



NH Site Evaluation Committee Docket No. 2015-02

Joint Public Hearing

February 22, 2016

INEXHAUSTIBLE RESOURCES. UNLIMITED POTENTIAL.

Antrim Wind Energy LLC



Antrim Wind Energy LLC (AWE) is a Delaware Limited Liability Company that was formed in 2009 for the purpose of developing the Antrim Wind Project and is owned and managed by Walden Green Energy LLC (“Walden”) and Eolian Renewable Energy LLC (“Eolian”).



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Walden/Eolian

- Walden is a global renewable energy firm based in New York, NY. Walden's founding principals have over 50 years experience in energy related businesses and transactions during careers at JP Morgan, Goldman Sachs and Barclays. Walden is majority owned by RWE Supply & Trading, a subsidiary of RWE AG, a German company that is one of Europe's top five electric and gas utilities with operations around the world and currently managing over 2,900 MW of renewable energy assets.
- Eolian is a Portsmouth NH based company, and is operated by its founding partners who have over 35 years of combined experience in energy & real estate development.

Project Elements

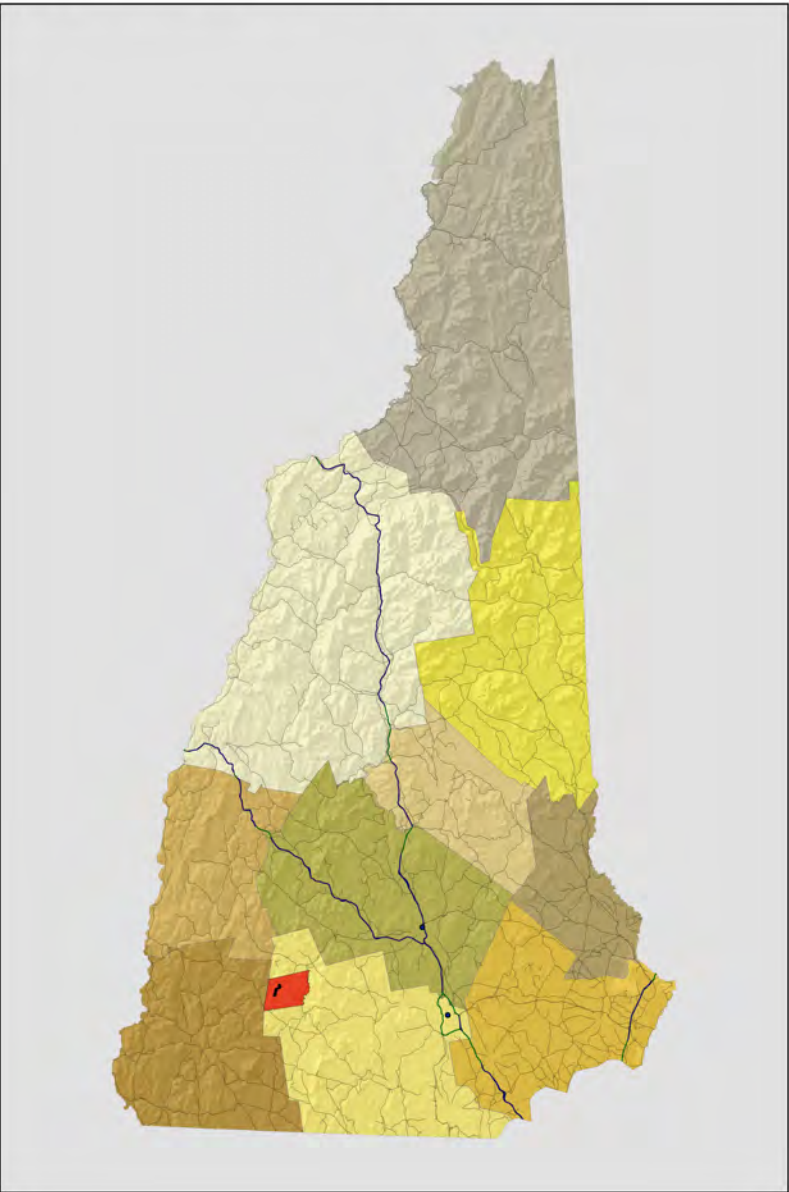
- AWE is proposing to build a 28.8 MW wind energy facility in the northwest corner of Antrim
- The proposal calls for the installation of
 - 9 X 3.2 MW wind turbine generators (WTGs)
 - a collector and interconnection substation
 - one operations and maintenance building
 - one permanent meteorological tower
- The facility will be constructed entirely on private property and will be accessed by a new gravel surface access road off of NH Route 9.

