

**AN ORDINANCE AMENDING THE ZONING ORDINANCE
OF THE TOWN OF DUCK, NORTH CAROLINA
REGARDING WIND ENERGY FACILITIES**

Ordinance No. 10-06

WHEREAS, the Town Council of the Town of Duck may enact ordinances to protect the health, safety, and welfare of its citizens under the North Carolina General Statutes § 160A-174; and

WHEREAS, the Town's adopted CAMA Core Land Use Plan articulates in Chapter II, Concerns and Aspirations, the Duck Vision Statement as follows:

The Town of Duck desires to remain a slow paced, coastal village and family oriented vacation destination. The Town seeks to maintain its charm and character. It will accomplish these objectives by: balancing residential and commercial land uses; protecting and preserving view sheds; protecting and preserving the natural environment and the waters of the ocean and sound; and, discouraging over-commercialization and intensive land use developments that are not compatible with the Town's residential nature and established development patterns.; and

WHEREAS, the Town's adopted CAMA Core Land Use Plan further articulates in Chapter II, Concerns and Aspirations, Desired General Physical Appearance and Form as follows:

The continuation of its present physical appearance and form is important-if not critical-to the Town if it is to maintain its unique character among coastal villages. Development patterns are well established. Redevelopment proposals which seek to build "higher and closer" will challenge the Town with respect to maintaining and enhancing its desired physical appearance and form...; and

WHEREAS, within the CAMA Core Land Use Plan, Policy #18d and #19c with respect to Residential Development state:

POLICY #18d: Duck will continue to regulate building intensity and oversized structures by enforcing, and amending as necessary, the zoning ordinance. The zoning ordinance regulates building intensity factors such as building height, lot coverage, and building setback(s) for commercial and residential building development.

OBJECTIVE #19a: Encourage, through the development review process, future development that is consistent with adopted goals, objectives, and policies and regulations including building code requirements and is in character with existing development with respect to features such as building size, lot coverage, architectural design standards, and construction materials and methods. Duck will evaluate development and redevelopment proposals according to goals,

objectives, and policies and the land suitability analysis and future land use map developed as a part of the land use plan.

OBJECTIVE #19g: Encourage new residential development to respect the rights and consider the concerns of adjoining property owners with respect issues such including storm water runoff, line of sight, and vegetative buffer installation; and

WHEREAS, the Town Council and the Planning Board have thoroughly researched, discussed, and solicited public input and professional advice regarding wind energy facilities; and

WHEREAS, the Town Council and Planning Board recognize the benefits of wind energy and seek to balance the opportunity for property owners use this abundant, clean, and renewable resource with the development principles established by the Town's CAMA Core Land Use Plan and the Town's desired physical form of development;

NOW THEREFORE BE IT ORDAINED by the Town Council of Duck, North Carolina, that the Zoning Ordinance of the Town of Duck is hereby amended, as follows:

Part I. Add the following terms in Article I, In General, Section 2, Definitions:

Wind Energy Facility. An electric generating facility, whose main purpose is to supply electricity, consisting of one or more wind turbines and other accessory structures and/or buildings, including substations, meteorological towers, electrical infrastructure, transmission lines and other appurtenant structures & facilities.

Wind Energy Facility, Supplementary. A single system designed to supplement other electricity sources as an accessory use to existing buildings or facilities, wherein the power generated is used primarily for on-site consumption. A supplemental wind energy facility may consist of a single wind turbine mounted either on a freestanding tower or on the roof of a building with associated control or conversion electronics.

Wind Energy Facility, Commercial. An electric generating facility consisting of one or more wind turbines under common ownership or operating control that includes substations, MET towers, cables/wires and other building accessories to such facility, whose main purpose is to supply electricity to off-site customer(s).

Wind Power. The conversion of wind energy into another form of energy.

Wind Turbine. 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.

Shadow Flicker. The visible flicker effect when rotating turbine blades cast shadows on the ground and nearby structures causing the repeating pattern of light and shadow

A-Weighted Sound Level. The sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dB(A).

Decibel (dB). A unit for describing the amplitude of sound equal to 20 times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro newtons per square meter.

Ambient Noise. The sound present in a given environment, being usually a composite of sounds from many sources. For the purposes of this ordinance, this shall be the A-weighted sound level in decibels that is exceeded 90 percent of the time.

Part II. Create a new Section 156.138 WIND ENERGY FACILITIES, under Article IV, Miscellaneous Regulations, as follows

- (A) *Purpose.* To allow for the installation of wind energy facilities that are appropriate within the Town of Duck as a supplemental means of on-site electric power generation, while recognizing the public safety as well as the land use and community compatibility issues that are associated with the structural components of these facilities. This shall be achieved by establishing standards to protect community and neighborhood aesthetics, public safety, and to limit adverse impacts to adjacent property owners.
- (B) *Types of wind energy facilities permitted by zoning district.* Supplementary Wind Energy Facilities, as defined in Town Code Section 156.002, shall be permitted in all zoning districts within the Town. Commercial Wind Energy Facilities are considered to be incompatible with development in the Town of Duck and are hereby prohibited.
- (C) *Use guidelines and dimensional requirements.*
 - (1) *Height.* Wind turbine structures shall not exceed the five feet above the maximum height limitation established within each zoning district.
 - (2) *Setbacks.* Freestanding wind turbines shall be set back a distance of least 1.1 times the total height of the wind energy facility from:
 - (a) The lot lines of the lot where the wind energy facility is located.
 - (b) The first line of stable natural vegetation of the Atlantic Ocean beach. In no instance shall the wind energy facility be located within the small structure setback established by the North Carolina Coastal Area Management Authority (CAMA).
 - (c) The normal water line of the Currituck Sound. In no instance shall the wind energy facility be located within 30 feet of the normal water line of the

Currituck Sound.

