

Appendix D: Energy Data



Population

Total Population ⁱ (2015):	9,258
Proj. Annual Avg. Growth Rate ⁱⁱ :	↓ 0.00269
Population Density:	187 persons/ square mile



Households

Owner-Occupied Units ⁱⁱⁱ :	2,657
Renter- Occupied Units ⁱⁱⁱ :	1,246
Total Households ⁱⁱⁱ :	4,324
Avg. Household Size ⁱⁱⁱ :	2.28 people/ household



Businesses^{iv}

Total businesses in Springfield:	301
Employees working in Springfield:	4,328
Average wage:	\$43,899



Heating

Residential ⁱ (see figure)	
Businesses ^v :	
Estimated avg. building space:	11,017 sq. ft.
Total energy use:	167.7 billion BTUs
Estimated total annual cost:	\$4 million
Avg. annual cost per business:	\$13,290



Transportation

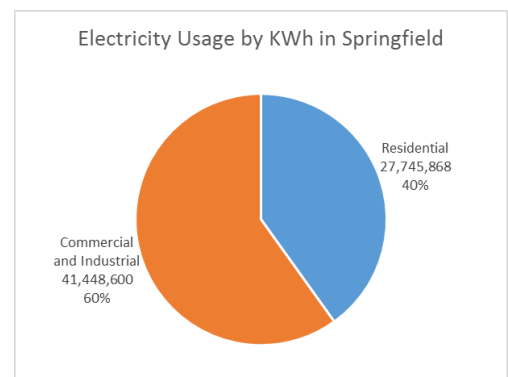
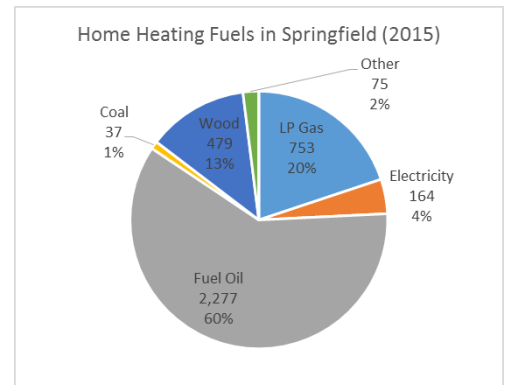
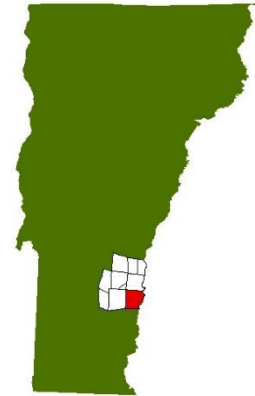
Number of vehicles:	6,245
Estimated vehicle miles traveled:	105.6 million
Estimated gal. fuel used per year:	5.7 million
Estimated fuel cost per year:	\$13.1 million
Residents driving alone to work:	81%
Average commute time:	21 minutes



Electricity Use

Electricity Usage in 2015 ^{vi}	(see figure)
Avg. Residential Usage:	6,921 KWh
Total Usage (2014-2016):	↑ 136,355 KWh ↑ 0.2%

Springfield





Energy Generation

Existing Renewable Energy Generation

Solar	59 sites	3.6 MW	4,415 MWh
Wind	1 site	0.001 MW	3 MWh
Hydro	5 sites	1.3 MW	4,555 MWh
Biomass	0	0	0

Renewable Energy Generation Targets^{vii}

2015 (Baseline)	8,973 MWh
2025	15,596.5 MWh
2035	31,193 MWh
2050	62,386 MWh

Potential for Renewable Energy Generation^{viii}

Rooftop Solar	7.18 MW	8,806 MWh
Ground-Mounted Solar	369.05 MW	452,603 MWh
Wind	34 MW	104,244 MWh
Hydro	0.01 MW	35 MWh

ⁱ U.S. Census Bureau, American Community Survey (ACS) 2011-2015

ⁱⁱ Based on Scenario B population projections for 2030 (VT ACCD, 2013)

ⁱⁱⁱ U.S. Census Bureau, Decennial Census (2010)

^{iv} Vermont Department of Labor Statistics (2015)

^v Estimated based on number of units, estimated floor space, heating fuel types and average fuel costs for 2015. Floor space was estimated from average commercial/manufacturing floor space per employee from the U.S. Energy Information Administration.

