

Appendix B: Vershire Energy Data and Town and Garage Energy Audits (2023)

May 7, 2025

Gregory Wilson
Planning Commission Chair
Town of Vershire
6894 VT Route 113
Vershire, VT 05079

RE: Municipal Summary Worksheet Energy

cc: Peter G. Gregory, Executive Director, TRORC
Andrea Herrington, TRORC Commissioner

Mr. Wilson:

TRORC is pleased to have prepared and enclosed a copy of the Municipal Summary worksheet and maps for Town. This document summarizes the type of data that is required to be in an “Enhanced Energy Plan” under the 2016 energy planning law known as “Act 174”. As you are aware, writing an “Enhanced Energy Plan” and seeking a determination of energy compliance is optional for communities. If your municipality chooses to write one and meets the municipal standards set by the Department of Public Service (PSD), the municipal plan receives substantial deference in the renewable energy generation Certificate of Public Good process.

The data in the attached document provides analyses and targets for your municipality that TRORC derived from a variety of regional and municipal data sources. Municipalities may choose to rely on these analyses and targets to meet PSD’s municipal standards. Alternatively, municipalities may develop their own custom analyses and targets or supplement the analyses and targets provided by TRORC with specific local data. If these options are chosen, a municipality must include all of the same analyses and targets and meet the same standards, as described in PSD’s Guidance for Regional & Municipal Enhanced Energy Planning Standards. Some of the numbers, such as current electricity use by the municipality, will need to be updated when TRORC receives new data. The Municipal Summary worksheet and maps will be emailed out and can also be found on the TRORC website under your respective town page. If you have any questions about the attached document or energy planning for your community, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink that reads "Bryan Kovalick". The signature is written in a cursive, slightly slanted style.

Bryan Kovalick
Planner

Vershire

The following is an explanation of the information displayed in the Municipal Summary Worksheet for Vershire.

The intent of the Municipal Summary is to provide your municipality with energy data that meets PSD's analysis and target standards to ensure your municipality's compliance with the requirements of Act 174 and "Enhanced Energy Planning" (24 V.S.A. § 4352). The worksheet contains data that estimates current energy use and provides targets for future energy use across all sectors (transportation, heating, and electricity). It also sets a target for renewable energy generation within the municipality.

This data is meant to be a starting point for your municipality to begin planning its energy future and to talk about the changes that may need to occur within the municipality to ensure that local, regional, and state energy goals are met. This includes the goal that 90% of all energy demand be met by renewable sources by 2050 (90x50 goal).

Estimates of current energy use and targets for future energy use are reliant upon the Long-range Energy Alternatives Planning (LEAP) analysis for the region completed for PSD. To estimate the current energy use of your Town, TRORC used PSD's Municipal Consumption. This tool uses inputs of data from the American Community Survey (ACS), the Vermont Agency of Transportation (VTrans), and the Vermont Department of Labor (DoL).

Targets for both future energy use and energy generation have been generally developed using a "bottom up" method of disaggregating regional data into the municipal level using PSD's Analysis and Targets Aid. PSD also makes certain assumptions within these tools based on statewide averages for energy consumption.

The targets established here show the direction in which change needs to occur to meet local, regional, and state energy goals. It is important to remember that the targets established by LEAP represent only one way to achieve energy goals. There may be other similar pathways your municipality may choose to meet your 90x50 goal. Please keep this in mind when reviewing the worksheet.

For those towns interested in learning more about how these estimates and targets were created, or about creating their own estimates and targets, please see PSD's Guidance for Regional & Municipal Enhanced Energy Planning Standards.

Figure 1 - Data Sources

American Community Survey (ACS)
Vermont Department of Labor (DoL)
Vermont Department of Public Service (PSD)
Energy Information Administration (EIA)
Efficiency Vermont (EVT)
Long-range Energy Alternatives Planning (LEAP)
Vermont Energy Investment Corporation (VEIC)
Vermont Agency of Transportation (VTRANS)

Municipal Summary Worksheet

The Municipal Summary worksheet summarizes all data that is required to be in the Municipal Plan if the plan is to meet the “determination” standards established by PSD.

