

Sec. 25-446. - Wind energy systems.

- (a) Purpose. The purpose of this section is to establish requirements for construction and operation of wind energy systems and to provide standards for the placement, design, construction, monitoring, modification, and removal of wind facilities; address public safety, minimize impacts on scenic, natural, and historic resources; and provide adequate financial assurance for decommissioning.
- (b) Applicability. This division shall apply to all wind energy systems constructed after the effective date of this division, including any physical modifications to any existing wind facilities that materially alter the type, configuration, or size of such facilities or other equipment.
- (c) General requirements.
 - (1) All wind energy systems, temporary meteorological towers (MET), and wind turbines, including but not limited to their associated electrical and mechanical components, shall conform to relevant and applicable local, state and federal codes, including, but not limited to, safety and performance codes.
 - (2) A building and zoning permit is required prior to the initiation of construction of any and each component of a wind energy system or a temporary meteorological tower (MET).
- (d) Temporary meteorological tower (MET) or wind monitoring tower requirements; by right. A temporary meteorological tower is permitted as a use by right in the Agricultural Use District (A-1) and the Forest Conservation Use District (FC) provided the following requirements are met:
 - (1) Height. A temporary meteorological tower shall not exceed one hundred and ninety-nine (199) feet in height.
 - (2) Lot or parcel size. No temporary meteorological tower shall be permitted by right on a lot or parcel smaller than five thousand (5,000) acres in size.
 - (3) Setbacks. A temporary meteorological tower shall be setback a distance at least equal to four hundred percent (400%) of the total structure height from any property line.
 - (4) Lighting. A temporary meteorological tower shall not be artificially lighted unless required by the FAA or appropriate authority.
 - (5) Maximum period of special exception permit. A temporary meteorological tower is intended to be a temporary structure and any approved permit shall be valid for a period that does not exceed twenty-four (24) months.
- (e) Temporary meteorological tower (MET) or wind monitoring tower requirements; special exception. A temporary meteorological tower must obtain special exception permit approval in accordance with section 25-583 of this chapter in the Agricultural Use District (A-1) and the Forest Conservation Use District (FC) provided the following requirements are met:
 - (1) Height. A temporary meteorological tower shall not exceed one hundred and ninety-nine (199) feet in height.
 - (2) Lot or parcel size. No temporary meteorological tower shall be located on a lot or parcel smaller than two (2) acres in size.
 - (3) Setbacks. A temporary meteorological tower shall be setback a distance at least equal to one hundred and ten percent (110%) of the total structure height from any property line or a distance at least equal to one hundred and fifty percent (150%) of its total height from the nearest occupied building on a non-participating landowner's property.
 - (4) Lighting. A temporary meteorological tower shall not be artificially lighted unless required by the FAA or appropriate authority.
 - (5) Maximum period of special exception permit. A temporary meteorological tower is intended to be a temporary structure and any approved permit shall be valid for a period that does not exceed twenty-four (24) months.

