



TOWN OF WEATHERSFIELD

LAND USE ADMINISTRATOR'S OFFICE

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Planning Commission Agenda

Martin Memorial Hall – 5259 Route 5, Ascutney, Vermont 05030

Monday, 11 February 2019 - 7 PM

1. Call to Order
2. Agenda Review – 11 February 2019
3. Approval of Meeting Minutes – 28 January 2019
4. Comments from Citizens
5. Zoning Bylaw Updates
 - (a) Solar screening ordinance/bylaw & draft Enhanced Energy Plan

Agenda Items and Materials from prior Planning Commission meeting:

 - * **Please bring meeting packet from 28 January meeting**
 - (b) Airport Uses
 - (c) Village district bylaw
 - (d) Minimum lot size bylaw
 - (e) Conservation of Natural Resources bylaw
 - Agricultural zoning
 - Places having unique ecological interest or value
 - Connecticut River
 - Pond construction
 - Steep slopes and high elevation
 - Streambank conservation
 - Wetlands
 - Damaged structures
6. Proposals for next meeting agenda
7. Adjourn

The next regularly-scheduled meeting of the Planning Commission will be
Monday, 25 February 2019 - 7 PM, Martin Memorial Hall

DRAFT
TOWN OF WEATHERSFIELD, VERMONT
MINUTES OF PLANNING COMMISSION MEETING
Monday, 28 January, 2019

I. Call to Order - Chair, Nancy Heatley called the meeting to order at 7:00pm.
Introductions: Howard Beach, Sven Fedorow (Land Use Administrator), Nancy Heatley, Paul Tillman, Michael Todd, Julia Lloyd Wright (Energy Coordinator, ex-officio)
Visitors: Peter Daniels, Tyler Harwell

II. Agenda Review - 28 January, 2019
Add Peter Daniels and Tyler Harwell to the agenda under Comments from Citizens

III. Approval of Meeting Minutes - 14 January, 2019
A motion was made by Michael Todd to accept Minutes of 14 January, 2018 with corrections, seconded by Howard Beach. Voted: Unanimously.

IV. Comments from Citizens

(a) Peter Daniels was invited by Sven Fedorow to give the Planning Commission an informal presentation on a proposal for his family property 'rearrangements' and to consider boundary changes instead of sub-divisions. The two lots are located on Skyline Drive and East Camp Hill and will continue to be owned by the Daniels families. Neither parcel will fragment agricultural soils nor habitat. Following discussion the Planning Commission agreed with Peter Daniels request for the two boundary line adjustments. There will be no further action.

(b) Perkinsville resident Tyler Harwell came to meet members of the Planning Commission, to hear about their work and responsibilities for the Town; he discussed his background as an attorney and interest in filling the current vacancy. He was advised to write a letter to the selectboard requesting an appointment to serve.

V. Zoning Bylaw Updates

(a) Solar screening ordinance & screening bylaw
Discussion took place regarding the current Regional Enhanced Energy Plan. Sven Fedorow said he was prepared to write up a draft of the report for Weathersfield patterned on the one Springfield is completing. Peter Daniels said the town should make its interests known to Regional Planning as far as siting future renewable energy systems are concerned such as wind, solar and hydro on regional maps. The Town of Bennington draft ordinance for ground mounted solar electric generation was also discussed and the Town of Cornwall bylaw. Sven Fedorow will have an edited draft available for the next meeting.

VI. The following items (b) through (e) will be on the agenda for the next meeting on Monday, 11 February, 2019 at 7pm.

- (b) Airport Uses
- (c) Village district bylaw
- (d) Minimum lot size bylaw
- (e) Conservation of Natural Resources bylaw

Sven Fedorow will also research the type of non-invasive tree species the state recommends for Conservation of Natural Resources Bylaws

VII. Adjourn

A motion to adjourn at 8.52pm was made by Howard Beach, seconded by Paul Tillman. Voted: Unanimously.

List of commitments / undertakings contained in draft Enhanced Energy Plan

- **Encourage** the town and school libraries to expand and regularly update their collections of energy publications.
- **Require** that all residential Act 250 projects follow the residential stretch energy code.
- **Require** that all commercial Act 250 projects follow commercial stretch energy guidelines.

(**Stretch Code:** A building energy code that achieves greater energy savings than the base Residential Building Energy Standards (RBES). The Stretch Code is required for Act 250 projects and may be adopted by municipalities.)

Consider providing incentives (e.g. density bonuses) to developments that exceed the state's stretch energy code, or net-zero ready or net-zero demonstrated requirements, and that are located in an area identified as appropriate for growth.

Promote building placement and location with [passive solar](#) and active solar in mind, and promote the use of [landscaping for energy efficiency](#).

Maximize energy efficiency in existing municipal buildings and operations, including weatherizing, researching renewable energy systems for the municipality, and conducting energy audits of and developing long- term efficiency plans for municipal buildings.

Identify municipal buildings that would be good candidates for cold climate heat pumps, and **develop a plan** and schedule to add the heat pumps to those buildings.

The Renewable Energy Standard requires utilities to help reduce customer fossil fuel use through "energy transformation projects" such as weatherization, and incentives for heat pumps and electric vehicles. Municipalities **should coordinate** with their utilities to deliver these services in the most effective manner.

Encourage, promote, and incentivize advanced wood heating in certain situations by:

- 1) Supporting the conversion of existing fossil fuel heating systems to wood;
- 2) Encouraging local manufacturing of advanced wood heat technology;
- 3) Supporting development of wood fuel delivery infrastructure;
- 4) Supporting development of sustainable forestry and procurement services;
- 5) Expanding wood fuel processing facilities, encouraging bulk wood pellet delivery systems; and,
- 6) **Providing training** and education on the benefits of heating with efficient, clean wood energy systems that have low-particulate emissions.

Identify municipal buildings that would be good candidates for wood pellet or chip heating and **develop a plan** and schedule to convert those buildings to wood heat.

Develop an inventory and conduct energy audits on municipal facilities, and **develop a strategic plan** to make energy efficiency and conservation upgrades

Incorporate weatherization/energy efficiency projects into the municipal Capital Budget.

Implement weatherization/energy efficiency projects in municipal buildings.

Implement [low-impact development](#), [green stormwater infrastructure](#) practices, and/or strategic landscaping to shade buildings and reduce temperatures, thereby increasing overall efficiency.

Develop policies so that if investing in new municipal buildings, municipalities **strongly consider** locations that will give people the option to get to those buildings without driving – for example, by putting a new town hall near the post office or school or other village/downtown location instead of distant from the town center.

Replace older municipal fossil-fired heating systems with high-efficiency, cold-climate heat pumps, geothermal heat, or advanced wood heating systems (including wood-fired district heat), or **considering switching** over to biofuels.

Institute a pay-back plan with town officials so that 2 years of the money saved as a result of the implementation of each project developed in (b) above is reserved for future energy efficiency projects recommended by the energy committee for approval by the select board.

Improve awareness of existing public transit services and taxi service to residents and visitors.

Plan and advocate for access to public transit, especially for Act 250 proceedings for larger developments.

