

STATE OF NEW HAMPSHIRE
BEFORE THE SITE EVALUATION COMMITTEE
Docket No. SEC 2015-02

APPLICATION OF ANTRIM WIND ENERGY, LLC
FOR A CERTIFICATE OF SITE AND FACILITY

PREFILED DIRECT TESTIMONY OF JACK KENWORTHY
ON BEHALF OF
ANTRIM WIND ENERGY, LLC

September 10, 2015

Qualifications of Jack Kenworthy

Q. Please state your name, title and business address.

A: My name is John (Jack) B. Kenworthy and I am the Chief Executive Officer at Eolian Renewable Energy, LLC (“Eolian”). Eolian is a minority owner of Antrim Wind Energy, LLC, the developer of the Project. My business address is 155 Fleet Street, Portsmouth, New Hampshire 03801.

Q. Please describe your responsibilities as CEO of Eolian.

A: As CEO of Eolian, I have oversight and management responsibilities for every aspect of the Company. My primary roles include strategic development, raising capital, investor relations, major contract negotiations and project development support. I am closely involved in all projects developed by Eolian, including the Antrim Wind Project (the “Project”). I provided extensive witness testimony regarding the previously proposed Antrim Wind Project in Docket 2012-01, and directed the preparation of the current Application for a Certificate of Site and Facility (the “Application”) for the Project. I also negotiated all land leases, agreements with the Town of Antrim and conservation easements in connection with the Project, and have participated in dozens of meetings in Antrim related to the Project.

Q. Briefly summarize your educational background and work experience.

A. I graduated from the University of Vermont in 2000 with a Bachelor of Arts in Environmental Science. I have been an executive in the renewable energy industry for more than a decade, and have extensive project development experience in wind, solar, and biofuel technologies. For further information regarding my professional and educational experience please see my Curriculum Vitae, attached hereto as Attachment JBK-1.

1 **Q. Have you previously testified before this Committee and/or any other state**
2 **permitting agencies?**

3 A. Yes. I provided both written and oral testimony in Dockets No. 2011-02 in
4 support of AWE's petition to the Site Evaluation Committee to take jurisdiction over its initial
5 Application for a Certificate of Site and Facility, as well as in Docket No. 2012-01 supporting
6 AWE's application. I have not provided testimony in any other state permit proceedings. In
7 addition, I submitted testimony on March 30, 2015 in the jurisdictional docket (Docket No.
8 2014-05) in support of Antrim Wind, LLC's petition to the Site Evaluation Committee to take
9 jurisdiction.

10 **Q. What is the purpose of your testimony?**

11 A. The purpose of my testimony is to provide the Site Evaluation Committee ("SEC"
12 or "the Committee") with background information about the Applicant, Antrim Wind Energy,
13 LLC ("Antrim Wind" or "AWE") and the Project, and with information on the following topics
14 that are contained in Antrim Wind Energy, LLC's Application for the Project: details on
15 alternatives to the Project that were considered; the Project's consistency with the orderly
16 development of the region; our interactions with municipal and regional planning commissions
17 and local governments; and the Project's consistency with local and State conservation initiatives
18 and other public interests. In addition, my testimony explains how the facility proposed in
19 AWE's Application differs from the facility reviewed by the SEC in Docket 2012-01, both in its
20 physical attributes and its impacts. The facility that AWE now intends to propose for
21 construction in Antrim differs substantially in several critical and fundamental ways from that
22 which preceded it, and I discuss those differences below. Further, my testimony is intended to

1 support and sponsor information contained in the Application that is not specifically addressed or
2 supported by other witnesses.

3 **Applicant Information**

4 **Q. Please provide information about the Applicant and the companies with**
5 **which it is affiliated.**

6 A. The Applicant, AWE, is a Delaware limited liability company formed to develop,
7 build, own and operate the Antrim Wind Project. AWE has two members – Eolian Antrim, LLC,
8 and Walden Green Energy Northeast Wind, LLC. Both of these members are registered
9 Delaware limited liability companies and are owned by Eolian Renewable Energy, LLC and
10 Walden Green Energy, LLC (“Walden”), respectively. Eolian and Walden are the entities
11 ultimately responsible for the development, financing, construction and operation of the Project,
12 with Walden having ultimate control as the majority owner of Antrim Wind Energy.