4A. Current Transportation Energy Use

2022 Transportation Data

Total Number of Internal Combustion Engine (ICE) Vehicles ¹	700
Total Number of Electric Vehicles (EVs) ²	7
Total Number of ICE Vehicles and EVs	707
Average Yearly Miles Driven per Vehicle ³	12,500
Total Miles Driven per ICE Vehicle	8,750,000
Total Miles Driven per EV	87,500
Total Miles Driven per ICE Vehicle and EV	8,837,500
Average Fuel Economy of ICE Vehicles (Miles per Gallon) ⁴	22
Average Fuel Economy of EVs (Miles per Kilowatt Hour) ⁴	3
Total Gallons of Fuel Consumed by ICE Vehicles per Year	397,727
Total Number of Kilowatt Hours Consumed by EVs per Year	29,167
Transportation Energy Consumed by ICE Vehicles (mmBtus) ⁴	46,920
Transportation Energy Consumed by EVs (mmBtus) ⁴	100
Transportation Energy Consumed by ICE Vehicles and EVs (mmBtus)	47,019

This table calculates the energy use and energy cost of your residents’ light-duty passenger vehicles. This does not include the energy use or energy cost of medium-duty vehicles, heavy-duty vehicles, mass transit, rail, commercial vehicles, or other modes of transportation. The Average Miles per Vehicle and Realized Miles per Gallon are 2021 statewide averages for light-duty passenger vehicles in Vermont as reported in the LEAP model. The Transportation Energy Used is calculated in Million British Thermal Units (mmBtus) using PSD’s LEAP Municipal Consumption Template.

Data Sources: 1. ACS 2022 5-year Estimates. 2. Efficiency Vermont. 3. VTrans, 2021. 4. LEAP Municipal Consumption Template.

4A. Current Residential Heating Energy Use

Fuel Source ¹	Number of Households ¹	Percentage of Households	Square Footage Heated ² (mmBtus)
Gas from Bottle or Tank (propane, butane, liquified petroleum gas)	75	20.8%	8,250
Electricity	7	1.9%	770
Fuel Oil, Kerosene, etc.	97	26.9%	10,670
Coal or Coke	0	0.0%	0
Wood	169	46.8%	18,590
Solar Energy	0	0.0%	0
Other Fuel	8	2.2%	880
No Fuel Used	5	1.4%	550
Total	361	100.0%	39,710

This table displays 2022 ACS 5-year Estimates for the sources of fuel for occupied residences within Vershire. The square footage heated figure is calculated in the PSD Municipal Consumption Template based on a statewide average annual heating load for residences, measured in Million British Thermal Units (mmBtus).

Data Source: 1. ACS 2022 5-year Estimates. 2. LEAP Municipal Consumption Template.

4A. Current Commercial Heating Energy Use

Number of Commercial Establishments ¹	Total Thermal Energy Consumed by Commercial Establishments ² (mmBtus)	Average Thermal Energy Consumed by Commercial Establishments ² (mmBtus)
8	12,212	1,526

This table displays the number of commercial establishments within Vershire as reported by the Vermont DoL in 2022. The thermal energy estimate is calculated in the PSD Municipal Consumption Template based on a statewide average annual heating load for select commercial establishments, measured in Million British Thermal Units (mmBtus).

Data Sources: 1. VT DoL 2022. 2. LEAP Municipal Consumption Template.

4A. Current Electricity Use

Use Sector	Current Electricity Use
Residential (kWh)	2,304
Commercial and Industrial (kWh)	384
Total (kWh)	2,688

This table displays 2022 data from EVT for the commercial & industrial sector and residential sector within Vershire.

Data Source: EVT 2022.

4B. Residential Thermal Efficiency Targets

	2025	2035	2050
Weatherized for Increased Efficiency and Conservation	49%	57%	83%

This table displays targets for the cumulative percentage of residences within Vershire that will be weatherized by the target year, thereby achieving increased thermal efficiency and energy conservation. These targets were developed using the PSD Analysis & Target Municipal Aid in the CAP Central Mitigation Scenario. To be counted, each weatherized residence will have to achieve a 25% reduction in heat energy.

Data Sources: LEAP Analysis & Target Aid. ACS 2022 5-year Estimates.

4B. Commercial Thermal Efficiency Targets

	2025	2035	2050
Weatherized for Increased Efficiency and Conservation	44%	32%	54%

This table displays targets for the cumulative percentage of commercial establishments within Vershire that will be weatherized by the target year, thereby achieving increased thermal efficiency and energy conservation. These targets were developed using the PSD Analysis & Target Aid in the CAP Central Mitigation Scenario. To be counted, each weatherized commercial establishment will have to achieve a 25% reduction in heat energy.

Data Sources: LEAP Analysis & Target Aid. VT DoL.