7B: Promote a Shift Away from Single-Occupancy Vehicle Trips

Public transit can meet the needs of some mobility needs, but additional efforts will be needed in order to reach the energy goals for reducing transportation energy use. Weathersfield will work to encourage the following actions to encourage a reduction in single-occupant vehicle trips:

- a) **Encourage** people to re-think their trip before leaving home.
- b) **Promote** the Go Vermont webpage, which provides rideshare, vanpool, public transit and park-and-ride options.
- c) **Support employer programs** to encourage telecommuting, carpooling, vanpooling, walking and bicycling for employees' commute trips. **Encourage employers** to offer such programs and provide information on tax benefits that may be available for doing so.
- d) **Promote consumer awareness** of the benefits of, and access to, electric vehicles and alternative-fuel vehicles.
- e) **Promote** and **seek grants to fund** the installation of DC fast-charging infrastructure at strategic locations along major travel corridors and in transit hubs such as park-and-ride locations. – "Encourage electric car charger stations"

- f) **Plan, advocate for**, and consider **requiring** the installation of Electric Vehicle charging infrastructure as part of new development or redevelopment, especially for developments subject to Act 250.
- g) **Encourage** the establishment of a local biofuel supplier.

7E: Demonstrate the Municipality's Leadership by Example with Respect to the Efficiency of Municipal Transportation

In order to meet the State energy goals, municipalities should lead by example and demonstrate to individuals and organizations the benefits of energy efficiency in transportation. Springfield wishes to do so through the following ways:

- a) **Establish policies** that allow selected employees to telecommute.
- b) **Install electric vehicle charging** infrastructure on municipal properties.
- c) **Purchasing plug-in hybrid** or plug-in all-electric municipal and fleet vehicles when possible, and choosing the most fuel-efficient models if EVs are not practicable.
- d) **Establishing minimum fuel efficiency** standards for the purchase of new vehicles.
- e) **Consider incentives** for employees who commute using methods alternative to single occupancy vehicles, e.g. walking, biking, public-transit, and carpooling.
- f) When purchasing diesel fuel, the Town **should use the highest biodiesel blend available** without compromising the manufacturer's engine warranty. All manufacturers fully warranty their engines with the use of B5, a blend of 5% biodiesel and 95% diesel.
- g) **Support the development** of additional refueling stations for alternative fuels for both private and public transportation fleets by sharing station development costs between public and private interests.
- h) Maintaining Village Center Designation, **and improving the awareness** of property owners about the tax credit opportunities to help pay for improvements to eligible buildings within Weathersfield's Village Centers.
- i) Coordinating with Southeast Vermont Transit (The Current) and the Go Vermont program to **discuss options to promote** car-sharing and public transit services.
- j) **Plan sidewalk improvements** in the newly designated Village Centers.

9E: Statements of Policy to Accompany Maps

Weathersfield hereby promotes the development of renewable energy generation in order to achieve the energy goals and targets as established in this plan. The following statements of policy apply to renewable energy projects:

- a) Weathersfield supports rooftop solar projects.
- b) Weathersfield supports residential-scale wind turbines, which are generally up to 30 meters (or 98 feet) tall, measured at the hub, or center of the wind turbine blades.
- c) Renewable energy projects, including ground-mounted solar projects of 15 KW and bigger, must not be located in the following areas:
 - 1. Vernal pools with a surrounding 50 foot buffer;
 - 2. Commercial scale projects in the river corridors as most recently mapped by the Vermont Department of Environmental Conservation (DEC);
 - 3. FEMA floodways;
 - 4. State significant natural communities and rare, threatened and endangered species;
 - 5. National wilderness areas; and,
 - 6. Class 1 and Class 2 wetlands.
- d) Proposed renewable energy facilities must demonstrate that the proposed project siting is appropriate in scale as it relates to the character of the area in which it is to be located, and the applicant must also demonstrate that all reasonable options have been considered in siting the facility.
- e) All ground-mounted solar projects must meet or exceed the setback standards in 30 V.S.A. §248(s).
- f) Any new biomass facility and all ground-mounted solar projects of 150 kW or greater that are within view of public roadways (i.e. state highways, US routes, and Class 1, 2 and 3 town highways) must provide landscaping that blends the project with its surroundings. This shall consist of naturalistic plantings using a mix of native plants and avoid introducing invasive species.
- g) The applicant must replace any dead or diseased vegetation serving as part of the landscape mitigation measures throughout the life of the project or until the project ceases commercial operation.
- h) In accordance with PUC Rule 5.900, the applicant is required to provide a plan for the site to be adequately decommissioned at the time when the project ceases commercial operation. This should involve the removal of all parts of the project from the site including, but not limited to, the solar panels or wind turbines, inverters, metal framework that supports the solar panels, fencing, control invasive species, and any necessary site recovery as stipulated in the permit.
- i) Proposed renewable energy facilities must not have undue adverse impacts on significant wetlands, significant wildlife habitat, wildlife travel corridors, stormwater, water quality, flood

Undue Adverse Effect (Impact):

An adverse impact that meets any one of the following criteria:

- (1) Violates a clear, written community standard intended to preserve the aesthetics or scenic, natural beauty of the area;
- (2) Offends the sensibilities of the average person (i.e. it is offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area); or,
- (3) Fails to take generally available mitigating steps that a reasonable person would take to improve the harmony of the proposed project with its surroundings.

resiliency, important recreational facilities or uses, scenic resources identified in this plan, or inventoried historic or cultural resources.

- j) Proposed renewable energy facilities must not result in substantial deforestation, cause forest fragmentation, or perpetuate invasive species.
- k) For all utility-scale wind (i.e. hub height of 70 meters/230 feet) and commercial-scale wind projects (i.e. hub height of 50 meters/164 feet hub height), the applicant must demonstrate that the proposal was evaluated and that reasonable mitigation was considered with respect to the following criteria:
 - 1. Operational noise, to be measured at the property line, will result in noise levels that are compatible with the adjacent land uses in the surrounding area, and are consistent with state standards.
 - 2. Avoid or minimize “shadow flicker” through careful project siting, planting trees or other methods.
 - 3. Avoid or minimize adverse impacts to significant wildlife habitat and wildlife travel corridors, including applicable terrestrial, aquatic and aerial species (e.g. migratory, resident and breeding bird and bat populations).
 - 4. Avoid or mitigate safety hazards in the vicinity of the project area (i.e. ice shedding or ice throw hazards, blade throw hazard, and tower fall zones).

Shadow Flicker

A flickering effect caused when rotating wind turbine blades periodically cast shadows, such as through the windows of adjacent homes. Shadow flicker is considered by some individuals as a nuisance and may cause headaches. No more than 30 hours per year is commonly used as a limit to reduce nuisance complaints.

9F: Maximize the Potential for Renewable Generation on Preferred Locations

Preferred locations include specific areas or parcels that are specifically identified to indicate preferred locations for siting a generator or a specific size of type of generator. Identifying preferred sites informs the community where renewable generation is desired. The identification of such sites can help to streamline the permitting process.

Preferred sites for Weathersfield include:

- a) Rooftops;
- b) Parking lots;
- c) Brownfield/superfund sites;
- d) Disturbed portions of extraction sites (i.e. gravel pit, quarry);
- e) Marginal farmlands that are not classified as prime agricultural soils or agricultural soils of statewide significance.

Enhanced Energy Plan for the Town of Weathersfield, Vermont v13 11/26/2018

1. Introduction

Weathersfield's *Enhanced Energy Plan* is a component of the *Weathersfield Town Plan* prepared in accordance with 24 V.S.A., Chapter 117, Subchapter 5. The intent of this plan is to address the requirements of Act 174 of 2016 and to meet the enhanced energy planning standards developed by the Vermont Department of Public Service (DPS). This document was prepared based upon the *Guidance for Municipal Enhanced Energy Planning Standards* (DPS; March 2, 2017) in order for the Weathersfield Town Plan to be given greater weight in the Section 248 process.