13 AWE currently operates from the offices of Eolian Renewable Energy, LLC at 155 Fleet
14 Street, Portsmouth, NH 03801. Eolian, a Delaware limited liability company headquartered in
15 Portsmouth, New Hampshire, was formed in 2009 to manage the development, construction, and
16 operation of utility scale wind energy facilities in New England. Eolian is the original developer
17 of the Project. Eolian is actively developing three wind energy projects in Maine, New
18 Hampshire, and Pennsylvania. Prior to becoming the founder and CEO of Eolian, I founded
19 Cape Systems, Ltd., a leader in renewable energy consulting and project development in the
20 Bahamas. Eolian’s co-founder and Vice President of Development, John Soininen is trained as a
21 civil engineer and real estate developer with over 15 years of management experience in
22 complex high value real estate development projects totaling over \$100 million.

1 Walden is a privately held global developer, owner and operator of renewable energy
2 projects. Walden has developed, financed, constructed and either currently operates, or sold
3 upon completion, over 10 MW of renewable generation assets in Massachusetts and Vermont. In
4 addition, Walden is currently developing over 200 MW of wind, solar and hydro generation
5 assets, including Antrim Wind, in the United States, Latin America and Central Eastern Europe.
6 Walden's background and experience is more specifically described in Section I.5 of the
7 Application and in Henry Weitzner's prefiled testimony.

8 **Site Information**

9 **Q. Please describe the location and basic characteristics of proposed Project**
10 **site.**

11 A. The entirety of the Project is located in the sparsely settled rural conservation
12 zoning district in the northwest portion of the Town of Antrim. Specifically, the Project is
13 proposed to be located on and adjacent to 354 Keene Road (NH Route 9) and includes
14 approximately 1,870 acres of private lands currently leased by AWE from six landowners. The
15 Project will be constructed primarily on the ridgeline that starts approximately 0.75 miles south
16 of NH Route 9 and runs south-southwest, for approximately 2 miles. The area of initial clearing
17 required for construction of the Project will be approximately 55.3 acres and the area that will
18 directly accommodate any Project facilities (e.g. roads, turbine pads, substations and other
19 facilities) will be approximately 11.25 acres. This represents only 3% of the total amount of the
20 land leased by AWE.

21 Between the ridgeline (where the proposed turbine string will be located) and Route 9, to
22 the north, is a Public Service of New Hampshire ("PSNH") transmission corridor containing both
23 a 115 kV electric transmission line and a 34.5 kV electric distribution circuit. AWE proposes to

1 interconnect the Project to the grid by building a substation to interconnect to the 115 kV line
2 known as L163. Development adjacent to the proposed Project site consists primarily of rural
3 residential dwellings (and their associated outbuildings) and seasonal camps. The nearest year-
4 round residence is located approximately ½ mile due north of the northernmost proposed turbine
5 (Turbine #1) on Tuttle Hill. The owner of this residence is among the parties that have entered
6 into lease agreements with AWE. The closest structure owned by a party who does not have a
7 lease agreement with AWE is a seasonal hunting camp located approximately one-half mile to
8 the northeast of the northernmost proposed turbine on Tuttle Hill.

9 In general, the Project site is undeveloped and forested. Historically, the area of the
10 proposed Project was cleared for sheep farming; numerous stone walls still remain as a result of
11 this historic activity. After the decline of sheep farming, the site was allowed to regenerate into a
12 forested condition. Subsequently, timber harvesting occurred in many areas on Tuttle Hill and
13 Willard Mountain. Currently, the land in and around the area of proposed development consists
14 of undeveloped forest land in various stages of maturity. Because of this historical logging
15 activity, all of which was unrelated to the Project, the area includes patches of successional
16 forest. A natural community survey indicated that no significant natural communities exist
17 within the Project area, and field surveys for rare plants revealed no rare plants or species of
18 concern. More information about the location and characteristics of the Project site and
19 surrounding area is contained in Sections D.1 through D.6 of the Application.

1 **Facility Information**

2 **Q. Please provide information about the basic design and configuration of the**
3 **proposed wind energy facility.**

4 A. The Project will consist of 9 turbines. Antrim Wind is seeking certification of the
5 Siemens SWT-3.2-113 direct drive turbine. This turbine is a horizontal axis machine configured
6 much like any other typical wind turbine in that its major components include a tower, a nacelle,
7 and a rotor with three blades. The towers for turbines 1-8 will each be 92.5 meters tall and the
8 tower for turbine 9 will be 79.5 meters tall. The Project will also include a permanent
9 meteorological (“MET”) tower. The MET tower will be a 100-meter tall, free-standing, lattice
10 steel tower located on the ridge.