- (f) Reserved.
- (g) Reserved.
- (h) Reserved.
- (i) Reserved.
- (j) Reserved.
- (k) Reserved.
- (l) Utility scale wind energy system requirements. A utility scale wind energy system must obtain special exception permit approval in accordance with section 25-583 of this chapter in the Agricultural Use District (A-1) and the Forest Conservation Use District (FC) provided the following requirements are met:
 - (1) Energy capacity. Utility scale wind energy system shall include all such systems that have a rated capacity of one megawatt (1 MW) or greater.
 - (2) Lot or parcel size. The minimum lot size for a utility scale wind energy system shall be five (5) acres per turbine.
 - (3) Turbine height. The individual turbines shall not exceed five hundred and fifty (550) feet in height, as measured from the ground to the highest vertical portion of the blade when fully extended. The system height established through a special exception permit shall supersede any other height requirement in the zoning ordinance.
 - (4) Setbacks. Wind turbines, post construction meteorological towers and other associated towers shall be set back a distance at least equal to one hundred and ten (110) percent of its total height from all adjacent non-participating landowner's property lines and a distance equal at least to one hundred and fifty (150) percent of its total height from the nearest occupied building on a non-participating landowner's property. Wind energy systems shall meet all setback requirements for primary structures for the zoning district in which the wind energy system is located in addition to the requirements set forth above.
 - (5) Separation. The minimum distance required between turbines shall be no less than one hundred and fifty percent (150%) of the total structure height.
 - (6) Commission permit. A commission permit in accord with Section 15.2-2232 of the Code of Virginia shall be required prior to or in conjunction with any special exception approvals that may be required by the district regulations of this chapter.
- (m) Reserved.
- (n) Reserved.
- (o) Requirements for wind energy systems with a rated capacity of one hundred kilowatts (100 kW) or more.
 - (1) Siting requirements. The requirements for siting and construction of all wind energy systems with a rated capacity of one hundred kilowatts (100 kW) or more shall include the following.
 - (2) Wind energy system towers shall be of monopole design and shall be painted a non-reflective unobtrusive color such as white, off-white or gray that blends with the surrounding environment and prevents glint, unless Federal Aviation Administration (FAA) standards require otherwise. The planning commission and board of supervisors may approve any other color that is deemed to be less visually obtrusive.
 - (3) Wind energy system towers shall not be artificially lighted unless required by the FAA or appropriate authority. If lighting is required, the owner or operator shall provide a copy of the FAA determination to establish the required markings and/or lights for the wind turbines. Lighting of other parts of the wind energy project, such as appurtenant structures, shall conform to the requirement for outdoor lighting in article IV, division 5.

- (4) No tower should have any sign, writing, or picture that may be construed as advertising. Appropriate warning signage shall be placed on wind turbines, electrical equipment, and wind energy systems project entrances. All signs, flags, streamers or similar items, both temporary and permanent, are prohibited on turbines except as follows:
- (a) Manufacturer's or installer's identification on the wind turbine.
 - (b) Appropriate warning signs and placards.
 - (c) Signs that may be required by a federal or state agency.
 - (d) Signs that provide a 24-hour emergency contact phone number and warn of any danger.
 - (e) Audible sound from a wind energy system shall not exceed sixty (60) decibels, as measured from any adjacent non-participating landowners' property line. This level may be exceeded during short-term exceptional circumstances, such as severe weather. In accordance with section 25-446(o)(8)(g) below, an applicant for a wind energy system with a rated capacity of one hundred kilowatts (100 kW) or more shall provide a sound study. The owner or operator of a wind energy system shall measure and document, on a continuing basis, which shall not be less frequent than annually, or upon by request by the county, that noise levels comply with the study, and any violation will constitute a zoning violation.
 - (f) The minimum distance between the ground and any protruding blades utilized on a wind energy system shall be fifteen (15) feet, as measured at the lowest point of the arc of the blades. The lowest point of the arc of the blade shall be ten (10) feet higher than the tallest peak of any structure within one hundred and fifty (150) feet of the base of the tower.
 - (g) Wind energy systems shall be equipped with manual (electronic or mechanical) and automatic over speed controls to limit the blade rotation speed to within the design limits of the wind energy system.
 - (h) The base of the tower shall not be climbable for a distance of fifteen (15) feet above ground surface.
 - (i) All access doors to wind turbines and electrical equipment shall be locked or fenced, as appropriate, to prevent entry by unauthorized persons.
 - (j) A clearly visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.
 - (k) Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the wind energy system. Adherence to erosion and sediment control regulations is required. The restoration of natural vegetation in areas denuded for construction activities shall be required so long as the restored vegetation does not interfere with the operation of the wind energy system or the maintenance thereof.
 - (l) Any on site transmission or power lines shall be placed underground, unless written evidence is provided, satisfactory to the board of supervisors during the special exception permit process, demonstrating the need for transmission or power lines to be placed above ground.
- (5) Local, federal and state requirements:
- (a) Wind energy systems must comply with applicable FAA regulations.
 - (b) Wind energy systems shall be designed, constructed and operated without significant adverse impact to fish, wildlife or native plant resources, including fish and wildlife habitat, migratory routes, and state or federally-listed threatened or endangered fish, wildlife or plant species, and to meet all applicable state and federal environmental requirements.
 - (c) Utility scale wind energy systems that generate over five (5) megawatts of electricity shall comply with the Virginia Department of Environmental Quality (DEQ) and Virginia State

Corporation Commission (SCC) application regulations and receive all necessary approvals as required, prior to issuance of a zoning and building permit, as required by section 25-571 of this chapter.