The Southern Windsor County Regional Planning Commission (SWCRPC) developed a regional energy plan to meet these standards and received Section 248 substantial deference from the Department of Public Service (DPS) on September 17, 2018. Springfield is coordinating the development of this municipal energy plan with the SWCRPC so that:

1. The municipal plan is informed by the regional energy planning process; and,
2. The municipal plan is compatible with the regional plan.

This Plan was developed with assistance from the SWCRPC through funding provided by the DPS.

1.1 Energy Goals

Through the 2016 Vermont Comprehensive Energy Plan (CEP), the State of Vermont has identified a number of goals and strategies to achieve energy conservation throughout the state. The most significant of these goals being;

By 2050, 90% of Vermont's total energy will be derived from renewable sources.

This goal serves as the platform for determining energy policies, targets and pathways for the Town of Weathersfield, as articulated throughout this plan.

The CEP includes additional goals for the state to fully achieve the overall, long-term "90x50" goal, some of which are:

- By 2025, 25% of remaining energy needs will be met by renewable sources, 40% by 2035, and 90% by 2050
- By 2025, total energy consumption per capita will be reduced by 15%, and by 2050 more than one-third.
- Renewable sources will meet the demand for 10% of transportation needs, 67% for electricity demand, and 30% of building energy demand.
- 75% of electricity demand is to be derived from renewable sources by 2032
- 50% of electricity will be obtained from locally distributed energy generation.
- Major reductions in contributions to greenhouse gas emissions will be made.

- Weatherization of 80,000 housing units by 2020.

1.2 Weathersfield's Energy Goals

The Town of Weathersfield hereby adopts the goals established in the 2016 CEP, and through the detailed policies and actions contained in this plan, Weathersfield will strive to achieve these goals. Below is a list of some of the methods outlined in this plan to further energy conservation and efficiency efforts within our community:

- Promote energy conservation.
- Transition from fossil fuels to renewable resources.
- Develop new local sources of renewable energy.
- Monitor energy usage within town.
- Promote land use patterns that result in energy conservation.
- Achieve substantial deference from the Vermont Public Utility Commission (formerly Public Service Board) for the Town Plan.

2. Analysis of Current Energy Use

This section involves a summary and analysis of existing conditions in Weathersfield with respect to energy use. The appendices include more detailed data figures, which are summarized in this section. This section relies on data analysis provided by the Southern Windsor County Regional Planning Commission and, as such, the Regional Energy Plan for Southern Windsor County contains an important regional context for this analysis of Springfield's energy use and targets.

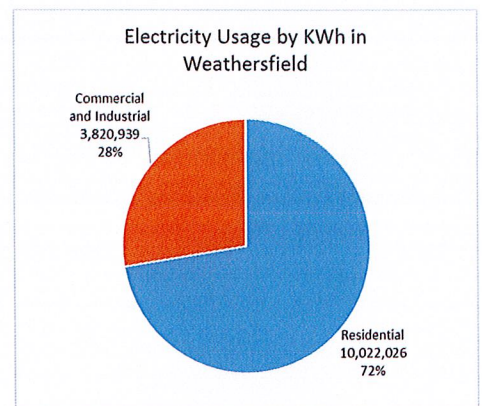
Vermont's Comprehensive Energy Plan calls for 25% of remaining energy needs will be met by renewable sources by 2025, 40% by 2035, and 90% by 2050.

2.1 Electricity

Electricity in Weathersfield is provided by Green Mountain Power. There are four Vermont Electric Power Company (VELCO) transmission lines that pass through Weathersfield, as shown on all maps included in this plan. In Weathersfield, the network of three-phase distribution lines is generally located along the VT 5 and VT 106 corridors.

In 2016, residences accounted for 72% of the total electricity usage in Weathersfield, and commercial and industrial uses accounted for 28% of the total 13,842,965 kWh used in Weathersfield¹. See Figure 2 that summarizes electricity use data provided by Efficiency Vermont. Average residential usage is 7,211 kWh (2015). According to Department of Labor Statistics, there were 76 commercial establishments in Weathersfield in 2015.

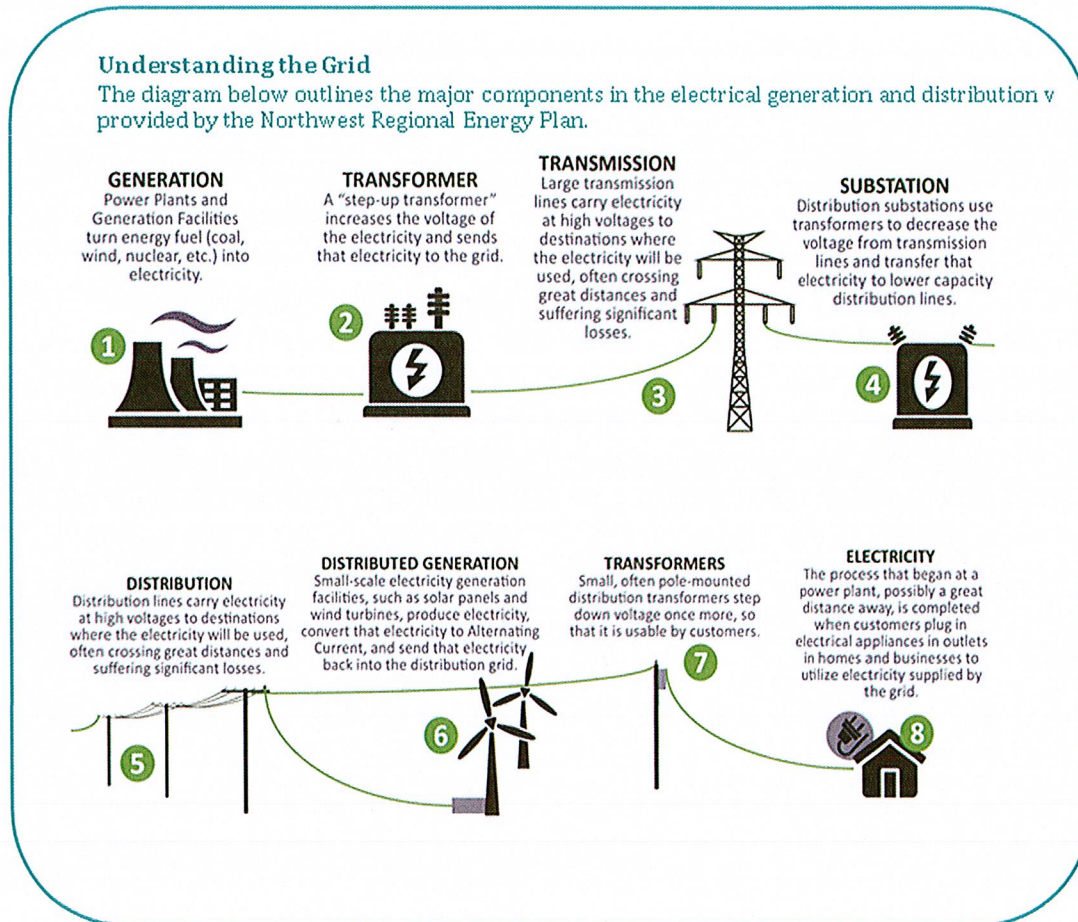
Total electricity consumption has essentially leveled off in recent years. (There was a slight increase in total electricity usage in Weathersfield



¹ 2016 electricity usage data provided by Efficiency Vermont

between 2014 and 2016.) See Appendix A for more detail. According to Department of Labor Statistics, there were 76 commercial establishments in Weathersfield in 2015².