^{vi} Efficiency Vermont (2017)

^{vii} SWCRPC

^{viii} Based upon an analysis of GIS data mapping data (i.e. land area shown on the solar and wind potential maps)

Solar Resources Map

Town Energy Plan 2019

Town of Springfield, VT

Adopted: 11-11-2019

This map shows the existing solar energy production according to capacity for electricity generation and organization type. This map also shows the potential for ground-mounted solar energy production considering

- Statewide analysis of solar potential
- Statewide, Regional and Local constraints which prevent or may impact development of solar energy generation facilities

Known constraints include areas that should not be developed with renewable energy generation facilities. Possible constraints include areas that may impact the siting of renewable energy generation facilities, but do not necessarily prevent their development. There are no additional Regional or Town constraints to those listed in the November 2016 Regional Energy Planning Standards.

The Regional Energy Planning Standards are available at <http://publicservice.vermont.gov/content/act-174-recommendations-and-determination-standards>

Data sources: Solar Facilities (VT Energy Dashboard. Sites listed on Atlas on 02/03/2017), Prime and Secondary Solar Potential (VCGI 2017) (No additional Regional or Town Constraints), Substations (BCRC 2015 and SWCRPC 2016), Three Phase Electricity Lines (BCRC 2015), Transmission Lines (RPC 2016), Waterbodies (VHD 2008), Roads (VTrans 2016), Town Boundary (SWCRPC 2013 using Parcels 2013)

VT State Plane, Meters, NAD 83
Data depicted on this map are for planning purposes only and are based on best available information. Some of the data do not line up.