4B. Thermal Fuel Switching Targets – Heat Pumps

	2025	2035	2050
Number of Heat Pumps used by Residences (in units)	150	483	879
Number of Heat Pumps used by Commercial Establishments (in units)	6	16	18
Total	156	499	897

This table provides a target of the number of new heat pumps in the commercial and residential sectors of Vershire in the CAP Central Mitigation Scenario. This dataset assumes there will be 1.3 devices per residence and one device per 512 square feet of commercial floorspace based on state averages.

Data Sources: LEAP Analysis & Target Aid. ACS 2022 5-year Estimates. VT DoL.

4C. Use of Renewables - Transportation

	2025	2035	2050
Light Duty Electric Vehicles	5%	52%	100%

This table shows the percentage of light duty vehicles that are electric vehicles in the target years within Vershire in the CAP Central Mitigation Scenario.

Data Source: LEAP Analysis & Target Aid. EVT 2022.

4C. Transportation Fuel Switching Target – Electric Vehicles

	2025	2035	2050
Battery Electric	35	539	1,496
Plug In Hybrid Vehicles	5	6	2
Total	40	545	1,498

This table shows the count of light duty vehicles that are electric vehicles in the target years within Vershire in the CAP Central Mitigation Scenario.

Data Source: LEAP Analysis & Target Aid. EVT 2022.

4D. Electric Efficiency Targets

	2025	2035	2050
Cumulative Electricity Conserved – Residential (MWh)	59	402	915

This table shows the megawatt hours (MWh) of electricity cumulatively conserved by residences within Vershire by 2025, 2035, and 2050 based on modelling completed by EVT's 2022 Energy Efficiency Market Potential Study and PSD.

Data Source: EVT 2022 Energy Efficiency Market Potential Study. PSD Potential Study Data for RPCs Tool.

4D. Renewable Energy Generation Targets

	2025	2035	2050
Incremental Renewable Energy Generation (MWh)	1	82	424
Total Renewable Energy Generation (MWh)	446	526	868

This table shows targets for electric generation from renewable resources in megawatt hours (MWh) within Vershire. This table also reports the incremental generation of new renewable energy needed by each target year. This figure shows the increase in generation needed from Vershire's 2022 renewable energy generation levels.

The figures for 2035 and 2050 were developed using PSD's LEAP model. The figures for 2025 were developed by TRORC equating to a 0.3% increase from 2022 generation figures. TRORC used this approach because the LEAP model does not provide targets for 2025 renewable energy generation that are higher than the region's 2022 renewable energy generation.

Data Source: LEAP Generation Scenarios Tool.

4D. Use of Renewables - Heating

	2025	2035	2050
Residences	30%	76%	100%
Commercial	25%	65%	69%

This table displays the percentage of residences and commercial establishments within Vershire using heat pumps for thermal heating by the target year.

Data Source: LEAP Analysis & Target Municipal Aid.

9A. Existing Renewable Generation

Renewable Type	MW	MWh
Solar	0.3	444
Wind	0.0	0
Hydro	0.0	0
Biomass	0.0	0
Other	0.0	0
Total	0.3	444

This table shows existing renewable generation within Vershire for 2022, in both megawatt (MW) and megawatt hours (MWh), based on figures provided by PSD.

Data Source: PSD.

9B. Renewable Generation Potential

Renewable Type	MW	MWh
Ground-mounted solar	30	39,420
Rooftop Solar	5	6,017
Wind	20	38,533
Biomass	0	0
Hydro	0	0
Other	0	0
Total	54	83,970

Renewable generation potential is based on mapping completed by TRORC that is based on the Municipal Determination Standards and associated guidance documents developed by PSD. The renewable generation potential is expressed in MW and MWh by the type of renewable resource (solar, wind, hydro, etc.).

Data Sources: PSD. TRORC.

9C. Sufficient Land

Renewable Type	Land Available	Acreage Needed to Meet 2025 Target		Acreage Needed to Meet 2035 Target		Acreage Needed to Meet 2050 Target	
	Acres	Acres	%	Acres	%	Acres	%
Solar	210	2	1.1%	3	1.3%	4	2.1%
Wind	782	0	0.0%	0	0.0%	0	0.1%
Biomass	0	0	0.0%	0	0.0%	0	0.0%
Hydro	0	0	0.0%	0	0.0%	0	0.0%
Total	992	2	0.2%	3	0.3%	5	0.5%

This table shows there is sufficient land within Vershire to meet the renewable generation targets based on the renewable generation potential. The 'land available' category in this table only includes prime areas for wind and lands for solar generation that have no constraints and are not part of a priority forest block.

Data Sources: These prime areas for wind and solar generation were calculated by the Vermont Center for Geographic Information. TRORC excluded the acres of priority forest blocks mapped by the Vermont Agency of Natural Resources.