

Municipal Template - Energy Data

The following is an explanation of the information displayed in the Municipal Template for Alburgh.

The intent of the Municipal Template is to provide the municipality with data required to ensure compliance with the requirements of Act 174 and “Enhanced Energy Planning” (24 V.S.A. 4352). The spreadsheet contains data that estimates current energy use and provides targets for future energy use across all sectors (transportation, heating, and electricity). It also sets targets for renewable energy generation within the municipality.

This data is meant to be a starting point for the 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.

Estimates of current energy use consist primarily of data available from the American Community Survey (ACS), the Vermont Agency of Transportation (VTrans), the Vermont Department of Labor (DOL), and the Vermont Department of Public Service (DPS). Targets for future energy use are reliant upon the Long-range Energy Alternatives Planning (LEAP) analysis for the region completed the Vermont Energy Investment Corporation (VEIC). Targets for future energy generation have come from the regional planning commission and DPS. For more information on LEAP, see Figure 4. Targets for both future energy use and energy generation have been generally developed using a “top down” method of disaggregating regional data to the municipal level. This should be kept in mind when reviewing the template. It is certainly possible to develop “bottom up” data. For those municipalities interested in that approach, please see the Department of Public Service's Analysis and Targets Guidance.

Figure 1 - Data Sources

ACS – American Community Survey

DOL – Vermont Department of Labor

DPS – Vermont Department of Public Service

EIA – Energy Information Administration

EVT – Efficiency Vermont

LEAP – Long-range Energy Alternatives Planning

VEIC – Vermont Energy Investment Corporation

VTrans – Vermont Agency of Transportation

There are some shortcomings and limitations associated the data used in the Municipal Template. For instance, assumptions used to create the LEAP analysis are slightly different than assumptions used to calculate current municipal energy use. Regardless, 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 represents only on way to achieve energy goals. There may several other similar pathways that a municipality may choose to take in order to meet the 90x50 goal.

Below is a worksheet by worksheet explanation of the Municipal Template spreadsheet:

1. Municipal Summary

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 the Vermont Department of Public Service.

1A. Current Municipal Transportation Energy Use

Transportation Data	Municipal Data
Total # of Vehicles (ACS 2011-2015)	713
Average Miles per Vehicle (Vtrans)	11,356
Total Miles Traveled	8,096,828
Average Gallons Use per Vehicle per Year (VTrans)	684
Total Gallons Use per Year	487,621
Transportation BTUs (Billion)	59
Average Cost per Gallon of Gasoline (RPC)	2
Gasoline Cost per Year	1,126,404

This table uses data from the American Community Survey (ACS) and Vermont Agency of Transportation (VTrans) to calculate current transportation energy use and energy costs.

1B. Current Municipal Residential Heating Energy Use

Fuel Source	Municipal Households (ACS 2011-2015)	Municipal % of Households	Municipal Square Footage Heated	Municipal BTU (in Billions)
Natural Gas	2	0.3%	228,480,000	0
Propane	77	10.8%	8,036,160,000	8
Electricity	0	0.0%	0	0
Fuel Oil	478	67.0%	49,791,360,000	50
Coal	0	0.0%	0	0
Wood	146	20.5%	15,454,080,000	15
Solar	0	0.0%	0	0
Other	10	1.4%	1,142,400,000	1
No Fuel	0	0.0%	0	0
Total	713	100.0%	74,652,480,000	75

This table displays data from the ACS that estimates current municipal residential heating energy use.

1C. Current Municipal Commercial Energy Use

	Commercial Establishments in Municipality (VT DOL)	Estimated Thermal Energy BTUs per Commercial Establishment (in Billions) (VDPS)	Estimated Thermal Energy BTUs by Commercial Establishments in Municipality (in Billions)
Municipal Commercial Energy Use	38	725,000	27,550,000

The table uses data available from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (DPS) to estimate current municipal commercial establishment energy use in the municipality.

1D. Current Electricity Use

Use Sector	Current Electricity Use
(Efficiency Vermont)	To Be Determined (TBD)
Commercial and Industrial (kWh)	To Be Determined (TBD)
Total (kWh)	To Be Determined (TBD)

This table displays current electricity use within the municipality. This data is available from Efficiency Vermont (EVT).

1E. Residential Thermal Efficiency Targets

	2025	2035	2050
Residential - Increased Efficiency and Conservation (% of municipal households to be weatherized)	5%	16%	78%

This table displays targets for thermal efficiency for residential structures based on a methodology developed by DPS using data available from the regional Long-range Energy Alternatives Planning (LEAP) analysis and ACS. The data in this table represents the percentage of municipal households that will need to be weatherized in the target years.

