

THE STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

Docket No. 2012-01

Re: Application of Antrim Wind Energy, LLC
for a Certificate of Site and Facility for a Renewable Energy Facility
Proposed to be Located in
Antrim, Hillsborough County, New Hampshire

APPLICANT'S POST HEARING BRIEF

January 14, 2013

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I. INTRODUCTION

The Antrim Wind Project (the “Project”) has been the subject of nearly four years of public discussion, consultations, analyses, and examination, with nearly one year of substantive consideration before the New Hampshire Site Evaluation Committee. During that time, the Project has been discussed, debated, and considered in dozens of public meetings with town Select Boards, Zoning Boards, and Planning Boards, and in countless meetings with state and town officials, local and regional organizations, local businesses, and residents. The agency charged with protecting New Hampshire’s environment – the New Hampshire Department of Environmental Service – has recommended approval of permits issued by it. The Applicant has worked closely with all relevant agencies through an extensive consultation process; those agencies have been satisfied with the Applicant’s efforts, and none have expressed any opposition to the Project.

The Project will be an economic engine for Antrim while providing clean, renewable energy to the state and the region. The Antrim Board of Selectman has clearly stated its support for the Project, noting that “based on a number of polls and the defeat of a large scale wind ordinance at two elections, [we] believe that the vast majority of residents support the project.” Ex. AWE 36, Letter from the Town of Antrim.

The Project is not simply the sum of various parts made up of voluminous engineering plans, environmental studies, field reports, and testimony. The whole of the Antrim Wind Project is a substantial investment in a small town, and the many benefits to the common good that will accrue from that investment, if the Project is granted a Certificate of Site and Facility. The Project is, of course, a business investment, with an expectation of a reasonable rate of return. But it also brings environmental and financial

benefits to the region and the state and will be an important step to addressing climate change issues and reducing greenhouse gas emissions. Our economy needs energy sources (particularly renewable energy) to grow and prosper, even in difficult economic times. The State of New Hampshire has clearly stated policy goals to encourage and expand renewable energy generation within our state, and these goals are echoed in the Town of Antrim's own Master Plan. And the Town of Antrim, like every municipality, seeks to diversify and grow its tax base, so that it can better serve its citizens, and improve the lives of its residents. Although Antrim Wind cannot, in and of itself, accomplish all of these things, it can contribute in very substantial ways to meeting these societal goals. Through its careful studies, project design, extensive collaboration with many diverse stakeholders, conservation efforts and other post-construction commitments, the Antrim Wind Project appropriately balances environmental concerns with the need for an additional, renewable, and local source of emission-free energy. As such, it meets the goals articulated by the Legislature in RSA 162-H:1 and, as discussed further below, it meets all of the criteria for a Certificate of Site and Facility.

II. PROCEDURAL HISTORY

On January 31, 2012, Antrim Wind Energy, LLC ("Applicant" or "AWE") filed with the New Hampshire Site Evaluation Committee ("Committee" or "SEC") an Application for a Certificate of Site and Facility seeking authority to site, construct and operate a 30 megawatt ("MW") wind energy facility to be located in Antrim, Hillsborough County, New Hampshire. The Project consists of, among other things, ten (10) wind turbine generators each having a nameplate capacity of three (3) MW. On February 9, 2012, pursuant to RSA 162-H:6-a, II, the Chairman of the Committee

designated Vice-Chairman Ignatius to review the Application to determine whether it contained sufficient information to carry out the purposes of RSA 162-H.

Correspondence from Chairman Burack to Commissioner Ignatius (Feb. 9, 2012). The Chairman of the Committee also indicated that due to a personal conflict, he would be unable to serve as a member of the Subcommittee assigned to this matter and that in accordance with RSA 162-H:3, Vice-Chairman Ignatius would serve as Subcommittee Chairman in the place of the Chairman. *Order Designating Subcommittee Pursuant to RSA 162-H:6-a* (March 20, 2012). By Order dated March 5, 2012, the Subcommittee Chairman determined pursuant to RSA 162-H:6-a, II that the Application contained sufficient information to carry out the purposes of RSA 162-H pertaining to renewable energy facilities, and accepted the Application. *Order Accepting Application for Certificate of Site and Facility* (March 5, 2012). By Order dated March 20, 2012, the Subcommittee Chairman designated a subcommittee (“Subcommittee”)¹ to consider the Application in accordance with RSAs 162-H:6-a, III and 162-H:4, V. *Order Designating Subcommittee Pursuant to RSA 162-H:6-a* (March 20, 2012).

The Subcommittee Chairman issued an Order and Notice on March 20, 2012 establishing a deadline for intervention petitions and directing the Attorney General to appoint an Assistant Attorney General as Counsel for the Public under RSA 162-H:9. The Order and Notice also scheduled: a prehearing conference to be held in Concord on May 7, 2012; a site visit to be held the afternoon of April 30, 2012 at various locations within and outside of the Project site; and a public information meeting to be held the evening of April 30, 2012 in Antrim as required by RSA 162-H:6-a, IV. These events occurred as scheduled.

¹ The terms Subcommittee, SEC and Committee are used interchangeably herein.

Timely intervention petitions were filed by: the Town of Antrim; the Antrim Planning Board; the Antrim Conservation Commission; the Stoddard Conservation Commission; the Audubon Society of New Hampshire; the Harris Center for Conservation Education; Industrial Wind Action Group (“IWAG”); the Application Mountain Club (“AMC”); Brenda, Mark and Nathan Schaefer; Richard and Lorraine Carey Block; Robert Cleland and Annie Law; Katharine Elizabeth Sullivan; Elsa Voelker; Janice Duley Longgood; Clark A. Craig; Robert Edwards and Mary Allen; James Hankard; Samuel and Michelle Apkarian; and Clifton Burdette. By Order issued May 18, 2012, the Presiding Officer granted the intervention petitions and ordered that two groups of intervenors be consolidated: Abutting Landowners (Brenda, Mark and Nathan Schaefer, Janice Duley Longgood, and Clark Craig Jr.) and North Branch Residents (Richard and Lorraine Carey Block, Robert Cleland and Annie Law, Elsa Voelcker, James Hankard, Samuel and Michelle Apkarian, and Clifton Burdette). *Order on Motions to Intervene* (May 18, 2012). On July 26, 2012 the Gregg Lake Association moved for late intervention. On August 22, 2012, the Presiding Officer permitted the late intervention of the Gregg Lake Association as a limited intervenor with the right to cross-examine the Applicant and the witnesses for the other parties, and make arguments regarding whether or not the Subcommittee should grant or deny a Certificate of Site and Facility. *Order on Outstanding Motions* (Aug. 22, 2012).

The Applicant submitted four supplements to the Application. The First Supplement to the Application was filed on August 10, 2012, and included, among other things, additional information regarding the laydown yard, the O & M Building and Temporary Staging area, the proposed [temporary] meteorological towers, and updates

regarding environmental impacts and related information provided to state and federal agencies. The First Supplement also included several figures, charts, and appendices.² The Second Supplement to the Application, submitted on August 22, 2012, included, among other things, information regarding the Applicant's technical and managerial capability, aesthetics, and radar activated light control system. The Second Supplement to the Application also included the First Supplemental Prefiled Testimony of Sean McCabe and Ellen Crivella and prefiled direct testimony of Ruben Segura-Coto, Appendix 9-A-1 (a ten mile viewshed analysis), and Appendix 20 (an agreement between the Applicant and AMC). The Third Supplement to the Application included information regarding the wind energy resource at the Project Site, as requested by the Committee in its *Order on Outstanding Motions* (Aug. 22, 2012). The Fourth Supplement to the Application, submitted on October 11, 2012, included the supplemental prefiled testimonies of Jack Kenworthy, Joseph Cofelice and Martin Pasqualini, John Guariglia, Richard Will and Russell Stevenson, Colin High, Daniel Butler and Patrick Martin, Dana Valleau, Dana Valleau and Adam Gravel, Robert O'Neal, Matthew Magnusson, and the Second Supplemental Prefiled Testimony of Sean McCabe, First Supplemental Prefiled Testimony of Ruben Segura-Coto, and Prefiled Direct Testimony of Sally Wright. The Fourth Supplement to Application also included additional information regarding the radar activated light system, and Appendices 2D-1 (Application for Driveway Permit associated with temporary laydown/construction area), 2H (letter to Mr. Rennie regarding revisions to Alternation of Terrain, 401 Water Quality Certification, and Wetlands Permit

² The First Supplement includes the following: Figures C.4, C.5, E.4, E.5, E.6, F.5.C, I.5.a-1, and I.5.b-1e; Tables I.5.a-1, I.5.b(a)-1, I.5.b(c)-1; and Appendices 2A (including Exhibits 1-1, 2-1, 3-1, 4-1, 5-1, and 11-1), 2B (including Exhibit 3-1, 11-1), 2C, 2C-1, 11-A, 11A-1, 11A-2, 12F-1, and 12G (including Attachment A).

applications), 2I (response to NHDES request for additional information), and 5A (specifications for the radar tower associated with the Radar Activated Lighting System).

Initially, the Committee scheduled a final pre-hearing conference for Friday, September 7, 2012 and public adjudicative proceedings to begin on Monday, September 10, 2012. *Order and Notice of Final Pre-Hearing Conference and Public Adjudicative Proceedings* (Aug. 15, 2012). However, on August 30, 2012, in response to motions by Industrial Wind Action Group and Counsel for the Public, the Presiding Officer ruled that a prehearing conference would be held on September 6, 2012 to determine whether Counsel for the Public's motion should be granted, and if so, to discuss a new procedural schedule. *Procedural Order and Notice of Additional Prehearing Conference* (Aug. 30, 2012).

Additionally, in the Application for Site and Facility the Applicant requested that the SEC create a subdivided lot for the interconnection facilities associated with the Project. Ex. AWE 1, Application at 45. After receiving briefing regarding this issue, the Committee met to hear oral argument on September 6, 2012. *Notice of Public Meeting and Further Procedural Order* (Aug. 22, 2012). At the oral argument, the Committee voted to take additional procedural steps to review the Town of Antrim Subdivision regulations to determine whether the Antrim Planning Board retained residual authority pertaining to the proposed subdivision, and indicated that it would require an additional day of hearings to address those issues. *Order on Motions to Continue and Further Procedural Schedule* (Sept. 13, 2012).

Following the September 6 hearing, the Committee scheduled a pre-hearing conference for October 25, 2012, with adjudicative proceedings beginning on October 26,

2012 and continuing until November 2, 2012, with public comment scheduled for November 1, 2012 and November 2, 2012. *Order and Notice of Re-Scheduled Final Pre-Hearing Conference and Public Adjudicative Proceedings* (Sept. 13, 2012). The referenced prehearing conference was held as scheduled on October 25, 2012. Subcommittee counsel, Michael Iacopino presided at this conference and issued a report adopted by the Subcommittee Chairman by Order dated October 25, 2012. *Report of Pre-Hearing Conference* (Oct. 25, 2012). The adjudicative proceedings began on October 26, 2012, with further oral argument regarding the Applicant's request to subdivide the lot associated with the interconnection facilities, and the proceedings continued through November 2, 2012. The adjudicative proceedings did not conclude at that time, and were recessed until November 27, 2012. *Order and Notice of Continued Adjudicative Proceeding* (Nov. 8, 2012). The evidentiary portions of the proceeding concluded on December 6, 2012. *Order and Notice of Public Deliberative Proceedings and Further Procedural Order* (Dec. 28, 2012). In lieu of closing arguments, the Committee permitted the parties to file post-hearing briefs.

III. BURDEN OF PROOF

The Applicant bears the burden of proving facts sufficient for the Subcommittee to make the findings required under RSA 162-H:16 by a preponderance of the evidence. *See* N.H. Admin. Rule Site 202.19 (a) and (b). As discussed more fully below, the record demonstrates that the Applicant has met its burden with respect to each of the findings required by RSA 162-H:16, IV.

IV. SUBCOMMITTEE CONSIDERATIONS

A. Evidence and Public Comment

The Subcommittee is required to consider and weigh all evidence presented at public hearings and to consider and weigh written information presented to it by members of the public before, during and after public hearings. RSA 162-H:10, III. Although the rules of evidence do not apply to administrative proceedings, *see* RSA 541-A:33, II, principles of fundamental fairness and common sense dictate that more weight should be given to sworn testimony presented by live witnesses who were subject to cross-examination than to unsworn written information. The Subcommittee should also accord more weight to sworn testimony presented by experts or other witnesses who are qualified to render opinions than to evidence (either sworn or unsworn) provided by lay witnesses who do not possess the background, education or experience to offer opinions on technical or scientific subject matters such as noise and other environmental issues. Further, experts who give detailed analysis of the specific circumstances of the Project should be given greater weight than evidence containing generalized information not specific to the site or the Project. *Continental Paving v. Town of Litchfield*, 158 N.H. 570, 573-76 (2009).

Many members of the public have provided their comments – both supporting and opposing the Project – orally at the public comment meetings and hearings held by the Subcommittee, and in writing. In addition, the Applicant has engaged in exhaustive outreach efforts outside of the SEC process to provide members of the public an opportunity to learn about and present their views on the Project. Beyond the nine voluminous exhibits comprising the Application and Supplemental Applications, the

extensive evidentiary record in this docket was developed during the adjudicative proceedings in which the Applicant presented the prefiled and live testimony of several experts who were subject to cross-examination by the parties and questioning from the Subcommittee.

B. State Permits

The Subcommittee cannot issue a Certificate of Site and Facility if any other state agency denies authorization for the proposed activity over which it has jurisdiction. RSA 162-H:16, I. No such denials have occurred or been recommended by any state agency. By letter dated August 31, 2012, the Water Division of the New Hampshire Department of Environmental Services (“DES”) recommended approval of the Applicant’s Alteration of Terrain permit, Wetlands Permit, and Individual Subsurface Disposal System application with conditions. Ex. COMM 12, Final Decisions and Conditions from NHDES. The conditions include those from the Watershed Management Bureau (“WMB”) to satisfy 401 Water Quality Certification concerns, and from the Drinking Water and Groundwater Bureau (“DWGB”) to satisfy concerns regarding ledge blasting and monitoring Best Management Practices. In addition, on September 4, 2012, the New Hampshire Department of Transportation issued a driveway permit for the Project. Ex. COMM 14, NHDOT Driveway Permit.

C. Available Alternatives

As part of its review, the SEC must consider “available alternatives.” *See* RSA 162-H:16, IV. “The function of the Committee regarding alternative sites is to confirm that the Applicant has reviewed alternative sites.” Application of AES Londonderry LLC (SEC Docket No. 1998-02), *Decision* at 11 (May 25, 1999). In so doing, the SEC

considers the evidence of alternatives presented by an Applicant, and any other evidence in the record pertaining to alternative sites. Application of Granite Reliable Power, LLC (SEC Docket No. 2008-04), *Decision Granting Certificate of Site and Facility with Conditions* at 27 (July 15, 2009).

The record establishes that the Applicant considered alternatives to the proposed site, and also considered different site-specific design configurations in developing the Project. Ex. AWE 1, Application at 46-51. The Applicant applied a multi-criteria evaluation model in its assessment of site suitability. *Id.* at 47. Site election criteria included adequate wind resource, environmental appropriateness, grid-interconnection, proximity to transportation routes, and distance from residences, and the Applicant considered other nearby sites applying these same criteria. *Id.* Section H.2. of the Application identifies and discusses siting criteria and other sites considered for the Project. Section H.2.a. of the Application discusses several siting alternatives which were considered, including a larger layout of 11 turbines (which “was ultimately eliminated in favor of a more compact project footprint while maintaining a greater distance to the Willard Pond wildlife sanctuary”). *Id.* at 50-51.

D. Environmental Effects of the Site and Facility

RSA 162-H:16, IV provides that the Subcommittee must fully review the Project’s environmental effects. As discussed more fully below in Section V.5, the environmental effects of the components of this Project (e.g., the Project site including the substation and laydown areas) will have no unreasonable adverse environmental effects.

E. Other Relevant Factors Bearing on Whether the Objectives for RSA 162-H Would be Best Served by Issuing the Certificate

The Subcommittee must review “other relevant factors” bearing on whether the objectives of RSA 162-H would be best served by issuing a certificate of site and facility. RSA 162-H:16, IV. The objectives of 162-H, as stated in the purpose section of that statute, include: 1) maintaining a balance between the environment and the need for new energy facilities in New Hampshire; 2) avoiding undue delay in the construction of needed facilities; 3) providing full and timely consideration of a facility’s environmental consequences; 4) providing full and complete disclosure to the public regarding energy project plans; and 5) ensuring that construction and operation of energy facilities are treated as a significant aspect of land-use planning in which all environmental, economic and technical issues are resolved in an integrated fashion. RSA 162-H:1. All of these objectives are for the purpose of assuring “that the state has an adequate and reliable supply of energy in conformance with sound environmental principles.” *Id.*

First, the Project is consistent with the goal of maintaining a balance between the environment and the need for new energy facilities in New Hampshire because it will assist with meeting the state’s demand for renewable energy resources required by RSA 362-F with no unreasonable adverse environmental effects. The Committee has interpreted RSA 362-F:1 as recognizing the state’s “need for low emission renewable electric power.” Application of Groton Wind, LLC (SEC Docket No. 2010-01), *Decision Granting Certificate of Site and Facility with Conditions* at 30 (May 6, 2011). As a new source of electricity that does not emit air pollutants, the Project will help to reduce the amount of carbon dioxide (CO₂), methane (CH₄), nitrogen oxides (NO_x), sulfur dioxide (SO₂) and particulate matter emitted in New Hampshire, thereby improving air quality

and mitigating against the risks of climate change. Ex. AWE 1, App. 10 (Avoided Emissions Report) at 5-7. For the same reasons, the Project is consistent with the Regional Greenhouse Gas Initiative (“RGGI”) set forth in RSA 125-O:19 *et seq.*, the purpose of which is to reduce greenhouse gas emissions. *Id.* The Project also adds over 800 acres³ of permanent conservation lands. These easements, which will be held by the Harris Center for Conservation Education, further enhance the environmental benefits of the Project.

