

## **ALTERNATIVE ENERGY RESOURCES ORDINANCE**

### ***Intent***

The Town of Seven Devils recognizes the progressive and changing needs for alternative energy sources and wishes to illustrate a desire to be proactive in addressing these new sources. The goal is to preserve the health, safety, and welfare of Seven Devils citizens by promoting the safe, effective and efficient use of active solar energy and wind energy systems. Inherent in this goal is the desire to reduce the on-site consumption of fossil fuels or utility-supplied electric energy. The Town's goal of protecting its natural beauty is an important consideration in the substance of this section.

### ***Applicability***

This Ordinance shall apply to the use of all alternate energy resources except "temporary energy systems" as herein defined.

***Application Requirements:*** Submittal of a conditional use permit application as well as a site specific development plan for all systems shall include the following requirements that will be considered by the Board of Adjustment:

- (a). A plan denoting the dimensions of the subject property, proposed location of solar panel(s), the arrangement of solar panels, distance from the roof, pitch of the finished roof, and distance from the proposed site improvements to all property lines.
- (b). The site plan should also show the required buffering as outlined in UDO, Article VIII, Section 8.04 (e) and (f); while consideration should be made for reasonable solar access.
- (c). Submit horizontal and vertical elevation drawings to scale with dimensions.

- (d). Approved solar components: Solar energy system components must have a UL listing and must be designed with anti-reflective glare coating(s) to minimize solar glare.
- (e). Written authorization, when applicable, from the public utility company acknowledging that it has been informed of the applicant's intent to install an interconnected customer-owned generator and that it also approves of such connection(s).
- (f). Compliance with North Carolina Building Code: All active solar energy systems shall meet all requirements of the North Carolina State Building Code and shall be inspected by a building inspector with whom the Town of Seven Devils contracts.
- (g). Compliance with National Electrical Code: All systems shall comply with the National Electrical Code, current edition and any other applicable codes.
- (h). All solar collection devices shall be registered with the Fire Department and registration shall include a map of the solar collection devices and panel disconnect.
- (i). Posting of a performance bond is required on the completed project and must be done within 10 days of approval. The amount, which shall be enough to meet the requirements of (j) immediately below this paragraph shall be determined by an Engineer licensed in the State of North Carolina.
- (j). If the applicant ceases operation of the energy project or begins, but does not complete, construction of the project, the applicant shall restore the site to its previous appearance. It shall be the responsibility of the property owner to maintain any installed solar system. If failure to restore or maintain, the Town of Seven Devils shall have the authority to cash in the performance bond and perform the necessary work to restore the site.

***Accessory Solar Energy Collection Systems, Small Scale***

Shall be permitted as accessory uses in the Limited Density – LDR, Medium Density – MDR, and Snowcloud – SC Residential Zoning Districts, and Recreational Business - RB District as roof mounted systems to existing structures or facilities provided they comply with minimum design standards outlined below. Ground mounted systems are prohibited. Compliance with applicable standards shall be documented and shown on a site plan and submitted to the Zoning Administrator along with a Conditional Use Permit Application for the appropriate review and approval.

(1). Residential Solar Collection. An application for a proposed Small Scale Solar Collector/Energy System located at a residence must meet the following standards as an accessory use:

(a). Roof-mounted solar collector systems shall meet the following location standards:

(i). Roof-mounted accessory solar collectors shall not extend above the ridge-cap or exceed the 35 feet height restrictions for houses in the LDR and MDR zoning districts of the UDO.

(ii). The collector surface and mounting devices for roof-mounted systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built.

(iii). Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure.

(iv). Roof mounted systems shall be located so as not to impede the ability of emergency personnel to access the roof for fire-fighting purposes.

(v). Roof mounted systems on pitched roofs shall be mounted parallel to the roof at the same pitch or no greater than 5% steeper than the roof.

(vi). Solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto other properties or public access areas.

(vii). Mounting hardware and framing shall be non-reflective or matte black in color.

(viii). Approved solar components: Solar energy system components must have a UL listing and must be designed with anti-reflective glare coating(s) to minimize solar glare.

***Accessory Solar Energy Collection Systems, Small Scale***

Shall be permitted as an accessory use in the GB – General Business zoning district as roof mounted systems to existing structures or facilities provided they comply with minimum design standards outlined below. Ground mounted systems are prohibited.

(1). Commercial Energy Solar Collection. An application for a proposed Small Scale Solar Collector/Energy Systems in zoning districts other than residential and Recreational Business must meet the following standards as an accessory use:

(a). Roof-mounted solar collector systems shall meet the following location standards:

(i). Roof-mounted accessory solar collectors shall not extend above the ridge-cap or exceed the 50-foot height restriction of the UDO.