1F. Commercial Thermal Efficiency Targets

	2025	2035	2050
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	25%	25%	73%

This table shows the same information as Table 1E, but sets a target for commercial thermal efficiency. Information from the VT DOL is required to complete this target.

1G. Thermal Fuel Switching Targets (Residential and Commercial) - Wood Systems

	2025	2035	2050
New Efficient Wood Heat Systems (in units)	20	53	158

This table provides a target for new wood heating systems for residential and commercial structures in the municipality for each target year. This target was calculated using data from LEAP and ACS.

1H. Thermal Fuel Switching Targets (Residential and Commercial) - Heat Pumps

	2025	2035	2050
New Heat Pumps (in units)	34	82	185

This table provides a target for new heat pump systems for residential and commercial structures in the municipality for each target year. This target was calculated using data from LEAP and ACS.

1I. Electricity Efficiency Targets

	2025	2035	2050
Increase Efficiency and Conservation	25.2%	48.3%	100.7%

Data in this table displays a target for increased electricity efficiency and conservation during the target years. These targets were developed using regional LEAP analysis.

1J. Use of Renewables - Transportation

	2025	2035	2050
Renewable Energy Use - Transportation	2.7%	18.2%	83.4%

This data displays targets for the percentage of transportation energy use coming from renewable sources during each target year. This data was developed using the LEAP analysis.

1K. Use of Renewables - Heating

	2025	2035	2050
Renewable Energy Use - Heating	42.7%	53.4%	82.3%

This data displays targets for the percentage of heating energy use coming from renewable sources during each target year. This data was developed using information from the LEAP analysis.

1L. Use of Renewables - Electricity

	2025	2035	2050
Renewable Energy Use - Electricity	TBD	TBD	TBD

This data displays targets for the percentage of electricity generation coming from renewable sources within the municipality during each target year. This data was developed using information from the regional planning commission and DPS. This data is the same as the data in Table 1Q.

1M. Transportation Fuel Switching Target - Electric Vehicles

	2025	2035	2050
Electric Vehicles	116	869	2067

This tables displays a target for switching from fossil fuel based vehicles (gasoline and diesel) to electric vehicles. This target is calculated on Worksheet 2. by using LEAP and ACS data.

1N. Transportation Fuel Switching Target - Biodiesel Vehicles

	2025	2035	2050
Biodiesel Vehicles	26	48	83

This tables displays a target for switching from fossil fuel based vehicles to biodiesel-powered vehicles. This target is calculated on Worksheet 2. by using LEAP and ACS data.

1O. Existing Renewable Generation

Renewable Type	MW	MWh
Solar	0.11	134.90
Wind	0.00	0.00
Hydro	0.00	0.00
Biomass	0.00	0.00
Other	0.00	0.00
Total Existing Generation	0.11	134.90

Table 1O shows existing renewable generation in the municipality, in MW and MWh, based on information available from the Vermont Department of Public Service.

1P. Renewable Generation Potential

Renewable Type	MW	MWh
Rooftop Solar	1	1,107
Ground-mounted Solar	14	17,520
Wind	3	7,665
Hydro	0	28
Biomass and Methane	0	0
Other	0	0
Total Renewable Generation Potential	18	26,320

