



# Town of Fitzwilliam, New Hampshire

13 Templeton Turnpike, Fitzwilliam, NH 03447

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## SOLAR ORDINANCE

### 1. AUTHORITY

This Solar Energy Ordinance is enacted in accordance with RSA 674:17(I)(j) and the purposes of RSA 672:1-III, as amended. The purpose of this ordinance is to accommodate Solar Energy Systems and Distributed Generation Resources in appropriate locations, while protecting the public's health, safety, and welfare.

### 2. PURPOSE

The Town of Fitzwilliam allows Solar Energy Systems to assist its residents with economic and environmental sustainability while also maintaining Fitzwilliam's scenic vistas and rural character. This ordinance intends to minimize the potential adverse impacts of Solar Energy Systems in the community by ensuring that such facilities are properly screened; properly sited within existing topographic features of the property; and properly insured for consistent maintenance and safety procedures to protect public health.

The Town of Fitzwilliam intends to facilitate the State and National goals of developing clean, safe, and renewable energy resources in accordance with the enumerated policies of RSA 374-G and 362-F that include national security and environmental sustainability.

### 3. APPLICABILITY

This ordinance shall apply to systems intended for the provision of thermal, chemical, electrical, or mechanical power needs of: the owner/operator of the system and/or property situated with the Solar Energy System(s), the community that the energy generation system is located within, or for the provision of selling the power as a utility. The boundaries of the Solar Ordinance shall apply to all zoning districts defined by the Fitzwilliam Zoning Board of Adjustment, with the exception of provisions to the Historic District. Applicants shall submit a Conditional Use Permit subject to approval by the Planning Board, with the exception of properties located within the Historic District, who shall apply for the Solar Energy System(s) by means of Application for Permit submitted to the Historic District Commission. Any Solar Energy System(s) installation not meeting the requirements or contents of this ordinance may submit a variance plan to the Fitzwilliam Zoning Board of Adjustment for consideration.

### 4. DEFINITIONS

A. Abutter- The current owner of record of any property which is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the Planning Board. For purpose of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that their land will be directly affected by the proposal under consideration.

- B. Applicant – The owner, or his agent, of any land who is proposing a Ground-Mounted or Roof-Mounted Solar Energy System.
- C. Community Scale Solar System – Refers to Town-owned, or a community member-owned Solar Energy System where energy is produced to offset community electricity and generates between 15 kilowatts and 1 megawatt of electricity. The intent is not for an industrial/utility system where the purpose is to sell power for profit but to benefit the Town and its residents.
- D. Customer Generator – A system that uses alternating current electricity that is generated from a renewable energy system located on an individual's, business', or local government's real property. A system located on a leasehold interest does not qualify under this definition.
- E. Developer – The owner, or his agent, of land which is proposed to have a Ground-Mounted or Roof-Mounted Solar Energy System.
- F. Plat – The map or plan of record of a development projects accompanying material, as described in these regulations.
- G. Small Scale Solar Energy System – Refers to a residential- and business-scale Solar Energy Systems that generate up to 15 kilowatts of power.
- H. Solar Access – The access of a Solar Energy System to direct sunlight.
- I. Solar Arrays – A group of solar panels connected together.
- J. Solar Collector – A device, structure, or a part of a device or structure for which the primary purpose is to transform solar radiant energy into thermal, mechanical, chemical, or electric energy.
- K. Solar Energy – Radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.
- L. Solar Energy System – An arrangement of solar collectors and other electrical and/or mechanical devices, located on the property of a Customer Generator, and whose primary purpose is to transform solar energy into electricity or another form of energy, using thermal, mechanical, electrical, or chemical means.
- M. Solar Energy System, Ground-Mounted – A Solar Energy System that is structurally mounted to the ground and is not roof-mounted.
- N. Solar Energy System, Roof-Mounted – A Solar Energy System that is structurally mounted to the roof of a building or structure.
- O. Solar Farm – Refers to a system of solar arrays designed to capture sunlight and convert it to electricity primarily to offsite consumption and use.