Antrim Wind Project Area



- AWE has leased property from six private landowners in the Town of Antrim totaling about 1,870 acres in the northwest portion of Antrim
- Adjacent development consists primarily of rural residential dwellings and seasonal camps and undeveloped forest land in various stages of maturity
- The closest residence is a participating landowner located ½ mile north of the northernmost proposed turbine, all others are greater than ½ mile

Antrim Wind Energy Project, Hillsborough County, New Hampshire

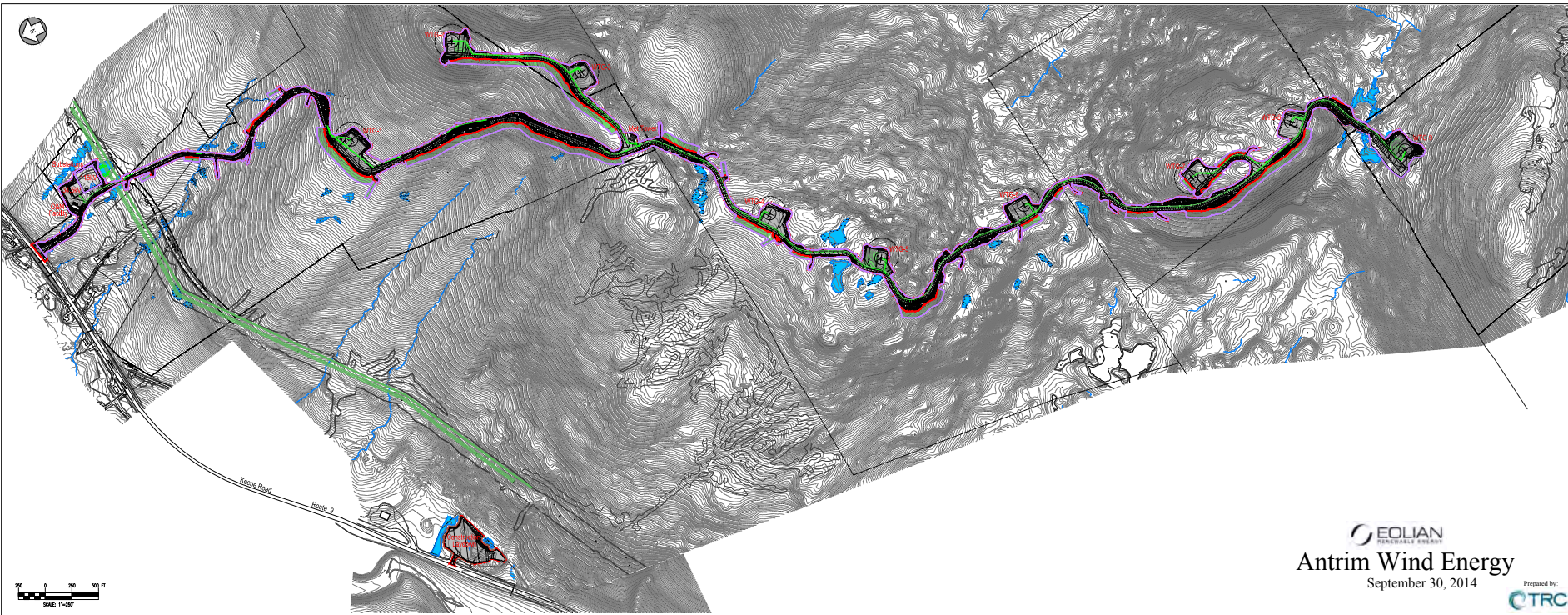


Project Design

AWE is proposing to develop a 28.8 Megawatt Wind Energy Facility consisting of:

- 9 – Siemens SWT 3.2/113 Direct Drive Wind Turbines
- 1 – 100-meter met tower
- 1 – 34.5kV/115kV collector & interconnection substation
- 1 – Operations and Maintenance Building
- Approximately 3.55 miles of new gravel surface roads
- 34.5 kV electrical collection system – below ground on ridge, above ground along roadside to collector substation
- 55.3 acres of new clearing
- 908 acres of new conservation land

Project Layout



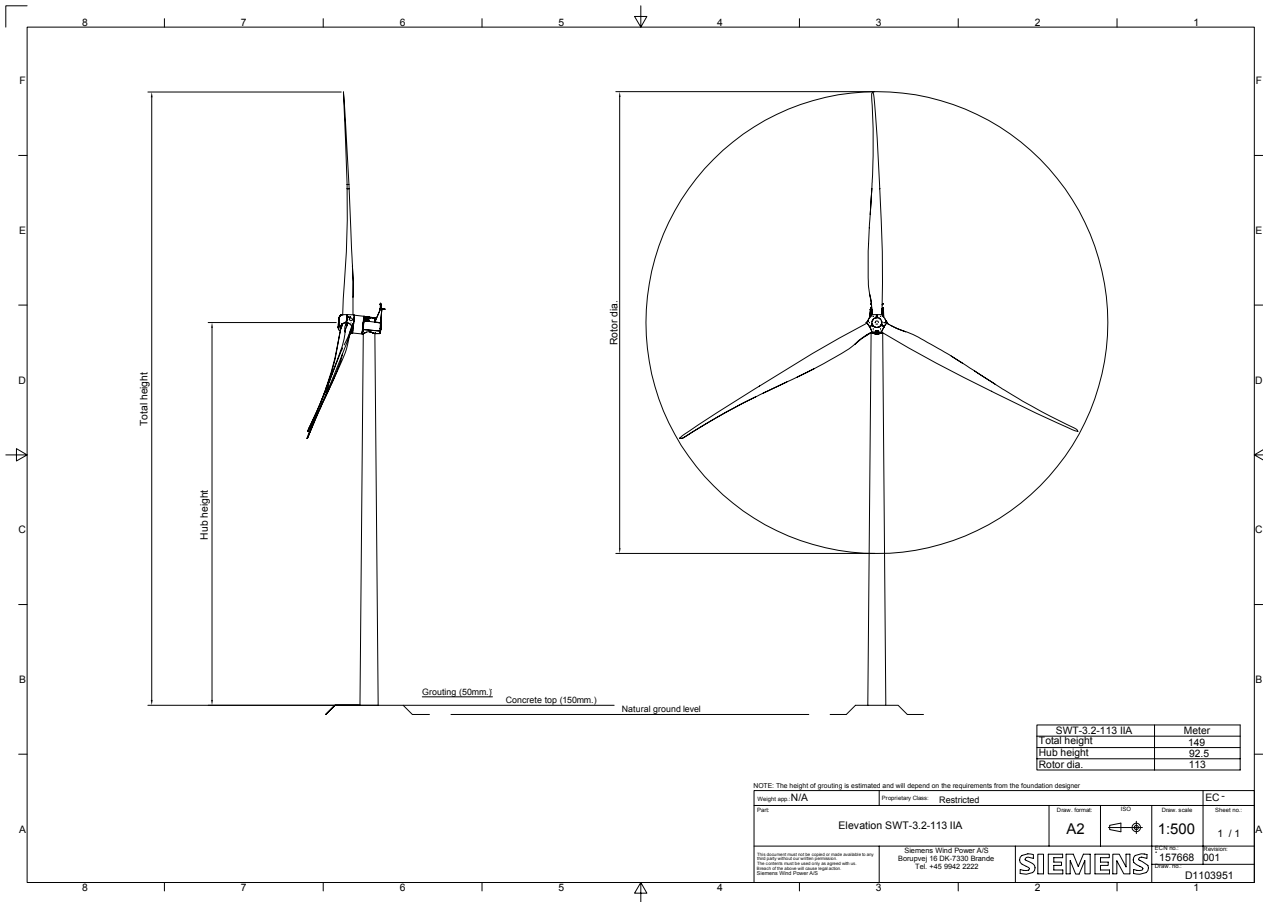

Antrim Wind Energy
September 30, 2014

Prepared by:




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Siemens SWT 3.2/113



Rated Power	3.2 MW
Rotor Diameter	113 M
Hub Height	79.5M/ 92.5 M
Tip Height	446' / 488'
Drive Train	Direct
Design Life	20 Yrs



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Studies Performed

AWE has performed extensive studies to assess potential impacts that may occur as a result of the proposed project. Study protocols were developed with input from NHF&G, USFWS, NHNHB, NHDHR, USACE & NHDES. Studies were performed relevant to the following:

- Historical and Archaeological Resources
- Wetlands and Vernal Pools
- Breeding Birds
- Nocturnal Avian Migration
- Diurnal Raptor Migration
- Acoustic Bat Surveys
- Bat Mist Net Surveys
- Bald Eagle Nesting
- Aesthetics
- Sound
- Shadow Flicker
- Stormwater management
- Economic Impact
- Property Values

Wetlands & Surface Waters

- Wetlands, surface waters and vernal pools throughout the Project area have been delineated by a NH certified wetland scientist
- Full reports of the wetland and vernal pool studies have been provided as part of the SEC application
- The Project will have minimal wetlands impacts - approximately 0.2 acres in total.
- NH DES recommended both the Wetlands and Alteration of Terrain Permits for approval in 2012, with conditions. AWE has included those conditions in its 2015 application.

Natural Communities

- In general, the Project site is undeveloped, forested and has been subject to timber harvesting in the past several decades
- No significant natural communities were identified as a result of this survey.
- New Hampshire Natural Heritage Bureau performed two site visits and “has determined that it is unlikely that the proposed wind facility will impact rare plants species or exemplary natural communities.”