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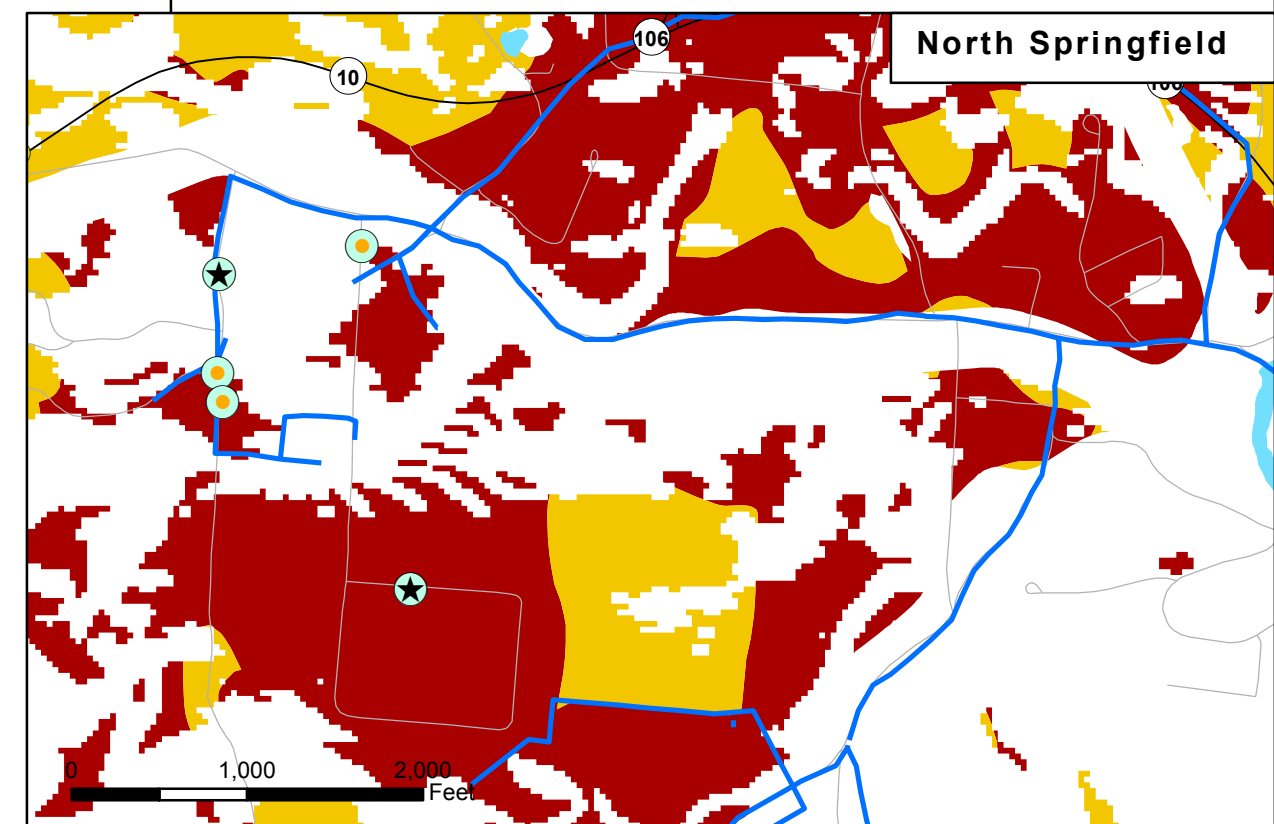
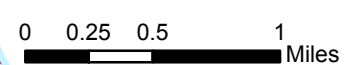
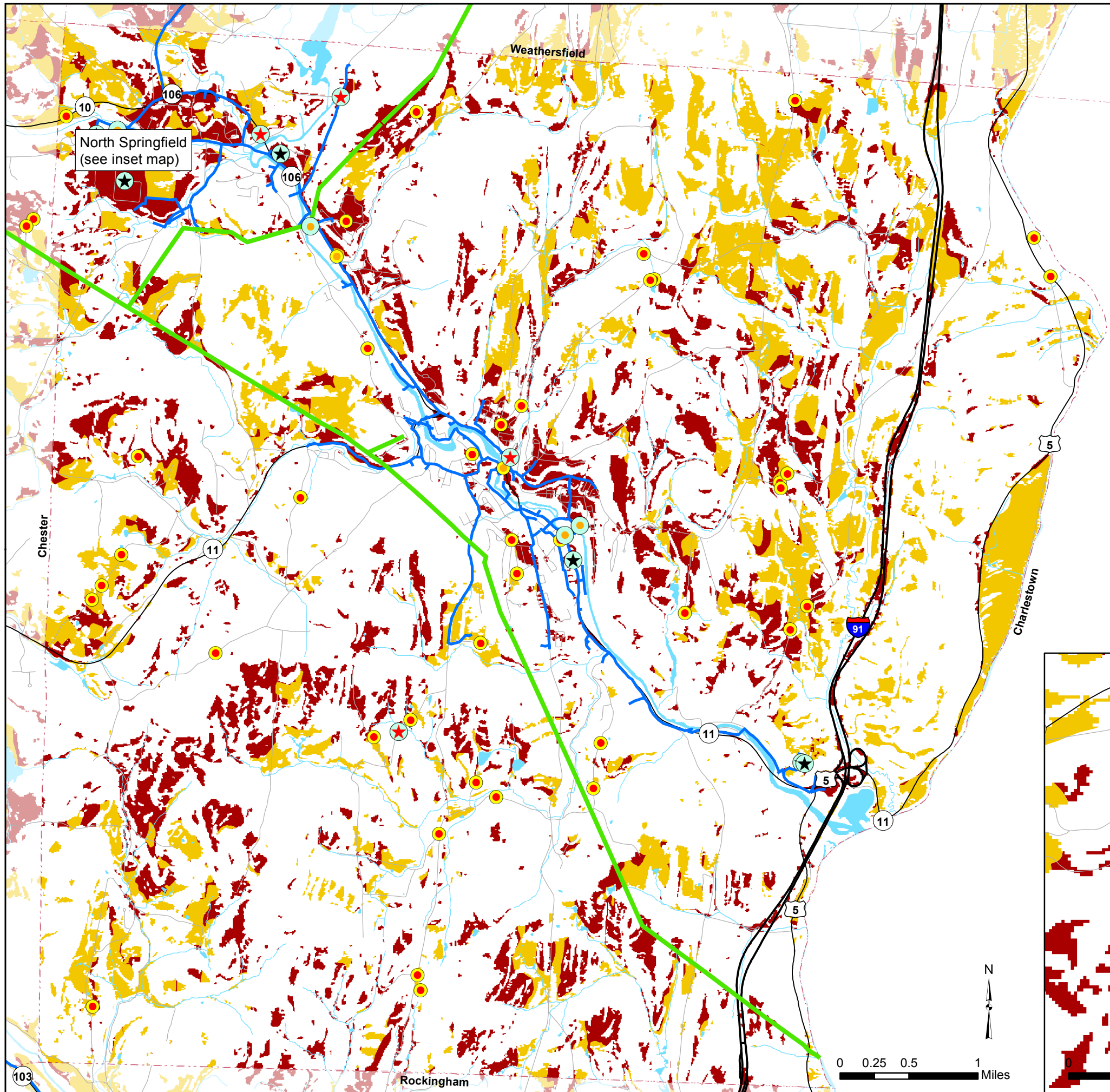
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The VT Public Service Board divides applications for a Certificate of Public Good by net metering system capacity: 15kW or less, over 15kW but less than 150k, and 150kW or more.