The relatively short construction period of a wind project (less than a year) ensures that the Project will meet the second goal under RSA 162-H:1 without undue delay, and serve as an immediate energy source that reduces the use of fossil fuels, including overreliance on peaking plants during heavy demand days. Ex. AWE 1, Application at 24, 27; RSA 162-H:1.

The process conducted by the Subcommittee in accordance with RSA 162-H and RSA 541-A in this docket has ensured that the last three of the above-stated goals contained in RSA 162-H:1 have been met. Through its comprehensive studies, written submissions, and its participation in discovery and adjudicative hearings, the Applicant has provided full and timely consideration of the Project’s environmental effects as well as full and complete public disclosure about the Project. The SEC’s process has ensured that construction and operation of the Project has been and will be treated as a significant aspect of land use planning in which all environmental, economic, and technical issues are evaluated in an integrated fashion. Given the integrated nature of these proceedings, the Applicant urges the Subcommittee to consider the Project’s positive effects on open

³ The Application at pages 10-11 discusses the Project’s initial plans to conserve 685 acres; the documents appended to this brief reflect AWE’s recent success in conserving an additional 123 acres, including the land surrounding turbines 9 and 10. Addendum to Post Hearing Brief.

space preservation, clean air and climate change when it weighs the environmental effects of the Project against the need for an additional source of energy.

Lastly, the Project will further the objectives of RSA 162-H by contributing to the state's adequate and reliable electricity supplies in an environmentally sound manner – being emission-free, fuel-free and requiring no water use. The Project's expected capacity factor, as calculated by experts in wind resource assessment, demonstrates that the Project will produce a significant amount (i.e., 98,300-106,645 megawatt hours) of clean, locally-produced electricity per year - enough to meet the average consumption of 13,000 to 14,000 New Hampshire homes annually. Ex. AWE 1, Application at 25. This will reduce regional emissions of CO₂ by more than 60,000 tons each year, while permanently conserving hundreds of acres of intact forest land. Ex. AWE 3, App. 10 (Avoided Emissions Report) at 6; Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 24; Addendum to Post Hearing Brief.

V. STATUTORY CRITERIA/FINDINGS

A. Applicant's Financial, Technical and Managerial Capability

RSA 162-H:16, IV(a) requires that the Subcommittee find that the Applicant has adequate financial, technical and managerial capability to assure construction and operation of the facility in continuing compliance with the terms and conditions of the certificate. Ample record evidence exists to support these findings.

1. Financial Capability

The uncontradicted evidence presented in this proceeding shows that AWE meets the SEC standard for having adequate financial capability to assure construction and operation of the facility in continuing compliance with the terms and conditions of the

certificate. RSA 162-H:16, IV(a). The prefiled and live testimonies of Joseph Cofelice and Martin J. Pasqualini establish by a preponderance of the evidence that AWE possesses the financial capability to construct, own and operate this Project in compliance with any reasonable terms and conditions that the SEC may impose. Ex. AWE 1, Cofelice & Pasqualini Prefiled Direct Testimony; Ex. AWE 9, Cofelice & Pasqualini Supp. Testimony; Tr. 10/31/12 (Day 3) AM and PM. Beyond AWE's own testimony, other evidence introduced in this proceeding supports the Applicant's assertions and confirms AWE's financial capability. Namely, the Deloitte Report, which was prepared by a consultant hired by Public Counsel to scrutinize AWE's financing plan and financing capability, concluded that "it appears likely that the Antrim project can be financed if the Project can attract a PPA with pricing that allows for adequate return to investors." Ex. PC 7, Deloitte Report (Redacted) at 32. This conclusion affirms the Applicant's own testimony and provides further evidence that AWE meets the statutory financial capability standard.

AWE is a limited liability company that has two members, Eolian Antrim, LLC and Westerly Antrim, LLC. Westerly Antrim, LLC is owned by Westerly Wind, LLC, a portfolio company of US Renewables Group, a private energy investment firm that has invested approximately \$750 million of capital in clean energy companies and projects. Ex. AWE 1, Cofelice & Pasqualini Prefiled Direct Testimony at 4:20 through 5:15. Members of the AWE management team have been involved in the development, financing, construction and operation of over 4,000 MW of independent power assets, including over 700 MW of wind power projects, representing over \$3 billion in aggregate project financings, and have worked for a number of highly successful and well-respected

energy and financial companies. Ex. AWE 1, Application at 54-55. As an advisor to the Project in this proceeding, Mr. Pasqualini has over 20 years in the energy finance industry and particular experience in assisting renewable project sponsors such as AWE with raising equity and debt financing. Ex. AWE 1, Cofelice & Pasqualini Direct Prefiled Testimony at 2:17 through 3:20, 6:6-12. The Deloitte Report recognized that the AWE management team has direct experience in wind project development and financing and appears qualified to develop the Project. Ex. PC 7, Deloitte Report (Redacted) at 2.

AWE's financing plan reflects industry standard practices that have been previously approved by the SEC. Application of Granite Reliable Power, LLC (SEC Docket No. 2008-04), *Decision Granting Certificate of Site and Facility with Conditions* at 31-32 (July 15, 2009). This project finance model relies upon well-established financing structures for both construction and term financing for wind projects. Ex. AWE 1, Cofelice & Pasqualini Direct Prefiled Testimony at 6:1 through 7:15. The SEC itself has recognized that the financing of energy projects such as this is a complex endeavor which frequently involves third-party capital sources, that such projects "are rarely financed from the existing balance sheet assets of the developer," and that non-recourse financing is a normal means of financing a wind project. See Application of Granite Reliable Power, LLC (SEC Docket No. 2008-04), *Decision Granting Certificate of Site and Facility with Conditions* at 31 (July 15, 2009). As described in the Application as well as in direct and supplemental testimony from Messrs. Cofelice and Pasqualini, the Project's ability to attract financing depends in large part on its ability to secure either a power purchase agreement ("PPA") or financial swap replicating the revenue certainty of a PPA, (Ex. AWE 1, Application at 55-56; Ex. AWE 1, Cofelice &

Pasqualini Direct Prefiled Testimony at 8:5 through 9:11; Ex. AWE 9, Cofelice & Pasqualini Supp. Prefiled Testimony at 8:15-16) a point also echoed by the Deloitte Report. Ex. PC 7, Deloitte Report at 24.

IWAG and some other intervenor groups attempted to attack AWE's financial capabilities by assailing the Project's competitiveness, questioning AWE's financial assumptions, and focusing on issues outside the jurisdiction/purview of this proceeding, such as the federal tax policy. However, such arguments fail to discredit AWE's prospects for obtaining a PPA or AWE's financial capability. IWAG argued that wind power is not competitive with the current spot price of natural gas. But as Msrs. Cofelice and Pasqualini testified, the price for wind power is determined by the demand for wind power from utility customers, which in turn is driven by state renewable portfolio standard ("RPS") requirements in New Hampshire and other New England states, not the spot price of natural gas. Ex. AWE 9, Cofelice & Pasqualini Supp. Prefiled Testimony at 12:5-6. As evidence of the strength of demand for wind power from projects like Antrim Project, AWE testified that Renewable Energy Certificate ("REC") prices have increased dramatically since May of 2011 in large part because of increasing RPS requirements and the shortage of renewable generation capacity. *Id.* at 7:4-15. AWE further stated that the price paid for PPAs for wind power in New England with its growing RPS requirements will be driven by the supply and demand for qualifying renewables such as clean wind energy, rather than the marginal price for electricity which is largely driven by natural gas. *Id.* at 8:1-3. The Deloitte report also notes that financing conditions and the availability of PPAs have improved since 2009. Ex. PC 7, Deloitte Report (Redacted) at 22.

Next, IWAG attempted to argue that the capacity factors for the Project were overstated, but it failed to produce any credible evidence to support its assertion. In response to such claims as well as a request from the Presiding Officer, AWE produced a report from V-Bar, LLC, a nationally recognized third party meteorologist, which validated the Project's capacity factor projections and explained how the latest wind turbine technology such as the Acciona AW 3000/116 turbine has improved energy yields. The Third Supplement to the Application and the V-Bar Report contained in Appendix 21 to the Application confirm that AWE's expected net capacity factors are sound and based on the latest analytical methods and technology. Ex. AWE 8, Third Supp. to Application; Ex. AWE 8, App. 21 (V-Bar Report) at 4. Furthermore, AWE witness Sally Wright, a turbine engineer at the world's leading wind energy consultancy GL Garrad Hassan, testified that the capacity factors projected for this Project are very typical of modern wind projects using large rotor turbines such as the Acciona AW3000/116. Tr. 10/30/12 (Day 2) at 226:13 through 227:1.

There were also discussions during the course of the proceeding about the status of the production tax credit ("PTC") and the impact that an expiration of the PTC would have on this Project and its ability to secure a PPA and arrange financing. Deloitte had asserted that the planned expiration of the PTC at the end of 2012 "will put additional pressure on the economics of wind projects," Ex. PC 7, Deloitte Report (Redacted) at 1, but Deloitte ultimately concluded that even without the PTC, the Project is financeable. *Id.* at 32. After the conclusion of the evidentiary hearings, the PTC was extended for another year as part of The American Taxpayer Relief Act of 2012 with language that allows projects that commence construction in 2013 to take advantage of the PTC. *See*

American Taxpayer Relief Act of 2012, H.R. 8 (112th Congress) § 407(a)(1). This eligibility requirement is consistent with AWE's current commercial schedule and serves as additional rebuttal to parties' complaints about AWE's financial capability and financing plan.

As the Presiding Officer noted, details about ongoing PPA negotiations are highly confidential and only "a confirmed and executed power purchase agreement is relevant in these proceedings." *Order on Outstanding Motions* at 8 (Aug. 22, 2012). A PPA is typically not executed until all material permits such as the Certificate of Site and Facility, have been issued. Ex. AWE 9, Cofelice & Pasqualini Supp. Testimony at 8:17-19. Even though AWE does not yet have a PPA in place, AWE testimony establishes the existence of a robust market for competitive, construction-ready wind projects in the New England region, and AWE's willingness to accept a financing condition similar to that included in the Granite Reliable Power certificate (Application of Granite Reliable Power, LLC (SEC Docket No. 2008-04), *Order and Certificate of Site and Facility* at 4 (July 15, 2009)). By requiring AWE to demonstrate to the SEC that it has secured construction financing for the Project prior to the start of construction,⁴ the SEC can assure that the public's interests are protected while establishing adequate final verification that the Applicant has satisfied all requirements under RSA 162-H with respect to its financial capability. Ex. AWE 9, Cofelice & Pasqualini Supp. Prefiled Testimony at 20; Tr. 10/30/12 (Day 2) at 83:21 through 84:9.

AWE submits that the record, when viewed in its entirety, clearly reflects that the Applicant has demonstrated by a preponderance of the evidence that it has adequate

⁴ Subject to an exception that allows for installation of the proposed second temporary meteorological tower prior to securing project financing.

financial capability to assure construction and operation of the facility in continuing compliance with the terms and conditions of a certificate of site and facility.

2. Technical and Managerial Capability

The evidence presented by AWE supports a finding that it has the technical and managerial capability to assure construction and operation of the facility in continuing compliance with the terms and conditions of the certificate. RSA 162-H:16, IV(a). The prefiled and live testimonies of Sean McCabe, Ruben Segura-Coto and Sally Wright establish by a preponderance of the evidence that AWE possess the technical and managerial capability to construct and operate this Project in compliance with terms and conditions that the SEC may impose. Ex. AWE 1, McCabe & Crivella Prefiled Direct Testimony; Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony; Ex. AWE 9, McCabe, Wright & Segura-Coto Second Supp. Testimony; Tr. 10/30/12 (Day 2) at 131 through 274.

As noted in the financial capability section (IV.A.1), above, AWE's management team has considerable experience in the energy sector and has been involved in the development, construction and operation of over 4,000 MW of independent power assets, including over 700 MW of wind power projects. Ex. AWE 1, McCabe & Crivella Prefiled Direct Testimony 6:8-18. In addition to Mr. Cofelice's proven track record noted above, Mr. Kenworthy, the Chief Executive Officer of AWE, has worked in the renewable energy industry for the past 10 years and is leading the development of four different windpower projects. Tr. 10/29/12 (Day 1) at 33:8-15. Mr. McCabe, an officer of AWE, has worked in the wind power industry since 2004 and held a variety of positions at Catamount Energy and Duke Energy Corporation, companies which

developed, constructed and operated wind power facilities. Tr. 10/30/12 (Day 2) at 132. Furthermore, the Deloitte Report recognized that the development team has direct experience in wind project development and appears qualified to develop the Project. Ex. PC 7, Deloitte Report (Redacted) at 2.

As Mr. McCabe and Mr. Segura-Coto explained in their prefiled testimony and during the hearing, AWE plans to contract with Acciona Windpower North America (“AWP”) to be the operations and maintenance (“O & M”) provider for at least the first five years of operation of the facility. Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 5:6-9; Tr. 10/30/12 (Day 2) at 263:6-7. After the first five years of operations, AWE will either extend the term of the O & M Agreement with AWP or contract with another provider. Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 7:6-10. In all cases, AWE will retain overall management responsibility for the Project and maintain on-site personnel to oversee the Project’s operations and represent AWE in all site administration and balance of plant matters not within the O & M provider’s scope of work. This operating structure is a common approach for independent power producers such as AWE, as confirmed by the testimony of Sally Wright, a licensed mechanical engineer in New Hampshire who is employed by GL Garrad Hassan, the world’s largest renewable energy consultancy. Ex. AWE 9, McCabe, Wright & Segura-Coto Second Supp. Testimony at 2:9 through 3:2.

Messrs. McCabe and Segura-Coto describe the services to be provided to AWE by AWP under the O & M Agreement, including: routine operation activities such as monitoring, switching and reset operations, maintenance of incident logs, prompt notification of outages; routine maintenance activities such as the performance of all

corrective maintenance tasks on the turbines, central monitoring and control systems, data acquisition cards and remote software; replacement or substitution of defective materials and components; performance of necessary tests or checks; and preparation of incidental and emergency operations and maintenance reports. Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 7:1-8:16.

AWP's experience in operating wind power facilities is well-established. It is a direct subsidiary of Acciona Energy, the world's largest non-utility energy operator devoted exclusively to renewable energy generation with an operating fleet of 8,255 MW, of which 6,965 comes from wind power generation. *Id.* at 2:15-18. AWP currently operates 1,315.5 MW of wind turbines across 12 projects interconnected to the North American grid and maintains responsibility for another 189 MW of wind turbines that were commissioned before the end of 2012, including the first two AW3000/116 turbines in the United States. *Id.* at 9:1-4; Tr. 10/30/12 (Day 2) at 82:12-16. These North American projects range in size from 45 MW to 306 MW and are located in a variety of terrains and climates. *Id.* at 9:4-6. AWP utilizes a 24/7 remote monitoring center in Chicago, Illinois which tracks the operating performance of projects in the AWP fleet, including those for which AWP provides O & M services. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 9:7-9. During the course of the proceeding Mr. Segura-Coto testified that AWP personnel will be available 24/7 at the center to ensure the safe and reliable operation of the Project. Tr. 10/30/12 (Day 2) at 145:16-24. A SCADA system will continuously monitor the facility, reports alarms and irregular events, categorize them based on their criticality and either resolve the issues remotely or dispatch technicians to address the issue. *Id.* at 147:19-23. Mr. Segura-Coto also

testified that while the SCADA system has automated protocols, it does require human intervention from personnel on duty 24/7 at the operations center. *Id.* at 149:18-22. He further testified that, in the event of power outage in Chicago, the AWP control center has redundancies that would prevent any unsafe condition from arising. *Id.* at 152:24 through 154:1. In the event that a turbine loses connectivity with the remote operations center, the turbine automatically puts itself into pause mode. *Id.* at 155:5-16 *see also id.* at 217:8 through 218:11. These operating protocols and turbine control design features will ensure the continual safe and reliable operation of the facility, while maximizing the Project's availability, and hence energy yield.

AWP's excellent O & M track record is evidenced by the availability numbers it provided in this proceeding: 98.9% in 2011 and an average fleet availability of 98.2% since the first project was installed in 2007. Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 9:18-21. The OSHA lost time rate of 0.0 and recordable injury rate of 2.8 in 2011 for US projects further supports this excellent track record. *Id.* at 10:1-2. Based on AWP's operating experience and internal resources, including that of Acciona Energy, AWP has the demonstrated capabilities necessary to fulfill its responsibilities under an O & M Agreement.

Proposed staffing for this Project includes the permanent site presence of between 3 and 4 technicians with different levels of responsibility, together with the 24/7 monitoring described above. *Id.* at 10:8-16. In addition to AWP's technicians, AWE proposes to maintain on the site an AWE site manager and a site administrator. Tr. 10/30/12 (Day 2) at 252:22-24. Ms. Wright, who has worked in the clean power generation systems industry for 19 years and in the wind power industry for 11 of those

years, *id.* at 133:5-10, testified that AWE's plan for operation of this facility is consistent with common practice in the wind industry, Ex. AWE 9, McCabe, Wright & Segura-Coto Second Supp. Testimony at 6:4-6, and that AWE has the technical and managerial capability to assure that the operation of the Project will be in compliance with any conditions in the certificate of site and facility issued by the SEC. Ex. AWE 9, McCabe, Wright & Segura-Coto Second Supp. Testimony at 10:17-11:6

During the course of the proceedings, there were discussions and testimony around the commercial status of the AW3000/116 turbine model. As mentioned previously, the first AW3000/116 units in the United States have been commissioned and are operating in Iowa. That Acciona has already executed a turbine supply agreement (consisting of (10) AW3000/116 turbines for delivery in 2013) with a utility customer in Nova Scotia speaks directly to any questions about the turbines' commercial status, market acceptance and Acciona's reputation as a top-tier supplier. Tr. 10/30/12 (Day 2) at 224:8-10, 259:17 through 260:5; *see also* Ex. AWE 14, Segura-Coto resp. to PC DRs (describing where Acciona 3 MW turbines are presently being operated).