- (6) Reserved.
- (7) Reserved.
- (8) Special exception permit required. Any landowner, in cooperation with the owner and/or proposed operator of any proposed wind energy system with a rated capacity of greater than one hundred kilowatts (100 kW), constructed after the effective date of this ordinance, including any physical modifications to any existing wind energy systems that materially alter the type, configuration, or size of such systems or other equipment, must obtain special exception permit approval in accordance with section 25-583 of this chapter. In addition to the requirements set forth in section 25-583, wind energy systems with a rated capacity of greater than one hundred kilowatts (100 kW) are subject to the following application requirements:
 - (a) Project description. A narrative identifying the applicant and the proposed owner or operator of the wind energy system and a description of the proposed wind project, including an overview of the project and its location; approximate generating capacity of the wind energy project; the approximate number, types and height or range of heights of wind turbines to be constructed; and a description of ancillary facilities, if applicable. This should include all specifications of the proposed wind energy system, including the manufacturer and model, materials, color and finish, rotor diameters, rated capacity and tower types.
 - (b) Concept plan. Each applicant requesting a special exception permit for a wind energy system shall submit a scaled concept plan, prepared by an engineer with a professional engineering license in the Commonwealth of Virginia, to include the following:
 - 1. The proposed location of all wind energy system structures and components, including all turbines, permanent meteorological towers, ground equipment, transmission lines, utility lines, electrical storage and cabling, collection and supply equipment, transformers, ancillary equipment and other proposed structures. The concept plan should indicate if proposed transmission or utility lines are to be above ground or underground;
 - 2. Property lines, setback lines, access roads and turnout locations, parking, proposed lighting, service areas, any existing or proposed easements and/or rights-of-way, and excavation and fill areas;
 - 3. Proposed heights of all wind energy systems structures. The applicant shall provide evidence that the proposed height of the wind turbines does not exceed the height recommended by the manufacturer or distributor of the system;
 - 4. The location of any public or private road rights-of-way being utilized for or adjacent to the proposed project;
 - 5. The location of existing vegetation and the limits of proposed clearing and grading;
 - 6. Existing tree cover, including average height of trees, on the subject property and on adjacent parcels within the setback distance of any component of the wind energy system;
 - 7. Outline of all existing buildings and their uses on all adjacent parcels within the setback distance of any component of the wind energy system. Include distances from the wind energy system to each building shown;
 - 8. Location of visualization viewpoints as required in this section.
 - (c) Wind study. The applicant shall provide a summary of the wind data gathered for the proposed system. The dates and periods of the collection of the wind data shall also be submitted.