Total electricity consumption has essentially leveled off in recent years. (There was a slight increase in total electricity usage in Weathersfield between 2014 and 2016.) See Appendix A for more detail.



2.2 Thermal (Space Heating)

Of the estimated 1,245 total occupied household units in Weathersfield in 2015, 12% were renter-occupied³. See Figure __ which summarizes total housing units in Weathersfield by type from the 2010 Census Bureau.

Fossil fuels are currently the primary fuel type used for heating structures in Vermont⁴. According to American Community Survey (ACS) data (2011-2015), the predominant ways to heat homes in Weathersfield include fuel oil (54%), wood (26%) and propane/LP gas (14%). In 2015, the estimated

² Covered Employment and Wages for 2016 (Vermont Department of Labor, Economic & Labor Market Information)

³ U.S. Census Bureau – American Community Survey, 2015

⁴ Vermont Comprehensive Energy Plan (Department of Public Service, 2016)

average annual cost to heat a home was \$1,576 and about \$3,159 to heat a business. See Appendix A for more detail about heating existing buildings in Weathersfield.

Wood is the only form of these heating fuels that is renewable and locally produced. Sustainable forestry operations are important not only to supply fuel wood for residents, but also to maintain an active working landscape in rural Weathersfield and support a local forestry economy.

2.3 Transportation

As a rural area, transportation options for Weathersfield residents are dominated by the personal automobile (see the Transportation Chapter for more information about other modes of travel). The negative environmental impacts of single-occupant vehicle driving is well documented. Costs associated with using an automobile for most of your travel needs can be significant (see the Housing Chapter for more information on household transportation costs). About 98% of the local work force travel to jobs located in another town. Common work destinations are Lebanon, Springfield, Hanover, Claremont, and Windsor.⁵ Approximately 81% of employed Weathersfield residents drive alone to work. The average commute time is 25 minutes.⁶

According to ACS data, there were about 2.1 vehicles per occupied household in 2015. The average vehicle miles traveled in a year is estimated at around 12,100⁷, which accounts for approximately 1.7 million gallons of total fuel used and an estimated total fuel cost of more than \$3.9 million.

Fuel costs are volatile. Gasoline costs of around \$4 a gallon in 2008 and \$3.70 in 2014 were challenging for many household budgets. During June 2018, average motor vehicle fuel costs in Vermont were about \$2.96.

3. Scenarios (Targets)⁸

The standards that the Department of Public Service has established for targets must be met if this Plan is to receive substantial deference in Section 248 energy siting proceedings. Weathersfield is utilizing targets (or scenarios) developed using the Long-Range Energy Alternatives Planning (LEAP) Model and provided to Weathersfield by the SWCRPC. The background for the targets is described in more detail in the *2018 Southern Windsor County Regional Energy Plan*. The purpose of the targets, when combined with the analysis presented in the previous section, is intended to provide an overview of existing energy use and projections for the pace of change that is needed over the next three-plus decades. **The targets simply demonstrate that, in order to meet 90% of Vermont's energy need from renewable sources by 2050, a significant amount of change will be needed in the forms of energy conservation, behavior modification, and development of new local renewable energy generation.**

In order to meet the 90% by 2050 goal, total energy use in southern Windsor County will need to decrease by 50%. Primarily, this must involve a vast reduction in the use of non-renewable fuels, such as gasoline and fuel oil. At the regional level, the LEAP model includes the following generalized assumptions to reach the 90% by 2050 goal:

⁵ US Census Bureau - Longitudinal Employer-Household Dynamics, 2015

⁶ U.S. Census Bureau - American Community Survey, 2015

⁷ Derived from data in VTrans 2015 Energy Profile and U.S. Census Bureau - American Community Survey, 2011-2015

⁸ Targets are derived from the Long-Range Energy Alternatives Planning (LEAP) Model

- Electricity use today is about 20% of total energy consumption, but it will increase to 35% of total consumption in 2050;
- The use of non-renewable fuels will be vastly reduced from about two-thirds today to about 10% by 2050;
- Renewables will increase from about 18% now to more than half by 2050. This involves wood consumption remaining relatively constant and biodiesel usage increasing substantially.

3.1 Electricity

Targets for electricity are mixed. Significant efforts to reduce electricity usage through conservation and efficiency measures will be needed. However, the LEAP model utilizes increased use of electricity to achieve the goal for both transportation (i.e. electric vehicles) and space heating (i.e. cold-climate heat pumps). See Figure 3 below.

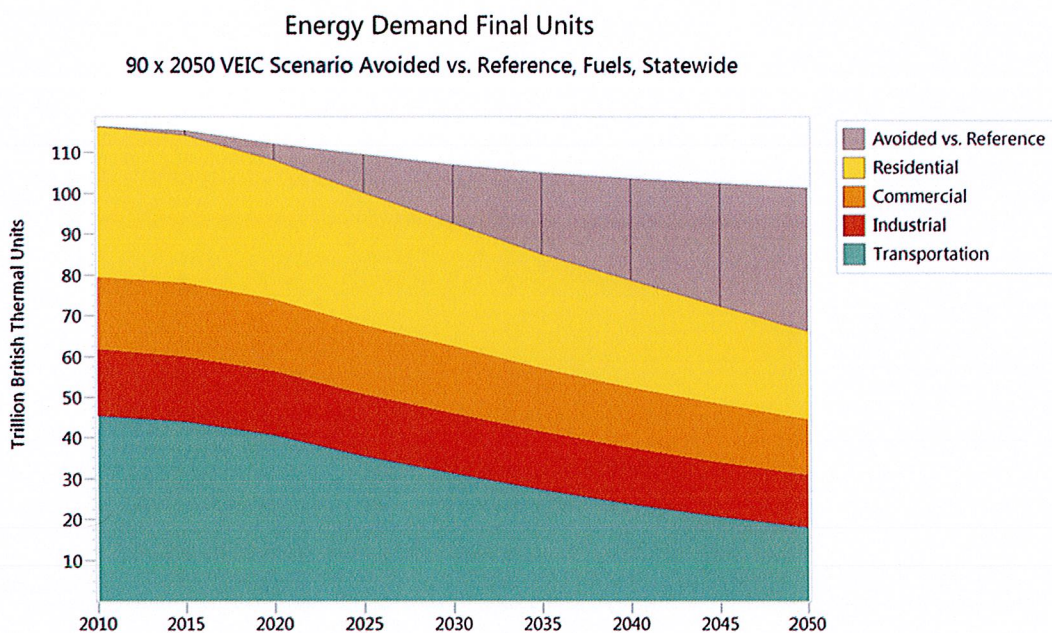


Figure 3: Vermont must significantly reduce total energy use by 2050 to be successful in implementing the goals of the Comprehensive Energy Plan. The LEAP model referenced in this Plan calls for substantial reductions in energy use by residences and transportation. The line above the grey area represents projections for if we do nothing else to reduce energy demand. The grey area itself represents efforts needed to reduce total energy demand.