Nevertheless, like all new turbine models, the AW3000/116 completed a rigorous technical design review and is in the midst of a third party certification process which is expected to be complete in the second quarter of 2013. Tr. 10/30/12 (Day 2) at 159:11 through 160:5. Ms. Wright, a turbine engineer, described in detail the process for certifying new wind turbine models. The first step – the design certification - is complete for AW3000/116 and a statement of compliance was issued. *Id.* at 161:17 through 160:13. As she noted, compliance at the design phase is primarily about safety and whether the turbine will meet its design life. *Id.* at 162:8-15, 249:9-17. As Mr. McCabe

testified, the type certification is a third party validation that the turbine is commercial and is going to be safe, reliable and perform to expectations. *Id.* at 160:6-12. Though type certification is not required in the United States, it is often pursued by top tier suppliers such as Acciona. *Id.* at 162:20. Type certification involves constructing prototypes and performing various tests to validate and verify design and performance assumptions. *Id.* at 163:2-5. In the case of the AW3000/116, two units in Iowa are being used to complete the type certification. *Id.* at 160:2-5.

Certain references were also made to whether the AW3000/116 has achieved “proven” status, which is a term used internally by GL Garrad Hassan only. The Acciona AW3000/116 is not yet “proven” based on GL Garrad Hassan’s criteria, which requires 100 turbine years of operational history (e.g. 100 turbines operating for a year or 25 turbines operating for 4 years, etc . . .). *Id.* at 166:7-8. For any new turbine model, it typically takes a couple of years of sales and operating history to reach proven status as determined by GL Garrad Hassan. *Id.* at 166:17-20. As a result, Ms. Wright indicated that many projects using newer turbine technology are financed without a “proven” status label. *Id.* at 207:24 through 208:1. Type certification, along with Acciona’s demonstrated willingness to sell the AW3000/116 and to warranty its performance, should eliminate any concerns about its status as a commercially viable turbine.

As summarized above, a clear preponderance of the evidence in this proceeding supports a finding that AWE has the technical and managerial capability to assure construction and operation of the facility in continuing compliance with the terms and conditions of the certificate.

B. The Site and Facility Will Not Unduly Interfere with the Orderly Development of the Region.

RSA 162-H:16, IV(b) requires that the Committee find that the site and facility will not unduly interfere with the orderly development of the region, with due consideration having been given to the views of municipal and regional planning commissions and municipal governing bodies. The views of such planning commissions and governing bodies, as well as the evidence in this docket, supports a finding that the Project will enhance rather than unduly interfere with the orderly physical and economic development of the region.

1. The Project is Consistent with the Orderly Development of the Region, Taking into Account the Views of Municipal and Regional Planning Commissions and Municipal Governing Bodies.

The Project has secured the clear support of the Town of Antrim Selectboard, Antrim's governing body, and no governing or planning body has testified that the Project unduly interferes with the orderly development of the region. Ex. AWE 36 Letter from the Town of Antrim. In addition to the Town's letter of support (Ex. AWE 36), Town of Antrim's Selectboard's strong support of the Project is further evidenced by the fact that it has entered into an operations agreement and a Payment in Lieu of Taxes ("PILOT") agreement with AWE, both of which were executed after duly-noticed public discussion. Ex. AWE 4, App. 17-A (Town of Antrim Agreement); Ex. AWE 12, PILOT Agreement; Ex. AWE 13, Alternative PILOT Agreement.

Unlike the Antrim Board of Selectmen, the Antrim Planning Board has not taken a position on the Project in this proceeding. The Antrim Planning Board has not expressed a conclusion regarding the Project's impact on the orderly development of the

region and did not provide any opinion regarding whether the Project meets the requirements of the Town's Planning Documents. Ex. APB 15, Levesque resp. to AWE DRs at 14-16; Ex. APB 16, Pinello resp. to AWE DRs at 25-29. The Planning Board's testimony includes many extensive quotes from Antrim's planning documents which the Board characterized as complex and nuanced, however, it did not provide the Committee with its analysis of the Project or explain how Antrim's regulations would apply to the proposed Project. *See, e.g.*, Tr. 11/30/2012 (Day 9) PM at 112:5 through 113:2.

Therefore, the Committee has no guidance from the Antrim Planning Board regarding its position on the Project's consistency with the orderly development of the region. In addition, to the extent that the Town of Stoddard Selectboard has raised issues regarding the Project through the participation of the Stoddard Conservation Commission in these proceedings, those issues concern wildlife and environmental impacts, discussed below in Section V.5, and do not expressly address the orderly development of the region. *Letter from Town of Stoddard* (Oct. 5, 2012). The Town of Deering Planning Board filed a letter⁵ with the Committee, but it did not participate in the proceedings.

Even though the Antrim Planning Board did not provide testimony about its conclusions as to whether the Project is consistent with the orderly development of the region, the evidence supports a finding that the Project aligns with the goals and values set forth in town planning documents. For example, the Antrim Master Plan and the Open Space Plan call for support of renewable energy development and the preservation

⁵ On November 9, 2012, seven months after the Town of Deering received official public notice regarding the Project and after five days of public hearings had already concluded, the Town of Deering Planning Board submitted a letter to the Site Evaluation Committee. The Planning Board did not indicate its position regarding the orderly development of the region. It stated the need to review additional information (which is available in the public record) regarding impacts, if any, on Deering and requested (at this very late date) a public hearing.

of open space, both of which are accomplished with the construction of the Project. Ex. AWE 3, App. 15 (Antrim Master Plan Chapter on Energy); Ex. ACC 2, Beblowski Prefiled Testimony (the Open Space Plan is attached to the testimony); Ex. APB 9, Levesque Prefiled Direct Testimony at 6:23 through 7:16. The Project's clean energy benefits, coupled with a very substantial permanent conservation plan, ensure the Project provides both immediate and lasting benefits to stakeholders in Antrim and the surrounding region.

The Economic Development section of the Town of Antrim Master Plan expressly supports wind energy, stating that the Town should “[e]xplore the use of alternative energy sources including geothermal, solar, wood pellets, wind, and water power in providing long-term improvement in a sustainable fashion.” Ex. APB 9, Levesque Prefiled Direct Testimony at 13:16-17. The Master Plan also cites favorably several New Hampshire statutes which urge towns to enable and support the development of renewable energy. Ex. AWE 3, App. 15 (Antrim Master Plan Chapter on Energy) at IV-4 to IV-5, IV-11. It concludes that “[g]lobal warming is a real threat” and the first recommendation in the chapter on energy issues encourages renewable energy systems via tax exemptions. *Id.* at IV-13-14; *see also* Ex. APB 9, Levesque Direct Testimony at 8:20-23 (stating that the Master Plan encourages renewable energy to reduce fossil fuel use and reduce greenhouse gas emissions). The Project will produce enough clean electricity for approximately 13,000-14,000 homes while reducing annual carbon emissions by approximately 60,000 tons each year, outcomes which specifically address the Master Plan's stated concerns over the impacts of climate change and the need for new renewable energy. Ex. AWE 1, Application at 25; Ex. AWE 3, App. 10 (Avoided

Emissions Report) at 6. Thus, in broad and decisive brush strokes, the Antrim Master Plan reveals that Project comports with the Plan's goals.

Although local zoning and planning provisions are preempted because the Committee has exclusive jurisdiction over this Project, *see Public Serv. Co. of N.H. v. Town of Hampton*, 120 N.H. 68, 72 (1980), it is noteworthy that a utility-scale wind energy facility is a permitted use of property in the Rural Conservation District under the Antrim Zoning Ordinance. *Antrim Wind Energy v. Town of Antrim* (216-2010-EQ-00245), Order on ZBA Appeal (July 5, 2012) (see Ex. AWE 9, Kenworthy Supp. Testimony, Att. JBK-1) [hereinafter "*Order on ZBA Appeal*"]. The Superior Court considered whether a meteorological tower, a necessary prerequisite to a wind project, is a permitted use in the Rural Conservation District in Antrim. *Order on ZBA Appeal* at 3. The ordinance permits public utilities, and AWE asserted that for the purposes of land use, the Project was a public utility.⁶ *Order on ZBA Appeal* at 4; Tr. 11/30/12 (Day 9) PM at 122:1-4. The Court agreed with AWE, stating that "based on the plain meaning of the term 'public utility,' the court finds that a met tower, ***as a necessary antecedent to a commercial wind farm***, constitutes a public utility within the meaning of the ordinance."⁷ *Order on ZBA Appeal* at 5 (emphasis added). The Superior Court's order was not appealed. Tr. 12/6/12 (Day 11) PM at 47:6-11. Therefore, as a matter of law, Antrim's

⁶ Most of the project falls within the Rural Conservation District, which permits, in addition to public utilities, single-family dwellings, public and private schools, churches, home-based businesses, kennels, public and private recreational facilities, farms and agricultural activities, roadside stands, stables and riding academies, farm employee housing, manufactured housing units, personal wireless service facilities, and several accessory uses and uses permitted only by special exception. Ex. APB 9, Levesque Prefiled Direct Testimony at 21:15 through 22:5.

⁷ In affirming the Planning Board's original decision, the Superior Court also found that the turbines' height could exceed the usual restrictions because it met the requirements of a "Special Industrial Structure" under the Ordinance. *Order on ZBA Appeal* at 2-3, 6.

zoning ordinance permits a utility scale wind project within Antrim's Rural Conservation District.

Although no regional commission has been active in this proceeding, the Southwest Regional Planning Commission's Comprehensive Economic Development Strategy for Southwest New Hampshire indicates that the "current lack of local, renewable energy alternatives" to conventional energy sources presents a risk to future growth in the region. Ex. AWE 3, App. 16 (SRPCC Comprehensive Economic Development Strategy) at 79.

The Project has garnered significant local support. Over the course of the past four years, the Project has been the subject of numerous publicly-noticed meetings and hearings before the Zoning Board of Adjustment, the Planning Board, and the Board of Selectmen. Ex. AWE 1, Kenworthy Prefiled Testimony at 12:9-11. In addition, AWE held a three-hour informational "open house" at the Antrim Town Hall in November 2011. *Id.* at 12:14-15. As a result of these public processes, wind energy development has been vetted thoroughly and has received consistent widespread support throughout Antrim. Ex. AWE 22, *A Vote in Favor of Wind Energy*, Monadnock Ledger-Transcript; Ex. AWE 1, Application Vol. 1 at 12-13; Tr. 10/29/12 (Day 1) at 125:17-24, 126:2-8, 126:18 through 127:1 (describing several votes and surveys supporting the Project) ; *See also* Tr. 11/2/12 (Day 5) AM at 69:13-22, 73:10-20 (public statement of Cynthia Crockett); Tr. 11/2/12 (Day 5) AM at 84:9-21 (public statement of Kathryn Chisholm). The Town of Antrim Board of Selectmen, "based on a number of polls and the defeat of a large scale wind ordinance at two elections, believe that the vast majority of residents in Antrim support the project." *Letter from Chairman Tenney to Chairman Ignatius* (Oct.

22, 2012). In the highest-recorded voter turnout in Antrim history, seventy-two percent of the voting public rejected an amendment that would have banned all wind development within the relevant zoning district. Ex. AWE 22, *A Vote in Favor of Wind Energy*, Monadnock Ledger-Transcript. In another vote on the same date, sixty-two percent of the population rejected the highly restrictive ordinance developed by the Planning Board. *Id.*; Ex. AWE 1, Application at 12-13.

The evidence and views presented above clearly support a finding that the Project is consistent with the orderly development of the region.

2. The Project is Consistent with the Orderly Physical Development of the Region

In terms of its location, the Project is consistent with the orderly physical development of the region as it has been sited in close proximity to existing transportation and transmission infrastructure to minimize its environmental impact. Ex. AWE 1, Application at 11-13. It will be constructed in a zoning district where public utilities are an allowed use, on large tracts of private property, significant portions of which will be contained in the Applicant's extensive Conservation Plan. *Id.*

The Project's Conservation Plan meets the conservation goals of the Antrim Open Space Plan and corresponding goals in the Master Plan. Ex. ACC 2, Beblowski Prefiled Testimony (Open Space Plan is attached to testimony); Ex. APB 9, Levesque Prefiled Testimony at 7:1-2. The Open Space Plan sets the objective of conserving nearly fifty percent of the Town. Tr. 12/3/12 (Day 10) PM at 163:18:23. Conservation easements are obtainable only from a private landowner willing to sell his or her development rights. *Id.* at 165:1-6. AWE's Conservation Plan establishes five conservation easements held by Harris Center and provides for 808 acres of permanent conservation. Ex. AWE 1,

Kenworthy Prefiled Testimony at 1-2.⁸ Of all of these easements, only one property owner is permitted access to the roads associated with the Project; the other owners are prohibited access to the ridgeline via the Project road. Tr. 10/29/2012 (Day 1) at 43:20 through 44:12. Three of the five property owners are allowed residential development consisting of only a single home. *Id.* at 72:1-5. These three easements are very limiting when compared with the three acre residential subdivisions permitted in the Zoning Ordinance. *Id.* at 79:17-19. Of the two remaining easements, one of the owners may build only a primitive hunting camp and the other may not build any commercial or residential development after the Project is decommissioned. *Id.* at 72:1-5; Addendum to Post Hearing Brief. The Conservation Plan ensures that hundreds of acres in Antrim will be kept as open space (nearly 13 times as much land as will be impacted by the Project), with only forestry and agricultural practices permitted, in perpetuity after the Project is decommissioned. Tr. 10/29/2012 (Day 1) at 46:11 through 47:2.

The Project's compatibility with existing land uses in the area also supports a finding that the Project will not unduly interfere with the orderly development of the region. Historically, the land within the Project site was used for sheep farming and timber harvesting. Ex. AWE 1, Application at 9; Ex. AWE 1, Kenworthy Prefiled Testimony at 6:4-8. Activities within the region include commercial timber production, hiking and hunting, and commercial enterprises along Route 9, in addition to residences and undeveloped forest. Ex. AWE 1, Application at 7, 11, 67-68, 99-100. All of these

⁸ On December 31, 2012, AWE signed an agreement with the Whittemore Trust to add an additional easement to the Conservation Plan. The protected property includes the sites for Turbines 9 and 10 and the agreement includes largely the same language as the other easements already submitted to the Committee, except that no structures are allowed in the easement after the wind farm is decommissioned. Furthermore, performance of this easement is contingent on the Project going forward in its proposed size, including all ten three MW turbines. *See* Addendum to Post Hearing Brief.

activities can easily and successfully coexist with the Project. In fact, the Committee has previously concluded that a wind project will not affect forest management activities or recreational uses of land in a manner or degree that would unduly interfere with those uses. Application of Groton Wind, LLC (SEC Docket No. 2010-01), *Decision Granting Certificate of Site and Facility with Conditions* at 42-45 (May 6, 2011). Further, while the Project will be visible from some areas within the region, visibility alone does not interfere with the orderly development of the region. Application of Lempster Wind, LLC (SEC Docket No. 2006-01), *Decision Issuing Certificate of Site and Facility with Conditions* at 25 (June 28, 2007).

Finally, it is important to consider that the Project is proximate to existing transmission and transportation corridors, and will have adequate setbacks from residences and inhabited structures. The instant Project is able to provide 30 MW of renewable energy within one half mile of an existing transmission corridor and three quarters of a mile from a substantial state highway. Ex. AWE 1, Application at 11, 16. Thus, the Project will deliver power to the transmission grid without the need to build new transmission or distribution lines or to obtain new rights of way. *Id.* at 40. In view of the foregoing, the SEC may properly determine that the Project is consistent with the orderly physical development of the region.

3. The Project Will Promote Regional Economic Development

The weight of the evidence in this proceeding supports AWE's contention that this Project will promote regional economic development. The prefiled testimony of Ross Gittell, adopted by Matthew Magnusson, who has worked extensively with Dr. Gittell on this and other projects, supports the fact that this Project is expected to

contribute a total of \$55.7 million to the local economy over a 20 year period, including \$12 million to the local New Hampshire economy during the construction phase, with 86 jobs and \$5 million in wages. Ex. AWE 1, Gittell Prefiled Direct Testimony at 3-4. The testimony also demonstrates the fact that this Project will be part of the growing green economy in New Hampshire, providing high quality jobs. *Id.* at 5. Annual tax payments to the Town under the PILOT will total more than \$8.7 million over 20 years. *Id.* at 4. Based on the extensive and comprehensive economic impact analysis, Gittell and Magnusson concluded that the economic benefits of this Project for Hillsborough County and the surrounding area of Southern New Hampshire “are expected to be significant.” Ex. AWE 1, App. 14B (Economic Impact Analysis) at 3. The soundness of this conclusion is reinforced by Mr. Magnusson’s testimony during the hearings that they used “very reasonable, grounded assumptions, that will give a conservative, but accurate picture of a situation.” Tr. 11/27/12 (Day 6) AM at 147:11-13.

IWAG attempted to discredit some of Gittell and Magnusson’s analysis and conclusions, but offered no credible testimony to contradict the testimony provided by the AWE expert. In his Supplemental Testimony, Mr. Magnusson rebutted IWAG’s criticism of the JEDI wind model used in the economic impact analysis. AWE 9, Magnusson Supp. Testimony at 2-3. Mr. Magnusson said this is an input-output model that was developed by the U.S. Department of Energy, has been tested and refined, and is widely utilized in these applications. *Id.* In addition, Dr. Gittell, who has extensive experience with and has conducted significant research on the New Hampshire economy, reviewed the economic impact data produced by this model and deemed it to be reasonable. *Id.* at 3:12-17. Mr. Magnusson also testified that the overall finding of a

Vermont study cited by IWAG actually showed there had been new job growth and income impact from the project at issue, which for them confirms that the Gittell/Magnusson study provided a conservative estimate of job activity. *Id.* at 4-6.