Visual Assessment

- AWE retained LandWorks to perform a Visual Assessment (“VA”) for the Project
- The study area for the VA extends to a ten mile radius from each turbine, which contains 353.2 square miles and 20 towns
- Viewshed maps were created to determine from which sensitive locations the project might be visible (only 2.5% of study area has visibility)
- Using LandWorks’ comprehensive methodology, the VA identifies 1) scenic resources within the 10-mile study area, 2) the sensitivity of a scenic resource, 3) the visual change the project may have to that sensitive resource, 4) the effect the visibility may have on the reasonable person, and 5) an overall conclusion on whether the project has an unreasonable adverse effect on aesthetics given the visual change
- LandWorks concludes no unreasonable adverse effect.

Shadow-flicker

Epsilon Associates performed an evaluation of potential shadow-flicker impacts, which was updated in February 2016 in response to newly adopted SEC rules.

The updated report identified 150 receptors within 1 mile of a turbine. Of those 150:

- 77 are not expected to experience any shadow flicker;
- 49 are conservatively expected to experience between 0 and 8 hours per year;
- 24 conservatively expected to experience between 8 hours per year and 13 hours 48 minutes per year

Shadow-flicker

The SEC's newly adopted rules require that the expected shadow flicker at any non-participating receptor not exceed a total of eight (8) hours per year. In order to comply with the new SEC rules regarding shadow flicker, AWE will utilize a Siemens provided shadow control method to ensure that the 24 locations that are conservatively expected to experience between 8 hours and 13 hours 48 minutes of shadow flicker per year, will not exceed a total of 8 hours per year. The remaining 49 locations that will experience some shadow flicker will not require AWE to implement any operational control measures to comply with the SEC rule. The Siemens shadow control method will allow AWE to utilize operational controls to curtail specific turbines that are identified as potentially causing shadow flicker in excess of the 8 hour maximum at any of the 24 locations to reduce the actual shadow flicker to no more than 8 hours per year.

