 2016 Paris Agreement



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



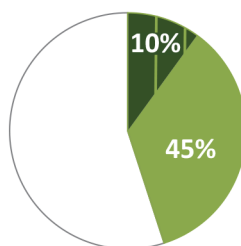
Not less than 80% from 1990 greenhouse gas emissions by January 1, 2050, pursuant to the State's 2016 Comprehensive Energy Plan

**Increasing
Renewable
Energy**

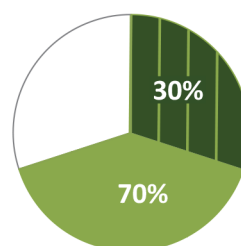
Meet 90% of Vermont's overall energy needs from renewable sources by 2050

**ENERGY USE AND
GENERATION -
FUTURE TARGETS****Energy Conservation**

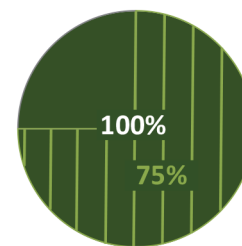
In 2017 and again in 2024, NRPC worked with the Vermont Energy Investment Corporation (VEIC) to create targets for energy conservation and renewable energy generation. Conservation and improved efficiency are planned through a variety of means, including increased use of efficient materials during construction 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.

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

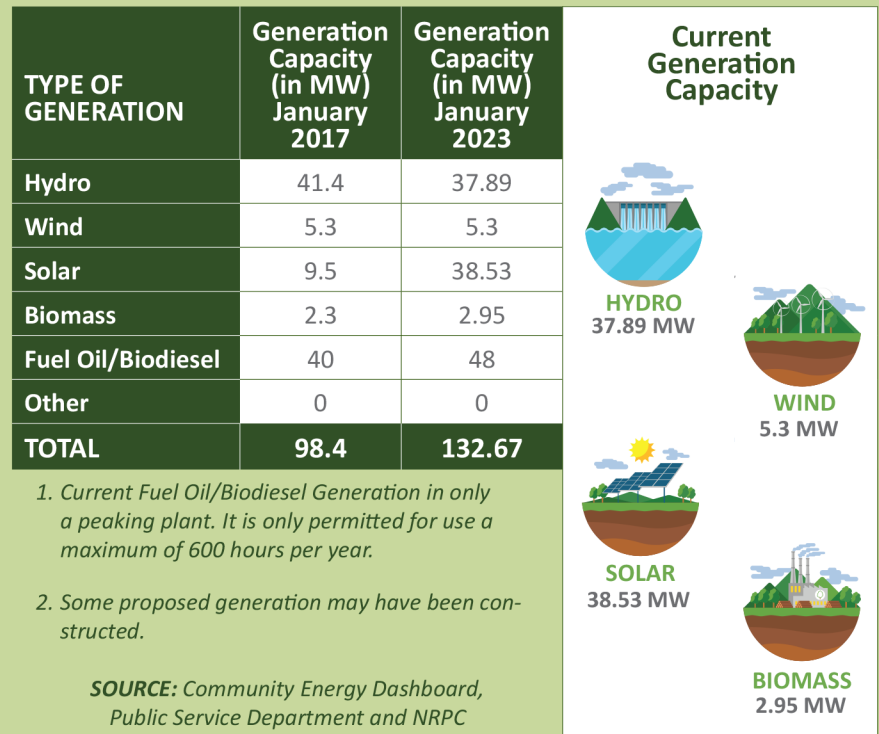
TABLE 6: Northwest Regional Energy Plan Outline (available at www.nrpcvt.com)

Section I	Executive Summary
Section II	Introduction
Section III	Equity
Section IV	Regional Energy Supply and Consumption
Section V	Targets for Energy Conservation, Energy Use and Electricity Generation
Section VI	Strategies to Achieve Regional Targets
Section VII	Feasibility and Challenges
Appendix A	Summary Results and Methodology
Appendix B	Energy Resource Mapping
Appendix C	Regional Generation Maps
Appendix D	Summary of Planning Approach and Process
Appendix E	List of Acronyms
Appendix F	Northwest Region - Existing Renewable Generation Facility Summary
Appendix G	Municipal Analysis Target

SOURCE: Northwest Regional Energy Plan

Energy Generation

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.)

FIGURE 4: Regional Generation Capacity

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 updated regional energy plan addresses these alternative generation methods in more detail.

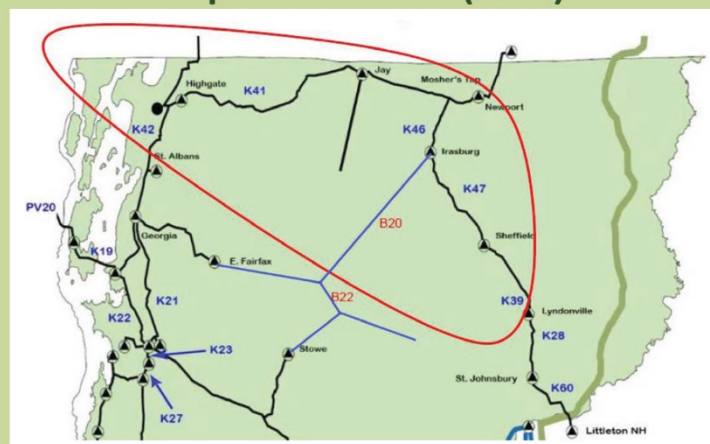
CHALLENGES AND OPPORTUNITIES

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 regional organizations and municipalities to support the creation of municipal energy committees and other 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.

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

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
- The need to balance “baseload” and “intermittent” electricity generation along with storage to ensure grid reliability
- Inclement weather, which can threaten electricity service

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

1. **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.
2. **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. 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. 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 downtowns, existing growth centers and village centers and areas.**
- 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 downtowns, planned growth areas, and village centers and 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.

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- h. Support increased funding for expansion of public transit into Grand Isle County and the region's rural areas.
- 5. 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. 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. 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.
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- 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.