Roof-mounted wind turbines and other accessory components of wind energy facilities shall be required to adhere to the minimum yard requirements for principal structures established in each zoning district.

(3) *Noise.*

- (a) The maximum audible sound resulting from all wind energy facilities located on the same lot shall be fifty-five decibels (dBA) or five decibels (dBA) above the existing ambient noise level, whichever is greater, measured at the closest adjacent property line. The maximum audible sound shall be the sound pressure level that is exceeded for more than 10 percent of the measurement duration. This standard shall not apply to short-term events such as utility outages and/or severe wind storms.
- (b) When the Town receives a complaint of noise generated from a wind energy facility, the Town shall perform a preliminary test using a decibel meter to determine if the noise from the wind energy facility exceeds the established level for maximum audible sound as defined in this section. If the result of the preliminary test supports that the maximum audible sound level has been exceeded to a material extent, then the owner of the wind energy facility shall be required to perform a detailed acoustic sound measurement of the wind energy facility. This measurement shall be conducted in accordance with industry standards for performing acoustic testing of small wind energy facilities which may include, but shall not be limited to, the procedures set forth in the American Wind Energy Association Publication “AWEA Small Wind Turbine Performance and Safety Standard, Standard AWEA 9.1 – 2009.”
- (c) If the results of this measurement indicate that a violation exists and that the violation will persist without corrective action, then the owner shall discontinue use of the wind energy facility until appropriate measures can be taken to retrofit the structure or mitigate the noise at the affected property lines. If the noise from the wind energy facility cannot be brought into compliance with the noise requirements established by this section, the owner shall be required to decommission the wind energy facility.

(4) *Aesthetics.*

- (a) *Tower.* If a tower is part of a wind energy facility, it shall be a self-supporting tubular tower (monopole) tower.
- (b) *Exterior Finish.* Each wind energy facility shall maintain a non-reflective finish neutral in color to reduce reflection and glare and to otherwise reduce visual obtrusiveness.
- (c) *Signage and lighting.* Signs, advertisements, flags, streamers and other decorative items shall be prohibited from a wind energy facility. No lighting on the wind energy facility shall be permitted unless required by FAA regulations.

(d) *Communications antenna.* No communications antenna or arrangement of wires unrelated to the wind energy facility shall be installed or connected to the wind energy facility.

(D) *Structural Requirements.*

- (1) All wind energy facilities shall be designed and certified by a North Carolina licensed professional engineer that the wind energy facility meets the design requirements established by the current North Carolina State Building Code, including the ability to withstand the force exerted by a 130-mph, three-second wind gust.
- (2) If the lowest point of a rotor blade or other movable part is located closer than 12 feet to the ground, an adequate barrier shall be placed around the base of the wind turbine tower to prevent injury.
- (3) The installation and design of all wind energy facilities shall comply with any applicable industry standards including standards for performance and safety as established by the American Wind Energy Association and the Small Wind Coordinating Council, and all electrical and mechanical components shall conform to relevant local, state and national codes.
- (4) Wind energy facility shall meet all applicable FAA regulations.
- (5) All wind energy facilities shall be equipped with a disconnection means compliant with Article 705 of the National Electric Code.

(E) *Decommissioning.*

- (1) A wind energy facility that is out of service and not functioning shall be repaired by the owner or removed. If the Town determines that a wind energy facility has not been operational for a continuous 90-day period, the Department of Community Development shall give written notice by certified mail to the owner of the facility. The owner shall be given 45 days from receipt of said notice to respond in writing and provide information that explains the reason(s) that the system has been out-of-service and the corrective action that will be taken to put the system back in service. The response shall also include a timetable for completion of repairs.
- (2) If the Town determines that the corrective measures and/or the proposed time for repairs is unreasonable, the Department of Community Development shall give written notice by certified mail to the owner or occupant of the property on which the wind energy facility is located to remove the system within 90 days of receipt of said notice. The owner or occupant of the property on which the facility is located shall be solely responsible for safe removal of the facility, and all costs to remove the facility shall be borne solely by such owner or occupant.
- (3) Upon failure to comply with a notice of removal within the time specified, the Town shall cause removal of the wind energy facility, and any expense incurred shall be

paid by the owner of the property upon which the wind energy facility was erected or maintained.

(F) *Wind Energy Facility Permitting Requirements.*

- (1) No person shall erect any wind energy facility without first obtaining a permit from the Director of Community Development (Director) in accordance with the procedures set forth in this section.
- (2) All permit applications for wind energy facilities shall include the following:
 - (a) Site plan depicting the proposed location of all components of the wind energy facility as well as existing structures located on the subject property with dimensions showing compliance with minimum yard requirements;
 - (b) Construction drawings of the wind energy facility depicting the design of the turbine structure, tower, base and footings, sealed by a licensed North Carolina Professional Engineer certifying that the drawings conform to all structural requirements established by law;
 - (c) Wind energy facility specifications including the total rated capacity;
 - (d) Measurements of ambient noise conditions of the subject property taken during daytime and nighttime hours as well as the maximum sound pressure levels from the proposed wind energy facility;
 - (e) Construction plan;
 - (f) Operation and maintenance plans and specifications;
 - (g) Shutdown procedures;
 - (h) Evidence of at least \$500,000.00 of general liability insurance coverage;
 - (i) Any county, state and federal permits required by law or regulation; and
 - (j) Other relevant information as may be reasonably requested to ensure compliance with the requirements of this Ordinance.

PART III. This ordinance shall be effective upon its adoption.

/s/ Dave Wessel, Mayor

ATTEST:

/s/ Lori Kopec, Town Clerk

Date adopted: May 5, 2010

Motion to adopt by: Mayor Pro Tempore Kingston

Vote: 4 AYES 1 NAYS