

## **ARTICLE 5. ARRAYS**

### **Section 1. Purpose**

The purpose of this section is to accomplish the following objectives with the least possible regulations:

1. To encourage the development of on-site energy production and consumption.
2. To protect the public health and safety.
3. To promote the general welfare of the community.
4. To meet the goals of the Comprehensive Plan.
5. To conserve the environment, wildlife habitat, fisheries, and unique natural areas; and
6. To fit these systems harmoniously into the fabric of the community by providing standards for alternative energy systems and other types of arrays.

### **Section 2. Authority**

The Union Planning Board is vested with the authority to review and approve, approve with conditions, or reject any application for arrays as defined in this Ordinance.

1. The Union Planning Board reserves the right to hire independent third-party consultants to review array proposals in order to determine the impact to surrounding properties or public safety implications or resolve any other issues regarding the proposal.
2. In the event that the Planning Board requires expert opinions, advice, or testimony during the course of reviewing the application, it will use due diligence to obtain and utilize free services from governmental or non-profit sources.
3. Should the Planning Board be unable to obtain and utilize free services, it shall require the applicant to pay for such services, after giving notice to the applicant of the name of the expert, the area of qualification of the expert, and the purpose for which the expert is required, and the approximate cost of the expert.
4. The applicant shall be provided with an opportunity to meet with the Planning Board to arrange a schedule for payment of the costs.
5. The applicant shall have the right to request a public hearing before the Appeals Board to determine if the experts, as noticed by the Planning Board, are necessary to a determination of any issue properly before the Planning Board, and if the approximate costs of the expert are reasonable.
6. The applicant shall request the hearing within 10 days of the receipt of the notice establishing the necessity and costs of any independent third-party consultant, or such time as is agreed to by the Planning Board and the applicant.
7. It will be the applicant's burden to prove that the requested expert is unnecessary, or that the cost is not reasonable.

In addition to any other applicable provisions of this Ordinance, before granting Site Plan Approval for any land-use activity described in this section, the Planning Board must find that the proposed plan will comply with such of the following standards as are applicable.

### **Section 3. Exempt Arrays**

The following arrays are exempt from this Article provided they meet all other requirements of this Ordinance:

1. Roof-mounted on any legally permitted residential or residential accessory structure or small commercial building or accessory structure.
2. Ground- or pole-mounted for private use with a panel area less than 5,000 square feet.
3. Building integrated solar (i.e., shingle, hanging solar, canopy, etc.).
4. Repair or replacement of array components that do not enlarge the area of the existing array.
5. Arrays regulated by the Union Wireless Telecommunication Facility Provisions.
6. Single wind energy conversion units for private use no more than 50 feet high.

### **Section 4. Location and Size**

Arrays may be permitted in all districts subject to all requirements of securing site plan approval and a building permit and the following size restrictions:

1. Shoreland Resource Protection (RP) and Limited Residential (LR) Districts: less than or equal to one-half (1/2) acre.
2. Rural & Commercial Districts: No limit.
3. Village (V) District: less than or equal to one-half (1/2) acre.

### **Section 5. Site Plan Review**

All non-exempt arrays must be approved by the Union Planning Board through the Town of Union Site Plan Review process which is a part of this Ordinance.

The following requirements are additional to all other requirements of this Ordinance to be included in the Site Plan.

1. A Site Plan stamped and certified by a Maine registered engineer.
2. A revegetation plan for any cleared areas with appropriate plantings that are native to the region when the facility is decommissioned.
3. A decommissioning plan signed by the party responsible for decommissioning and the landowner (if different) whose minimum requirements meet the standards in Section six (6) below. Such plan must be filed in the Knox County Registry of Deeds prior to the first operation of the array.
4. A Waste Stream Management Plan (WSMP) for the construction waste and debris at the site of the said Array, including but not limited to cardboard, wood, scrap metal, scrap write, and clearing and grading wastes, from the construction site and the disposal site (s) of such waste, Information on the amount of material that is being recycled shall be included in the WSMP.

## Section 6. Guarantee for Removal

At the time of approval of a proposed array, and prior to initiating construction of any array within the Town of Union, the applicant must guarantee the costs for the removal of the facility.