11 The proposed Project will consist of approximately 11.25 acres of new facilities,
12 including turbine pads, gravel roadways, electrical substations and support buildings, located
13 within approximately 1,870 acres of private lands consisting of six parcels that are leased by
14 AWE from private landowners. The initial clearing limits to accommodate the construction of
15 the Project will be approximately 55.3 acres.

16 The Project will also require the construction of a joint collector system and
17 interconnection substation as well as an operation and maintenance building (“O&M building”).
18 The electrical collection system will consist of electrical cables for collecting power generated
19 by the facility as well as fiber optic cables for two-way communications between the turbines
20 and the on and off site control centers. The maintenance building is expected to be
21 approximately 3,000 square feet in size. The collector system and fiber cables will be buried
22 along the roadside along the ridgeline and will transition to pole mounted above ground
23 installations where the access road meets the ridge line. The collector and interconnection

1 substations will be located immediately to the north of the PSNH L163 line that passes through
2 property leased by Antrim Wind. The final design of the interconnection substation will be
3 performed by PSNH but will be located within the footprint shown on civil design plans
4 (provided in Appendix 7A of this Application).

5 **Q. How does the reconfigured Antrim Wind Project differ from the project**
6 **reviewed by the SEC in Docket 2012-01?**

7 A. As a general matter, the jurisdictional docket (Docket 2014-05) contains
8 substantial information about the ways in which the projects differ. These changes, both
9 physical and otherwise, are also detailed in Appendix 10 of this application.

10 AWE has made targeted physical changes to the Project design to reduce aesthetic
11 impacts as well as securing additional permanent conservation lands to further mitigate aesthetic
12 impacts. AWE has also conducted a far more comprehensive visual analysis to characterize the
13 Project in the landscape to assist the Committee in its review of this important component.

14 Numerous changes were made to the Project design from 2012 until the present. The
15 Project design was modified from 10 turbines each with a nameplate generating capacity of 3
16 MW, to 9 turbines with a capacity of 3.2 MW. By removing turbine #10, AWE has substantially
17 reduced the physical scale of the proposed facility and, in doing so, eliminated all of the civil and
18 electrical infrastructure associated with turbine #10. Turbine #10 was identified in Docket 2012-
19 01 as having a particularly strong impact upon Willard Pond, and AWE has removed it to
20 directly address that concern.

21 Additionally, the turbine heights from foundation to blade tip were reduced from the
22 previous project design. In 2012, all 10 turbine heights included in the application were
23 approximately 492 feet. In the reconfigured Project design, AWE has significantly reduced the

1 height of turbine # 9 to eliminate visibility of the tower and nacelle from Willard Pond and thus
2 substantially reduce its visual impact. Turbine #9 will now be 446.2 feet, which is a 45-foot
3 reduction from the prior proposal. AWE has also reduced the height of turbines # 1 – 8.
4 Turbines #1 – 8 will be 488.8 feet from foundation to blade tip. These changes collectively
5 represent a substantial difference in the configuration of the proposed facility.

6 The manufacturer and certain physical attributes of the turbines themselves will be
7 different. In Docket 2012-01, AWE proposed the construction of 10 Acciona AW 3000/116
8 wind turbine generators each with a nameplate capacity of 3 MW. The facility that AWE now
9 intends to construct in Antrim consists of nine Siemens Energy Inc. (“Siemens”) SWT-3.2-113
10 direct drive turbines, each with a nameplate capacity of 3.2 MW, or 28.8 MW in total. Each
11 turbine is a horizontal axis machine comprised of a tubular steel tower, a nacelle, and a rotor
12 with three blades. In addition to being shorter, the Siemens wind turbines are also smaller in
13 other dimensions: the tower diameter is reduced by 13% at the base and 15% at the top and the
14 length of the nacelle is reduced by 19%. Siemens is a larger and more experienced turbine
15 supplier than Acciona, with vast experience in the manufacture, installation, commissioning and
16 operation of turbines both globally and in the United States, including New England.

17 AWE has also made other changes to the Project proposal since it initially filed its
18 application in Docket 2012-01 in January 2012. As further discussed below, AWE has
19 significantly increased the mitigation associated with the Project by adding additional on-site and
20 off-site land conservation and entering into new agreements for additional community benefits
21 such as the agreement to fund recreational and aesthetic enhancements at the Gregg Lake Beach
22 area and the agreement to make annual contributions to the Antrim Scholarship Committee. All
23 of these new agreements are further described in the Application and in Appendix 10.