Although the Project has entered into a PILOT agreement that provides the Town of Antrim with significant economic benefits in the form of additional tax revenue, Intervenor Mary Allen raised questions about the Project's potential impacts on Antrim taxpayers. Ex. EA 2, Allen Prefiled Direct Testimony. She was concerned that Antrim taxpayers would have to make up the difference between the PILOT payment for a particular year and what will be owed to the county and local school district for that year. *Id.* at 10-11. She testified about a determination by the State Department of Revenue Administration ("DRA") that would assess the Project according to the equalized value based on the DRA's assessment of the Project's full market value, rather than the value that was used for the purposes of the PILOT. *Id.* at 7-9. Although she was aware of the Alternative PILOT agreement that AWE had entered into to address this possibility and to make the town whole, Ms. Allen testified that she was concerned that AWE might not seek a court decision challenging the DRA decision. *Id.* at 8-10. Ms. Allen made her views known to the Town during public hearings on the PILOT and Alternative PILOT, *Id.* at 3, however the Town chose not to take any additional steps to address this issue beyond the Alternative PILOT agreement and the Petition for Declaratory Ruling that the Town and AWE jointly filed with the Superior Court. Tr. 11/30/12 (Day 9) PM at 163:13-17; 173:17-21; 174:18 through 175:7.

Mr. Kenworthy rebutted Ms. Allen's points by making it clear that the Alternative PILOT was entered into specifically to address Ms. Allen's concerns about potential

adverse tax consequences to Antrim citizens. Ex. AWE 9, Kenworthy Supp. Prefiled Testimony at 8-11. In his Supplemental Testimony Mr. Kenworthy specifically stated: “AWE has agreed to pay 100% of the increase in the Town’s obligations to ConVal and Hillsborough County attributable to the Project, plus a series of scheduled fixed payments – a clear benefit to the Town.” *Id.* at 11:5-7. During the hearing he reiterated this commitment. Tr. 10/30/12 (Day 1) at 83:10 through 84:8. He also provided an update on the status of the Superior Court litigation, *id.* at 85:2-19, and said that AWE committed to go forward and seek the declaratory judgment and that they “have pursued it with vigor.” *Id.* at 86:14-16. The Petition for Declaratory Judgment that the Town and AWE filed jointly with the Superior Court is included in the record. Ex. AWE 11, Petition for Declaratory Judgment. As the foregoing indicates, Ms. Allen’s tax concerns are unfounded and therefore do not undermine or negate the Project’s positive economic and economic development attributes.

As the foregoing demonstrates, the evidence supports a determination that the Project will not unduly interfere with the orderly development of the region and that it will in fact have a positive economic impact on the region.

4. The Project Will Not Adversely Affect Property Values

Although there is no statutory requirement that the SEC make a determination regarding a renewable energy project’s impacts on property values, AWE nonetheless provided the expert testimony of Ross Gittell and Matthew Magnusson to support AWE’s contention that this Project will not have an unreasonable adverse effect on property values in the area of the Project. As noted in their testimony, the growing body of research on the impact of wind energy projects on residential property values generally

indicates no statistically significant impact on property values as a result of these projects. Ex. AWE 1, Gittell Prefiled Direct Testimony at 5:22 through 6:2. Gittell and Magnusson studied the effects of the nearby Lempster wind farm to assess the impact of an actual wind project on property values in New Hampshire. They obtained over 2,500 arms-length single-family home sales transactions from January 2005 to November 2011 and examined 88 property transactions that occurred during the post-construction phase. *Id.* at 6:8-13. Using this data, they developed a model that showed the areas where the Lempster turbines were likely to be visible. *Id.* at 6:13-16. They cross-referenced mapped property locations against the model turbine views and they visited all of the modeled locations to “ground truth” and confirm each view categorization. *Id.* at 6:16-20. They also statistically tested the view impacts to determine if there was a difference between the properties with no view, an obscured view and a clear view. *Id.* at 6:21 through 7:1. Finally, they considered whether the obscure view and clear view properties had a statistically significant difference in presale valuation and whether the average difference between the deed price and presale valuation were statistically significant in those instances. *Id.* at 7:1-6.

Based on their review of this information Gittell and Magnusson concluded that neither a view of nor proximity to the wind turbines in Lempster negatively impacted residential property values on a statistically significant basis. *Id.* at 7:16-18; Ex. AWE 1, App. 14A (Lempster Local Residential Property Values Report) at 3.

IWAG attempted to rebut the findings of this study by arguing that the studies that Dr. Gittell and Mr. Magnusson cited were flawed and misleading. In addition, Mr. Block argued that listings for Lempster and Antrim indicated that a greater percentage of

Lempster's homes are for sale than Antrim's. In his Supplemental Testimony, Mr. Magnusson noted that IWAG did not provide any new studies or present any new data that call into question the overall finding of no statistically significant change in property values due to wind power projects. Ex. AWE 9, Magnusson Prefiled Direct Testimony at 9:7-10. Mr. Magnusson also pointed out that the IWAG testimony did not provide any factual evidence to contradict the findings of the Gittell/Magnusson study. *Id.* He went on to note that the methodology that they used in comparing property valuations with sales transactions is similar to the process used by the New Hampshire Department of Revenue in determining equalization for property appraisals. Ex. AWE 9, Magnusson Prefiled Direct Testimony at 10:9-10.

In response to Mr. Block's analysis and argument, Mr. Magnusson noted that Mr. Block did not account for differences between Lempster and Antrim, nor did his argument indicate what the ratio of sales was before construction of the Lempster wind project and therefore did not indicate a negative impact due to the Lempster project. *Id.* at 11:8-17.

AWE further notes that in rejecting similar arguments that the Groton Wind project would adversely impact property values, the SEC stated that the relevant inquiry is "whether such effect will unduly impact the orderly development of the region, and not the value of individual houses." Application of Groton Wind, LLC (SEC Docket No. 2010-01), *Decision Granting Certificate of Site and Facility with Conditions* at 41 (May 6, 2011). Moreover, as the SEC noted in the Groton Decision and as is the case in this proceeding, no intervenor introduced "any formal scientific study or extensive analysis to

support its position that the Project will adversely impact the real estate market of [the]entire region.” *Id.*

AWE has submitted compelling and persuasive expert evidence supporting its contention that this Project will not have an adverse effect on property values and therefore will not unduly interfere with the orderly development of the region.

C. The Site and Facility Will Not Have Unreasonable Adverse Effects

1. Aesthetics

The Committee must determine whether the Project will have an unreasonable adverse effect on aesthetics. RSA 162-H:16, IV(c). In so doing, “the Committee considers the effects on the viewshed in the region.” Application of Lempster Wind, LLC (SEC Docket No. 2006-01), *Decision Issuing Certificate of Site and Facility with Conditions* at 27 (June 28, 2007). The Applicant has met its burden of demonstrating that the Project will not have an unreasonable adverse effect on aesthetics in the region. The Applicant engaged Saratoga Associates Landscape Architects, Architects, Engineers, and Planners, P.C. (“Saratoga Associates”) to conduct a visual assessment of the Project and to prepare a visual impact analysis report (“VIA Report”) and a shadow flicker study.⁹ The VIA Report documents the potential visibility of the Project within a five-mile radius from each turbine, and includes quantitative and qualitative aspects of visual assessment. Ex. AWE 3, App. 9A (Aesthetics Report) (“VIA Report”) at 1. Subsequent to the filing of the VIA Report, the Applicant extended its visual assessment of the Project to include the area of between five and ten miles surrounding the Project. Ex. AWE 7, Second Supp. to Application at 2. The Applicant also provided expert viewshed testimony from

⁹ The Shadow Flicker Technical Memorandum is contained in Ex. AWE 3, App. 13B. The results of the Project’s shadow flicker study are discussed in section IV. C. 6. b., *infra*.

John Guariglia, an Associate Principal and registered landscape architect employed by Saratoga Associates, who has more than ten years' experience in conducting visual impact assessments, including work on over 30 wind projects. Ex. AWE 1, Guariglia Prefiled Direct Testimony at 2:11-12 and Att. JWG-1.

Initial VIA Report

Among other things, Saratoga Associates' VIA Report includes two viewshed maps identifying the geographic locations within the study area (which included approximately 100 square miles) where some portion of the Project's wind turbines is theoretically visible. Ex. AWE 1, Guariglia Prefiled Direct Testimony at 4:15 and 5:21-22. The first (topographic) viewshed map (AWE 3, App. 9A (VIA Report) Figure 1) depicts the areas where the Project would not be visible due to the screening effect caused by intervening topography, while conservatively assuming a treeless condition. AWE 3, App. 9A (VIA Report) at 5. The second (vegetated) viewshed map (AWE 3, App. 9A, VIA Report, Figure 2) illustrates the probable screening effect of existing mature vegetation and identifies the geographic areas where one would expect the Project to be screened by intervening forest vegetation. *Id.* Details concerning the manner in which the viewshed maps were generated are presented in the VIA Report. *Id.* Because the dataset used in producing the vegetated viewshed map does not include the screening value of any existing structures, the vegetated viewshed map "conservatively overestimates potential Project visibility in areas where the Project may be substantially screened from view." *Id.* at 5-6. Even with these conservative assumptions, the vegetated viewshed map indicates that the Project's wind turbines will not be visible from approximately 95% of the five-mile radius study area. *Id.* at 6-7.

An applicant for a certificate of site and facility need not present a visual impact assessment that addresses the visual impact of a project from every possible point in the area of potential effect. Application of Groton Wind, LLC (SEC Docket No. 2010-01), *Decision Granting Certificate of Site and Facility with Conditions* at 49 (May 6, 2011). Moreover, because it is impractical to evaluate the aesthetic impact upon every conceivable location where a Project may be visible, "...it is accepted visual assessment practice to limit detailed evaluation of aesthetic impact to public locations generally considered by society, through regulatory designation or policy, to be of cultural and/or aesthetic importance." Ex. AWE 1, Guariglia Prefiled Testimony at 7:10-13. Seventy-two (72) visual receptor locations within the five-mile radius study area were identified through a review of publicly-available information and with input from representatives of the Antrim Historical Society and Antrim Conservation Commission. *Id.* at 7:13-17. Table 2 of the VIA Report identifies each of the 72 receptors by name, municipal location, landscape unit (e.g. forest, water, community center, agricultural), viewer group (e.g. recreational users, tourists, local residents, local workers, through travelers), distance from nearest turbine, view duration (stationary or moving) and indicates whether the Project would be visible at each location. AWE 3, App. 9A (VIA Report) at 14-16. The VIA Report concludes that of these 72 locations, 22 of them would likely have no view of the Project because of screening provided by intervening landform or vegetation. *Id.* at 14.

Saratoga Associates also created photo simulations from several locations to illustrate the visibility of turbines from a representative sampling of landscapes at varying distances from the turbines. *Id.* at 16-17. The simulated locations were selected based

on input from local community members, with additional consideration given to each location's relevance in addressing primary factors affecting visual impact, i.e. viewers, landscape units, distance zones, and duration/frequency and circumstances of views. *Id.* Details concerning the photo simulation methodology employed by Saratoga Associates are presented in the VIA Report. *See Id.* at 17-18. Photographs of each location's existing condition and photo simulations of the Project turbines and other features at each location are contained in the VIA Report. *See Id.* at Figures A2-A through A11-B.

In addition to the Project's wind turbines, Saratoga Associates assessed the visual impacts of other aspects or components of the Project: night lighting, the Project's access road, meteorological towers¹⁰, the Operations and Maintenance Building, Electrical Substation, overhead electrical lines, and construction-related visual impacts. *Id.* at 23-25. Mr. Guariglia concludes in the VIA Report that the visual impacts associated with these ancillary project components are relatively minor. *Id.*; Ex. AWE 1, Guariglia Prefiled Direct Testimony at 12:12-16.

Mr. Guariglia's prefiled testimony discusses the results of the visual impact assessment and describes the types of views of the Project that are expected at various locations within the study area. *See* Ex. AWE 1, Guariglia Prefiled Testimony at 10-12. Based upon the results of Saratoga Associates' visual analyses, Mr. Guariglia concludes that the Project will not have an unreasonable adverse effect on aesthetics. *Id.* at 17:2-3. He notes that the VIA Report as a whole indicates that the Project will not be visible in a significant portion of the study area. *Id.* at 17:7-8. He further observes that "[w]ind turbines are large and highly visible structures" and that siting them in locations

¹⁰ The visual impact of the Project's permanent meteorological ("met") tower is addressed in the VIA Report; the potential impact of the temporary met towers is addressed in Mr. Guariglia's Supplemental Prefiled Testimony, Ex. AWE 9, Guariglia Supp. Testimony at 8-9.

providing high visibility “may not be readily avoided.” *Id.* at 17:14-15. The SEC has similarly noted that “turbines are tall structures that will extend beyond tree top level” but has nonetheless concluded that “the evidence does not support a finding that the turbines themselves are aesthetically displeasing.” Application of Granite Reliable Power, LLC (SEC Docket No. 2008-04), *Decision Granting Certificate of Site and Facility with Conditions* at 43 (July 15, 2009).

Supplemental VIA Information

Following submission of the Application, AWE signed an agreement with Appalachian Mountain Club (“AMC Agreement”) in which AWE agreed to extend its viewshed analysis to include a ten-mile radius from any proposed turbine location and to perform additional visual simulations within the five to ten mile radius area. *See* Ex. AWE 7, App. 20 (AMC Agreement). Pursuant to this agreement, Saratoga Associates prepared a ten-mile radius topographic viewshed map, Ex. AWE 7, App. 9-A-1 (TS 1-38(a)) and a ten-mile radius vegetated viewshed map, Ex. AWE 7, App. 9-A-1 (TS 1-38(b)). Saratoga Associates also identified 258 additional potential visual receptors within the area of five to ten miles of the Project, and determined the Project’s visibility at each location, the distance of the receptor from the nearest turbine, the affected viewer groups, and the view duration (stationary or moving). Ex. AWE 7, App. 9-A-1 at 1-14.

Also pursuant to the AMC Agreement, photo simulations illustrating potential views of the Project from Greenfield State Park, Powder Mill Wildlife Management Area, Pitcher Mountain, Goodhue Hill and Gregg Trail were prepared and submitted with Mr. Guariglia’s First Supplemental Prefiled Testimony. Ex. AWE 9, Guariglia Supp. Testimony, Att. JWG-3A-4B, JWG-6A&6B, JWG-9A&9B, and JWG-13A&13B. The

Applicant also provided updated photo simulations from Bald Mountain Trail and Willard Pond illustrating the potential view of a proposed 90-foot tower for a radar activated lighting system (which the Applicant agreed to install pursuant to the provisions of the AMC Agreement). Ex. AWE 9, Guariglia Supp. Testimony, Att. JWG-7A-8B.

Mr. Guariglia's supplemental testimony discusses the views depicted in the additional visual simulations. Ex. AWE 9, Guariglia Supp. Testimony at 4-7. He states that, generally, the visibility of the Project is consistent with the 5-mile viewshed maps and that potential visibility still remains very low throughout the expanded study area because much of the 10-mile area is highly vegetated. Ex. AWE 9, Guariglia Supp. Testimony at 4:4-9. Taking into account the entire study area, Mr. Guariglia concludes that the Project will not have an unreasonable adverse impact on the aesthetics of the Antrim region. *Id.* at 8. In support of this conclusion, Mr. Guariglia notes that while the Project will have some impacts on a limited number of resources, given the relatively small viewshed area affected, "the collective impact on the study area will be low." *Id.*

Ms. Vissering's Testimony

Testifying on behalf of Public Counsel, Jean Vissering provided the only other expert testimony on the aesthetical impact of the Project. She recognized Saratoga Associates as "...a well-respected firm with considerable experience in conducting visual impact assessments." Ex. PC 1, Vissering Visual Impact Assessment ("Vissering VIA") at 17. Unlike Saratoga Associates, Ms. Vissering did not prepare a viewshed map as part of her study; instead, she relied on Saratoga Associates' viewshed map, which she found reliable. Tr. 11/28/12 (Day 7) AM at 114:8-21. She also indicated that the vantage points selected by Saratoga Associates for its visual simulations of the Project "were well

selected and present reasonably accurate portrayals of how the project will appear in the landscape.” Ex. PC 1, Vissering VIA at 17. Ms. Vissering submitted her own photo simulations of the Project from two new viewpoints and one that was also illustrated by the Applicant. *Id.* at 1. In addition, Ms. Vissering described her analysis of the views at 10 specific locations and other lakes and ponds. *Id.* at 5-14. She also ranked the Project’s visual impact at each of those locations using terms such as “significant,” “moderate,” and “minimal,” depending on her opinion of the change or contrast introduced to the existing condition. *Id.* at 5. However, Ms. Vissering has previously stated that assigning such scores to views of utility-scaled wind projects “does not provide meaningful information to a decision maker without considering how the project is seen, in what context, and what the value of the resource is.” Ex. AWE 34, Clean Energy States Alliance, State Clean Energy Program Guide at 33. In addition, because Ms. Vissering’s VIA does not provide a methodology for arriving at those scores, her conclusions cannot be independently repeated or verified. Ex. AWE 9, Guariglia Supp. Testimony at 13:5-8. Thus, Ms. Vissering’s rankings of the Project’s views are of questionable value to the Committee, as they simply represent a personal opinion that is subject to differing interpretations. *Id.* at 14:2-5. In fact, Ms. Vissering herself testified that some people could employ her visual assessment methodology and yet reach conclusions that differ from her own. Tr. 11/28/12 (Day 7) AM at 120:19-24; 127:11-13.