- P. Solar Photovoltaic (PV) System – A solar collection system consisting of one or more building systems; solar photovoltaic cells, panels, or arrays; and solar related equipment that rely upon solar radiation as an energy source for collection, inversion, storage, and distribution of solar energy for electricity generation.
- Q. Solar Thermal System – A Solar Energy System that uses collectors to convert the sun’s rays into useful forms of energy for water heating, space heating, or space cooling.
- R. Utility Scale Solar Energy Systems – Refers to large arrays or farms whose purpose is to generate electricity to sell to the open market and generate over 1 megawatt of electricity. These facilities would be subject to the requirements of the New Hampshire Public Utilities Commission.
- S. Wetlands – An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

**SOLAR ENERGY SYSTEM SIZE QUICK REFERENCE GUIDE:**

1000 watts = 1 kilowatt

1000 kilowatts = 1 megawatt

- An average 2,000 square foot home would need about 15 to 18 solar panels, which equals 4,000 watts.
- An average 20,000 square foot grocery store would use about 85,000 watts per month, or 8.5 kilowatts.

**5. CONDITIONAL USE PERMIT**

A. *Permit Required:* No Solar Energy Systems, except Roof-Mounted Systems, shall be erected, constructed, installed, or modified without first receiving a Conditional Use Permit (CUP) from the Planning Board. The CUP shall clearly set forth all conditions of approval and shall list all plans, drawings, and other submittal that is listed on the CUP, shall be considered to be a condition of approval.

1. All Roof-Mounted and Ground-Mounted Solar Energy Systems are required to submit a Construction Permit to the Board of Selectman.
2. If applying for a Conditional Use Permit for a Ground-Mounted Solar Energy System, abutting properties within 200 feet of the applicant’s property line must be notified of the public hearing.

B. *Application and Review Procedure:* An Application for a Conditional Use shall be initiated by filing with the Planning Board for an application for a Conditional Use Permit for Solar Energy Systems. The following procedures shall apply to the processing of such applications:

1. Site Plan Approval Required: A Site Plan Review procedure for a CUP shall be made concurrently and in accordance with the Site Plan Regulations as applicable to the particular development.
  2. Standards for Review: Following a fully noticed public hearing on the proposed use, the Planning Board may issue a Conditional Use Permit, if it finds, based on the information and testimony submitted with respect to the application, that:
    1. The use is specifically authorized by the Planning Board as a conditional use.
    2. The development in its proposed location will comply with all requirements of the Fitzwilliam Site Plan Regulations, as well as specific conditions established by the Planning Board.
    3. The use will not materially endanger the public health or safety.
    4. The use shall provide adequate screening to ensure adjacent property values are not adversely impacted. Screening may be provided by maintaining existing vegetation or through the installation of site-specific evergreen landscaping, suitable fencing, or a combination thereof. Such screening shall be maintained during the operative lifetime of the Solar Energy System Conditional Use Permit.
    5. In granting a Conditional Use Permit pursuant to this section, the Planning Board may impose any reasonable conditions or restrictions deemed necessary to carry out the intended purpose of this ordinance.
    6. The Planning Board reserves the right to waive the Height conditions of the Conditional Use Permit if the Applicant proves to the Planning Board that the requested waiver will not be detrimental to the public safety, adjacent property values, or the rural character.
- C. *Duration of Solar Energy System Conditional Use Permit*: Any Ground-Mounted Solar Energy System which has been abandoned or is no longer operational shall be removed. The owner or operator shall physically remove the installation no more than 365 days after the date of discontinued operations and plans for the removal.

## 6. RESIDENTIAL-SCALE STANDARDS

### A. Site Layout and Design

1. A Commitment of Deconstruction shall be included in the plan for when the system is no longer in use. The Board would reserve the right to require a posting of a bond for the removal of an unused facility. The Boards have the authority to ask for more information and seek outside expertise if, in the opinion of the Board, it is necessary.