Reducing electricity demand through energy conservation and efficiency measures will involve taking advantage of programs offered by Efficiency Vermont, utilization of high-efficiency/energy star appliances, LED lighting upgrades, and other efforts at energy demand management.

Electricity targets also include the development of renewable energy generation in Weathersfield and the surrounding region. The LEAP model also includes additional imported renewable energy from sources such as Hydro Quebec. However, local generation is also required. Targets for local renewable generation are summarized below in Table 1 and discussed in more detail in the renewable siting discussion under Section 4.

Table 1: Renewable Generation Targets (in MWh)			
	2025	2035	2050
Total renewable generation in MWh	5,453	10,906	21,811

3.2 Thermal (Space Heating)

The first step to reduce energy demand for space heating is to weatherize homes and businesses (e.g. air sealing, insulation). Table 2 shows the targets for weatherizing existing structures in Weathersfield in both percentage of the total existing households and commercial buildings and the number of units of each. We assume that all new structures will comply with the State energy building codes.

Table 2: Thermal Efficiency Targets			
	2025	2035	2050
Weatherize Homes (percentage, number)	17%	31%	63%
	212	386	785
Weatherize Commercial Establishments	4%	7%	15%
	3	6	12

The next step is to move toward the widespread utilization of renewable energy to heat homes and businesses. The LEAP model established the following targets for doing so in Weathersfield. Table 3 shows the scale to which buildings should switch over to renewable heating systems in order to meet the state energy goals.

Table 3: Use of Renewables for Space Heating			
	2025	2035	2050
Thermal renewable energy use	49%	64%	92%

In order to achieve the overall renewable target for heating, the LEAP model is calling for investing in new efficient wood heating systems, cold-climate heat pumps or ground-source heat pumps. (See Table 4.)

Table 4: Thermal Fuel Switching Targets (by Number of Heating Units)			
	2025	2035	2050
New efficient wood heating systems	4	9	63
New heat pumps	130	350	674

Cold-climate heat pumps are also referred to as air-source heat pumps, mini-splits or ductless heat pumps. These systems are a good option to retrofit existing houses, and can be used to supplement the existing heating system. As explained on the [Efficiency Vermont website](#), “heat is collected from the exterior air, concentrated via an outdoor compressor, and distributed inside through an indoor room unit. Heat pumps require electricity to run, but can deliver more energy than they use.” They also provide air conditioning during the warmer months.

Ground-source heat pumps provide space heating and cooling. They work similarly to air-source heat pumps, but instead they pump water or other fluid through pipes buried in the ground to collect heat. A more detailed description for how these systems work can be found on the [US EPA website](#). These are generally a better option for new construction installations.

Heating with wood is generally encouraged as it uses a locally-available fuel. However, sustainable wood harvesting is important in order to protect the environment and provide a viable, long-term local energy source. New efficient wood stoves that are EPA-certified are encouraged. Wood-chip heating systems are considered a good option to heat larger commercial, industrial or institutional buildings. See the [Efficiency Vermont website](#) for more information. A number of schools in the region use such heating systems.

3.3 Transportation

Transportation is probably the most difficult area to “bend the curve” in order to meet the energy goals. Changing behaviors is challenging. However, it must be done if we are to achieve the 90% by 2050 goal. The LEAP model used a number of assumptions in addressing this issue. The following targets are based on that LEAP model.

Table 5: Renewable Energy Use for Transportation

Use of renewables for transportation	2025	2035	2050
	10%	31%	90%

Overall, transportation needs to shift to renewable fuel sources as shown in Table 5. The LEAP model is largely expecting this to happen through using electric vehicles, and the use of biodiesel by the trucking industry. Table 6 below shows the fuel switching targets for Springfield. Efficiency Vermont has information on its [website](#) about ways to achieve transportation efficiencies. Also required to meet the goals will be additional efforts to lessen the use of energy for transportation, including land use patterns that encourage walking and bicycling, public transportation, driving less and ride sharing.

Table 6: Transportation Fuel Switching Targets

	2025	2035	2050
Passenger cars switch to electric vehicles	216	1,479	3,046
Trucks switch to biodiesel	372	692	1,153

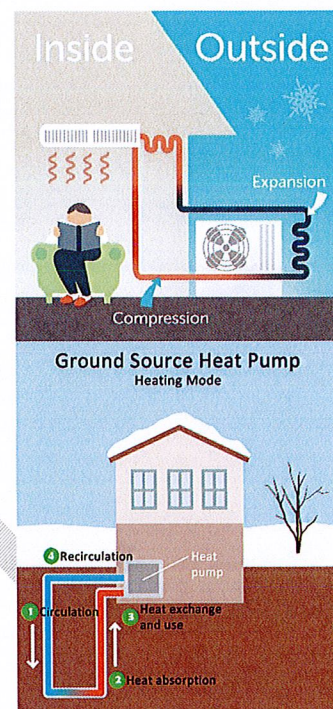


Figure 2: Illustration of how ground-source heat pumps work. Source: US EPA.

DRAFT

4. Implementation Actions (Pathways)

In order to meet our stated energy goals and targets, the Town of Weathersfield identifies the following implementation actions, also referred to as “Pathways”. The reference numbers used in this section are intended to be consistent with those used in the *Guidance for Municipal Enhanced Energy Planning Standards* (DPS; March 2, 2017).

Pathways Standard 6: Conservation and Efficient Use of Energy

- a) The Town of Weathersfield encourages the conservation and efficient use of energy.

Efforts to improve energy efficiency and conservation are Weathersfield’s initial focus. Weathersfield has identified the following implementation actions in Sections 6A, 6B, 6C and 6D to achieve this policy.

6A: Encourage Conservation by Individuals and Organizations

Weathersfield cannot control the use of energy by individuals and organizations. However, the Town can lead by example, serve as a resource, and encourage individuals and organizations to conserve and use energy efficiently. To do so, Weathersfield identifies and promotes the following resources to provide guidance to individuals and organizations:

- a) Inform residents about energy efficiency programs through [Efficiency Vermont](#) and the Weatherization Assistance Program for low-income households through Southeastern Vermont Community Action ([SEVCA](#)) and encourage residents to participate.
- b) Work with partner organizations and Efficiency Vermont to offer workshops and educational opportunities to businesses on efficiency in new construction, retrofits, and conservation practices.
- c) Publicize local energy conservation projects to encourage future private and public activities.
- d) Utilize various methods to disseminate educational information, such as through brochures, website materials, public events and digital media.
- e) Conduct outreach to service clubs.
- f) Identify large energy usage customers (including large businesses, manufacturing facilities, and schools) as a target audience and encourage participation in commercial and industrial efficiency programs through Efficiency Vermont.
- g) Encourage local business start-ups to conduct energy audits.
- h) Encourage the town and school libraries to expand and regularly update their collections of energy publications.

Net-Zero: A construction method for buildings that generate as much energy as they consume. Also known as a zero-energy building.

Net-Zero Ready: A building constructed in a manner that, with subsequent on-site renewables installed, it can make as much energy as it uses.

Stretch Code: A building energy code that achieves greater energy savings than the base Residential Building Energy Standards (RBES). The Stretch Code is required for Act 250 projects and may be adopted by municipalities.

6B: Promote Efficient Buildings

Heating buildings accounts for about 30% of all energy consumed in Vermont. Creating more efficient buildings can be achieved through weatherization and high-performance construction methods.