Based on her analysis, Ms. Vissering concluded that, as currently configured, the Project would result in unreasonable adverse effects to the scenic quality of the surrounding area. Ex. PC 1, Vissering VIA at 18. Importantly, she did not conclude that the Project is inappropriate for the proposed location. Tr. 11/28/12 (Day 7) AM at 43:20-

21. Rather, she provided seven mitigation recommendations discussed below. Ex. PC 1, Vissering VIA at 18-19.

Ms. Vissering's Recommendations and Applicant's Responses

1) Ms. Vissering's first recommendation is to eliminate turbine numbers 9 and 10. *Id.* at 18. However, Ms. Vissering did not prepare a photo simulation of the Project's appearance without those two turbines to justify this recommendation. Tr. 11/28/12 (Day 7) PM at 60:15-20. Moreover, during questioning from the Committee, Ms. Vissering could not even identify the location of those two turbines on her own photo simulation from Willard Pond. Tr. 11/28/12 (Day 7) PM at 59-61. For these reasons alone, the Committee should not accept this recommendation. There is no evidence on record which supports Ms. Vissering's position that the elimination of these two turbines (or any one of them for that matter) is necessary to address the Project's impacts on aesthetics in the region. Absent such necessity, this recommendation may not be imposed as a certificate condition. *See* RSA 162-H:16, VI (certificate of site and facility may contain...reasonable terms and conditions as the committee deems *necessary*). In addition, AWE strenuously objects to this recommendation for financial reasons. Reducing the number of turbines from ten to eight would materially increase the Project's construction costs per MW of installed capacity. Ex. AWE 9, Cofelice & Pasqualini Supp. Testimony at 17:2-4. The resulting loss of economies of scale in the construction of the Project would make the Project far less competitive and thus unlikely to secure a PPA and obtain financing. Ex. AWE 9, Kenworthy Supp. Testimony at 20:14-16. Imposing a condition that would materially harm the Project's competitiveness without any corresponding justification relative to the Project's visual impact would be

unreasonable and therefore is impermissible under RSA 162-H:16, VI. In view of the foregoing, the Committee should reject this recommendation.

2) Ms. Vissering's second recommendation calls for a motion-activated collision avoidance system to deal with the issue of night lighting. Ex. PC 1, Vissering VIA at 18. The Applicant agrees and has committed to do this as part of its agreement with AMC. *See* Ex. AWE 7, App. 20 (AMC Agreement).

3) Ms. Vissering's third recommendation is that AWE use smaller turbines. Ex. PC 1, Vissering VIA at 18. Again, Ms. Vissering failed to provide visual simulations which depict the aesthetic benefits of smaller turbines, nor has she provided any specific recommendations concerning the precise size or model of the turbines she is recommending. Thus, the record is devoid of any evidence demonstrating that smaller-sized turbines would, in fact, have a lesser effect on aesthetics than the proposed turbines. In addition, statements made by Ms. Vissering herself belie the assumption that smaller sized turbines would have a lesser effect upon aesthetics than larger turbines. Ms. Vissering has stated that "[d]espite the height of modern wind turbines, it is difficult for most people to distinguish between a 200-foot turbine and a 400-foot turbine unless they are side by side." Ex. AWE 34, Clean Energy States Alliance, State Clean Energy Program Guide at 19. In her direct testimony, Ms. Vissering referred to the Lempster Project turbines as being more appropriately sized for the Antrim Project; however, upon cross examination she was unable to confirm the actual height of those turbines. Tr. 11/28/12 (Day 7) AM at 53:13-20. Again, like Ms. Vissering's first recommendation, her third recommendation should also be rejected because the record evidence does not support her conclusion. Moreover, this recommendation ignores the fact that the Town

of Antrim, after many years of extensive dialogue, specifically agreed to a project consisting of ten turbines that are up to 500 feet tall. Ex. AWE 4, App. 17-A (Town of Antrim Agreement). This recommendation also ignores the benefits associated with using the Acciona 3000/116 turbine model, which enable an economic project with fewer turbines. Ex. AWE 9, Cofelice & Pasqualini Supp. Testimony at 16:20-21 through 17:1. Lastly, AWE objects to this recommendation on the grounds that the use of outdated technology, i.e. older, smaller turbine model, will render the Project uncompetitive and likely prevent it from securing a PPA and obtaining financing. Ex. AWE 9, Kenworthy Supp. Testimony at 19:18-19; 20:14-16. For the foregoing reasons, the SEC should reject this recommendation.

4) Ms. Vissering's fourth recommendation is for land conservation to "provide a meaningful counterbalance to the impacts to the natural and scenic resources of the area." Ex. PC 1, Vissering VIA at 18. AWE believes that the Project's conservation plans more than adequately address the concerns underlying this recommendation. If AWE secures all necessary approvals and the Project proceeds to construction, upon commercial operation approximately 685 acres of land in and around the project area will be permanently conserved. Ex. AWE 1, Kenworthy Direct Testimony at 24:1-17. In addition, to address specific concerns expressed by the Audubon Society of New Hampshire, the Applicant has recently secured binding agreements to add 123 acres to the Project's conservation plan. *See* Addendum to Post Hearing Brief. This new conservation property surrounds turbines 9 and 10, and consequently has the greatest amount of visibility from Willard Pond. *See* Addendum to Post-Hearing Brief at 22. . If the Project is constructed and operated as presently configured, this additional

conservation land will be preserved from future commercial or residential development, even after the wind farm is decommissioned. *Id.* In total, the Project is obligated to conserve, through agreements it has entered into, a total of 808 acres of land – nearly 13 times as much land as the Project will impact.

5) Ms. Vissering's fifth recommendation is to identify and address all areas from which portions of the roads, ridgeline clearing, cut and fill slopes and or turbine/pads may be visible. Ex. PC 1, Vissering VIA at 18. The Applicant has followed this recommendation. Saratoga Associates has evaluated the Project's clearing and grading areas, and has determined that they "will be somewhat visible but difficult to discern from most vantage points." Ex. AWE 9, Guariglia Supp. Testimony at 23:3-16. To demonstrate visibility of clearing and grading, visual simulations of the Project from Bald Mountain and Willard Pond were prepared and submitted. *See* Ex. AWE 9, Guariglia Supp. Testimony, Att. JWG-7B and JWG-8B. These photo simulations substantiate Mr. Guariglia's conclusions regarding the limited visibility of the Project's clearing and grading areas. Therefore, no further action regarding this issue is needed.

6) Ms. Vissering's sixth recommendation is for revegetation of cut and fill slopes and all non-permanent surfaces immediately following construction. Ex. PC 1, Vissering VIA at 19. The Applicant believes that because this recommendation deals with matters under the purview of the New Hampshire Department of Environmental Services, the conditions recommended by that agency for the Project's Alteration of Terrain and Wetland Permits should govern, and no further/different action is necessary. *See* Ex. COMM 12 (Final Decision & Conditions from NHDES).

7) Ms. Vissering's seventh and final recommendation is for screening plantings to mitigate any significant visibility of the substation and O & M facility. Ex. PC 1, Vissering VIA at 19. AWE objects to this recommendation as unnecessary and contrary to a prior SEC decision on this same topic. The substation and O & M facility are proposed to be located off Route 9, in close proximity to the existing PSNH transmission corridor. Ex. AWE 1, Application at 33 and 35. As such, the substation and O & M facility will not measurably change the character of the site. In these similar circumstances the SEC has found that "...the mitigation measure...would provide no discernable benefit." Application of Groton Wind, LLC (SEC Docket No. 2010-01), *Decision Granting Certificate of Site and Facility with Conditions* at 49 (May 6, 2011). This recommendation, therefore, should be rejected.

Conclusions Regarding Aesthetics

Neither RSA 162-H nor the Committee's rules define "aesthetics." Consequently, there are no written criteria in New Hampshire for evaluating a wind project's impacts on aesthetics. Nor are there any standards for conducting a visual impact analysis. Mr. Guariglia and Ms. Vissering employed different methodologies in evaluating the Project's impacts on aesthetics and reached different conclusions, with Ms. Vissering acknowledging that another expert could apply her own methodology and reach a different conclusion than she did. Tr. 11/28/12 (Day 7) AM at 120:19-24, 127:11-13. Ms. Vissering examined the Project's impacts from just a few locations and, for the purposes of her methodology, placed undue emphasis on views at just a few locations. She ignores the fact that the Project will not be visible in the vast majority of the study area. On the other hand, Mr. Guariglia prepared viewshed maps and several photo

simulations, and conducted a general visual impact assessment looking at the entire ten-mile study area at a landscape level rather than honing in on and analyzing impacts on a few locations. Tr. 11/2/12 (Day 5) PM at 121:7-12. Mr. Guariglia testified that his study methodology is a common practice, that regulatory bodies like the NH SEC have accepted it, and that this analysis has not been rejected by a regulatory body and is usually welcomed. *Id.* at 121:13-21; 122:3-15. Mr. Guariglia also testified that his VIA followed particular steps, which he described in detail. *Id.* at 148:19-153:13.

Although Mr. Guariglia and Ms. Vissering reached different conclusions, the preponderance of the evidence in this case clearly supports a finding that the Project will not have an unreasonable adverse effect on aesthetics in the region. In making its aesthetics determination, the Committee must examine the Project's effects upon aesthetics within the entire study area, and not simply upon a few specific locations such as those selected by Ms. Vissering. *See Application of Lempster Wind, LLC (SEC Docket 2006-01), Decision Issuing Certificate of Site and Facility with Conditions*, at 27 (June 29, 2007); *Application of Granite Reliable Power, LLC (SEC Docket 2008-04), Decision Granting Certificate of Site and Facility with Conditions* at 43 (July 15, 2009); . Significantly, the extent of the Project's visual impact upon the vegetated viewshed (5%) is very similar to that of the Groton Wind Project (4%) which the SEC determined did not have an unreasonable adverse effect on aesthetics in the region. *See Application of Groton Wind, LLC (SEC Docket 2010-01), Decision Granting Certificate of Site and Facility* at 48-49 (May 6, 2011). Since Mr. Guariglia has presented much more information about the Project's visual impacts within the 10-mile study area than has Ms.

Vissering, the weight of the evidence in this case favors Mr. Guariglia's conclusions that the Project will not have an unreasonable adverse effect on aesthetics.

Even if the SEC agrees with Ms. Vissering's assessment that the Project will have a "significant" impact on views at Willard Pond and from Bald Mountain, such a determination does not equate to a finding under RSA 162-H:16, IV that the Project will have an *unreasonable adverse effect* on aesthetics in the *entire Antrim region*. Neither Antrim's Master Plan nor Antrim's open-space conservation plan nor any other local, regional or state document identifies any specific views within the region designated for preservation, and there are few resources of statewide or national significance within the study area. Tr. 11/2/12 (Day 5) PM, at 164:17-24, 165:1. Mr. Kimball also confirmed that from AMC's perspective, Willard Pond is not an area of state, regional or national significance. Tr. 11/28/12 (Day 7) AM at 10:22-24. Moreover, to the extent that the Project will have some visual impacts within a very small portion of the study area, AWE has gone to great lengths (e.g. committed to use a radar-activated lighting system and secured extensive conservation easements) to mitigate those impacts. Thus, the Committee may properly conclude that the Project will not have an unreasonable adverse effect upon aesthetics.

2. Historic Sites

AWE provided uncontroverted expert testimony of Dr. Richard Will and Mr. Russell Stevenson that the Project will not have an unreasonable adverse effect upon archaeological or architectural historic sites. *See* Ex. AWE 1, Will & Stevenson Prefiled Direct Testimony; Ex. AWE 9, Will & Stevenson Supp. Testimony; Tr. 11/2/12 (Day 5) at 94-159.

Dr. Will is employed by TRC Companies and has been involved with archaeological resource assessment of wind projects since 1992. Ex. AWE 1, Will & Stevenson Direct Testimony at 2:14-15. He participated in TRC's Phase IA archaeological survey of the Project site which identified and collected information about archaeological resources in the Project area. *Id.* at 5:7-10. TRC also conducted a Phase IB survey consisting of a walkover of the Project's archaeological area of potential effect ("APE") – the area where construction activities may result in ground disturbances. *Id.* at 6:1-4. Due to a recent snowfall, a 100% walkover of the APE could not be completed. *Id.* at 6:6-8. This was reported to Ms. Feighner of the New Hampshire Division of Historical Resources ("DHR") who confirmed that TRC's walkover was adequate. *Id.* at 6:10-12. At the adjudicative hearing, Dr. Boisvert indicated that before he was appointed to the Subcommittee assigned to hear this docket, he participated in DHR's review of TRC's walkover survey and determined that it was adequate. Tr. 11/2/12 (Day 5) AM at 133:4-15.

A report of TRC's Phase IA and IB archaeological assessments was submitted with the AWE Application. Ex. AWE 3, App. 9B (Results of Phase I Archaeological Survey of the Antrim Wind Project). The Phase IA survey indicated that no Historic Period or Precontact Period archaeological sites within the Project's boundaries or within 10 km of the Project have been previously documented. Ex. AWE 1, Will & Stevenson Prefiled Direct Testimony at 6:16-18. The Phase IB walkover survey indicated that no landforms suitable for Precontact Period subsurface testing were observed and that no Historic Period features (e.g. cellar holes) other than stone walls within the lower elevations on the north side of Tuttle Hill were identified. *Id.* at 6:21-22, 7:1-2.

Therefore, no subsurface testing was conducted and no additional archaeological evaluation was deemed necessary. *Id.* at 7:2-4.

In a letter dated January 6, 2012, DHR concurred with these recommendations and found the report acceptable. Ex. AWE 3, App. 9C (New Hampshire Division of Historic Resources Letter). DHR also indicated that if any archaeological resources are discovered or affected as the result of project planning or implementation, or if the Project's plans change, DHR is to be consulted. *Id.*

Mr. Stevenson, an architectural historian employed by A.D. Marble & Company, testified about his studies concerning the Project's anticipated impacts on above-ground historical properties, as well as the process under Section 106 of the National Historic Preservation Act which requires that federally licensed projects provide for the protection of historic properties. Ex. AWE 1, Will & Stevenson Prefiled Direct Testimony at 7-8. Mr. Stevenson explained that because the Project will require a permit from the U.S. Army Corps of Engineers ("USACE"), the Project is subject to the Section 106 process in which USACE, in consultation with DHR, determines whether the Project will have an adverse effect on historic sites and, if so, whether mitigation measures must be taken. *Id.* at 8:7-11. Mr. Stevenson summarized A.D. Marble's studies which included compilation of a Project Area Form ("PAF") containing text, maps and photographs of 97 properties, all which are intended to provide an historic context for the three-mile area surrounding the Project and to identify contextual themes and building types, and to recommend further survey for resources within the three-mile area that may be eligible for listing in the National Register of Historic Places. *Id.* at 8:18-21, 9:1-2; *see* Ex. AWE 3, App. 9D (New Hampshire Division of Historic Resources Area Form). Mr.

Stevenson's prefiled direct testimony identified properties that were either listed or eligible for listing in the National Register of Historic Places, as well as other resources warranting further study. Ex. AWE 1, Will & Stevenson Prefiled Direct Testimony at 9. He also noted that no buildings or structures will be acquired or physically altered or removed by the Project, and thus, impacts (if any) would be limited to those resulting from the visibility of the Project from the historic site. *Id.* at 10:1-12.

Mr. Stevenson's supplemental prefiled testimony provided an update on his work with DHR to identify properties within a three-mile area eligible for listing on the National Register of Historic Places and to assess the effects of the Project on listed properties within a five-mile radius of the Project. Ex. AWE 9, Will & Stevenson Supp. Testimony at 2:19 – 3; Tr. 11/2/12 (Day 5) AM at 130:6-14. During questioning of Mr. Stevenson by Ms. Pinello at the hearing, she alluded to "misidentified photographs" in the PAF. Tr. 11/2/12 (Day 5) AM at 117:9-11. However, Mr. Stevenson testified that if, during his consultations with DHR it is determined that DHR needs more information about properties within the APE or anything else that the agency needs to complete its work under the Section 106 process, the Project will comply with those requests. Tr. 11/2/12 (Day 5) at 158:11-19.

The fact that the Section 106 process has not yet concluded does not preclude a finding that the Project will not have an unreasonable adverse effect on historic sites. The Committee has recognized that the Section 106 process is an iterative one, and "provides assurance that any adverse effect on historic sites will not be unreasonable." *See, e.g.,* Application of Groton Wind, LLC (SEC Docket 2010-01), *Decision Granting Certificate of Site and Facility* at 56 (May 6, 2011). Because the Section 106 study

period extends beyond the anticipated completion date of this docket, the Committee may, as it has done in other dockets, include certificate conditions (i.e. continued consultation with and monitoring by DHR) designed to assure that the Project will not have an unreasonable adverse effect on historic sites. *Id.* For all of the reasons set forth above, the Committee may properly determine that the Project will not have an unreasonable adverse effect on historic sites.

3. Air Quality

As is the case with other wind projects certificated by this Committee, the AWE Project will not have an unreasonable adverse effect on air quality because it will not create air emissions. Application of Groton Wind, LLC (SEC Docket No. 2010-01), *Decision Granting a Certificate of Site and Facility* at 58 (May 6, 2011). Moreover, the Project will actually substantially reduce emissions of many air pollutants, including greenhouse gases, creating a significant net benefit with respect to climate change and other air pollution concerns.¹¹

The New Hampshire Legislature has found that “global climate change is a significant environmental problem” and has implemented several policies to reduce the emissions of greenhouse gases. *See, e.g.*, RSA 125-O:19 (regarding the Regional Greenhouse Gas Initiative); RSA 162-H:6-a (providing expedited permitting for renewable energy projects); RSA 362-F:1 (regarding the Electric Renewable Portfolio Standard). Greenhouse gases, “if they’re continued to be emitted at present rates, will bring about severe climate disturbances, which will impact all aspects of the environment

¹¹ Importantly, the Project will result in the reduction of poor air quality episodes in southern New England, and will indirectly benefit southern New Hampshire. Tr. 11/27/12 (PM) 53:7-17, 56:6-22.

...” Tr. 11/27/12 (Day 6) PM at 36:4-10; *see also* Tr. 11/2/12 (Day 5) AM at 81:13-22 (public statement of Eric Orff).

The Project will substantially reduce greenhouse gas emissions by displacing variably-dispatched fossil-fueled plants in the ISO-NE region. *See* Tr. 11/27/12 (Day 6) PM at 8:18 through 9:2, 9:10-17, 50:11 through 51:8; Ex. AWE 1, App. 10 (Avoided Emissions Report). The Time Matched Marginal model used in Appendix 10 to the Application was developed together with the United States Environmental Protection Agency and the United States Department of Energy and it “has been used in the evaluation of more than 270 renewable energy and alternative energy projects in the United States and is regularly relied upon by the United States Department of Energy.” Ex. AWE 9, High Supp. Testimony at 7:9-11.