2. Sites planned for, or intended to be used for a Community Scale or Utility Scale Solar Energy System, shall submit plans showing the location, size, roads, utility lines, drainage, fencing, lighting, screening, utility corridors, setbacks, density, and landscaping.
3. Solar Energy Systems shall not exceed a footprint greater than 15% of the land area of lots 3 acres or less and no more than 20% of a lot greater than 3 acres. In no case shall any Solar Energy System exceed 43,560 square feet in area. The footprint of the Solar Energy System shall include all above ground components and solar access ways and shall be calculated by including the entire area within a single, continuous perimeter enclosing all elements of the Solar Energy System.
4. The Boards shall determine if the facility is compatible within its setting by looking at setbacks, buffers, height, stormwater runoff, scale, and density to mitigate impacts to the environment and scenery. The Site Plan Review standards shall also apply when applicable.
  1. Solar Energy Systems intended to be constructed within a wetland area of the setback shall be subject to further scrutiny of the applicability for development on the property.

B. Dimensional Regulations

If the Planning Board grants a Conditional Use Permit pursuant with this section, any such use shall be conducted in a manner compliant with the conditions imposed by the Planning Board as well as the following minimum standards:

1. *Height:* The maximum height of any Ground-Mounted Solar Energy System shall be 10 feet off the ground but not exceed 20 feet off the ground. Roof-Mounted Solar Energy Systems shall be considered exempt for height requirements.
2. *Setbacks:* All Ground-Mounted Solar Energy Systems shall adhere to required front, side, and rear yard requirements as an accessory structure to the property, along with all required wetland setbacks, and shall not be considered accessory structures when determining required setback provisions. Based upon specific character of the neighborhood, greater setbacks may be required by the Planning Board in order to meet the goals of the Rural Character Preservation Ordinance, pursuant of Chapter 137 of the Code of the Town of Fitzwilliam.
  - a. It is strongly encouraged that Roof-Mounted Solar Energy Systems provide a setback, as defined in the 2012 International Fire Code (IFC) or any code adopted thereafter, to ensure that firefighters may access the roof in a quick and safe manner and may penetrate the roof to create ventilation if necessary.

3. *Construction Standards*: All Solar Energy Systems shall conform to applicable building, electrical, and fire codes.

C. Screening

1. A detailed screening plan, as determined necessary by the Planning Board or Historic District Commission, may be required to address specific neighborhood sensitivities, mitigate visual impacts, and maintain the rural character of the neighborhood.

D. Abutting Properties

1. During the Site Plan and Subdivision Review process the Board shall consider the impacts of development on abutting properties with Solar Energy Systems relative to potential obstruction of light from neighboring properties. The intent is not to impede someone's right to build, but to reflect upon the Energy Conservation Section of the Fitzwilliam Master Plan where future placement and alignment of buildings and vegetation support solar and other forms of renewable energy.

**7. COMMUNITY- AND UTILITY-SCALE STANDARDS**

Proposed Solar Energy Systems for Community or Utility use shall meet the standards listed above in Section 6, and, pursuant with RSA 675:6, shall meet the standards for large-scale energy generation facilities set forth by the Fitzwilliam Planning Board for Community- and Utility-Scale Systems as follows:

1. Landscape Plan.

1. All Community- and Utility-Scale solar energy generation facilities shall provide a landscape plan indicating all proposed changes to the landscape of the site, including temporary or permanent roads or driveways, grading, existing vegetation, clearing and planting, exterior lighting, proposed screening vegetation, or other structures.

2. Lighting.

1. In accordance with the Dark Skies regulations under Article II of §137 of the Code of the Town of Fitzwilliam, lighting shall be designed to minimize glare on abutting properties and be directed downward with full cut-off fixtures to reduce light pollution.

3. Noise.

1. In accordance with §130 of the Code of the Town of Fitzwilliam, Commercial- and Utility-Scale Solar Energy Systems shall regulate noise emittance.
  - a. All noise emissions shall not exceed the following noise limits anywhere at any time on another property unless the owner of that property has granted a noise easement to the facility. As a part of the application, the developer shall provide modeling of the anticipated noise emissions.

**Table 1: Fitzwilliam Operational Noise Limits, see §130-5**

<b>Zoning District</b>	<b>Maximum Noise Limit Day</b> (from 7:00 AM to 7:00 PM)	<b>Maximum Noise Limit Night</b> (from 7:00 PM to 7:00 AM)
<b>Village Center, Historic District</b>	<b>45 dBA (10-min L10)</b>	<b>35 dBA (10-min L10)</b>
<b>Rural Residential District</b>	<b>45 dBA (10-min L10)</b>	<b>35 dBA (10-min L10)</b>
<b>Light Industrial District General Industrial District</b>		

NOTE: L10 is sound level exceeded 10% of the time.