FAA Lighting

- AWE will comply with all FAA requirements for marking and/or lighting of tall structures
- Based on current FAA guidance, six of the turbines will have a single medium-intensity flashing red light (nighttime), attached on top of the nacelles of the turbines
- AWE has committed to the use of radar activated lighting systems to be installed and operated on the Project once the FAA has approved this technology.
- In late 2015, the FAA issued a new advisory circular that addresses requirements for Aircraft Detecting Lighting Systems (ADLS). AWE will continue to work with the FAA to clarify requirements for the Antrim project site and advance the approval of an ADLS for the Project.

Sound

Epsilon Associates performed an evaluation of anticipated sound levels associated with the Project, which were updated in February 2016 to comply with new SEC rules.

- Baseline sound levels were measured to characterize the existing background sound levels within the area.
- Turbine-only sound levels were then predicted throughout the entire wind farm and off-site, to determine future sound levels
- All modeling was based on the Siemens SWT 3.2/113 turbine.
- The study demonstrates that the Project will not exceed 40 dB(a) at the outside façade of any residence, which meets the new SEC standard for sound, which is among the strictest state standards in the nation.

Cultural Resources



Archaeological Resources:

- Request for Project Review to NHDHR in October 2011
- Phase 1 A&B Studies submitted in December 2011
- DHR Response in January 2012 that no further study required

Historic Architecture:

- Section 106 Review – USACE/NHDHR
- Followed NHDHR Guidelines for Wind Farm Development and USACE guidance
- USACE filed a letter with the NHSEC in December indicating that no further consultation was required.

Orderly Development of the Region



Successful wind projects require specific criteria:

- adequate wind speeds
- proximity to adequate transportation infrastructure and transmission infrastructure
- setbacks from residences to ensure public safety
- appropriate environmental siting

The Antrim Wind Site has all of these characteristics and is consistent with the orderly development of the region as it maximizes the use of existing infrastructure and coincides with local and regional land use patterns and goals



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Orderly Development of the Region

- The Antrim Wind Project is expected to provide new clean energy sufficient to power 12,300 average NH homes, while also providing jobs, tax benefits, and conservation benefits to the Town and the region
- Conservation easements provide significant open space benefits
- Open space preservation and renewable energy are clearly and strongly supported by the Antrim Master Plan.
- Historic logging, hunting and recreational activities will not be substantially encumbered by the Project

Economic Impact



UNH/Seacoast Economics produced a report evaluating the economic impact of the Project. The report found that the Project would:

- Generate approximately \$53.4 million in local economic benefit, including \$11.6 million locally during construction and then \$2.2 million a year for the first 20 years of operations.
- Create or support 84 FTE jobs during construction and 12 FTE jobs during operations.

(local area defined as Hillsborough, Cheshire, Merrimack, Rockingham and Sullivan Counties).



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Public Safety

The entire facility is located on private lands with substantial setbacks to neighboring property owners and residences. These setbacks, over ½ mile from any wind turbine to the nearest non-participating residence, protect the public from any potential safety hazards at the Project, both during normal operations and in the event of any equipment failures.