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

1Q. Renewable Generation Targets

	2025	2035	2050
Total Renewable Generation Target (in MWh)	TBD	TBD	TBD

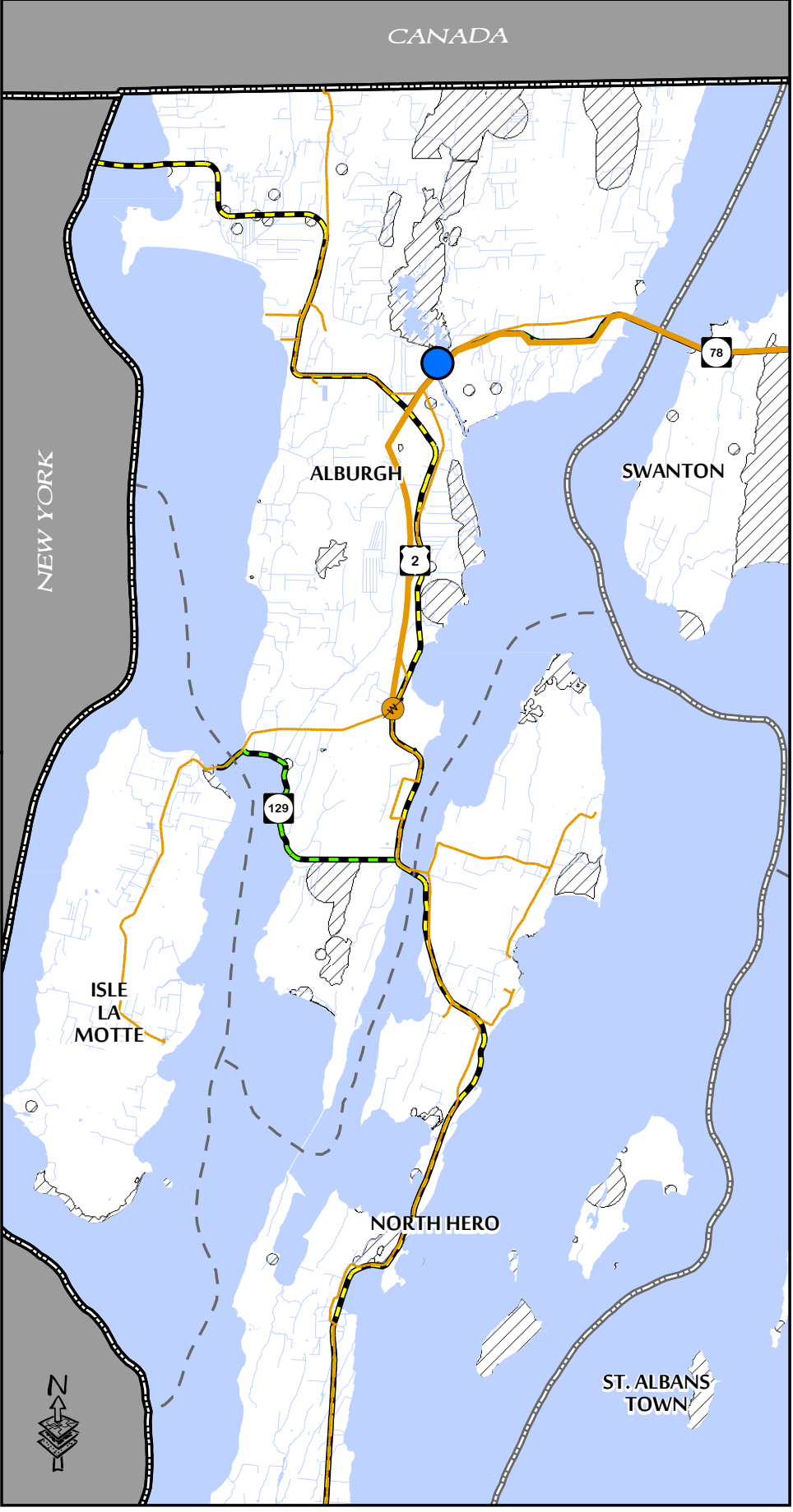
Renewable generation targets for municipalities were developed by the regional planning commission.

1R. Sufficient Land

	Y/N
Solar	Y
Wind	Y

This table shows whether or not there is sufficient land in the municipality to meet the renewable generation targets based on the renewable generation potential in the municipality.

HYDRO-ELECTRIC



LEGEND

- Substation
- 3 Phase Power Line
- Transmission Line
- Designated Outstanding Resource Waters
- Primary Resources - Designated National Wild and Scenic River
- Secondary Resources - Stressed or Impaired Waters
- Secondary Resources - Rare and Irreplaceable Natural Areas (RINAs)

Operating Hydroelectric Facilities

- Dams not on National Wild and Scenic Rivers
- Dams on National Wild and Scenic Rivers

Potential Hydroelectric Facilities

- < 50 kW Capacity
- > 50 kW Capacity
- High Hazard with < 50 kW Capacity
- High Hazard with > 50 kW Capacity

Surface Water Feature

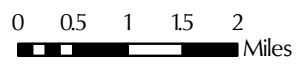
- River, Stream or Brook
- Lake, Pond or River