1. The amount of the guarantee shall be equal to the estimated removal cost, provided by the applicant and certified by a professional civil engineer licensed in Maine or a professional array construction company.
2. The owner of the facility shall provide the Planning Board with a revised removal cost estimate and structural evaluation prepared by a professional civil engineer licensed in Maine or a professional array construction company every five (5) years from the date of the Planning Board's approval of the site plan.
3. If the cost has increased more than fifteen (15) percent, then the owner of the facility shall provide additional security in the amount of the increase. The applicant may also request adjustments in the guarantee.
4. Types and Contents of Guarantee

One of the following performance guarantees chosen by the applicant shall be provided on approval of the application.

a. Interest-Bearing Escrow Account

A cash contribution equal to the estimated removal cost for the establishment of an escrow account shall be made by either a certified check made out to the Town, direct deposit into a savings account, or purchase of a certificate of deposit.

- i. For any account opened by the applicant, the Town shall be named as owner or co-owner, and consent of the Town shall be required for a withdrawal.
- ii. Any interest earned on the escrow account shall be returned to the applicant unless the Town has found it necessary to draw on the account, in which case the interest earned shall be proportionately divided between the amount returned to the applicant and the amount withdrawn to complete the required work.

b. Performance Bond

A performance bond shall detail the conditions of the bond, the method for release of the entire bond or portions of the bond to the Town, and the procedures for collection by the municipality. The bond documents shall specifically reference the array facility for which approval is sought.

c. Irrevocable Letter of credit

An irrevocable letter of credit from a bank or other lending institution shall indicate that funds have been set aside for the removal of the array facility and may not be used for any other project or loan.

The conditions and amount of the performance guarantee shall be determined by the Planning Board with the advice of the Town Selectmen, and/or Town Attorney, expenses paid for by the applicant.

## **Section 7. Decommissioning and Abandonment**

1. The lessee of the Facility, or the owner of the parcel if there is no lessee, will do the following as a minimum to decommission the project.
  - a. Remove all non-utility owned equipment, conduits, structures, fencing, and foundations to a depth of at least four (4) feet below grade.
  - b. Remove all graveled areas and access roads unless the owner of the leased real estate requests in writing for it to stay in place.
  - c. Restore the land to a condition reasonably similar to its condition before development, including replacement of topsoil remove or eroded.
  - d. Revegetate any cleared areas with appropriate plantings that are native to the region according to the approved Site Plan unless requested in writing by the owner of the real estate to not revegetate due to plans for agricultural planting or other development subject to site plan review.
2. All said removal and decommissioning shall occur within 12 months of the facility ceasing to operate.
3. Abandonment will occur as a result of any of the following conditions unless the lessee or owner of the facility or of the parcel notifies the Code Enforcement Officer of the intent to maintain and reinstate the operation of the facility within 30 days of the following events:
  - a. The land lease ends; or
  - b. The system does not function for 12 months; or
  - c. The system is damaged and will not be repaired or replaced.

A notice of the intent to maintain and reinstate the operation of the facility shall be updated every six months with a statement of the progress made towards that goal.

If the facility has not returned to operational condition within two years from the date of the first notice of the intent to maintain and reinstate the operation of the facility the Code Enforcement Officer shall find the facility has been abandoned unless there is documentable evidence that the process has had significant progress and in the Code Enforcement Officer's opinion is likely to be completed in a timely manner.

4. Upon determination of abandonment based on the foregoing, the Code Enforcement Officer shall notify the party (or Parties) responsible by certified mail or by hand delivery with signed receipt that they must remove the facility and restore the site to its condition prior to development within three hundred and sixty (360) days of notice by the Code Enforcement Officer. A copy of the notice shall be forwarded by the Code Enforcement Officer to the Board of Selectmen.
  - a. In the event the lessee of the facility fails to remove the array and its components as outlined above, the landowner shall remove the facility within 90 days of notice by the Code Enforcement Officer.
  - b. In the event the landowner fails to remove the facility as stated above, the Town of Union shall have the facility removed at the expense of the landowner.

- c. Any unpaid costs associated with the removal after one year of removal shall be enforced as a tax lien placed on the real estate of the array site.