(ii.) The collector surface and mounting devices for roof-mounted systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built.

(iii). Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure.

(iv). Roof mounted systems shall be located so as not to impede the ability of emergency personnel to access the roof for fire-fighting purposes.

(v). Roof mounted systems on pitched roofs shall be mounted parallel to the roof at the same pitch or no greater than 5% steeper than the roof.

(vi). Solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto other properties or public access areas.

(vii). Sites where a flat roof is used to support the solar system must be shielded from view by a parapet or curtain wall tall enough to shield the panels and have a uniform look around the entire perimeter.

(viii). Exterior electrical wires and conduit shall be kept as a location to a side yard and any related conjunction boxes shall be shielded from public view while maintaining access to mechanical equipment.

***Accessory Solar Energy Collection System, Utility Scale  
(Production for Resale):***

On a utility scale, accessory use solar collectors in the zoning district of GB – General Business may be used for on-site consumption as well as generating electrical energy for the purposes of resale back to the energy grid. This type of use must meet the following standards as an accessory use:

(a). Systems designed for on-site consumption and the possibility of resale use shall be permitted on a flat roof only, no ground mounted systems are allowed.

(b). Systems shall be screened from public view by a parapet or curtain wall around the entire perimeter of a flat roof, with consideration given to maintenance and solar access.

(c). System panels shall be tilted in the optimal direction and shall not exceed a 37° angle from horizontal.

(d). Systems must be mounted on non-reflective or black matte frames to help reduce glare to neighboring properties.

(e). System's associated wiring and electrical boxes should be located inside the building. If this is not possible, then they must be screened from public access and public view, while allowing maintenance access for the operator(s).

(d). System's solar panels shall be placed such that the concentrated solar radiation or glare shall not be directed onto other properties or public access areas.

(e). Systems shall not cover more than 65% of a flat roof. This allows for the addition of other roof top mechanical or electrical equipment and solar access.

***Accessory Wind Energy Conversion Systems, Small Scale*** shall be conditional as an accessory use in the Limited Density Residential – LDR, Medium Density Residential – MDR, Snowcloud – SC, and Rereational Business - RB as a single system whose main purpose is to supply electricity for on-site consumption. It is essential that a site plan must first be submitted in order to determine if a property is eligible for a wind energy conversion system. Roof mounted systems to existing structures or facilities are easier to regulate provided they comply with minimum design standards outlined below. Compliance with applicable standards shall be documented and shown on a site plan and submitted to the Zoning Administrator along with a Conditional Use Permit Application for review and approval by the Planning Board and the Board of Adjustment.

(1). Residential Wind Energy Conversion Systems: A conditional use permit application, as well as a site plan, denoting the dimensions of the subject property for a proposed Small Scale Wind Energy Conversion System located at a residence must meet the following standards as an accessory use:

(a). Roof-mounted wind energy conversion systems shall meet the following location standards:

(i). Roof-mounted accessory wind energy conversion systems shall not extend above the ridge-cap of the roof or exceed the 35 feet height restrictions of this ordinance.

- (ii). The wind energy conversion system and mounting devices for roof-mounted systems shall not extend beyond the exterior perimeter of the roof of the building on which the system is mounted or built.
- (iii). Roof mounted systems shall be located so as not to impede the ability of emergency personnel to access the roof for fire-fighting purposes.

***Accessory Wind Energy Conversion Systems, Utility Scale*** shall be conditional as an accessory use in the General Business – GB, for the purpose of on-site consumption in addition to the resale of energy back to the grid. These systems require an environmental assessment by a professional Engineer, licensed in the State of North Carolina. The environmental assessment shall be submitted along with a Conditional Use Permit Application to the Zoning Administrator.

- (a). All wind energy conversion systems shall be located within a protected “fall zone.” Towers cannot exceed 100 feet in height. The tower shall be designed in such a manner as to be fully contained within a “fall zone” (distance within fifty (50) feet in any direction from the center point) that will not exceed fifty (50) feet, should it collapse. There shall be no other structures located within the site plan defined area. Distances from the proposed site improvements to all property lines shall be clearly indicated. The setbacks in the zoning ordinance are in addition to the fall zone calculation.
- (b). Acceptable decibels (at the property line) should be no greater than (40dB.)
- (c). Clear cutting of property in order to install an accessory wind energy conversion system shall not be allowed without special permission from the Board of Adjustment.
- (d). If approved, a performance bond, with value determined by a NC licensed engineer, shall be posted on the project and must be done within 10 days of approval. The amount, shall be enough to meet the

requirements of (e) immediately below this paragraph as determined by an Engineer.