Public Safety

AWE's Agreement with the Town of Antrim includes additional public safety measures including:

- All access roads to the site will be gated and locked and emergency response personnel will have keys/codes
- No wind towers will be climbable and all access doors will be locked
- High voltage electrical equipment will be enclosed and marked with signs and the substation will be fenced in.
- No turbine is closer than 1.1X turbine height to an adjacent property line

Public Safety

- Access roads and informal trails will have signs warning of potential hazards not less than 750 feet and 500 feet from any turbine, respectively.
- All above ground electrical equipment will be appropriately marked in a highly visible manner.
- All wind farm equipment shall have design safety certification, as required
- All blasting will adhere to NHDES & NHDOS standards and the Town will be noticed in advance of any blasting activities

Public Safety

- In addition to Siemens fire detection and prevention technologies in each turbine, AWE will employ Fire Trace active fire suppression in the nacelle.
- AWE will adhere to all applicable fire and safety codes and will complete an Emergency Response Plan in consultation with the Antrim Fire Department and State Fire Marshall's Office prior to commencement of construction.

Construction Process

- Commercial operations are planned to commence in December 2017.
- Tree clearing will occur between October 1 and March 31 to avoid impacts to nesting birds
- Road construction will commence as soon as practical after clearing and grubbing, followed by turbine pad and foundation construction, electrical line construction and turbine erection and commissioning.
- Turbines will be delivered directly to turbine pads
- Project roadways will be reduced to 16 feet by re-vegetating the shoulders.
- AWE will brief the Town on the construction plan and provide notice before any blasting occurs.

Reed & Reed Contractor

- Leading wind energy contractor in New England
- Installed over 411 turbines (nearly 1,000 MW) in New England since 2007
- Many New Hampshire subcontractors and suppliers will be used to support the construction of the Project



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Decommissioning

- Modern wind turbine generators typically have an expected operating life of 20 to 25 years
- The Project may be “repowered” after the initial ~ 20 year operating period.
- Once the turbines are no longer operational they will be decommissioned. All facilities will be removed, including foundations to at least 48” below grade where practicable.
- AWE will break up the roadbed beyond the Ott Property and reseed the area to facilitate revegetation.

Decommissioning Funding

AWE will provide decommissioning funding assurance prior to commencement of construction for the full value of the decommissioning estimate without accounting for salvage value. Decommissioning funding assurance shall be provided by posting a decommissioning bond, letter of credit, or other financial mechanism that provides for an irrevocable guarantee to cover the estimated costs of complying with AWE's decommissioning obligations.

Emissions Benefits



Recent studies in New England and New Hampshire have consistently demonstrated that installing additional wind generation into the New England power system results in significant emissions benefits, including carbon dioxide. It also results in substantial annual fresh water savings.

A 2013 report published by Environment New Hampshire finds that New Hampshire's wind energy is already avoiding more than 157,267 metric tons of carbon dioxide pollution, the equivalent of taking 32,764 cars off the road, while it also saves 70,265,000 gallons of water per year. The Antrim Wind Project will significantly increase these benefits.



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Conservation Lands

AWE has always made it a priority to include conservation as a key benefit of this Project. Over the past several years, AWE has met with many conservation groups to help build an understanding of the project, including:

New Hampshire Sierra Club, Conservation Law Foundation, Appalachian Mountain Club, The Nature Conservancy, New Hampshire Audubon, The Harris Center, The Monadnock Conservancy, The Antrim Conservation Commission, New England Forestry Foundation and the Society for the Protection of New Hampshire Forests.