#### **Section 8. General Standards for All Arrays**

1. Arrays legally constructed prior to the effective date of this Article shall not be required to meet the requirements of this Article, unless they are expanded.
2. Unless otherwise specified through a written contract or agreement, a copy of which is on file with the Union Code Enforcement Officer, the property owner of record will be presumed to be the responsible party for owning and maintaining the array.
3. Approval under this Article is conditional upon compliance with all other provisions of the Land Use Ordinance, the Maine Plumbing and Electrical Codes, Natural Resources Protection Act, Site Law, Stormwater Management Law or other applicable regulations and any requirements of the local utility if any array is to be connected to any existing electric grid.
4. An array shall not be constructed until the Site Plan has been approved by the Planning Board and a Building Permit has been issued by the Code Enforcement Officer and all time for appeal by others has expired during which no appeal has been filed.
5. All arrays shall be operated and located such that no disruptive electromagnetic interference with signal transmission or reception is caused beyond the site. If it has been demonstrated that the system is causing disruptive interference beyond the site, the system operator shall promptly eliminate the disruptive interference or cease operation of the system.
6. All on-site electrical wires or piping associated with the system shall be installed underground except for "tie-ins" from above-ground mounted installations and to public-utility company transmission poles, towers and/or lines. This standard may be waived by the Planning board if the project terrain is determined to be unsuitable for underground installation.
7. The array site shall not display any permanent or temporary signs, writing, symbols, logo's, or any graphic representation of any kind except appropriate manufacturer's or installer's identification and warning signs.
8. Array placement must be designed to minimize or negate any solar glare onto nearby properties, airport's, or roadways.
9. If lighting is provided at site, lighting shall be shielded and downcast such that the light does not spill onto the adjacent parcel or the night sky. Motion sensor control is preferred.
10. Any point of potential contact of people or animals with generated electric current must be secured.
11. The boundaries of any array that border any road or any abutting residential dwelling lot shall consist of a vegetated buffer the width of the required setback along that boarder additionally to any fence that may be erected and existing vegetation should be used to satisfy these planting requirements where possible. No vegetation or fence shall interfere with a required clear sight triangle at a driveway or intersection.
12. Arrays covering permanent parking lots and other hardscape areas approved by the Planning Board are encouraged to limit the amount of stormwater flowage. Such installations may have the vegetated buffer requirements substituted by the buffer requirements of the overall project at the discretion of the Planning Board.
13. If electric storage batteries are included as part of any array system, they must be installed according to all requirements set forth in the National Electric Code and State Fire Code when in

operation. When no longer in operation, the batteries shall be disposed of in accordance with the laws and regulations of the Town of Union and any other applicable laws and regulations relating to solid, special, or hazardous waste disposal.

14. Financial gain from “Net metering” for electric power is not considered a commercial activity if the benefits of it are for private use.
15. Collective or cooperative arrays are not considered commercial if they benefit only the collective or cooperative owners.

### **Section 9. Solar Energy Conversion Arrays (SECA)**

1. Setbacks:

All parts of the SECA shall be setback from all property lines a distance equal to the required minimum setback of the district in which it is located plus ten (10) feet for each 100,000 square feet or fraction thereof of array collectors surface area.

2. Height:

A ground- or pole-mounted SECA shall have a maximum height of 20 feet in all districts as measured from the ground level to the system’s highest point at full tilt except for the Rural and Commercial districts where the maximum height shall be 40 feet as measured from the ground level to the system’s highest point at full tilt.

3. Roof Load:

The weight of any SECA proposed to be roof mounted on any non-exempt structure must be calculated and a determination must be made in writing by a registered engineer stamped certification or finding that the load rating of the underlying structure can accommodate the additional weight.

4. Lot Coverage:

The maximum surface area of a ground- or pole-mounted panel system, regardless of the mounted angle, shall be calculated as part of the overall lot coverage.

5. Design Standards:

- a. Any height limitations of this Ordinance shall not be applicable to roof-mounted solar collectors provided that such structures are erected only to such height as is reasonably necessary to accomplish the purpose for which they are intended to serve.
- b. SECA installations shall not obstruct solar access to neighboring properties.
- c. The SECA structure shall be a non-reflective color that blends the system and its components into the surrounding landscape to the greatest extent possible and incorporates non-reflective surfaces to minimize any visual disruptions.