Even taking into account recent declines in reliance on coal and oil in ISO-NE, greenhouse gas reductions will be significant. *See Id.* at 2:16 through 3:9; Tr. 11/27/12 (Day 6) PM at 43:14 through 44:2 (indicating adjustments of only two to four percent if one accounted for reductions in coal and oil use through 2010). Reliance on even the most efficient natural gas units (not including emissions from the development of natural gas resources) still results in substantial emissions of greenhouse gases. *Id.* at 46:7-11. While the avoided emissions from the Project are a small percentage of the overall greenhouse gas emissions in the United States, the cumulative impact of the Antrim Wind Project and other renewable energy projects on air emissions is significant, and the construction of many such projects will be necessary to make a significant impact on overall emissions. *Id.* at 71:9 through 72:11.

Therefore, the Project will not have an unreasonable effect on air quality and will actually result in a net benefit in several areas, including carbon dioxide (CO₂), methane (CH₄), nitrogen oxides (NO_x), sulfur dioxide (SO₂) and particulate matter. Ex. AWE 1, App. 10 (Avoided Emissions Report).

4. Water Quality, Wetlands Effects and Mitigation

Water Quality

Section I.4 of the Application at pp. 65-67 summarizes the Project's effects on water quality and notes that the Project will not withdraw or discharge any water. Ex. AWE 1, Application at 65. In addition, by displacing fossil fuel facilities, the Project will actually avoid water consumption over the life of its operations. Tr. 11/27/12 (Day 6) PM at 6:14-18, 9:2-7; Ex. AWE 1, App. 10 (Avoided Emissions Report) at 8. Detailed information about the Project's impacts on water quality is contained in the Project's Standard Dredge and Fill Application, Alteration of Terrain Application, and Individual Sewage Disposal System Application. Ex. AWE 2, Apps. 2A, 2B, and 2F. Subsequent to filing the Application, AWE supplemented this information. *See* Ex. AWE 6, First Supp. to Application at 9 and Ex. AWE 9, Fourth Supp. to Application, App. 2I.

The Applicant provided uncontroverted expert testimony that the Project will not have an unreasonable adverse effect upon water quality. Daniel Butler and Patrick Martin submitted prefiled direct and supplemental testimony on this subject and testified at the adjudicative hearing. *See* Ex. AWE 1, Butler & Martin Prefiled Direct Testimony; AWE 9, Butler & Martin Supp. Testimony; and Tr. 11/1/12 (Day 4) PM. Potential impacts to water quality, including erosion and sedimentation during construction, and changes in stormwater runoff, have been addressed through a Project design that meets

all applicable state and federal standards. Ex. AWE 1, Butler & Martin Prefiled Direct Testimony at 7:12-14; Tr. 11/1/12 (Day 4) PM at 23:8-12. A stormwater management system has been designed to minimize impacts to the existing natural drainage ways, and overall drainage and flow directions will remain generally the same post construction. Ex. AWE 1, Butler & Martin Prefiled Direct Testimony at 7:15-17.

The New Hampshire Department of Environmental Services (“NHDES”) conducted a technical review of the Application and supplemental submissions relating to water quality issues and has recommended that the SEC approve the applications for an Alteration of Terrain Permit, Wetland Permit and Individual Subsurface Disposal System, subject to several conditions. Ex. COMM 12 (DES Letter and Final Decisions of AoT Bureau, Wetlands Bureau, and Subsurface Systems Bureau). In light of NHDES’s recommendations, and the testimony and information provided by Messrs. Butler and Martin, the Applicant has demonstrated that the Project will not have an unreasonable adverse effect upon water quality.

Wetlands

The Applicant provided uncontroverted expert testimony of Dana Valteau that the Project will not have an unreasonable adverse effect upon wetlands or vernal pools. *See* Ex. AWE 1, Valteau Prefiled Direct Testimony and Ex. AWE 9; Valteau Supp. Prefiled Testimony. The study and evaluation of the wetlands and vernal pools in the Project area have resulted in a design plan that avoids and minimizes impacts to those resources. Ex. AWE 1, Valteau Prefiled Direct Testimony at 8:11-12. Mr. Valteau used a methodology consistent with the approach used by other experts to determine impacts to wetlands and vernal pools. *Id.* at 4:19-20. Field studies were conducted during spring, summer and

fall of 2011, and reports of those studies are included as Appendices 11C and 11D of the Application. *Id.* at 4:20-22. The Wetlands Report (Application Appendix 11C) indicates that the Project will impact nine wetlands, but only 0.19 acres (8,350 square feet) of permanent wetland impact (those deemed unavoidable during the Project planning process) are expected. *Id.* at 7:11-14. Because this impact level is below 10,000 square feet, NHDES does not require compensatory mitigation. *Id.* at 7:17-19. The Vernal Pools Report (Application Appendix 11D) indicates that the Project will not directly impact any jurisdictional vernal pools or areas currently described as potential vernal pools. *Id.* at 8:4-6.

Subsequent to the filing of the Application, additional studies of the Project's proposed laydown yard, temporary meteorological tower sites and proposed site for a radar activated lighting system tower were performed to determine their impacts on wetlands and vernal pools. Ex. AWE 9, Valteau Supp. Testimony at 2-6. Of these areas, only the laydown yard design will necessitate impacts to a very small anthropogenic wetland (i.e. 0.02 acres in size). *Id.* at 4:7-10, 5-6.

Based upon the above-referenced reports and information, Mr. Valteau has posited that the Project will not have an unreasonable adverse effect on wetlands or vernal pools. Ex. AWE 1, Valteau Prefiled Direct Testimony at 8:20-21. This unrebutted expert opinion, as well as NHDES's conditional approval AWE's Wetlands Permit Application, amply supports the conclusion that the Project will not have an unreasonable adverse effect upon wetlands or vernal pools.

5. The Natural Environment

AWE submitted substantial evidence demonstrating that it has appropriately studied the Project's potential effects on the natural environment as it relates to birds, bats, wildlife, wildlife habitat, and plants/natural communities. The results of AWE's studies are contained in reports submitted with the Application.¹² In addition to the numerous studies submitted with its Application, AWE presented the expert testimony of Certified Wildlife Biologists Dana Valleau and Adam Gravel on the subjects of birds, bats, wildlife, wildlife habitat and natural communities. AWE consulted with various state and federal agencies to identify the appropriate scope of these studies. Ex. AWE 1, Valleau & Gravel Prefiled Direct Testimony at 8:8-11. Those agencies included the United States Fish and Wildlife Service ("USFWS"), New Hampshire Fish and Game Department ("NHFGD"), New Hampshire Natural Heritage Bureau ("NHNHB"), New Hampshire Department of Environmental Services ("NHDES"), United States Army Corps of Engineers ("USACE") and United States Environmental Protection Agency ("USEPA"). *Id.* at 11-16. AWE submitted survey protocols for the agencies' review and met with the agencies to discuss a proposed work plan designed to assess nocturnal migration, bat activity, raptor migration, breeding bird species composition and abundance, bald eagle breeding, wetlands and vernal pools, rare plants, and natural communities in the Project area. AWE 9, Valleau & Gravel Supp. Testimony at 3:16-22.

¹² These studies include: Natural Community Assessment, Application Appendix ("Appx.") 11A; Rare Plants Assessment, Appx. 11B; Wetlands and Vernal Pools Information, Appx. 2A; Breeding Bird Survey, Appx. 12A; Diurnal Raptor Migration Surveys, Appx. 12B; Nocturnal Migration Surveys and Acoustic Bat Monitoring Survey, Appx. 12C; Rare Raptor Nest Survey, Appx. 12D; Bat Mist Netting Survey, Appx. 12E; Avian and Bat Protection Plan, Appx. 12F; Revised ABPP, AWE 6, First Supp. to App., Appx. 12F-1; Wildlife Impact Assessment, *Id.*, Appx 12G.

Since the State of New Hampshire does not have guidelines for assessing and evaluating natural resource concerns at wind energy projects, AWE followed USFWS's detailed Land-Based Wind Energy Guidelines and the Eagle Conservation Plan Guidance. *Id.* at 4:7-10. AWE's studies were consistent with these guidelines, and AWE presented a summary of its study results to USFWS and NHFGD prior to filing its Application. *Id.* at 4:11-14. NHFGD reviewed the AWE Application for completeness and found that the bird and bat surveys complied with the Department's requests for pre-construction bird and bat activity surveys that were identified through initial consultations. Ex. COMM 13, Letter from NHFGD. While NHFGD did not request additional surveys, USFWS requested that additional summer eagle use surveys be conducted. AWE 9, Valteau & Gravel Supp. Testimony at 4:15-17. Such additional studies were conducted for six days at the Project site between June 1 and August 20, 2012, and the results of those surveys were provided to USFWS by letter, a copy of which is attached to the Valteau and Gravel Supplemental Testimony. *Id.* at 4:17-20; AWE 9, Valteau and Gravel Supp. Testimony, Att. DV & AJG-1.

As demonstrated below, there is ample record evidence to support the determination that the Project will not have an unreasonable adverse effect upon the natural environment.

a. Birds and Bats

AWE's numerous avian and bat studies are described in Section I.5.c. of the Application, and summarized and discussed in the prefiled testimony of Dana Valteau and Adam Gravel. Ex. AWE 1, Application at 81-94; Ex. AWE 1, Valteau & Gravel Prefiled Direct Testimony at 8-28. In addition, Messrs. Valteau and Gravel provided

expert testimony on the Project's potential impacts upon avian and bat species. With respect to avian species, they noted that documented post-construction avian mortality at ten wind farms in New England and New York is low, *id.* at 29:19-20, and based upon observations at operational wind farms in the New England Region, bird collisions at the Antrim Project are expected to occur at a low frequency. *Id.* at 30:20-21 through 31:1. In addition, they posited that avian impacts are not expected to occur to a degree that would adversely affect populations. *Id.* at 31:1-2. With respect to bats, Messrs. Valleau and Gravel noted that of the total bat fatalities recorded during post-construction studies at ten wind farms in New England and New York, the majority appear to have been recorded in New York, where bat mortality ranged from 0.7 to 40.4 bats per turbine during the study period. *Id.* at 31:22 through 32:1-4. This compares with a much lower range at Maine and New Hampshire wind farms, *i.e.*, 0.17 to 5.51 bats per turbine per study period. *Id.* at 32:4-6. Based upon the accumulated knowledge of bat mortality at wind farms in New England, mortality at the Project is expected to be low. *Id.* at 33:7-8. However, in light of White Nose Syndrome, an emerging disease that has spread throughout New England and has caused the major decline of all six bat species that hibernate in caves or mines in the Northeast, *id.* at 31:18-21, what constitutes a biologically significant level of bat mortality may change. *Id.* at 33:8-10. The Project has anticipated this possibility and addressed this potential change by developing, in conjunction with NHFGD and USFWS, an adaptive management process under the Project's Avian and Bat Protection Plan ("ABPP") discussed below. *Id.* at 33:11.

New Hampshire Audubon Witness Carol Foss provided written and oral testimony concerning the Project's potential risks to Golden Eagles, and indicated that it

is reasonably likely that the species could be “taken” at a rate greater than what she considered to be consistent with maintaining stable or increasing populations. Ex. ASNH 25, Foss Prefiled Direct Testimony at 6. However, Ms. Foss’s position is negated by USFWS conclusion. Its modeling has predicted that the Project’s “risk to Golden Eagles is within the range considered to be low by the Service.” Ex. AWE 43, Electronic Mail Message from Sarah Nystrom, USFWS at 2. USFWS modeling also predicts annual collision rates for Bald Eagles to be at the low end of the moderate category when compared to other similar projects in the Northeast. *Id.* USFWS also stated that the Project does not appear to present a significant risk to breeding bald eagles, but did recommend that the Project monitor eagle use and notify USFWS if eagle use of the Project area increases. *Id.*

Mr. Lloyd-Evans testified for Public Counsel on the issues of birds and bats. However, unlike AWE, he did not conduct his own surveys of avian and bat species at the Project site. His prefiled testimony consists of his opinions, which are primarily based on his review of AWE’s studies. Mr. Lloyd-Evans is advocating for three years of post-construction avian and bat mortality studies, and adaptive management, if necessary, afterwards. Tr. 11/27/12 (Day 6) PM at 122:9-13, 123:2-4. Mr. Lloyd-Evans’ recommendations for three years of post-construction avian and bat studies are excessive and unreasonable. For the reasons discussed below, the Applicant contends that in lieu of devoting time and resources to three years of post-construction studies, it is much more reasonable and appropriate to implement the ABPP as proposed because it addresses potential avian and bat mortality in meaningful, immediate and targeted manner.

b. Avian and Bat Protection Plan (“ABPP”)

Recent studies indicate that there is little correlation between pre-construction risk assessments and actual document mortality of avian species at wind farms. Ex. AWE 1, Valteau & Gravel Prefiled Direct Testimony at 29:11-14. Because it is difficult to predict post-construction mortality, AWE has developed an Avian and Bat Protection Plan (“ABPP”) that will allow AWE to work continuously with USFWS and NHFGD to consider and react to actual results, so that unexpected events and changes to species of concern may be addressed proactively. *Id.* at 29:14-18. The ABPP describes actions the Project has taken - and will take - to avoid, minimize and mitigate impacts to avian and bat species. The basis of this approach is an adaptive management strategy. The initial ABPP was submitted with the Application; a revised ABPP, which incorporated additional comments from NHFG and USFWS, was submitted with the First Supplement to the Application. *See* Ex. AWE 3, App. 12F, and Ex. AWE 6, App. 12F-1.

The ABPP is discussed in detail in the Prefiled Direct Testimony of Messrs. Valteau and Gravel. Ex. AWE 1, Valteau & Gravel Prefiled Direct Testimony at 33:12 through 42:2. Among other things, the ABPP includes: a post-construction mortality survey; a post-construction acoustic bat monitoring survey; a curtailment evaluation study; consultation with state and federal agencies; and adaptive management targeted to address specific avian and bat issues, if necessary. *Id.* at 36:12-14 and 36:21 through 37:1. Because the population status of a given species is dynamic, the biological significance of individual losses at a project site can change over time. *Id.* at 40:18-21. The ABPP will continuously address changing circumstances surrounding avian and bat issues at the Project site and will enable AWE, with input from USFWS and NHFGD, to

implement adaptive management for dealing with risk to birds and bats over the life of the Project. *Id.* at 41:1-4.

Adaptive management provides solutions tailored to specific species, locations, weather patterns, wind speeds and/or seasons. *Id.* at 41:4-6. It is therefore more helpful in mitigating risks than simply studying populations or mortality rates. Adaptive management under the ABPP is guided by: formal post-construction study results documented during the first year of the Project's operation; a continuous Wildlife Mortality Monitoring Program with an Immediate Alert Procedure (which all site personnel will be trained on) for reporting unusual mortality events; and a phased consultation process with USFWS and NHFGD. *Id.* at 41:13-17. Messrs. Valleau and Gravel conclude that the ABPP is a superior plan for addressing potential avian and bat mortality. *Id.* at 42:7-8. They believe that because the AWE ABPP would actually implement measures that have been shown in practice to be effective at addressing avian and bat mortality, "it is much more appropriate and valuable than the traditional approach, which merely replicates pre-construction surveys at substantial cost to the Project and with no action steps intended to reduce mortality." *Id.* at 42:16-20. The ABPP offers the best use of Project and agency resources to study and address post-construction avian and bat mortality. *Id.* at 44:9-10. In addition, as was pointed out during the hearing, the ABPP contains a section that states that all managers, supervisors, inspectors and maintenance crews will be trained in the identification, handling and reporting of dead or injured avian and bat species. Tr. 10/30/2012 (Day 2) at 255:23 through 257:1.

USFWS Northern States Bald and Golden Eagle Coordinator for the Northeast Region has reviewed the Project's ABPP and found it to be consistent with the Service's Land Based Wind Energy Guidelines. Ex. AWE 43, Electronic Mail Message from Sarah Nystrom, USFWS at 2. USFWS did not provide any additional comments or suggested revisions to the ABPP and stated that the adaptive management/phased consultation process included in the ABPP will be sufficient to meet USFWS's requirements for future consultation. *Id.* In light of these determinations by USFWS, recommended changes to the ABPP such as those suggested by Ms. Foss in her supplemental prefiled testimony are unnecessary and inappropriate.

A few days prior to the commencement of the adjudicative hearing, and well after the statutory deadline for filing state agency reports, NHFGD submitted a letter to the SEC commenting on the ABPP. Ex. COMM 16, Letter from NHFGD. Mr. Valleau addressed the letter during his oral testimony, as set forth below. Tr. 10/31/12 (Day 3) PM at 102:19 through 110:24.

NHFGD's first comment is that it prefers that tree clearing be done during frozen ground conditions as suggested in the ABPP and that tree clearing should be avoided until after August 1 to effectively avoid mortality of nesting birds and their young. Ex. COMM 16 (Letter from NHFGD) at 1. Although AWE understands this concern, the Project's tree clearing schedule will depend on the timing of final permits, and therefore clearing may need to occur prior to August 1. Tr. 10/31/12 (Day 3) PM at 106:14-20. Thus, AWE finds this condition onerous, given the relatively small area that will be cleared, as well as the fact that other types of development and timber harvesting activities are not subject to a similar restriction. *Id.* at 106:21 through 107:3.

NHFGD's second ABPP comment is a request for information on the plans for revegetation of the Project's roadways and site. This comment overlooks the fact that revegetation information has been submitted with the Alteration of Terrain Application and was reviewed and approved by NHDES. *Id.* at 107:5-21; *see* Ex. COMM 12, Final Decision & Conditions from NHDES.

NHFGD's third ABPP comment requests that the ABPP be interpreted as requiring the use of data from other New England states and local projects for purposes of consulting and evaluating the Project's avian and bat impacts. AWE agrees with this comment. Tr. 10/31/12 (Day 3) PM at 108:8-19.