Solar potential for ground-mounted systems was calculated to consider the following conditions: slope direction, slope steepness, and radiation values from ESRI solar analyst
For more info see <http://vcgi.vermont.gov/opendata/act174>

Existing solar energy generation sites

- Business, Institution or Municipality with a capacity of 150kW or more
- Business, Institution or Municipality with a capacity of 15kW or less
- Business, Institution or Municipality with a capacity of 15.1kW - 150kW
- Residential, Capacity of 150kW or more
- Residential, Capacity of 15kW or less
- Residential, Capacity of over 15kW but less than 150kW
- Prime solar resource
- Secondary solar resource
- Electric Transmission Line
- Three Phase Electricity Distribution Lines
- Interstate
- US & VT Highway; and Class 1 Town Hwy
- All other roads and ROW
- Rivers and Streams
- Lakes and Ponds
- Town Boundary



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Rockingham

North Springfield
(see inset map)

North Springfield

Wind Resources Map Town Energy Plan 2019 Town of Springfield, VT Adopted: 11-11-2019

This map shows the existing wind energy general sites and the potential for wind energy production considering

- Statewide analysis of solar potential
- Statewide, Regional and Local constraints which prevent or may impact development of solar energy generation facilities

Known constraints include areas that should not be developed with renewable energy generation facilities. Possible constraints include areas that may impact the siting of renewable energy generation facilities, but do not necessarily prevent their development. There are no additional Regional or Town constraints to those listed in the November 2016 Regional Energy Planning Standards.

The Regional Energy Planning Standards are available at <http://publicservice.vermont.gov/content/act-174-recommendations-and-determination-standards>

Data Sources: Wind Facilities (VT Energy Dashboard. Sites listed on Atlas on 02/03/2017), Prime and Secondary Wind Potential (VCGI 2017) (No additional Regional or Town Constraints), Substations (BCRC 2015 and SWCRPC 2016), Three Phase Electricity Lines (BCRC 2015), Transmission Lines (RPC 2016), Waterbodies (VHD 2008), Roads (VTrans 2016), Town Boundary (SWCRPC 2013 using Parcels 2013)