### **Section 10. Wind Energy Conversion Arrays (WECA)**

1. Setbacks:

All parts of the WECA shall be setback from all property lines a distance equal to the height of the wind-system structure measured from the ground to the system’s highest point plus the required minimum setback of the district in which it is located.

2. Height:

Each WECA unit shall have a maximum height of 50 feet in all districts as measured from the ground level to the system’s highest point except for the Rural and Commercial districts

where the maximum height shall be 140 feet as measured from the ground level to the system's highest point.

3. Noise:

The WECA shall not exceed 45 dBA in the Rural and Commercial districts and 55 dBA in all other districts during short-term events such as severe windstorms.

4. Shadow Flicker and Blade Reflection

The WECA shall be designed and sited so that alternating changes in light intensity caused by the movement of wind turbine blades casting shadows on the ground or a stationary object (shadow flicker), and/or blade reflection will not fall on any occupied building on a non-participating landowner's property plus an additional 100 foot boundary surrounding the exterior of the occupied building, the entire outdoor public area surrounding schools, churches and public buildings, and public roads with a posted speed limit greater than 25 MPH (shadow flicker receptor).

5. Avian and Bat Protection

All WECA site plan applications shall include an Avian and Bat Protection Plan to be approved by the Planning Board.

6. Design Standards:

- a. The minimum distance between the ground and any wind-turbine blades of a WECA unit shall be 25 feet as measured at the lowest arc of the blades.
- b. All units in a WECA shall be equipped with both manual and automatic over-speed controls.
- c. The WECA shall be designed and installed such that public access via step bolts or a ladder is prevented on each unit for a minimum of 12 feet above the ground.
- d. The WECA units shall be a non-reflective color that blends the system and its components into the surrounding landscape to the greatest extent possible and incorporates non-reflective surfaces to minimize any visual disruptions.
- e. No WECA unit shall be lighted unless required by the FAA.
- f. No WECA unit shall be roof mounted.

## Section 11. Definitions

**Electrical Equipment:** Any device associated with a solar energy system, such as an outdoor electrical unit/control box. That transfers the energy from the solar energy system to the intended location.

**Electricity generation (production, output):** The amount of electric energy produced by transforming other forms of energy, commonly expressed in kilowatt-hours (kWh) or megawatt-hours (MWh).

**Height of buildings:** the vertical measurement from grade to the highest point of the building, except that utility structures such as chimneys, TV antennae, HVAC systems, and roof-mounted solar energy systems shall not be included in this measurement, nor shall any construction whose sole function is to house or conceal such structures.

**Mounting:** The manner in which a solar PV system is affixed to the roof or ground (i.e., roof mount, or ground mount).

**Power:** The rate at which work is performed (the rate of producing, transferring, or using energy). Power is measured in Watts (W), Kilowatts (kW), Megawatts (MW), etc. in Alternative Current (AC).

**Solar Array:** Multiple solar panels combined to create one system.

**Solar Collector:** A solar PV cell, panel, or array, or solar thermal collector device, that relies upon solar radiation as an energy source for the generation of electricity or transfer of stored heat.

**Solar Energy System:** A solar energy system whose primary purpose is to harvest energy by transforming solar energy into another form of energy or transferring heat from a collector to another medium using mechanical, electrical, or chemical means. It may be roof-mounted or ground-mounted, and may be of any size as follows:

1. Small-scale Solar energy System is one whose physical size based on total airspace projected over roof or the ground is less than 15,000 square feet (approximately one-third of an acre);
2. Medium-scale Solar Energy System is one whose physical size based on total airspace projected over a roof or the ground is equal to or greater than 15,000 square feet but less than 87,120 square feet (two acres); and
3. Large-scale Solar Energy System is one whose physical size based on total airspace over a roof or the ground is equal to or greater than 87,120 square feet (two acres).

**Solar energy System, Ground-Mounted:** A Solar Energy System that is structurally mounted to the ground and is not roof-mounted; may be of any size (small-, medium- or large-scale).

**Solar Energy System, Roof-Mounted:** A Solar Energy System that is mounted on the roof of a building or structure; may be of any size (small-, medium- or large-scale).

**Tilt:** The angle of the solar panels and/or solar collector relative to horizontal. Tilt is often between 5 and 40 degrees. Solar energy systems can be manually or automatically adjusted throughout the year. Alternatively, fixed-tilt systems remain at a static tilt year-round.