- (d) Visual impact analysis. The applicant shall demonstrate through project siting and proposed mitigation, if necessary, that the wind energy system minimizes impact on the visual character of Botetourt County.
 - 1. The applicant shall provide accurate, to scale, photographic simulations showing the relationship of the wind energy system and its associated facilities and development to its surroundings. The photographic simulations shall show such views of wind energy structures from locations such as property lines and roadways, as deemed necessary by the county in order to assess the visual impact of the wind energy system.
 - a. The total number of simulations and the perspectives from which they are prepared shall be established by the zoning administrator after the pre-application meeting.
 - b. Visual representations shall be in color and shall include actual pre-construction photographs and accurate post-construction simulations of the height and breadth of the wind system.
 - c. All visual representations will include existing, as well as proposed buildings and tree coverage.
 - d. The visualizations must be accompanied by a complete description of the technical procedures used to produce the visualization (distances, angles, lens, etc.).
 - 2. The applicant shall also provide scaled elevation views.
- (e) Operation and maintenance plan. A plan for the operation and maintenance of the wind energy system. The plan should identify and list methods to mitigate any signal interference resulting in the disruption or loss of radio, telephone, television or similar signals or service.
- (f) Environmental inventory and impact statement. The applicant shall present information regarding any site and viewshed impacts, including direct and indirect impacts to national and state forests, national or state parks, wildlife management areas, conservation easements, or any known historic or cultural resources within five (5) miles of the proposed project. The applicant shall provide evidence of written notification to the office of a national or state forest, national or state park unit, wildlife management area, or known historic or cultural resource sites, if a proposed wind energy system is within five (5) miles of the boundary of said entity.
- (g) Sound study. A sound study, prepared by an independent acoustical engineer, to provide an assessment of pre-construction and post-construction conditions. Additionally, the applicant shall provide documentation regarding noise complaint response procedures and protocol for post-construction monitoring.
- (h) Construction plan. A phasing schedule for the construction of the large wind energy system or utility wind energy system, including the estimated commencement and completion date. Such plan shall identify staging areas, off-site storage facilities, and transportation routes to be used by construction and delivery vehicles, and the gross weight and height of the maximum delivery vehicle.
- (i) Shadow flicker model. A shadow flicker model, prepared by an independent engineer, that certifies that any wind turbine that is sited within one-half mile of any occupied building on a non-participating landowner's property either avoids shadow flicker on any occupied building or that reasonable efforts to minimize shadow flicker to any occupied building on a non-participating landowner's property shall be made. The model shall include a description of the zones where shadow flicker will likely be present within the project boundary and a one-half mile radius beyond the project boundary, the expected durations

of the flicker at these locations and the calculation of the total number of hours per year of flicker at all locations.

- (j) Decommissioning plan. As part of the project application, the applicant shall submit a decommissioning plan, certified by an engineer with a professional engineering license in the Commonwealth of Virginia, which shall include the following:
 - 1. The anticipated life of the project;
 - 2. The estimated decommissioning cost in current dollars;
 - 3. How said estimate was determined;
 - 4. The method of ensuring that funds will be available for decommissioning and restoration;
 - 5. The method that the decommissioning cost will be kept current; and
 - 6. The manner in which the project will be decommissioned and the site restored.
- (k) Independent review. Upon submission for a special exception permit for a wind energy system, the county will be authorized to hire an independent consultant to review the application and all associated documents for compliance with this section and any other state and federal codes. Any costs associated with the review shall be paid by the applicant. Any payment of such fees would in no way be a substitute of payment for any other application review fees otherwise required by this chapter.
- (9) Monitoring and maintenance. The owner or operator shall maintain large wind energy systems and utility wind energy systems in good condition. Such maintenance shall include, but not be limited to, painting, structural integrity of the foundation and support structure and security barrier if applicable, and maintenance of the buffer areas and landscaping if present. Site access shall be maintained to a level acceptable to the chief of fire and emergency medical service. The project owner shall be responsible for the cost of maintaining the large wind energy system and utility scale wind energy system and access roads, unless accepted as a public way, and the cost of repairing damage to private roads occurring as a result of construction and operation.
- (10) Liability insurance. The owner or operator shall provide written evidence of liability insurance in an amount acceptable to the purchasing utility provider for utility-scale wind energy systems prior to the issuance of a zoning/building permit.
- (11) Emergency response plan. The owner or operator shall coordinate with county emergency services to develop, implement and periodically update, including exercising of, an emergency response plan for the wind energy system.
- (12) Signal interference. Large wind energy systems and utility wind energy systems shall be sited in a manner that causes no disruption or loss of radio, telephone, television or similar signals or service. If loss or disruption occurs due to the operation of the large wind energy system or utility wind energy system, the owner or operator shall be required to provide appropriate mitigation measures to ensure that the signal or service is restored within twenty-four (24) hours. The owner or operator of a wind energy system may be required to discontinue use until the specified interference has been corrected.
- (13) Abandonment, decommissioning and expiration. Any wind energy system which has reached the end of its useful life or has been abandoned shall be removed. At such time that a large wind energy system or utility wind energy system is known to be abandoned or discontinued, the owner shall notify the zoning administrator within ten (10) days of such knowledge by certified mail of the proposed date of discontinued operations and plans for removal. The owner or operator shall physically remove the wind system and restore the site no more than one hundred and fifty (150) days after the date of discontinued operations. This may be extended by up to one hundred and fifty (150) days if a written request is submitted by the landowner and

approved by the zoning administrator. Decommissioning of discontinued or abandoned wind energy system shall include the following:

- (a) Physical removal of all wind turbine(s) and above-ground appurtenant structures from the subject property including, but not limited to, buildings, machinery, equipment, cabling and connections to transmission lines, equipment shelters, security barriers, electrical components, roads, unless such roads need to remain to access buildings retrofitted for another purpose, or if a written request is submitted by the landowner and approved by the zoning administrator that such roads remain).
- (b) Below-grade structures, such as foundations and underground collection cabling, shall be removed to a depth of four (4) feet below ground level or covered to an equivalent depth with fill material; however, these structures may be allowed to remain if a written request is submitted by the landowner and approved by the zoning administrator. Compacted soils shall be decompacted to a depth of four (4) feet.
- (c) Restoration of the topography of the project site to its pre-existing condition, except that any landscaping or grading may remain in the after-condition if a written request is submitted by the landowner and approved by the zoning administrator.
- (d) Proper disposal of all solid and hazardous waste in accordance with local and state waste disposal regulations.
- (e) Abandonment: Absent notice of a proposed date of decommissioning, the system shall be considered abandoned when the system fails to operate for more than one year without the written consent of the zoning administrator. The county shall determine at its discretion what proportion of the system is inoperable for the system to be considered abandoned. If the applicant fails to remove the wind energy system in accordance with the requirements of this section within one hundred and fifty (150) days of abandonment or the proposed date of decommissioning, the county or its agents shall have the authority to enter the property and physically remove the system and the costs of such removal shall be at the owner's expense.
- (f) Prior to obtaining a building and zoning permit, and on every fifth anniversary of the commencement of the commercial operation of the project, the owner or operator shall provide to the county an estimate of the projected cost of decommissioning as stated in the required decommissioning plan, and as stated in section 25-446(o)(13) above, prepared by an independent engineer with a professional engineering license in the Commonwealth of Virginia.
- (g) Based on this determination, the owner or operator shall post a surety bond, cash bond, or an irrevocable letter of credit, in a form approved by the county administrator or the county attorney, in order to ensure removal and decommissioning of the utility-scale wind energy project when it is no longer used for the generation of electricity. Such surety shall be an amount approved by the Zoning Administrator, that is no less than the total estimated cost for decommissioning, removing and restoring the site for the wind energy system as stated above plus ten percent (10%) of said estimated costs as a reasonable allowance for administrative costs, inflation, and potential damage to existing roads and utilities.
- (h) The applicant will ensure the surety shall remain in full force and effect until the County has inspected the site and verified the wind energy system has been decommissioned as stated above, at which time the County shall release the surety. The surety shall be binding on subsequent owners of the property or wind energy system. If the property owner or responsible party fails to decommission the wind project or to decommission a discontinued or derelict wind turbine in accordance with this section, Botetourt County may access such surety for the completion of decommissioning and site restoration. Any excess funds that accrue after consideration of salvage value may be returned to the responsible party.

- (i) Expiration: A special exception permit issued pursuant to this section shall expire if the wind energy system is not installed and functioning within five (5) years from the date the permit is issued; or the wind energy system is abandoned as defined above.
- (14) Annual report. The facility owner and operator of each wind energy systems with a rated capacity of one hundred kilowatts (100 kW) or more shall submit a report to the zoning administrator once a year, no later than July 1. The report shall state the current user status of the wind energy system. The yearly report shall include a phone number and identify a responsible person for the public to contact with inquiries and complaints available twenty-four (24) hours a day, seven (7) days a week throughout the life of the facility or turbine.
- (15) Notice of change in ownership. Notice shall be provided to the county within ten (10) working days of any change in ownership of the facility.

(Res. No. 15-06-18, 6-23-15)