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Conservation Lands

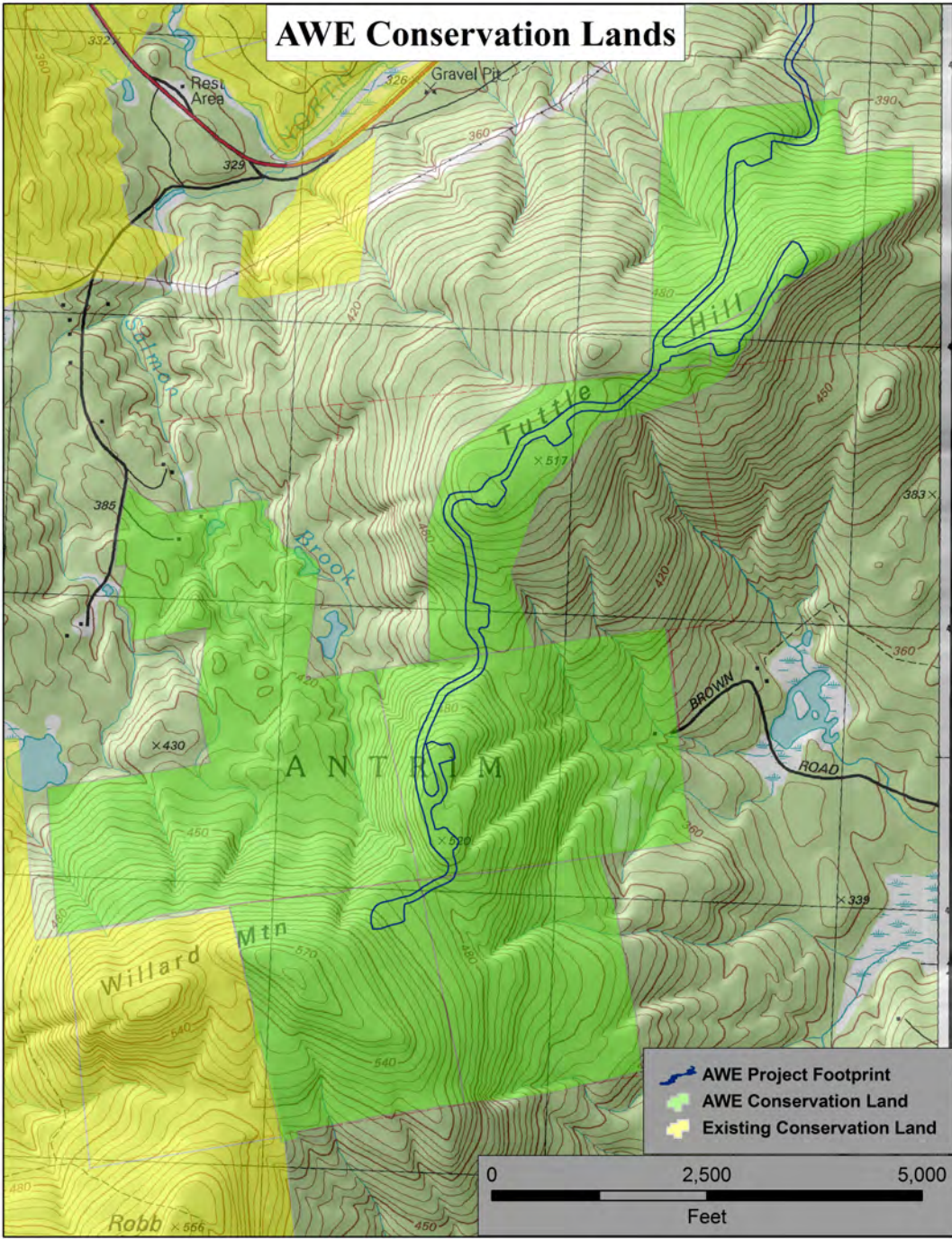
Specifically AWE has worked with local landowners, HCCE, and the Town of Antrim to permanently conserve ~ 908 acres of land in and around the project area once the project is built. This includes 100% of the project ridgeline. Conservation plan will significantly enlarge the conserved land contiguous with the dePierrefeu Willard Pond Sanctuary (adding 908 contiguous acres abutting the 1671 acre sanctuary).

AWE has also entered into a Land Conservation Funding Agreement with the New England Forestry Foundation whereby AWE will fund \$100,000 towards the preservation of additional lands to enhance and protect the region's aesthetic character, wildlife habitat and public recreational opportunities.