Weathersfield identifies the following to encourage efficient buildings:

- a) Promote the use of Vermont's residential building energy label/score.
- b) Promote the use of the [Residential Building Energy Standards](#) and [Commercial Building Energy Standards](#). To do so, the Zoning Office will distribute State energy code information to all applicants seeking a zoning permit for a structure that is heated or cooled. (Please note that the Town does not currently issue Certificates of Occupancy.)
- c) Promote benchmarking (using the free [EPA Portfolio Manager tool](#) and/or with assistance from Efficiency Vermont) for commercial buildings.
- d) Require that all residential Act 250 projects follow the residential stretch energy code.
- e) Require that all commercial Act 250 projects follow commercial stretch energy guidelines.
- f) Encourage new buildings to incorporate net-zero ready construction methods.
- g) Consider providing incentives (e.g. density bonuses) to developments that exceed the state's stretch energy code, or net-zero ready or net-zero demonstrated requirements, and that are located in an area identified as appropriate for growth.
- h) Promote building placement and location with [passive solar](#) and active solar in mind, and promote the use of [landscaping for energy efficiency](#).
- i) Maximize energy efficiency in existing municipal buildings and operations, including weatherizing, researching renewable energy systems for the municipality, and conducting energy audits of and developing long-term efficiency plans for municipal buildings.

6C: Promote Decreased Use of Fossil Fuels for Heating

Heating buildings accounts for about 30% of all energy consumed in Vermont and is the second largest contributor to greenhouse gas emissions. Home heating is heavily reliant on fossil fuels at this time.

Solutions to address this situation involve high-efficiency heating system upgrades and fuel switching.

Weathersfield identifies the following to encourage using less fossil fuels to heat buildings:

- a) Promote the use of cold climate heat pumps with education/presentations in coordination with the Efficiency Vermont/electric utilities.
- b) Support the use of ground-source heat pump heating and cooling systems for new construction.
- c) Identify municipal buildings that would be good candidates for cold climate heat pumps, and develop a plan and schedule to add the heat pumps to those buildings.
- d) The Renewable Energy Standard requires utilities to help reduce customer fossil fuel use through "energy transformation projects" such as weatherization, and incentives for heat pumps and electric vehicles. Municipalities should coordinate with their utilities to deliver these services in the most effective manner.
- e) Encourage, promote, and incentivize advanced wood heating in certain situations by:
 - 1) Supporting the conversion of existing fossil fuel heating systems to wood;
 - 2) Encouraging local manufacturing of advanced wood heat technology;
 - 3) Supporting development of wood fuel delivery infrastructure;
 - 4) Supporting development of sustainable forestry and procurement services;

- 5) Expanding wood fuel processing facilities, encouraging bulk wood pellet delivery systems; and,
- 6) Providing training and education on the benefits of heating with efficient, clean wood energy systems that have low-particulate emissions.
- f) Promote wood stove change-out programs that take older non-EPA certified stoves out of service and replace them with more efficient and lower emitting cord or pellet stoves.
- g) Identify municipal buildings that would be good candidates for wood pellet or chip heating and develop a plan and schedule to convert those buildings to wood heat.
- h) Explore opportunities for anaerobic digesters as appropriate.

6D: Demonstrate the Municipality's Leadership by Example with Respect to the Efficiency of Municipal Buildings

Weathersfield wishes to lead by example and demonstrate to individuals and organizations the benefits of building efficiency through the following efforts:

- a) Seek support and guidance from Efficiency Vermont for efforts to improve the efficiency of municipal buildings.
- b) Develop an inventory and conduct energy audits on municipal facilities, and develop a strategic plan to make energy efficiency and conservation upgrades
- c) Assess the life cycle costs of potential energy improvements during design and construction planning. For example, investment in a new, efficient heating system may be more expensive up front, but more economical to operate over time.
- d) Incorporate weatherization/energy efficiency projects into the municipal Capital Budget.
- e) Implement weatherization/energy efficiency projects in municipal buildings.
- f) Develop policies for evaluating investments in infrastructure that consider energy efficiency, for example making purchasing decisions with life cycle analysis and building operation guidelines in mind.
- g) Implement low-impact development, green stormwater infrastructure practices, and/or strategic landscaping to shade buildings and reduce temperatures, thereby increasing overall efficiency.
- h) Develop policies so that if investing in new municipal buildings, municipalities strongly consider locations that will give people the option to get to those buildings without driving – for example, by putting a new town hall near the post office or school or other village/downtown location instead of distant from the town center.
- i) Replace older municipal fossil-fired heating systems with high-efficiency, cold-climate heat pumps, geothermal heat, or advanced wood heating systems (including wood-fired district heat), or considering switching over to biofuels.
- j) Institute a pay-back plan with town officials so that 2 years of the money saved as a result of the implementation of each project developed in (b) above is reserved for future energy efficiency projects recommended by the energy committee for approval by the select board.

Pathways Standard 7: Transportation

- a) The Town of Weathersfield encourages the reduction of transportation energy demand and single-occupant vehicle use.
- b) The Town of Weathersfield encourages the use of renewable or lower-emission energy sources for transportation.

Weathersfield has identified the following implementation actions in Sections 7A, 7B, 7C, 7D and 7E to help achieve these policies.

7A: Encourage Increased Use of Public Transit

A public transit operator (i.e. Southeast Vermont Transit, a.k.a. “The Current”) provides bus service from the park-and-ride lot located at the I-91 Exit 8 Interchange to the Upper Valley. Maximizing public transit ridership is a priority. Weathersfield will implement the following actions to encourage public transit:

- a) Improve awareness of existing public transit services and taxi service to residents and visitors.
- b) Plan and advocate for access to public transit, especially for Act 250 proceedings for larger developments.

7B: Promote a Shift Away from Single-Occupancy Vehicle Trips

Public transit can meet the needs of some mobility needs, but additional efforts will be needed in order to reach the energy goals for reducing transportation energy use. Weathersfield will work to encourage the following actions to encourage a reduction in single-occupant vehicle trips:

- a) Encourage people to re-think their trip before leaving home.
- b) Promote the Go Vermont webpage, which provides rideshare, vanpool, public transit and park-and-ride options.
- c) Support employer programs to encourage telecommuting, carpooling, vanpooling, walking and bicycling for employees’ commute trips. Encourage employers to offer such programs and provide information on tax benefits that may be available for doing so.

7C: Promote a Shift Away from Gas/Diesel Vehicles to Electric or Other Non-Fossil Fuel Transportation Options

To meet State energy goals, municipalities will need to contribute toward efforts to reduce the number of vehicle-miles traveled (see 7B), and switch to renewable, non-fossil fuel transportation options. Weathersfield has identified the following pathways to shift toward electric vehicles and other non-fossil fuel travel:

- a) Promote consumer awareness of the benefits of, and access to, electric vehicles and alternative-fuel vehicles.
- b) Promote and seek grants to fund the installation of DC fast-charging infrastructure at strategic locations along major travel corridors and in transit hubs such as park-and-ride locations. – “Encourage electric car charger stations”
- c) Plan, advocate for, and consider requiring the installation of Electric Vehicle charging infrastructure as part of new development or redevelopment, especially for developments subject to Act 250.
- d) Encourage the establishment of a local biofuel supplier.
- e) Support the development of additional refueling stations for alternative fuels for both private and public transportation fleets by sharing station development costs between public and private interests.