1 AWE's new application retains the many favorable components of the project reviewed
2 by the SEC in Docket 2012-01 while making significant and beneficial improvements to features
3 of the facility that previously caused concern.

4 **Q. What is the Project's anticipated capability to produce electricity?**

5 A. The generation capacity of the Project is proposed to be 28.8 MW. The Project
6 will consist of 9 turbines each with a nameplate generating capacity of 3.2 MW. Output from the
7 facility will vary depending on the wind speeds, but the facility is capable of and will produce
8 power during all times of day and year.

9 The design and efficiency of a wind energy generation facility is dependent upon a
10 variety of interrelated factors including terrain and land cover, wind speed and direction, and the
11 rated capacity and power curve of a given wind turbine generator. Antrim Wind estimates that
12 the Project will have an average annual net capacity factor of approximately 37.00%. Based on
13 this projected capacity factor, the Project is expected to produce approximately 93,346 Megawatt
14 hours ("MWh") of electricity per year. The Project is anticipated to produce enough electricity
15 for the average annual consumption of approximately 12,310 New Hampshire homes. This
16 estimate is based on data from a 2009 report issued by the Department of Energy, Energy
17 Information Administration, which indicates that electricity usage per year for the average New
18 Hampshire home is 7,584 kilowatt hours ("kWh").

19 **Q. Please explain how the power produced by the Project will be delivered to**
20 **the regional electricity grid.**

21 A. Between the ridgeline, where the proposed turbine string will be located, and
22 Route 9, to the north, is a Public Service of New Hampshire ("PSNH") transmission corridor
23 containing both a 115 kV electric transmission line and a 34.5 kV electric distribution line.

1 AWE plans to interconnect the Project to the grid by building a substation to interconnect to the
2 115 kV line known as L163. This PSNH transmission corridor and point of interconnection is
3 approximately halfway between Route 9 and the northern-most turbine, and runs through
4 property currently leased by AWE. This interconnection will be accomplished via a new
5 substation to be built on property that is currently leased by Antrim Wind Energy, LLC.

6 The substation yard will be divided into two areas; one for collection and one for
7 interconnection. A single 34.5 kV three phase collector line will be constructed from the
8 collector substation to the individual turbines. The main collection line will follow the access
9 road, with each turbine connected to the main line via an underground connection. The main
10 collection line will consist of both underground and overhead lines. Underground lines will be
11 installed from WTG-9 to just east of the WTG-2 & WTG-3 spur road. From that point, the
12 collection line will be installed on overhead lines running adjacent to the access road. Where
13 the access road intersects the PSNH transmission line corridor, the collection line will be
14 installed underground to the collector substation.

15 The close proximity of the existing PSNH 115 kV line eliminates the need for new
16 transmission line construction, other than the Project electrical collector system lines, thereby
17 reducing any potential impacts by eliminating such additional development.

18 **Alternatives Analysis**

19 **Q. Please describe alternative sites for the Project that were considered by AWE**
20 **during the early stages of review and as the Project has progressed.**

21 A. Prior to settling on the Antrim site for the Project, alternative nearby sites in both
22 Stoddard and Marlow were considered. Ultimately, Marlow was determined to be less desirable
23 and potentially unsuitable due to a lack of nearby transmission resources as well as the presence

1 of extensive wetland resources. The Stoddard location was determined to be less favorable due
2 to siting complications arising from substantial amounts of land being under conservation
3 easements and increased difficulty with potential access to the area from existing roadways. The
4 Stoddard location was also less proximate to suitable interconnection options. The Antrim site,
5 after extensive review, was determined to be the preferred location and a suitable site for the
6 Project.

7 Within the parcels of land that have been leased by AWE for the Project, a number of
8 alternative designs were considered. The Project's current design is the preferred alternative
9 because it will provide for the most efficient and economic use of resources with the fewest
10 environmental impacts.

11 AWE's assessment of the site as a suitable site for a wind power project was affirmed in
12 many respects by the Order of Decision issued by the Committee in Docket 2012-01 which
13 found that the Project would not have an unreasonable adverse impact on public health and
14 safety, air and water quality, wildlife and the natural environment (subject to certain conditions
15 that AWE has incorporated into this Application). Likewise, the Committee concluded the
16 Project would not unduly interfere with the orderly development of the region. It is also
17 affirmed by the Town of Antrim's consistently expressed desire to host this Project in its current
18 location.