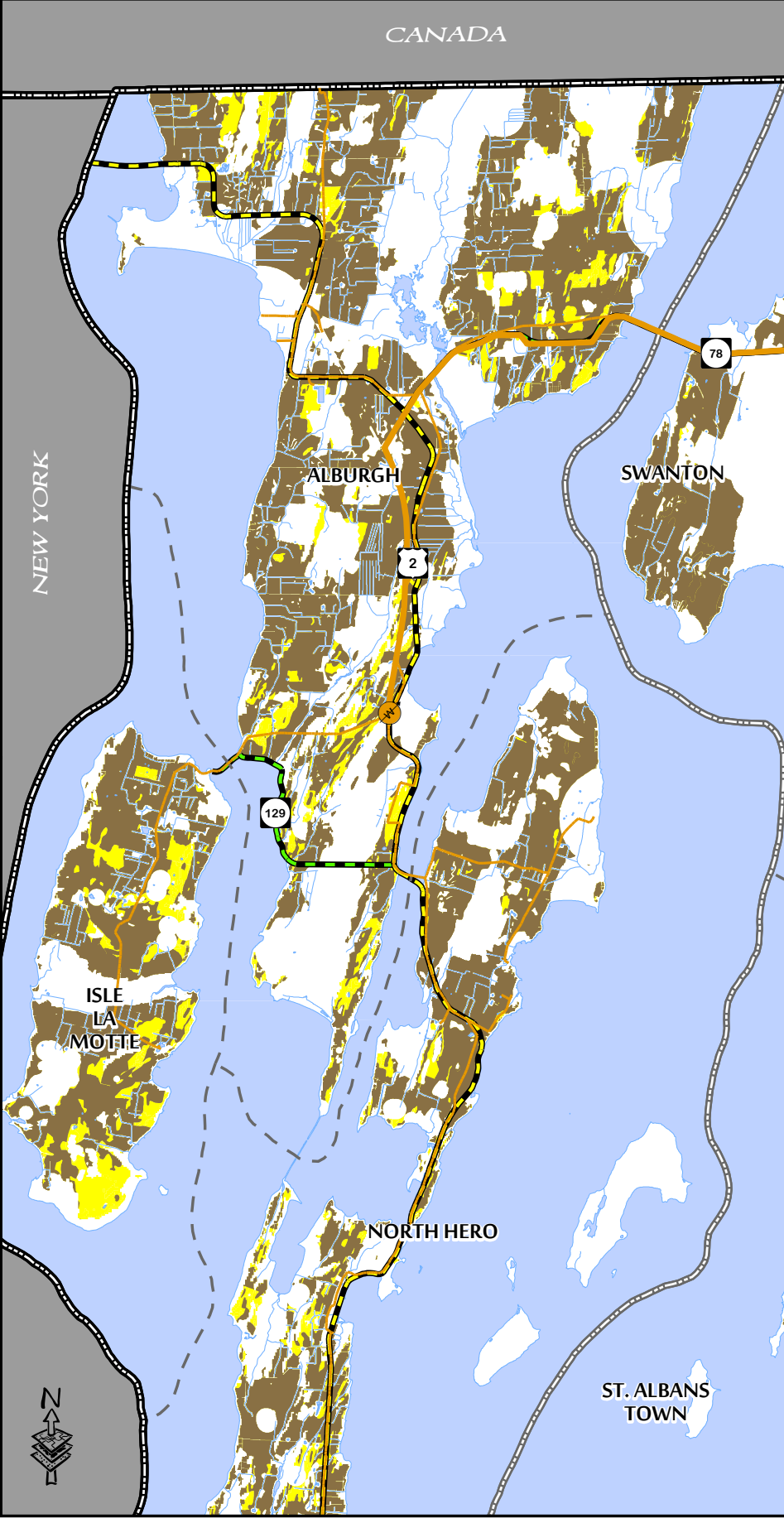
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This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, Northwest Vermont Regional Planning Commission, Two Rivers-Ottawaquechee Regional Commission, and the Vermont Public Service Department.



SOLAR



LEGEND

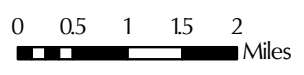
- Substation
 - 3 Phase Power Line
 - Transmission Line
 - Prime Solar Potential (Primary Resources have been removed.)
 - Primary Resources and areas without Solar Potential
 - Secondary Resources (Primary Resources have been removed.)
- Surface Water Feature**
- River, Stream or Brook
 - Lake, Pond or River
- Boundary Features**
- State Boundary
 - County Boundary
 - Municipal Boundary
- Transportation Features**
- Interstate Highway
 - Federal Highway
 - State Highway