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AWE Conservation Lands



Bird and Bat Conservation Strategy (“BBCS”)

AWE has developed a voluntary BBCS in consultation with USFWS and NHF&G. AWE’s plan takes innovative, proactive steps to mitigate potential impacts to birds and bats by:

- Performing comprehensive preconstruction surveys
- Performing post-construction monitoring and incident response protocols that include structured consultation with USFWS and NHF&G to address potential future impacts through adaptive management
- Test curtailment of turbines under certain conditions that have been shown to reduce risk to bat species

Community Benefits

- AWE would become the largest tax payer in Antrim, bringing steady revenue to the town over the project life, with little or no direct costs to the town. AWE's PILOT Agreement with The Town provides the highest per MW payment of any wind PILOT in NH.
- There are substantial direct and indirect economic benefits to the Town and region brought by investment in wind energy, including employing local contractors for construction and other trades, as well as food, fuel, housing, materials, etc.
- Permanent conservation benefits of 908 acres of forestlands plus \$100,000 land conservation fund
- Gregg Lake recreational facilities enhancement - \$40,000
- Antrim Scholarship Fund - \$5,000 per year



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Agreements with Town of Antrim

- AWE has worked closely with the Town of Antrim over the past 6 years to share information about wind energy and about AWE's project specifically.
- In March 2012, AWE and the Town of Antrim entered into an Agreement that addresses construction and operating period requirements on topics such as noise, public safety, construction timing, decommissioning, complaint response, emergency response and other key issues.
- In June 2013 AWE and the Town entered into a PILOT Agreement governing payments by AWE to the Town (\$324K in YR 1, escalating at 2%). In November of 2014, the PILOT was amended to extend the commercial operations date deadline to 2018.
- Gregg Lake Agreement - \$40,000 payment
- Scholarship Fund Commitment Letter with Trustees of Trust Funds

Project Changes from 2012



AWE has made significant changes to the Project to address concerns from the 2012 Docket:

- Eliminate T10
- Significantly shorten T9
- Change turbines to Siemens (smaller, quieter)
- Add 100 acres of conserved land to permanently protect 908 acres (100% of ridgeline)
- \$100K offsite land conservation funding
- \$5k/yr Antrim Scholarship Fund
- Added landscaping around new substation
- Incorporated DES & NHFG recommendations
- More robust decommissioning plan and decommissioning funding
- Commitment to install active fire suppression in nacelles

Support

AWE's consistent focus on stakeholder engagement from the beginning, together with careful siting, design and the establishment of significant community benefits have garnered broad support from within the Town of Antrim and across New Hampshire..

AWE is proud to have the support from:

- The Antrim Board of Selectmen
- Senator Jerry Little
- The NH Chapter of the Sierra Club
- IBEW
- NHCTC
- Representative Marjorie Porter
- Representative Frank Edelblut
- Representative Gilman Shattuck
- Representative Richard McNamara



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Support



In a January 5th letter to the SEC, Catherine Corkery of the Sierra Club wrote “As Chapter Director of the New Hampshire Sierra Club Chapter, I write to the New Hampshire Site Evaluation Committee in support of the Antrim Wind Energy Project.” “The scale of this project is exactly what environmentalists endorse for small, local and manageable power sources that create less climate and visual impact, lowers costs, creates local jobs and improves public health.”



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Summary

- AWE's proposed Project is the result of a careful site selection process focused on high performance and low impacts.
- The studies that have been performed indicate that the Project can be built without undue adverse impacts to the community or environment while bringing significant economic and energy benefits to the area.
- The Project will cause direct impacts on only 55.3 acres of land, produce enough energy for ~12,300 avg homes, bring substantial new revenue to the Town of Antrim and result in significant, ongoing emissions benefits.
- The Project has been significantly revised since the 2012 docket to address concerns about potential aesthetic impacts and enjoys broad support from the Town, elected officials, environmental groups, and labor and trade groups..
- The Project is consistent with the goals of the State of New Hampshire for increasing clean energy and meets the criteria under RSA 162H to receive a Certificate of Site and Facility.



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Thank You



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