- b. The Town of Fitzwilliam has defined the acoustic baseline as follows:

**Table 2: Fitzwilliam Operational Noise Limits, see §130-4**

<b>Zoning District</b>	<b>Maximum Noise Limit Day</b> (from 7:00 AM to 7:00 PM)	<b>Maximum Noise Limit Night</b> (from 7:00 PM to 7:00 AM)
<b>Village Center, Historic District</b>	<b>35 dBA (10-min L90)</b>	<b>25 dBA (10-min L90)</b>
<b>Rural Residential District</b>	<b>35 dBA (10-min L90)</b>	<b>25 dBA (10-min L90)</b>
<b>Light Industrial District General Industrial District</b>		

NOTE: L90 is sound level exceeded 90% of the time.

4. Burial.
  1. Utility controls and on-site line connections shall be wireless or buried, except at the point of connection with distribution lines, and designed and located so as to minimize disruption to wildlife habitat, agricultural lands, and scenic areas.
  
5. Utility Notification.
  1. No large-scale Ground-Mounted solar photovoltaic installation shall be constructed until evidence has been given to the Planning Board that the utility company that operates the electrical grid where the installation is to be located has been informed of the solar photovoltaic installation owner or operator's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

6. Appurtenant Structures.
  1. All appurtenant structures to large-scale Ground-Mounted solar photovoltaic installations shall be subject to reasonable regulations concerning the bulk and height of structures, lot area, setbacks, open space, parking, and building coverage requirements. All such appurtenant structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations shall be architecturally compatible with each other. Whenever reasonable, structures should be screened from view by vegetation and/or joined or clustered to avoid adverse visual impacts.
7. Operation and Maintenance Plan.
  1. The project proponent shall submit a plan for the operation and maintenance of the Community- or Utility-Scale Solar Energy generation facility, which shall include measures for maintaining safe access to the installation, storm water controls, as well as general procedures for operational maintenance of the installation.
8. Emergency Services.
  1. The large-scale Solar Energy System owner or operator shall provide a copy of the project summary, electrical schematic, and Site Plan to the local Fire Chief. Upon request, the owner or operator shall cooperate with local emergency services in developing an emergency response plan. All means of shutting down the Solar Energy System shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.
9. Expiration.
  1. A permit issued pursuant to this ordinance shall expire if:
    - a. The solar energy facility is not installed and functioning within 48 months from the date the permit is issued; or,
    - b. The solar energy facility is abandoned.
10. Financial Surety.
  1. The permit-granting authority, either the Board of Selectman or Planning Board, may require the applicant for a large-scale solar facility to provide a form a surety, either through escrow account, bond, or otherwise, to cover the cost of removal in the event the Town must remove the facility, of an amount and form determined to be reasonable by the permit-granting authority, but in no event shall exceed more than 125% of the cost of removal and compliance with the additional requirements set forth herein, as determined by the applicant. Such surety will not be required for municipally or state-owned facilities. The applicant shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a mechanism for Cost of Living Adjustment.

## **8. HISTORIC STRUCTURE STANDARDS**

Any applicant with a property in the Historic District shall adhere to the standards cited in Section 6 and will apply for their permit through the Historic District Commission. At the discretion of the Historic District Commission, applicants may be required to provide the following additional information in order to ensure the historic integrity of the home and/or property is not compromised:

### **A. Ground-Mounted Solar Energy Systems**

1. Historic features such as stone walls are protected during the building process.

### **B. Solar Tiles**

1. The use of solar tiles in the Historic District is permitted, however applicants are strongly encouraged to take into consideration the age and current state of the structure. Installing solar tiles on older homes may be more invasive and damaging to the overall historic integrity of the structure.

### **C. Solar Batteries**

1. Applicants looking to install solar batteries may be subject to provide additional screening measures based on the proposed location of the solar battery.