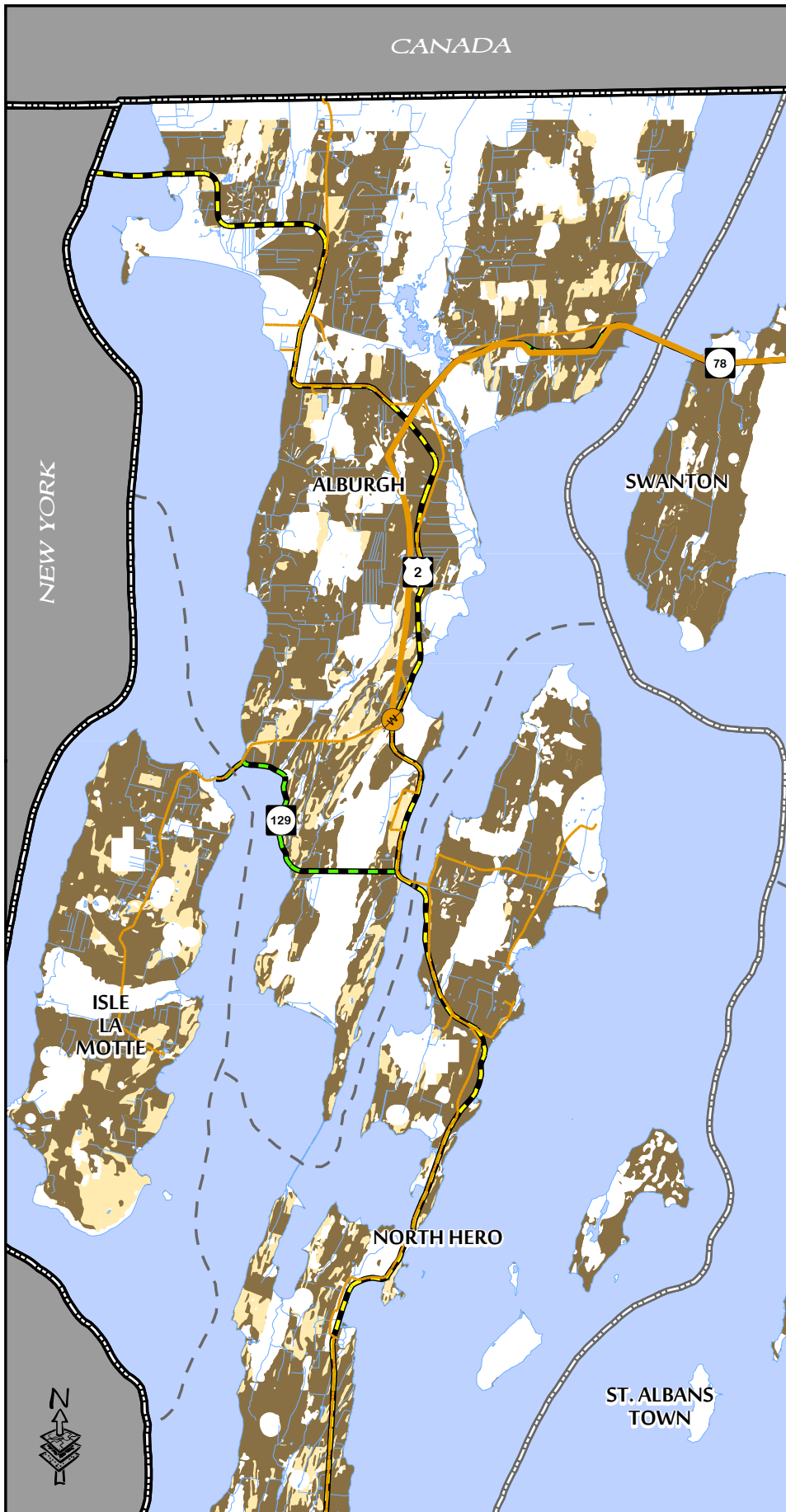
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








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WIND



LEGEND

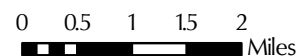
-  Substation
 -  3 Phase Power Line
 -  Transmission Line
 -  Prime Wind Potential (Primary Resources have been removed.)
 -  Primary Resources and areas without Wind Potential
 -  Secondary Resources (Primary Resources have been removed.)
- ### Surface Water Feature
-  River, Stream or Brook
 -  Lake, Pond or River
- ### Boundary Features
-  State Boundary
 -  County Boundary
 -  Municipal Boundary
- ### Transportation Features
-  Interstate Highway
 -  Federal Highway
 -  State Highway