NHFGD's fourth ABPP comment supports AWE's efforts to involve NHFGD in the post-construction consultative process but suggests a certificate condition indicating that if NHFGD and AWE cannot achieve consensus on an ABPP issue, then NHFGD may petition the SEC for a final determination. AWE objects to this condition as it overlooks section 9.3.6 of the revised ABPP which provides for mediation in the event consulting parties do not agree on resolution of an issue. Ex. AWE 6, App. 12 F-1 at 67. AWE believes that such mediation is a better process for resolving ABPP issues than an SEC proceeding, which would be burdensome for AWE, all of the other parties to this docket, as well as for the SEC. Moreover, the ABPP's adaptive management process (including mediation) is acceptable to USFWS. In view of the foregoing, NHFGD's request for SEC resolution of ABPP disputes should not be granted.

NHFGD's three additional recommendations regarding the ABPP related to the Common Nighthawk, a state-listed endangered species.¹³ Ex. COMM 16, Letter from NHFGD at 2. These comments appear to stem from a Common Nighthawk mortality event at the Lempster Wind Project. *Id.* AWE believes that its preconstruction studies and the ABPP adequately addresses any concerns relating to the Common Nighthawk. First, it should be noted that unlike the AWE Project site, nighthawks were actually found to be nesting at the Lempster site very close to the turbine location during pre-construction surveys. Tr. 10/31/12 (Day 3) PM at 109:14-15. The Antrim site does not have any nesting nighthawks or even suitable habitat for such nesting. *Id.* at 109:15-17. Moreover, AWE's site restoration plan relies heavily on revegetation which will minimize potential for nighthawk nesting because that species typically nests in gravel or bare bedrock areas. *Id.* at 109:20 through 110:5.

NHFGD's request for a post-construction assessment of the Project's potential risk to Common Nighthawks is addressed in the ABPP which includes a post-construction avian mortality study of all of the AWE turbines sites under a very rigid protocol. *Id.* at 110:9-14. This study will reveal nighthawk nesting, so no additional study is necessary. *Id.* at 110:16-19.

Lastly, NHFGD suggests that operational mitigation may be necessary and should be evaluated to prevent mortality to Common Nighthawks and/or any other Threatened or Endangered Species that may be determined to be impacted post-construction. Ex. COMM 16, Letter from NHFGD at 2. This suggestion is adequately addressed by the ABPP's Adaptive Management Program. Tr. 10/31/12 (Day 3) PM at 110:20-24. During

¹³ It should be noted that neither New Hampshire's Endangered Species Conservation Act nor any rule promulgated thereunder shall interfere in any way with the siting or construction of any energy facility under RSA 162-H. RSA 212-A:13, III.

its first year of operations, AWE will study the effect of operations curtailment on bat mortality. Ex. AWE 6, App. 12 F-1 at 51-53. Under sections 8.3.1 and 8.3.2 of the ABPP, AWE will collaborate with USFWS and NHFWD to review the results of post-construction monitoring and other data, and should those parties agree that an operational control measure is needed to address bird or bat mortality, they will agree upon and implement an appropriate curtailment strategy. *Id.* at 58. Such a strategy may include: cut-in wind speed, daily and nightly timing of curtailment, seasonal timing of curtailment, and numbers of turbines to curtail. *Id.*

Conclusion Regarding Avian and Bat Species

Messrs. Valteau and Gravel concluded, based upon their pre-construction surveys at the Project site, their evaluation of post-construction avian and bat mortality data from other wind projects, and AWE's ABPP (which, notably, includes the conservation of over 800 acres of valuable forest habitat used by many species of birds, bats and other wildlife), the Project will not have an unreasonable adverse impact to any bird or bat populations. This conclusion is supported by a preponderance of the evidence. For the reasons discussed above, requests for post-construction studies or actions related to avian and bat species that are inconsistent with or in addition to the ABPP are either unreasonable or unnecessary and therefore should be denied.

c. Other Wildlife and Wildlife Habitats

Mr. Valteau's prefiled testimony generally describes the Project area's wildlife habitat and indicates that, according to a desktop review of known environmental factors, no known critical habitat or endangered species are present at the Project site. Ex. AWE 1, Valteau Prefiled Direct Testimony at 10:22 through 11:17. Based on consultations

with state and federal agencies, as well as correspondence from the USFWS, AWE concluded that no wildlife habitat assessment report needed to be submitted with the Application. *Id.* at 11:17-18; Ex. AWE 3, App. 18, USFWS Letter at 2 (“[p]reparation of a Biological Assessment or further consultation ... under section 7 of the Endangered Species Act is not required.”) In addition to the foregoing, Mr. Valleau’s testimony notes that while the Project’s plan to conserve 685 acres is not necessary for the mitigation of any potential impacts upon wildlife habitat, it will nonetheless provide the benefit of conserving “in perpetuity valuable lands that are similar in character and natural communities to those that are being developed in the Project Area.” Ex. AWE 1, Valleau Prefiled Direct Testimony at 12:3-7. Based upon the above-described factors, Mr. Valleau’s prefiled direct testimony concluded that the Project will not have an unreasonable adverse effect upon wildlife habitat. *Id.* at 12:10-11.

AWE prepared and submitted a Wildlife Impact Assessment (“WIA”) to address concerns about habitat fragmentation expressed by witnesses such as Ms. Morse (North Branch Intervenors) and Mr. Jones (Stoddard Conservation Commission). *See* Ex. AWE 6, App. 12G. In addition, Mr. Valleau and Mr. Gravel filed supplemental prefiled testimony and testified extensively at the hearing on the issue of habitat fragmentation. *See* Ex. AWE 9, Valleau & Gravel Supp. Testimony at 11-13; *see, e.g.*, Tr. 10/31/12 (Day 3) PM at 126-158.

The WIA states that “[d]irect impacts to wildlife from construction and operation of the project are not expected to be a significant concern.” Ex. AWE 6, App. 12G at 1. On the issue of whether the Project will result in habitat fragmentation, the WIA states:

While the Project will create some degree of disruption in a forested landscape that is already frequently disturbed and bisected by forest

management activities which can impact forest-interior species, the narrow footprint of the development represents a small incision into a large block of habitat. The narrow footprint does not separate and create a distinct habitat block or “island”, so does not constitute a fragmentation of habitat especially given the scale of the habitat block....[S]everal large parcels of land will be conserved as part of the project, providing for protection of 685 acres of habitat that will not be developed. This habitat conservation effort, coming directly from the Project, will ensure that a significant portion of this habitat block will remain in tact.

Id. A map illustrating the Project’s footprint in relation to the surrounding habitat and the New Hampshire Ranked Wildlife Habitat was submitted with Mr. Valleau’s and Mr. Gravel’s supplemental prefiled testimony. Ex AWE 9, Valleau & Gravel Supp. Testimony, Att. DV & AJG-2. It, as well as the testimony of Messrs. Valleau and Gravel, indicates that the Project will occupy a very small area within a much larger landscape. More specifically, of the 12,994 acres of un-fragmented habitat block associated with the Project area, the Project will impact only 5.4 acres of the Highest Ranked Habitat in New Hampshire and only 6.4 acres of the Highest Ranked Habitat in the Biological Region. *Id.* at 11:21 through 12:4. Importantly, of the 685 acres of conservation land noted above, the Project will conserve 275.6 acres of Highest Ranked NH Habitat, and 148.9 acres of Highest Ranked Habitat in the Biological Region. *Id.* at 11:9-11.

As Messrs. Valleau and Gravel observed, the small and narrow Project footprint within the much larger un-fragmented habitat block does not create significant habitat fragmentation. *Id.* at 11:19-22. Mr. Valleau testified that the Project’s relatively narrow roadway would not present a barrier to any large, highly mobile mammal like a bobcat. Tr. 10/31/12 (Day 3) PM at 128:7-13. He also testified that looking at the totality of the Project’s parameters, habitat fragmentation is not created; “animals still have the ability

to move around there, and the habitat is still continuous.” *Id.* at 136:18-20. To support that point, photographs of animals at other wind farms were submitted by AWE and discussed by Messrs. Valteau and Gravel at the hearing. *See* Ex. AWE 15 (Photographs of Wildlife); Tr. 10/31/12 (Day 3) PM at 136:18 through 140:13, 141:11 through 142:24. In addition, photographs submitted with Ms. Morse’s prefiled testimony, as well as her testimony at hearing, indicate that bears continue to use power line corridors such as the one located near the Project site. Tr. 12/3/12 (Day 10) AM at 94:9 through 96:6.

Although Ms. Morse and Mr. Jones expressed concerns that the Project would produce habitat fragmentation, the weight of the evidence supports AWE’s position that no such fragmentation will occur. The WIA and testimonies of Messrs. Valteau and Gravel concerning the very small incision the Project will create in an area that will also contain substantial conservation acreage, as well as their observations about wildlife species’ subsequent usage of other wind project property far outweigh any information to the contrary provided by other witnesses. Mr. Valteau’s and Mr. Gravel’s definition and discussion of habitat fragmentation are informed by their professional experience as well as the sources cited in the WIA and their supplemental prefiled testimony. Moreover, Mr. Valteau testified that there is no one measure to determine fragmentation. Tr. 10/31/12 (Day 3) PM at 133:12-13. This point is illustrated by the various definitions of habitat fragmentation supplied by other witnesses. For example, Ms. Morse defined habitat fragmentation to go “way beyond ‘island biogeography’” Tr. 12/3/12 (Day 10) AM at 81:24 through 82:2. And Mr. Jones testified that the introduction of *any* human activity on the Project’s ridgeline constitutes habitat fragmentation. Tr. 11/29/12 (Day 8) PM at 187:10-13. AWE’s witnesses provided ample credible, reasonable and compelling

evidence to support a finding that the Project will not have an unreasonable adverse effect on the environment due to habitat fragmentation. The SEC, therefore, should adopt their conclusions.

d. Natural Communities/Plants and Trees

AWE assessed the Project area to determine whether natural communities, rare plants and trees would be impacted. *See* Ex. AWE 1, Valleau Prefiled Direct Testimony at 9-10. The methodology employed for the assessment is described in Mr. Valleau's prefiled testimony, *id.*, and a full Natural Communities Report was submitted with the Application. Ex. AWE 1, App. 11A (Natural Communities). The surveys identified no significant natural communities or rare plants, and the assessment determined that none of the surveyed communities in the Project area would qualify as "exemplary." Ex. AWE 1, Valleau Prefiled Direct Testimony at 10:10-12. Therefore, no avoidance or mitigation plans for these resources are needed. *Id.* at 10:12-13. Based upon the surveys, Mr. Valleau posited that the Project will not result in any impacts to significant natural communities, rare plants or communities that are likely to support rare plants. *Id.* at 10:17-19. This unrebutted testimony is supported by the New Hampshire Natural Heritage Bureau's ("NHNHB") final report to the Committee. Ex. COMM 10, Memo from NHNHB. This report indicates that NHNHB reviewed the Application and conducted a final site visit on July 13, 2012 to search for a state-listed plant species within a few targeted natural community types with greater potential for rare species. *Id.* Based upon observations at the site visit and the Application materials, NHNHB determined that it is unlikely that the Project will impact rare plant species or exemplary

natural communities. *Id.* As NHNHB's conclusions are unchallenged, the SEC may properly adopt them.

6. Public Health and Safety

The undisputed evidence demonstrates that the Project will not have an unreasonably averse effect on public health and safety. This includes, but is not limited to, the evidence regarding construction issues, shadow flicker, sound, the Acciona turbines selected for the project, ice shedding, tower collapse/blade throw, fire, lightning and stray voltage, hazardous materials, aviation safety, and decommissioning.

a. Construction Issues

The uncontroverted testimony provided during the course of this proceeding supports that this Project will not have an unreasonable adverse effect on public health and safety during the construction phase. RSA 162-H:16, IV(c). Applicant witnesses Daniel Butler and Patrick Martin described a number of steps that AWE will take to ensure that the Project is constructed safely. They also testified that AWE will retain an experienced general contractor who will have overall responsibility for the construction of the Project. This general contractor, under the supervision of experienced AWE staff, will make sure that the Project is constructed in accordance with all applicable codes, standards and permit conditions. Ex. AWE 1, Butler & Martin Prefiled Direct Testimony at 9:21 through 10:1. Any blasting that is required will be done with advanced notification of residents in a radius around the blasting area (Tr. 11/1/12 (Day 4) PM at 34:20-23) according to documented safety and control measures, and warning signs and sounds, by an experienced licensed contractor who will do so in strict compliance with a project blasting plan approved by the New Hampshire Department of Safety and provided

to the Town. Ex. AWE 1, Butler & Martin Prefiled Direct Testimony at 10:10-16. In addition substation yards to be located adjacent to an existing Public Service Company of New Hampshire transmission corridor will be surrounded by a security fence. *Id.* at 5:16-17. It is thus clear that the Applicant meets the standard of no unreasonable adverse effect on public health and safety during the construction phase.

b. Shadow Flicker

The undisputed evidence demonstrates that shadow flicker from the Project will not have an unreasonable adverse impact on aesthetics or public health and safety. RSA 162-H:16, IV(c). Shadow flicker is “the flickering effect that occurs within a structure resulting from shadows cast by rotating blades of wind turbines.” Ex. AWE 1, Guariglia Prefiled Direct Testimony at 14:5-6. Shadow flicker is only considered inside structures, and it occurs at a distance of less than ten rotor diameters.¹⁴ Ex. AWE 1, App. 13B (Shadow Flicker Technical Memorandum) at 2. For shadow flicker to be present, turbine blades must be rotating, the sun must be low in the sky (e.g., shortly after sunrise or shortly before sunset), the sun must be shining brightly enough to cast shadows (e.g., not foggy or overcast), and the turbine shadow must enter a structure through unshaded windows that face the turbine. *Id.*

The Applicant conducted a shadow flicker study using *WindPRO 2.7 Basis* software (“WindPro”) and associated shadow module. *Id.* at 5. WindPro is a widely accepted software modeling package developed specifically for the design and evaluation

¹⁴ See also Planning for Renewable Energy – A Companion Guide to PPS22 Queen’s Printer and Controller of her Majesty’s Stationary Office (2004) (“Flicker effects have been proven to occur within ten rotor diameter of a turbine”) (quoted in Ex. AWE 9, Guariglia Supp. Testimony at 20:17-20). “Beyond ten turbine diameters, the intensity of the blade shadow is considered negligible and at such a distance there will be virtually no, or limited, distinct chopping of sunlight.” Ex. AWE 9, Guariglia Supp. Testimony at 20:11-13.

of wind power projects. *Id.* The data inputs and assumptions used in the shadow flicker model are listed and described in the Shadow Flicker Technical Memorandum. *Id.* at 5-6. The variables included the Project's terrain, location in relation to the sun, turbine dimensions and blade rotation speed, sun coverage and angle, receptor locations, receptor windows, sunshine probabilities, and operational time/rotor orientation. *Id.* The model conservatively assumed that every receptor had windows and that the area lacks screening vegetation and structures. *Id.* Importantly, if the turbines are actually screened by trees or other structures, then shadows should not occur, or should occur less frequently in areas where turbines are substantially screened by vegetation. Ex. AWE 1, Guariglia Prefiled Direct Testimony at 16:8-9.

Although neither the State of New Hampshire nor the Town of Antrim has regulations or guidelines regarding an acceptable degree of shadow flicker on a receptor, many European countries have identified 30 hours of shadow flicker per year as an allowable threshold, and many municipalities in the United States have adopted this as the level at which mitigation may be considered. Ex. AWE 3, App. 13B (Shadow Flicker Technical Memorandum) at 10. AWE's analysis indicates that shadow flicker will likely occur less than thirty hours a year at all receptor structures. *Id.* Only one receptor is predicted to experience more than 20 hours of shadow flicker a year. *Id.* at 7 and 10. This receptor (Receptor 80, the Longgood residence), which the WindPro model predicts will experience approximately 21.5 shadow hours a year does not, according to the Visual Impact Analysis, have a view of the Project turbines. *Id.*; Tr. 11/2/12 (Day 5) PM at 111:7-10. Therefore, that structure should not experience any shadow flicker at all. Ex. AWE 1, App. 13B (Shadow Flicker Technical Memorandum) at 6. If shadow flicker

does occur at Receptor 80, it will be at very limited times of the day. *Id.* at 8. In addition, the vast majority of the receptors projected by WindPro to observe shadow flicker do not have views of the turbines and therefore will not experience any shadow flicker. *Id.* at 7. The shadow flicker report concludes that: (a) there are 36 receptors within the distance of 1,160 meters; (b) 19 receptors may experience shadow flicker; but (c) the Project can be seen from only two of these 19 receptors (and those two receptors are predicted to experience less than ten minutes of shadow flicker a year). *Id.* Thus, the evidence demonstrates that shadow flicker from the Project will not have an unreasonable adverse impact on aesthetics or upon public health and safety. RSA 162-H:16, IV(c).

c. Sound

The weight of the evidence in this proceeding supports the fact that this Project will not have an unreasonable adverse effect on public health and safety because of sound. RSA 162-H:16, IV(c). AWE presented a detailed Sound Level Assessment Report prepared by Epsilon Associates that evaluated both existing sound levels and the potential noise from this Project. Ex. AWE 3, Appendix 13A (Sound Level Assessment Report). This Report concluded that the predicted worst-case sound levels for this Project would easily meet the acceptable noise levels that this Committee applied to the Lempster and Groton wind projects, as well as the World Health Organization's 45 dBA night time guideline for residential locations and the US EPA guideline. *Id.* at 9-1; Ex. AWE 1, O'Neal Prefiled Direct Testimony at 10:22 through 11:2. Nevertheless, Public Counsel's sound witness recommended that the Committee adopt criteria that would limit turbine sound to not more than a defined margin above a baseline sound level, similar to a recommendation he made in the Groton case, which the Committee rejected. Ex. PC 5,

Tocci Supp. Testimony at 19; Tr. 11/28/12 (Day 7) PM at 197:12 through 198:4.