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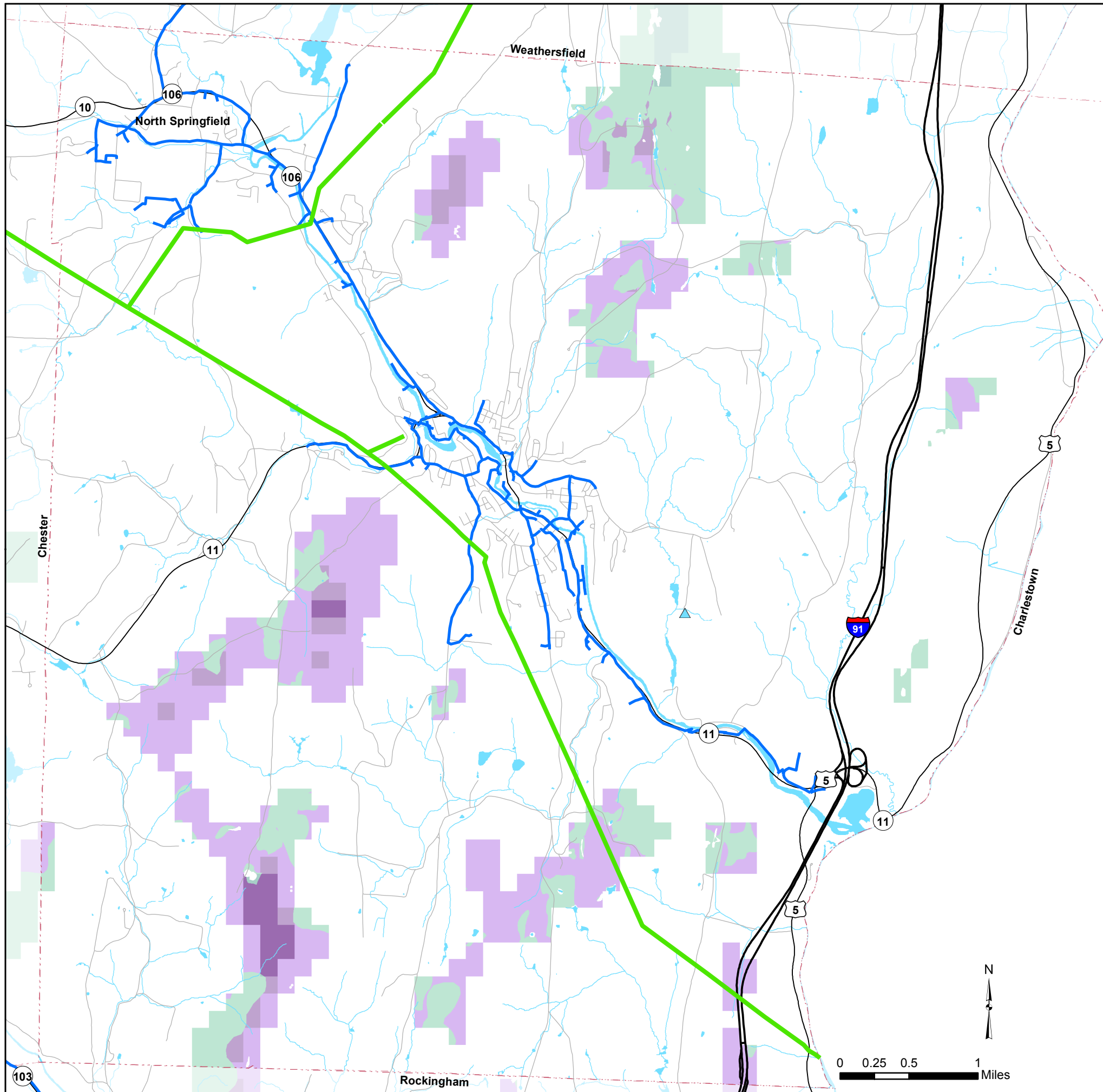
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- Prime Wind Potential**
Areas identified with high wind potential and no known or possible constraints. Darker areas have higher wind speed.
- Secondary Wind Potential**
Areas identified with high wind potential and no known constraints. May have one or more possible constraints. Darker areas have higher wind speeds

- ▲ Commercial Wind Facility
- ▲ Residential Wind Facility
- Electric Transmission Line
- Three Phase Electricity Distribution Lines
- Interstate
- US & VT Highway; and Class 1 Town Hwy
- All other roads and ROW
- Rivers and Streams
- Lakes and Ponds
- - - Town Boundary

Potential wind speeds were calculated using the TrueWind Solutions MesoMap wind mapping system. For more info see www.vtenergyatlas-info.com/wind/methodology

There are currently no commercial wind facilities in the area.



Hydro Resources Map

Town Energy Plan 2019

Town of Springfield, VT














Adopted: 11-11-2019

This map shows the potential for hydro energy production considering

- Statewide analysis of solar potential
- Statewide, Regional and Local constraints which prevent or may impact development of solar energy generation facilities

Potential hydro electric generation sites were identified by using existing dam location data for all of Vermont and then estimating electric production. Estimating is an inexact science, and estimates can vary widely between different studies. For more info see www.vtenergyatlas-info.com/hydro/methodology

The Regional Energy Planning Standards are available at <http://publicservice.vermont.gov/content/act-174-recommendations-and-determination-standards>

-  Existing Hydro Sites
- Potential Hydro Sites**
-  Undeveloped hydro potential over 50 KW
-  Undeveloped hydro potential less than 50KW
-  Potential with penstock
-  Substation
-  Electric Transmission Line
-  Three Phase Electricity Distribution Lines
-  Interstate
-  US & VT Highway; and Class 1 Town Hwy
-  All other roads and ROW
-  Rivers and Streams
-  Lakes and Ponds
-  Town Boundary

Data Sources: Existing and Potential Hydro Sites (VSJF 2010), Substations (BCRC 2015 and SWCRPC 2016), Three Phase Electricity Lines (BCRC 2015), Transmission Lines (RPC 2016), Waterbodies (VHD 2008), Roads (VTrans 2016), Town Boundary (SWCRPC 2013 using Parcels 2013)

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