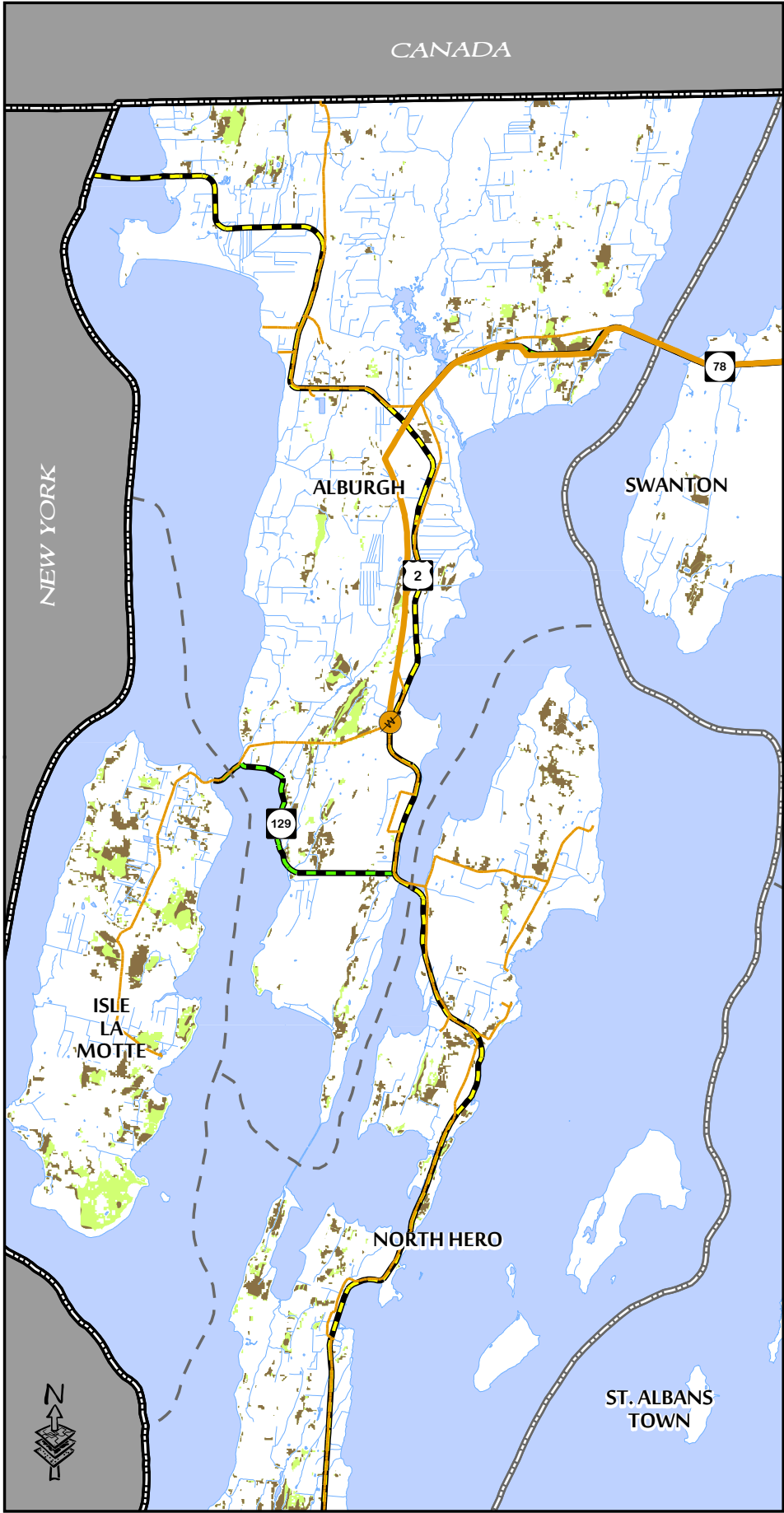
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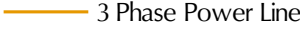
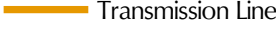

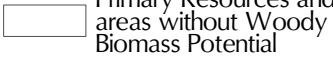




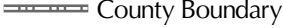
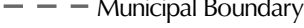



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WOODY BIOMASS



LEGEND

-  Substation
 -  3 Phase Power Line
 -  Transmission Line
 -  Prime Woody Biomass Potential (Primary Resources have been removed.)
 -  Primary Resources and areas without Woody Biomass Potential
 -  Secondary Resources (Primary Resources have been removed.)
- Surface Water Feature**
-  River, Stream or Brook
 -  Lake, Pond or River
- Boundary Features**
-  State Boundary
 -  County Boundary
 -  Municipal Boundary
- Transportation Features**
-  Interstate Highway
 -  Federal Highway
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