19 **Orderly Development of the Region**

20 **Q. Do you believe the Project will unduly interfere with the orderly**
21 **development of the region? Please explain your position.**

22 A. No, the Project will not unduly interfere with the orderly development of the
23 region. The installation of a renewable energy facility in a sparsely settled area of the State on

1 large tracts of private property is in concert with the orderly development of the region,
2 especially considering the site's close proximity to an existing transmission corridor and a state
3 highway. Development of a wind farm would be consistent with the surroundings, as there are
4 no significant environmental impacts. At the same time, the Project would provide substantial
5 additional tax base for the Town of Antrim without imposing the need for additional town
6 services, which could alleviate the need to attract alternate high-impact development.

7 Most of the Project impact will be temporary and forest management activities can
8 continue in the area. Thus, the Project will not prevent further development of other areas within
9 the town or region, it will not prevent other economic activities such as logging activities, to the
10 extent permitted, and it will not prevent orderly development of the region. The fact that the
11 municipal governing board, the Town of Antrim Board of Selectmen, has consistently supported
12 the Project over many years, provides an indication that the Project would facilitate, rather than
13 interfere with orderly development in the area.

14 **Q. Please describe AWE's interactions with municipal and regional planning**
15 **commissions and governing bodies.**

16 A. Eolian began development of the Project in 2009 and has worked closely with the
17 Town of Antrim and all major local, State and Federal agencies to design, site and permit an
18 outstanding project for the State of New Hampshire. Throughout this consultative process, AWE
19 has attended and presented information at dozens of public, noticed meetings in Antrim,
20 including before the Zoning Board of Adjustment, Planning Board and Board of Selectmen. The
21 Project has also coordinated with Antrim Selectmen, the Town Administrator, and
22 communicated with the Antrim Conservation Commission, the Antrim Historical Society, and
23 the Police and Fire Departments.

1 In addition to the public positions taken by the Town's elected representatives, AWE has
2 considered the views of the Town of Antrim as expressed in its Master Plan. The Project is
3 consistent with Antrim Master Plan, which was updated in 2010. The Master Plan contains a 15-
4 page section addressing climate change, energy efficiency and renewable energy and calls for the
5 Planning Board and Planning Department to encourage renewable energy uses. The Project is
6 clearly consistent with these goals. Additionally, Antrim residents have consistently
7 demonstrated their support for commercial wind energy in Town: a) in 2010 the Antrim
8 Planning Board held a straw poll where 84% of respondents favored commercial wind energy
9 and 69% favored it in the rural conservation district; in February 2011, AWE conducted a town
10 wide mail and internet poll where 77% of respondents favored AWE's project; and in November
11 2011 Antrim voters rejected a proposal that would have prohibited large-scale wind facilities in
12 the rural conservation zoning district 584-225.

13 Outside of the Town of Antrim, the Project has met with the following officials and
14 organizations: New Hampshire Audubon, The Harris Center for Conservation Education, The
15 Nature Conservancy, The Society for the Protection of New Hampshire Forests, the Monadnock
16 Conservancy, Conservation Law Foundation, Conservation New Hampshire, the New Hampshire
17 Department of Transportation and the New Hampshire Division of Fire Safety.

18 AWE has entered into numerous agreements with the Town of Antrim. In November,
19 2014, AWE updated its Payment in Lieu of Taxes ("PILOT") agreement with the Town of
20 Antrim, which provides for significant and stable revenue to the Town of Antrim for the first
21 twenty years of the Project's life, paying the highest per MW payment of any PILOT agreement
22 for a wind project in New Hampshire. In addition, AWE has entered into an agreement with the
23 Town that governs many requirements during preconstruction, construction, operation and

1 decommissioning of the Project. To ensure AWE adequately addressed concerns identified in
2 the 2012-01 Docket with respect to aesthetic impacts, AWE also entered into a binding letter
3 agreement with the Town of Antrim concerning aesthetic impacts to the Gregg Lake Beach area.
4 AWE has committed to make a one-time payment of \$40,000.00 to enhance the recreational and
5 aesthetic experience at this location, which the Town has agreed is full and acceptable
6 compensation for any perceived visual impacts to the Gregg Lake area. AWE has also entered
7 into a conservation easement letter of intent to the Town of Antrim for one of the parcels to be
8 conserved by the Project and in 2015, entered into a letter agreement with the Trustees of Trust
9 funds to make a \$5,000 annual contribution to the Antrim Scholarship Committee.