## **9. NET METETING AND INTERCONNECTION REQUIREMENTS**

A. Applicants interested in installing Solar Energy Systems on their property while maintain an electrical connection with their local utility company must adhere to the strict utility interconnection standards and regulatory-approved requirements. Pursuant of New Hampshire Public Utilities Commission Rule 900, applicants for Solar Energy Systems with net metering for 1,000 Kilowatts or less, shall establish safe interconnection requirements for safety, reliability, and power quality for net energy metering consistent with the Legislative Declaration of Purpose set forth in RSA 362 A:1. These requirements exist to ensure the continued safety and protection of both the homeowner's Solar Energy System and the utility's electrical grid. For Solar Energy System projects up to 100 kW in size, there is a simplified interconnection process.

B. Net Metering applications can be found on the applicant's utility carrier's website; such as Unitil or Eversource. Application guidelines may include:

1. Homes with multiple meters, or sub-meters, cannot be combined under a single "net meter,"
2. Visible disconnect switch and labeling is required. A rapid disconnect switch shall be located on the rooftop within 6 feet of the Solar Energy System,

3. Certificate of Completion must be signed by a town designee or electrician,
  4. Properly permitted, installed, and inspected Solar Energy Systems should not be “energized” or “activated” until a net meter is installed by the interconnecting utility. Without a net meter, all generation from the Solar Energy System that is fed back into the utility grid will be recorded as energy usage at the home, instead of an offset to the homes actual energy usage, and,
  5. The existing transformer serving the applicant’s energy load where the Solar Energy System is installed is subject to potentially require upgrades or replacement in order to maintain grid system reliability. Such replacement shall be at the applicant’s expense.
- C. Once the Interconnection Application is filed with the applicant’s utility company, the applicant shall provide the Town a copy of the application.
1. Any amendments, problems, inquiries, or other changes to the Interconnection Application shall be relayed to the Town via paper copy or emailed submission.

## **10. SAFETY REQUIREMENTS**

Regardless of the size or type of Solar Energy System, applicants are required to properly label safety hazards and directions for operation on their solar equipment. Solar Energy Systems may be subject to provide the following labeling requirements at the discretion of the Town of Fitzwilliam:

### **1. Residential Solar**

1. Disconnect or shutoff switch is clearly labeled as such.
2. AC Combiner Label; used to clarify if there is interconnection, or dual power supply.
3. Inverter and/or electrical box is clearly labeled of where the Solar Energy System rapid shutdown switch is located.
4. DC Raceway Label; warning label placed on raceways on exterior or interior of building, connecting the Solar Energy System to the inverter and transformer.
5. Service disconnect directory label; small sign that uses an image to identify the exact location of disconnect.
6. Fencing to keep out people and animals.

### **2. Design Elements**

1. Lettering should be a minimum of ¾” inches and in capital letters
2. Font color should be either red or white, and use a reflective coating

<b>Principal Use</b>	<i>Residential Districts</i>		<i>Business Districts</i>		<i>Industrial Districts</i>	
	<b>R-1</b>	<b>Rural</b>	<b>VCB</b>	<b>GB</b>	<b>LI</b>	<b>GI</b>
Residential-Scale Roof- Mounted Solar	N	N	N	N	N	N
Residential-Scale Ground- Mounted Solar	Y	Y	Y	Y	Y	Y
Community- Scale Roof-Mounted Solar	SPR	SPR	Y	Y	Y	Y
Community- Scale Ground-Mounted Solar	SPR	SPR	Y	Y	Y	Y
Utility-Scale Ground-Mounted Solar	SE	N	SPR	SPR	SPR	SPR

<b>Accessory Use</b>	<i>Residential Districts</i>		<i>Business Districts</i>		<i>Industrial Districts</i>	
	<b>R-1</b>	<b>Rural</b>	<b>VCB</b>	<b>GB</b>	<b>LI</b>	<b>GI</b>
Residential-Scale Roof- Mounted Solar	Y	Y	Y	Y	Y	Y
Residential-Scale Ground- Mounted Solar	Y	Y	Y	Y	Y	Y
Community- Scale Roof-Mounted Solar	SPR	SPR	Y	Y	Y	Y
Community- Scale Ground-Mounted Solar	SPR	SPR	SPR	Y	Y	Y
Utility-Scale Ground-Mounted Solar	N	N	SPR	SPR	SPR	SPR