7D: Facilitate the Development of Walking and Biking Infrastructure

Active transportation, such as walking and bicycling, offers significant health benefits and requires no outside energy resources. Weathersfield encourages completing short trips by walking or bicycling

instead of driving, by planning for safe and convenient infrastructure that support “Complete Streets Principles”. In order to do this, Weathersfield has identified the following pathways:

- a) Update municipal road standards (for maintenance and new construction) to reflect [complete streets principles](#).
- b) Identify key areas where improvements to bike and pedestrian access would be beneficial (in downtown and suburban areas for example) and work to improve access and infrastructure in those areas.

7E: Demonstrate the Municipality’s Leadership by Example with Respect to the Efficiency of Municipal Transportation

In order to meet the State energy goals, municipalities should lead by example and demonstrate to individuals and organizations the benefits of energy efficiency in transportation. Springfield wishes to do so through the following ways:

- a) Establish policies that allow selected employees to telecommute.
- b) Install electric vehicle charging infrastructure on municipal properties.
- c) Purchasing plug-in hybrid or plug-in all-electric municipal and fleet vehicles when possible, and choosing the most fuel-efficient models if EVs are not practicable.
- d) Establishing minimum fuel efficiency standards for the purchase of new vehicles.
- e) Consider incentives for employees who commute using methods alternative to single occupancy vehicles, e.g. walking, biking, public-transit, and carpooling.
- f) When purchasing diesel fuel, the Town should use the highest biodiesel blend available without compromising the manufacturer’s engine warranty. All manufacturers fully warranty their engines with the use of B5, a blend of 5% biodiesel and 95% diesel.

Pathways Standard 8: Land Use Patterns and Densities

- a) The Town of Weathersfield encourages maintaining the historic settlement pattern of compact downtowns and village centers surrounded by rural countryside in accordance with [24 V.S.A. §4302](#) and as described in the 2017 Weathersfield Town Plan.
- b) The Town of Weathersfield recognizes that compact development has a number of benefits, including furthering both State planning goals and State energy goals.
- c) The Future Land Use Map and corresponding descriptions in the Land Use Chapter of the Weathersfield Town Plan encourages the types of land use patterns and densities that are likely to result in the conservation of energy.
- d) Zoning bylaws adopted by the Town generally enable the above land use patterns and densities.
- e) The Village Centers of Ascutney and Perkinsville have been designated by the State Downtown Board under [24 V.S.A. Chapter 76A](#).

According to their Guidance, the DPS anticipates that if municipalities are actively participating in the above statutory frameworks for community planning, they will likely meet Pathways Standard 8.

Weathersfield’s Town Plan and various implementation methods, both regulatory and non-regulatory, combine to demonstrate a commitment to the above statutory planning framework. This plan documents what the municipality is doing in this area as it relates to encouraging the conservation of energy through land use development patterns and densities.

8A: The Plan Includes Land Use Policies (and Descriptions of Current and Future Land Use Categories) that Demonstrate a Commitment to Reducing Sprawl and Minimizing Low-Density Development

According to the enhanced energy planning guidance, the reduction of sprawl and low-density development not only reduces energy consumption, but also can improve the local and regional economy.

- a) The Future Land Use Map and corresponding descriptions in the Land Use Chapter of the Town Plan generally calls for growth to occur in the Village areas and in discrete nodes of activity, including Downers Corners and the I-91 Exit 8 Interchange. (See the Future Land Use Map and the corresponding language in the Land Use Chapter.)
- b) Weathersfield's Future Land Use Map and Town Plan language also calls for maintaining the rural countryside in the areas surrounding the growth areas described in "a" above. (See the Future Land Use Map and the corresponding language in the Land Use Chapter.)
- c) Statements for access management and other provisions intended to control strip development along major roadways are included in the Land Use Chapter, and I-91 Exit 8 Interchange Master Plan.

8B: Strongly Prioritize Development in Compact Mixed-Use Centers

As indicated in the enhanced energy planning guidance, households within a compact, mixed-use center typically use less energy than those located in outlying areas. The energy savings are realized through reduced vehicle-miles-traveled and generally smaller homes, which require less energy to heat and cool. Transportation energy use can be further reduced by locating services such as shopping or daycare within walking or biking distances to the places where people work and live. This enables people to either choose an alternative to driving a single-occupancy vehicle or to significantly reduce the length of their drive. Weathersfield chooses to encourage this by:

- a) Maintaining Village Center Designation, and improving the awareness of property owners about the tax credit opportunities to help pay for improvements to eligible buildings within Weathersfield's Village Centers.
- b) Coordinating with Southeast Vermont Transit (The Current) and the Go Vermont program to discuss options to promote car-sharing and public transit services.
- c) Plan sidewalk improvements in the newly designated Village Centers.

8C: Other

- a) Communicate the policies, goals and actions set forth in this chapter to the town's planning commission. Create the expectation with the town's planning commission that when analyzing subdivision or site plans, approving conditional uses, responding to ACT 250 inquiries, or adopting or construing zoning bylaws or regulations, it's responses, determinations and decisions reflect the policies, goals, and actions set forth in this chapter.

Pathways Standard 9: Statement of Policy on the Development and Siting of Renewable Energy Resources

The heating, transportation and conservation targets and pathways combined are not sufficient to meet the 90% by 2050 energy planning goal. The Long Range Energy Alternatives Planning (LEAP) model also assumes the purchase of additional out-of-state renewable energy will help to reach this goal; however,

that is also not sufficient to meet the energy goals. New local renewable energy generation is also needed in order to achieve the ambitious “90 by 50” energy goal. The following sections discuss how the municipality wishes renewable energy generation to take place in Weathersfield.

9A: Evaluate Existing Renewable Energy Generation

According to existing data, there are 39 known renewable energy generation facilities in Weathersfield as of 2015⁹, as summarized in Table 7. Existing facilities nearly amount to 0.137 MW of installed capacity. In order to more easily compare existing facilities with the targets for new renewable energy needs, generation output was estimated in MWh based upon the conversion factors found in the Guidance for regional enhanced energy plans.

Table 7: Existing Renewable Generation in Weathersfield⁴

Type	Number of Sites	Installed Capacity (MW)	Est. Output (MWh)
Solar	39	0.1372	168.252
Wind	0	0	0
Hydro	0	0	0

9B: Analyze Generation Potential from Preferred Sites and/or Potentially Suitable Areas

An analysis of renewable energy generation potential was conducted for Weathersfield by the SWCRPC. This consisted primarily of an analysis of existing and available GIS mapping data based upon the guidelines established by the DPS for enhanced energy planning. Table 8 below summarizes the findings of this analysis.

Table 8: Potential Renewable Energy Generation¹⁰

Type	Capacity (MW)	Generation Output (MWh)
Roof-top Solar	2.1	2,585
Ground-mounted solar	349.37	428,469
Wind	107.98	331,051
Hydro	0.01	28
Total	459.46	762,134

Based upon this analysis, there is significant potential to generate power from renewable sources in Weathersfield, primarily through ground-mounted solar and wind. There is limited potential to generate hydropower from the three existing dam sites that do not generate power at this time. The potential for rooftop solar projects is limited. Without ground-mounted solar and/or some forms of wind, there is not adequate generation potential from hydro and rooftop solar to meet the “90 by 50 goal” alone.