(e). If the applicant ceases operation of the energy project or begins, but does not complete, construction of the project, the applicant shall restore the site to its previous appearance. It shall be the responsibility of the property owner to maintain any installed wind system. If failure to restore or maintain, the Town of Seven Devils shall have the authority to cash in the performance bond and perform the necessary work to restore the site.

### ***Completion and Decommissioning:***

Each accessory wind energy conversion system project must be completed within 18 months. Should delays occur, the Zoning Administrator must approve an extension at six (6) month intervals. Should a project cease operation as an ongoing business entity, the site must be restored to the original, natural state. A plan must be filed with the Zoning Administrator within 180 days after cessation, outlining how the structure will be removed, the time frame in which the work will be done, and the plan to return the property to its pre-existing state. A date for final removal must be given and approved by the Zoning Administrator in the plan.

### ***Violations***

Each day that the site is not restored beyond the approved deadline for final removal shall be assessed a civil penalty of \$50 per day fine. Each day will be treated as a separate offense. If the violation continues for a consecutive sixty (60) days: the Town of Seven Devils will then have the authority to cash in the performance bond and have the work performed.

### **Definitions**

***Accessory Solar Energy Collection Systems, Small Scale:*** Any device or combination of devices or elements which rely upon direct sunlight as an energy source, including but not limited to any substance or device which collects sunlight for generating energy for residential use. The term shall include active solar systems. Windows and skylights are not included and shall be considered components of passive systems.

***Accessory Solar Energy Collection Systems, Utility Scale:*** Any device or combination of devices or elements which rely upon sunlight as an energy source, including but not limited to any substances or devices which collect sunlight for generating energy primarily for selling and/or returning electric energy to an electric distributor. Energy generated by this system may be used to serve on site power needs as well. Location of such high impact use is restricted to flat roofs and areas above ground that cannot be seen from major thoroughfares. This use is prohibited from slopes greater than 20 percent grade and shall not cover more than 50% of a property.

***Accessory Wind Energy Conversion System:*** A wind energy conversion system consisting of a wind turbine, tower, and associated control or conversion electronics, which has a rated capacity of less than or equal to hundred (100) kilowatts and is intended to reduce on-site consumption of utility power. A system is considered a small wind energy system only if it supplies electrical power for on-site use with no intention of selling power back to the grid.

***Accessory Wind Energy Conversion System, Utility Scale:*** A wind energy conversion system consisting of a wind turbine, tower, and associated control or conversion electronics with the intention of selling power back to the grid.

***Environmental Assessment:*** a detailed examination of the applicant's proposal as it relates to the project's local environment with an emphasis on avoiding, minimizing, and mitigating adverse impacts. An Engineer licensed in the State of North Carolina must provide an environmental assessment.

**Fall Zone:** a distance two times the height of the tower or two times the engineered break point on the tower as a setback from the nearest structure in order to alleviate the concerns of safety and negative impact. It may be possible to have a professional engineer calculate the specific “fall zone” for where the turbine could conceivably land if it were to topple. Additionally, the Town’s setback from both property lines and buildings that may lie on the same property should be outside the fall zone.

**Mechanical Equipment.** Any device associated with a solar or wind powered system, such as an outdoor electrical unit/control box that transfers the energy to the intended on-site structure.

**Operator.** the entity responsible for the day-to-day operation and maintenance of the Wind Energy Facility.

**Parapet Wall or Curtain Wall.** Is a wall-like barrier at the edge of a roof where extending above a roof, it may simply be a portion of the exterior wall that continues above the line of the roof surface, or may be a continuation of a vertical feature beneath the roof such as a fire wall. This outer covering is non-structural and is used merely to keep the weather out or to be used as a screening device. Because it is non-structural, it must be of like durability as the other external building materials.

**Photovoltaic (PV):** The technology that uses semiconductors to convert light directly to electricity.

**Solar Glare:** The effect produced by light reflecting from a solar panel with an intensity sufficient to cause annoyance, discomfort, or loss in visual performance and visibility.

**Solar Access:** A property owner’s right to have sunlight shine on the owner’s land.

**Temporary Energy Systems:** any system designed to provide temporary power for periods that do not exceed thirty (30) days and generally associated with emergency use. Temporary systems can include solar, wind, or small battery backup systems.

**Wind Energy Facility:** is an electric generating facility, whose main purpose is to supply electricity, consisting of one or more Wind Turbines and other accessories.

**Wind Power:** is the conversion of wind energy into another form of energy.

**Wind Turbine:** or windmill, is a wind energy conversion system that converts wind energy into electricity through the use of a wind turbine generator, and may include a nacelle, rotor, tower, guy wires, and pad transformer.

**Wind Turbine Height:** the distance measured from grade at the center of the tower to the highest point of the turbine rotor or tip of the turbine blade when it reaches its highest elevation.