10 **Consistency with State Energy Policies**

11 **Q. Is the Project consistent with State public policy and energy policies relating**
12 **to renewable energy and climate change?**

13 A. Yes, the Project is consistent with both State and local plans relating to the
14 development of renewable energy and climate change. The Antrim Project is widely supported
15 in the Town of Antrim among its residents and elected officials and is consistent with and
16 advances a number of important local and regional public policy goals, such as those contained
17 in New Hampshire's renewable portfolio standard ("RPS") law, the Regional Greenhouse Gas
18 Initiative ("RGGI"), the Antrim Master Plan and Antrim Open Space Plan.

19 The Project is consistent with the purpose of the RPS statute as it provides fuel diversity
20 to the State and the region's generation supply through the use of a local renewable resource that
21 is completely emission-free and which can displace and lower dependence on fossil fuels. The
22 proposed Project will provide clean energy, which is consistent with the stated goals of New
23 Hampshire statutes, the Antrim Master Plan, and Antrim residents' desires as presented in the

1 Antrim Master Plan (2010) and represented by their elected Board of Selectmen. In addition, the
2 Project is consistent with RGGI because it will produce electricity without producing greenhouse
3 gases. The Legislature has determined that global climate change is a significant environmental
4 problem that can be addressed through reducing greenhouse gases such as carbon dioxide which
5 is produced by electric power plants that combust fossil fuels. By generating electricity without
6 using fossil fuels, the Project will assist in addressing the issue of climate change.

7 Additionally, the Project is consistent with state planning and zoning laws that require
8 support of renewable energy projects through planning regulations and zoning ordinances that
9 encourage the installation and use of renewable forms of energy such as wind projects.

10 **Public Health and Safety**

11 **Q. Will the Project have an unreasonable adverse effect on the public health and**
12 **safety? What steps will be taken to minimize or avoid impacts to health and safety?**

13 A. No, the Project will not have an unreasonable adverse effect on public health and
14 safety. I will summarize the basis for that assertion here. Art Cavanagh, Don Marcucci, and
15 Rob O'Neal will further elaborate on the details of these issues.

16 AWE is committed to building and operating the Project with the utmost concern for
17 public health and safety. Initially, it should be noted that the Project is located in a remote and
18 undeveloped area, away from inhabited structures. The nearest residence is one-half mile away
19 from the closest turbine. In addition, to prevent public access to the Project, the only access road
20 into the facility will be gated and locked. To address the use of the Project area by persons
21 granted permission for such use by landowners or otherwise, the Project will post signs no less
22 than 500 feet from the Project's WTGs along informal roads and trails to warn of the potential
23 risks.

1 The Project will not produce noise that will unreasonably adversely affect nearby
2 residents or the general public. A comprehensive sound level assessment was conducted for the
3 Project by Epsilon and Associates, Inc. Please see the testimony of Rob O'Neal for further
4 details on the completed assessment. While there are no federal, state, or existing local noise
5 standards which would apply to the Project, it is instructive to note that the Project's projected
6 sound levels will be well below the standards outlined by the SEC in its decisions on comparable
7 wind turbine projects (Lempster Wind, Granite Reliable Power Windpark and Groton Wind) as
8 well as community noise guidelines published by the World Health Organization and the U.S.
9 Environmental Protection Agency. The Project's projected sound levels will also comply with
10 the limit recommended by the Committee for the prior AWE proposal in Docket 2012-01.
11 Likewise, Epsilon Association and Don O'Neal produced a shadow flicker analysis. The
12 industry standard is 30 hours per year and the Project will easily satisfy that standard. Rob
13 O'Neal will elaborate on that analysis.

14 The potential risk to the public due to ice shedding is minimal. Siemens' Wind Turbines,
15 which will be used for the Project, include safety measures should an icing event occur. If the
16 wind vane or anemometer is affected by ice (which typically occurs prior to any significant ice
17 buildup on blades), the wind turbine controller system will automatically shut down the turbine
18 and an error message will be logged. As further detailed in the testimony of Don Marcucci, the
19 wind farm supervisory control and data acquisition ("SCADA") system also closely monitors
20 and reacts to potential icing events and automatically adjusts operations accordingly to prevent
21 hazardous conditions from developing. Finally, the remoteness of the facility and significant
22 distances between turbines and any public or private roads or structures further reduces any risk
23 to the public from ice shedding.

1 Tower collapse and blade throw incidents are extremely rare, and currently represent
2 minimal danger to public health and safety. Industry improvements in design, manufacturing,
3 and installation have greatly reduced such occurrences, as further described in the testimony of
4 Don Marcucci. Once again, even in the extremely unlikely event such a failure should occur, the
5 risk to the public is very low given the remoteness of the turbines.