9C: Identify Sufficient Land for Renewable Energy Development to Reasonably Reach the 2050 Targets

Table 9 summarizes Weathersfield’s targets for renewable energy generation¹¹. There is more than adequate land area in Weathersfield that has solar potential to meet our 2050 renewable energy target of 21,811 MWh, which is the equivalent of approximately 17.78 MW of ground-mounted solar at the

⁹ Vermont Energy Dashboard (February 2017)

¹⁰ Derived from GIS mapping analysis (SWCRPC, 2017)

¹¹ SWCRPC, derived from Regional Shares of In-State Generation Target (DPS, 2017)

installed capacity. The guidance assumes 8 acres of land is generally needed to support 1 MW of solar. This would amount to about 142 acres of land to meet this target. This represents about 5.8% of the total land area in Weathersfield that is estimated to have potential to generate solar power.

Table 9: Renewable Energy Generation Targets⁹

Renewable Energy Generation	2025	2035	2050
Weathersfield Targets (in MWh)	5,453	10,906	21,811

9D: Ensure that Local Constraints do not Prohibit or Have the Effect of Prohibiting the Provision of Sufficient Renewable Energy to Meet State, Regional or Local Targets

These constraints have been analyzed, and the Town does not believe that these constraints prohibit or have the effect of prohibiting sufficient renewable projects needed to meet the state, regional or local energy goals.

The following resources are not appropriate locations for renewable energy projects and are hereby excluded from the potential wind and solar sites as depicted on the map. The following are consistent with the “known constraints” as described in the DPS mapping guidance.

- a) Vernal pools with a surrounding 50 foot buffer;
- b) Department of Environmental Conservation (DEC) river corridors;
- c) Federal Emergency Management Agency (FEMA) floodways;
- d) State significant natural communities and rare, threatened and endangered species;
- e) National wilderness areas; and,
- f) Class 1 and Class 2 wetlands.

The following represent constraints that will likely require mitigation and which may prove a site unsuitable after a site-specific study has been conducted based upon state, regional or local policies that are adopted and currently in effect. Points a) through g) below are consistent with the “possible constraints” as described in the DPS mapping guidance.

- a) Agricultural soils (Natural Resources Conservation Service (NRCS)-mapped prime agricultural soils, soils of statewide importance or soils of local importance);
- b) Act 250 agricultural soil mitigation areas;
- c) FEMA special flood hazard areas (floodplain);
- d) Protected lands (state fee lands and private conservation lands);
- e) Deer wintering areas;
- f) Vermont Agency of Natural Resources (ANR) conservation design highest priority forest blocks;
- g) Hydric soils; and,
- h) Ridgelines.

9E: Statements of Policy to Accompany Maps

Weathersfield hereby promotes the development of renewable energy generation in order to achieve the energy goals and targets as established in this plan. The following statements of policy apply to renewable energy projects:

- a) Weathersfield supports rooftop solar projects.
- b) Weathersfield supports residential-scale wind turbines, which are generally up to 30 meters (or 98 feet) tall, measured at the hub, or center of the wind turbine blades.
- c) Renewable energy projects, including ground-mounted solar projects of 15 KW and bigger, must not be located in the following areas:
 - 1. Vernal pools with a surrounding 50 foot buffer;
 - 2. Commercial scale projects in the river corridors as most recently mapped by the Vermont Department of Environmental Conservation (DEC);
 - 3. FEMA floodways;
 - 4. State significant natural communities and rare, threatened and endangered species;
 - 5. National wilderness areas; and,
 - 6. Class 1 and Class 2 wetlands.
- d) Proposed renewable energy facilities must demonstrate that the proposed project siting is appropriate in scale as it relates to the character of the area in which it is to be located, and the applicant must also demonstrate that all reasonable options have been considered in siting the facility.
- e) All ground-mounted solar projects must meet or exceed the setback standards in 30 V.S.A. §248(s).
- f) Any new biomass facility and all ground-mounted solar projects of 150 kW or greater that are within view of public roadways (i.e. state highways, US routes, and Class 1, 2 and 3 town highways) must provide landscaping that blends the project with its surroundings. This shall consist of naturalistic plantings using a mix of native plants and avoid introducing [invasive species](#).
- g) The applicant must replace any dead or diseased vegetation serving as part of the landscape mitigation measures throughout the life of the project or until the project ceases commercial operation.
- h) In accordance with PUC Rule 5.900, the applicant is required to provide a plan for the site to be adequately decommissioned at the time when the project ceases commercial operation. This should involve the removal of all parts of the project from the site including, but not limited to, the solar panels or wind turbines, inverters, metal framework that supports the solar panels, fencing, control invasive species, and any necessary site recovery as stipulated in the permit.
- i) Proposed renewable energy facilities must not have undue adverse impacts on significant wetlands, significant wildlife habitat, wildlife travel corridors, stormwater, water quality, flood resiliency, important recreational facilities or uses, scenic resources identified in this plan, or inventoried historic or cultural resources.

Undue Adverse Effect (Impact):

An adverse impact that meets any one of the following criteria:

- (1) Violates a clear, written community standard intended to preserve the aesthetics or scenic, natural beauty of the area;
- (2) Offends the sensibilities of the average person (i.e. it is offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area); or,
- (3) Fails to take generally available mitigating steps that a reasonable person would take to improve the harmony of the proposed project with its surroundings.

- j) Proposed renewable energy facilities must not result in substantial deforestation, cause forest fragmentation, or perpetuate invasive species.
- k) For all utility-scale wind (i.e. hub height of 70 meters/230 feet) and commercial-scale wind projects (i.e. hub height of 50 meters/164 feet hub height), the applicant must demonstrate that the proposal was evaluated and that reasonable mitigation was considered with respect to the following criteria:
 1. Operational noise, to be measured at the property line, will result in noise levels that are compatible with the adjacent land uses in the surrounding area, and are consistent with state standards.
 2. Avoid or minimize “shadow flicker” through careful project siting, planting trees or other methods.
 3. Avoid or minimize adverse impacts to significant wildlife habitat and wildlife travel corridors, including applicable terrestrial, aquatic and aerial species (e.g. migratory, resident and breeding bird and bat populations).
 4. Avoid or mitigate safety hazards in the vicinity of the project area (i.e. ice shedding or ice throw hazards, blade throw hazard, and tower fall zones).

Shadow Flicker

A flickering effect caused when rotating wind turbine blades periodically cast shadows, such as through the windows of adjacent homes. Shadow flicker is considered by some individuals as a nuisance and may cause headaches. No more than 30 hours per year is commonly used as a limit to reduce nuisance complaints.

9F: Maximize the Potential for Renewable Generation on Preferred Locations

Preferred locations include specific areas or parcels that are specifically identified to indicate preferred locations for siting a generator or a specific size of type of generator. Identifying preferred sites informs the community where renewable generation is desired. The identification of such sites can help to streamline the permitting process.

Preferred sites for Weathersfield include:

- a) Rooftops;
- b) Parking lots;
- c) Brownfield/superfund sites;
- d) Disturbed portions of extraction sites (i.e. gravel pit, quarry);
- f) Marginal farmlands that are not classified as prime agricultural soils or agricultural soils of statewide significance.

9G: Demonstrate the Municipality's Leadership by Example

Weathersfield will lead by example by working with partner organizations to identify opportunities for local renewable energy generation that benefits the community and furthers the goals and policies of this plan.