6 Should a lightning strike occur, each turbine is equipped with lightning protection
7 equipment, which conducts the lightning from the blade to the tower via a grounding system.
8 This prevents damage to the blade, the tower, and the electrical components. As a result
9 lightning strikes do not present any danger to the health and safety of the public.

10 Fires associated with wind turbines are extremely rare. There are very few flammable
11 components. If any smoke is detected in the wind turbine, the SCADA system will
12 automatically shut the turbine down and send an alarm to the control room. Additionally, all
13 maintenance vehicles will be equipped with fire extinguishers and all maintenance personnel will
14 be trained to respond appropriately to smoke and fire events. AWE is committed to providing
15 appropriate training to local emergency responders and has met with the Antrim Fire Department
16 to keep them abreast of Project plans, and who we will continue to collaborate with. AWE has
17 also met with the State Fire Marshal's Office to discuss fire safety issues associated with the
18 Project. As a result of those discussions, AWE has committed to using Fire Trace active fire
19 suppression systems in the nacelle of each turbine and will continue to work cooperatively with
20 that Office to address any future concerns that might arise.

1 **Q. What other steps has AWE proposed to address potential public health and**
2 **safety issues?**

3 A. AWE has entered into an agreement with the Town of Antrim that addresses
4 many public health and safety issues. The agreement is substantially similar to agreements
5 between the Town of Lempster and Lempster Wind, LLC, and the Town of Groton and Groton
6 Wind, LLC, both of which were approved by the Committee. AWE's agreement with the Town
7 of Antrim addresses the following issues: warning signs; Town access to Project site; liability
8 insurance coverage; indemnification; visual appearance of the wind turbines; turbine breaking
9 systems and electrical components; Project site security; public information, communications
10 and complaints; incident and other periodic reports to the Town; emergency response; road
11 usage, maintenance, repair and reimbursement for special police details relating to construction
12 period traffic; other construction-related issues such as scheduling, debris disposal, blasting, and
13 vehicle usage; operating period requirements; noise restrictions; setback requirements;
14 decommissioning responsibilities; and environmental compliance commitments.

15 **Q. How will AWE handle response to emergencies?**

16 A. While emergencies that may present a risk to public health and safety at wind
17 farms are extremely rare, there are various types of emergencies that both Siemens and AWE
18 staff could be called upon to respond to. AWE has met with the State Fire Marshall's Office and
19 Antrim Fire Department to discuss emergency response, and AWE will complete the final
20 emergency response plan ("ERP") in cooperation with both entities prior to the commencement
21 of construction for the Project. The site specific ERP will also involve close coordination with
22 Siemens as the turbine SMA provider. AWE has provided a copy of Siemens' onshore wind
23 emergency response plan and rescue protocols as Appendix 20. DNV-GL will assist AWE in

1 completing the final ERP in consultation with the Fire Marshal, Antrim Fire Department and
2 Siemens and to ensure that AWE site staff have all necessary training to respond to any
3 emergencies at the site. Section J.6.k provides additional details on the elements that will be
4 included in the final ERP.

5 **Public Benefits**

6 **Q. Please describe the Project's effort to ensure that areas within and**
7 **surrounding the Project are protected from additional development in the future.**

8 A. In addition to providing significant clean energy and fuel diversity benefits to the
9 State, which can stabilize volatile energy costs resulting from overdependence on fossil fuels, the
10 Antrim Project features a unique and extensive conservation benefit package that will
11 permanently conserve over 908 acres of valuable forestland and wildlife habitat on or near the
12 Project site. All 908 acres are contiguous with one another and these lands also directly abut
13 other nearby conservation lands. The development of the conservation benefit package involved
14 extensive collaboration with local landowners, and many conservation organizations. This
15 package will result in significant perpetual benefits that advance many local and regional
16 conservation goals and are consistent with the generation of clean wind energy. As a result of
17 these conservation commitments the Project will permanently conserve over 16.5 times more
18 land than will be initially cleared for construction and over 78 times more land than will be
19 occupied by long term facilities – including more than 313 acres of the highest ranked habitat in
20 the State under New Hampshire's Wildlife Action Plan and over 156 acres of the highest ranked
21 habitat in the region.

22 In addition to the "on-site" conservation lands, AWE has entered into a Land
23 Conservation Funding Agreement with the New England Forestry Foundation ("NEFF"),

1 whereby AWE will fund \$100,000.00 to NEFF to acquire additional conservation lands in the
2 region for the enhancement and maintenance of the region's aesthetic character, wildlife habitat,
3 working landscape, and public use and enjoyment.

4 The Project would also provide wind lease revenues to the private landowners, resulting
5 in direct and indirect economic impacts locally. This income mitigates the need for the
6 landowners to develop the land for other permitted purposes such as residential subdivisions,
7 which in turn require more municipal services.

8 **Q. Are there any other agreements that AWE has entered into with other**
9 **stakeholders?**

10 A. Yes. In addition to the conservation benefit package described above and in
11 Appendix 10, and the direct agreements AWE has entered into with the Town of Antrim, AWE
12 entered into an Agreement with Appalachian Mountain Club in 2012 in order to satisfy all of
13 their concerns relating to potential aesthetic impacts of the Project.

14 **Q. Does this conclude your pre-filed testimony?**

15 A. Yes.

John B. Kenworthy (Jack)

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 Portsmouth, NH 03801
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 jkenworthy@eolian-energy.com

GENERAL QUALIFICATIONS:

Experienced executive with over 12 years in the renewable energy sector. Expert in the financial, legal, technical and community elements involved in complex clean energy project development. Superior communications skills and ability to build and manage excellent teams and form lasting business relationships built on a foundation of trust and follow-through.

EDUCATION:

The University of Vermont, B.A. Environmental Science, 2000 (summa cum laude)

PROFESSIONAL EXPERIENCE:**Eolian Renewable Energy, LLC:** Portsmouth, NH: *Co-Founder, CEO*

(January 2009-Present)

Founded Eolian Renewable Energy, LLC – a wind energy development company focused on utility scale wind facilities in the New England and Mid-Atlantic regions. Responsible for capital raising, site acquisition, oversight of permitting and commercial development for projects, and corporate management and reporting.

Kenworthy Partners, LLC: Portsmouth, NH: *Founder, Managing Partner*

(July 2008-2009)

Founded Kenworthy Partners – a consultant to industry, educational institutions and municipalities on strategies to maximize competitiveness by providing thought leadership in integrated sustainable systems and technical competence in energy systems design.

Cape Systems, Limited: Eleuthera, Bahamas: *Co-Founder, President and CEO*

(July 2005 – June 2008)

Founded Cape Systems Ltd. – a full service renewable energy and biofuels consulting firm and project developer.

Bahamas Biodiesel: Nassau, Bahamas; *Co-Founder*

(May 2007-June 2008)

First commercial scale waste oil to biodiesel facility in the region developed in partnership with Bahamas Waste, Ltd.

Cape Eleuthera Institute: Eleuthera, Bahamas: *Co-Founder and Director of Systems, Facility Manager*

(January 2002 – June 2006)

Co-Founded Cape Eleuthera Institute – a center of excellence in marine resource preservation and sustainable technologies in The Caribbean.

Cape Eleuthera Island School: Eleuthera, Bahamas: *Teacher, Facilities Manager, Research Advisor*

(January 2001-January 2004)

PROFESSIONAL ACCOMPLISHMENTS:

- First successful public/private renewable energy partnership in The Bahamas using hybrid wind/solar technologies connected to utility grid in pilot partnership with utility.

- First “carbon finance” deal in The Bahamas for commercial scale biodiesel plant
- Launched “Freedom 2030” initiative to eliminate Eleuthera’s dependence on oil with partners at Rocky Mountain Institute, National Renewable Energy Labs, Bahamas Electricity Corporation, Bahamas Ministry of Works, Bahamas Office of the Prime Minister, international development banks, and private capital.
- Advisor to Renewable Energy Working Group at Bahamas Electricity Corporation.

PROFESSIONAL MEMBERSHIPS:

- New Hampshire Clean Tech Council
- Maine Renewable Energy Association

ACADEMIC AWARDS/ACCOLADES:

- George T. Kidder Medal for Leadership, Scholarship and Service, University of Vermont (May 2000)
- College Honors in Arts and Sciences, University of Vermont (May 2000)
- Program Honors, Environmental Studies at the University of Vermont (May 2000)
- Member of the John Dewey Honors Program at The University of Vermont
- Member of the Phi Eta Sigma Honors Society through The University of Vermont
- Member of the Vermont chapter of the Golden Key National Honors Society
- Crow Award for Excellence in Systems Thinking - Columbia University, Earth Semester, spring 1998

INTERESTS:

- NAUI certified for SCUBA (Dive Master)
- National Outdoor Leadership School (NOLS) instructor in rock/ice climbing, mountaineering, backpacking
- Mountain biking, windsurfing, fly fishing, rock climbing, guitar