Similarly, the sound witness for the North Branch Intervenor group provided no clear recommendation for the Committee in his prefiled testimony, and during the course of the hearing offered recommendations that have never been adopted in this or any other state or country for that matter. Ex. AWE 9, O’Neal Supp. Testimony, Att. RDO-B; Tr. 11/29/12 (Day 8) AM at 188:15-19; Tr. 11/29/12 (Day 8) PM at 84:20-29, 102:18.

The AWE Sound Level Assessment Report was prepared under the supervision of Robert D. O’Neal, a sound expert with over twenty years of experience and who provided expert testimony to this Committee in the Groton Wind docket. Ex. AWE 1, O’Neal Prefiled Direct Testimony at 1 through 3:4. The Sound Report predicted noise impacts using the Cadna/A noise calculation software that employs the ISO 9613-2 international standard for sound propagation. Ex. AWE 1, O’Neal Prefiled Direct Testimony at 6. This software included computations for topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption, and it imported the turbine locations and terrain height contour elevations in the surrounding area. *Id.* It was based on a model that “has been used by hundreds of other applicants in other projects around the country.” Tr. 11/1/12 (Day 4) PM at 241:18-20. Acciona turbines were modeled using manufacturer-provided, warranted broadband sound power levels with respect to wind speed. Ex. AWE 1, O’Neal Direct Testimony at 6. Sound levels anticipated from all ten wind turbines were modeled at 154 of the closest community receptors within an area of approximately 8km by 10km. *Id.* at 3-6.

Existing sound levels were monitored at five monitoring locations that were chosen to be representative of nearby residences in various directions. The

measurements were taken at these locations from September 16, 2011 to October 4, 2011. *Id.* at 4:7-10.

Projected sound levels were computed assuming that the receptors are always located directly downwind from all turbines simultaneously, which is a physical impossibility that provides conservative results. *Id.* at 6:18-20; Tr. 11/2/12 (Day 5) AM at 19:4 through 20:1. As Mr. O'Neal testified during the hearings with regard to Ms. Longgood's house, the closest residence to the Project, the anticipated worst case sound level there is 41dBA, but this assumes (unrealistically) the wind is blowing directly from every turbine to her house at the same time. Tr. 11/1/12 (Day 4) PM at 93:4-22. As Mr. O'Neal testified, taking into account the map that was included in his report and blown up as Ex. AWE 41, in general the sound level is going to be lower than the lines on the map indicate because the map reflects the previously stated assumption that all 10 turbines were running and operating at their maximum sound level, each being directly upwind of every receptor. *Id.* at 117:14 through 118:7. As he also testified, the model and the lines shown on the map do not take the mitigating effects of vegetation into account which make the estimate even more conservative. Tr. 11/1/12 (Day 4) PM at 153:6-8. In addition, as Mr. Tocci noted, Epsilon assumed hard ground everywhere, which is another appropriate, but conservative assumption. Tr. 11/28/12 (Day 7) PM at 248:24 through 249:4. Mr. O'Neal provided a summary of the ways in which the Epsilon report was conservative. Tr. 11/2/12 (Day 5) AM at 88:5-20.

Mr. O'Neal also noted that the mathematical computer modeling incorporated the guaranteed sound levels provided by Acciona. Tr. 11/1/12 (Day 4) PM at 94:8-13. He said that it is common to calculate predicted sound levels based on manufacturer's

specifications. Tr. 11/2/12 (Day 5) AM at 48:7-13. As he explained, Acciona rated this turbine at 107.4 decibels plus or minus 2, so it could be as high as 109.4 or as low as 105.4 decibels, but Epsilon assumed the maximum potential value of 109.4, thus making the estimates even more conservative, Tr. 11/1/12 (Day 4) PM at 118:13 through 119:14. Mr. O’Neal also pointed out, based on a review of a chart in a paper provided by Mr. James, the sound levels that Acciona is putting forth are eminently reasonable. *Id.* at 167:8-22. When asked about the use of model data for the Acciona turbine provided by the manufacturer, Mr. O’Neal said he was reassured by the fact that that Acciona was guaranteeing its sound curve and that based on his own observations of other turbines in the industry and a lot of post-construction testing he’s done, the numbers provided by Acciona were reasonable. *Id.* at 175:16-20.

Mr. O’Neal used noise evaluation criteria that have been used by this Committee for other wind projects, criteria that consider how much the Project changes sound levels over existing background or by comparison to an absolute standard. *See Application of Groton Wind, LLC (SEC Docket 2010-01), Decision Granting Certificate of Site and Facility with Conditions* at 80-89 (May 6, 2011); *Application of Lempster Wind, LLC (SEC Docket 2006-01), Decision Issuing Certificate of Site and Facility with Conditions* at 40-49 (June 29, 2007). He also used the “Guideline for Community Noise” (World Health Organization, Geneva, 1999) and the “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety” (U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, DC, 550/9-74-004, March 1974). Ex. AWE 1, O’Neal Direct Testimony at 7-9.

Based on this review, Mr. O’Neal concluded that because the predicted worst-case sound levels from this Project will be well below 45dBA at all occupied buildings, the Project will easily meet the acceptable noise levels established by the SEC for the Lempster and Groton wind projects as well as the WHO and EPA guidelines. *Id.* at 10-11. Epsilon also studied the noise levels that the proposed substation would generate, primarily from a transformer, and concluded the worst case sound levels from this are expected to be 33 dBA or less at any residence. *Id.* at 11.

Mr. O’Neal cited studies that concluded that “vibroacoustic disease”, “wind turbine syndrome” and “visceral vestibular disturbance” have been shown to be unproven hypotheses. *Id.* at 12-14. These conclusions are similar to those that this Committee reached in the Groton wind case when it said that “wind syndrome” and “vibroacoustic disease” had not been scientifically established. Application of Groton Wind, LLC (SEC Docket 2010-01), *Decision Granting Certificate of Site and Facility with Conditions*, at 82. Public Counsel’s witness, Gregory Tocci, admitted that he testified in the Groton case that none of the literature demonstrates a correlation between purported incidences of wind turbine syndrome and sound levels at receptor locations in proximity to wind turbines. Tr. 11/28/12 (Day 7) PM at 217:6 through 219:17. He also testified that his opinion on wind turbine syndrome has not changed since the Groton case. *Id.* at 247:8 through 248:1.

Mr. Tocci recommended that the Committee establish a baseline sound level and order that wind turbine sound not be allowed to be more than a defined margin above that baseline, in effect a delta over background. Ex. PC 5, Tocci Supplemental Testimony at 19. Mr. Tocci admitted, however, that his recommendations are not criteria this

Committee has ever adopted before and they were similar to what he recommended and the Committee rejected in the Groton case. Tr. 11/28/12 (Day 7) PM at 197:12 through 198:4. Mr. Tocci even went so far as to suggest an unreasonably low baseline background level of 14-15 dBA, and that baseline levels of 17 dBA and 19 dBA should be used as background levels for two of the areas in his Table 2 summary of sound impacts. Ex. PC 5, Tocci Supplemental Testimony at 20. According to Mr. O’Neal the lowest sound the instrumentation will measure is 15-16 dBA and Epsilon never observed any readings this low in the area of this Project. Tr. 11/1/12 (Day 4) PM at 80:11-15 and 103:4-7. He also said that 15 dBA is “extremely, extremely quiet” (*Id.* at 81:9-16), in fact 20 dBA is “very quiet” (*Id.* at 103:23). Mr. Tocci admitted that 15 dBA represents the equivalent of a completely pristine forest with no insect noise, a very rare occurrence, and that he has never recommended that as a baseline sound level in any project. Tr. 11/28/12 (Day 7) PM at 194:7-19.

In his testimony, Mr. Tocci points out that the wind turbines would be audible in some locations. In doing so, he seems to suggest that audibility is a criteria for determining the reasonableness of a potential impact, which would be totally impracticable and unrealistic. PC 5, Tocci Supp. Testimony at 21. Mr. O’Neal pointed out that since audibility is everywhere, in other words many sounds are already audible in this area, such a standard would not be appropriate to establish such vague and unenforceable criteria. Tr. 11/1/12 (Day 4) PM at 84:11-22. Audibility would, according to Mr. O’Neal, be “a very slippery slope” that would be impossible to measure and comply with. *Id.* at 115:20 though 116:4.

Mr. Tocci cited noise complaints at the Mars Hill project in Maine and wind turbines in Falmouth, Massachusetts to support an argument that there should be tighter standards in this case than the Committee has utilized previously. However, during the course of the proceeding, it became clear that these two locations both have residences far closer to the turbines (1000 and 1300 feet respectively) than what is proposed here, where the nearest non-participating residence would be at least 2800 feet away, a vastly greater distance than in either of those two instances. Ex. AWE 9, O’Neal Supplemental Prefiled Testimony at 6. In addition it became clear that in the case of Falmouth, the turbine in question is a “stall-controlled” turbine for which noise increases almost linearly. Tr. 11/2/12 (Day 5) AM at 30:11-22. The AW3000/116 turbine, on the other hand, is a pitch-controlled turbine that reaches a maximum sound level and then remains constant. *Id.*

Mr. Tocci measured sound levels at two locations in Antrim from August 22 to August 29, 2012 and then subtracted for instrumentation noise and insect sounds and argued that Epsilon’s nighttime background sound levels overstated background noise occurring during times of the year when insect sound is absent. Mr. O’Neal points out that subtracting from the pre-construction measurements for insect noise, as Mr. Tocci suggests, would not in any way influence the modeled noise projections for the Project. Tr. 11/2/12 (Day 5) AM at 90:9-20. One of the locations that Mr. Tocci used – Willard Pond – was purposefully not chosen by Epsilon because it was significantly further away from the proposed turbines than the other sites it selected. Tr. 11/1/12 (Day 4) PM at 106:8-9. Instead, Epsilon studied site L3, which it deemed to be a reasonable surrogate for locations like Willard Pond, *id.* at 108:10-11, where the Epsilon report estimates the

sound level from the Project to be 30 dBA. *Id.* at 119:18-19. It should be noted that with rare exceptions, Willard Pond is not used at night, and there are no occupied structures there. Ex. ASNH 23, Von Mertens Prefiled Testimony at 12 and 13. Thus, Epsilon's decision not to study that location is appropriate.

Mr. Tocci included a chart in his Supplemental Testimony that inaccurately claimed the sound level baselines from Table 6-2 of the Epsilon Report. Mr. Tocci's chart contained a column that purported to list percentages of people that would be either modestly annoyed, annoyed or very annoyed at the five receptor locations in the Epsilon report and the two locations he measured. Under cross examination, Mr. Tocci demonstrated that the annoyance commentary he provided for each location was extremely subjective and was based on a report that attempted to classify peoples' annoyance factors. Ex. PC 5, Tocci Supplemental Testimony at 20. Mr. Tocci agreed that the basis for his annoyance measurements, the Pedersen study, indicated that annoyance could be affected by perceived visual impact, that the response rate to the survey in the Pedersen study was only 37%, and that was not factored into the annoyance percentages that Mr. Tocci used in his chart. Tr. 11/2/12 (Day 5) AM at 187:9 through 188:23.

Richard James, the sound witness for the North Branch Intervenor Group, routinely testifies on behalf of groups that oppose wind projects, or as he put it "have concerns about a project." Tr. 11/29/12 (Day 8) PM at 8:7-8 and 110:8-13. He submitted many reports but, as evidenced by his own testimony, explained few of them. Mr. James recommended property value guarantees, which the SEC has previously rejected, noting that such a guarantee had never been used before and it was unclear how it would be

implemented as a practical matter. Application of Groton Wind, LLC (SEC Docket 2010-01), *Decision Granting Certificate of Site and Facility with Conditions*, at 41-42. Mr. James did not include any specific recommendations in his prefiled testimony, although in response to data requests he appeared to recommend a setback of 1.25 miles from any residence. Ex. AWE 9, O'Neal Supp. Testimony, Att. RDO-B; Tr. 11/29/12 (Day 8) PM at 36:7-17. Such a setback is significantly larger than any requirement for any wind energy project approved in this or any other state and has apparently been adopted only in the State of Victoria in Australia. Ex. AWE 9, O'Neal Supp. Testimony, Att. RDO-B. It is doubtful that any viable wind project could be constructed in New Hampshire with such a setback requirement and there is no credible evidence to support the argument that such a setback is justified in any way. He also intimated that the Committee should add somewhere between 5 and 15 decibels to the dBA measurements in Epsilon Table 7-2. Tr. 11/29/12 (Day 8) AM at 188:15-19. However, Mr. James's additional decibel level restrictions appeared to be arbitrary and were not substantiated with any further evidence. Mr. James did testify that the Committee should establish an A-weighted level of 35 dBA, Tr. 11/29/12 (Day 8) PM at 84:20-21, although he did not know if that had ever been adopted as a sound limit permit condition for any other project. *Id.* at 102:18.

Mr. James also proposed in oral testimony that the Committee establish a limit of 50 dBC on low frequency sound, though he admitted there are no such limits that have been imposed in the United States. *Id.* at 80:5-7. The Epsilon Report notes that low frequency sound has been reduced to low levels in modern wind turbines and it is generally not an issue. Tr. 11/1/12 (Day 4) PM at 127:14-19; Ex. AWE 3, Appendix 13A

at 4-1. Mr. O’Neal also testified that with the setbacks that AWE has provided to residences (all at least ½ mile or greater), low frequency sound is not at a level that would cause vibration or rattles. Tr. 11/1/12 (Day 4) PM at 162:1-8. He noted that a lot of the research shows that the visibility of wind turbines contributes to complaints about low frequency noise. *Id.* at 163:1-11; Tr. 11/2/12 (Day 5) AM at 26:6-22. In addition, Mr. Tocci, in the Groton Wind case, testified that modern upwind wind turbines do not generate significant levels of low frequency sound in large part because the newer turbines are designed so that the blades are upstream of the tower support. Tr. 11/28/12 (Day 7) PM at 212:2-18.

IWAG attempted to raise issues about the microphones and wind shields Epsilon used to gather the sound levels. Mr. O’Neal testified that for the purposes of its sound measurements, “wind-induced noise is not an issue”, Tr. 11/1/12 (Day 4) PM at 226:6-9, and any contribution that wind made to the levels measured was “not significant at all.” *Id.* at 232:14-16. He also noted that at the conclusion of the report that IWAG cited to support its contention, it actually stated that the type of wind screen Epsilon uses does a reasonably good job under low to moderate wind speed conditions of measuring the background sound level. Tr. 11/2/12 (Day 5) AM at 89:8-15. Moreover, Mr. Tocci testified that it is not important to worry about the wind that moves over the microphone. See Tr. 11/29/12 (Day 8) PM 91:13-18.

With regard to impacts of sound on wildlife, Mr. O’Neal said based on personal observation he has seen a lot of wildlife around active wind turbines with no apparent ill effects. Tr. 11/1/12 (Day 4) PM at 135:13-18; Tr. 11/2/12 (Day 5) AM at 18:11-19. He also said that he is not aware of “anything that says, at a certain sound level or a certain

octave, band or frequency, is a concern for certain species.” Tr. 11/2/12 (Day 5) AM at 18:5-7. There was no credible evidence that sound from wind projects has unreasonable adverse impacts on wildlife. In addition, as previously noted, this Project will set aside significant acreage that is away from the turbines for conservation purposes, thus preserving that land (and the wildlife that use it) from sound encroachment.

While there was some discussion during the proceeding about turbine noise reduction through a software adjustment, which is possible with the AW3000/116 turbine, Mr. O’Neal said that he did not think it would be necessary because the Project has substantial buffer distances to nearby residences (more than double the distances in the Lempster Project). *Id.* at 91:11 through 92:9. Furthermore, the Epsilon study used conservative assumptions and yet still concluded that the expected maximum sound levels at the nearest residences are already four decibels below sound levels that were previously permitted for other wind projects in New Hampshire, where there have been virtually no complaints. *Id.*

AWE recommends that the Committee adopt a noise standard similar to those adopted for Lempster and Groton. The Agreement that AWE has executed with the Town of Antrim, contains noise restrictions with limits similar to the Lempster and Groton limits. Ex. AWE 4, App. 17-A (Town of Antrim Agreement) at 10. The Agreement also provides for pre-construction sound modeling and post-construction noise measurements. *Id.* The Applicant recommends that the Committee incorporate these provisions as a condition of the certificate. In support of applying previous standards to this Project, AWE points to the actual experience of the Lempster Wind Project: as the evidence in this proceeding confirms, there have only been two noise

complaints at the Lempster Project where the nearest non-participating residence is more than 1300 feet closer than those residences in proximity to this Project. Tr. 11/2/12 (Day 5) AM at 93:8-10.

d. Ice Shedding

The evidence establishes that the Project will not pose an unreasonable risk to public health and safety as a result of ice shedding. The proposed turbines sense ice buildup on the turbine blades and the turbines shut down automatically until icing subsides. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 17:19-21. AWE has proposed setbacks which will provide further protection against the risk of ice throw. *See id.* at 18:1-11; *see also* Ex. AWE 4, App. 17A (Town of Antrim Agreement) at 10-11. The Applicant recognizes that there could be some risk from ice shedding on Project roads and informal trails. However, this site is located on private land, where the access road will be gated and locked, and where the use of the Project area near the turbines will be limited to those granted permission. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 17:13-17. Despite these factors, the Applicant will install warning signs no less than 750 feet from each turbine tower base on access roads and no less than 500 feet from each turbine tower base on informal roads and trails to further mitigate risk of ice shedding. Ex. AWE 4, App. 17A (Town of Antrim Agreement) at 3.

e. Tower Collapse/Blade Throw

The remote locations of the turbines and the setbacks referenced above effectively mitigate public safety concerns with respect to tower collapse and blade throw. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 18:18-21. The turbines are constructed according to all applicable local, state and national safety codes, and relevant and

applicable international engineering standards. Ex. AWE 1, Kenworthy Direct Testimony at 18:16-17; Ex. AWE 4, App. 17-A (Town of Antrim Agreement) at 5. Finally, neither the proposed turbine model nor its predecessor model installed on a steel tower has ever experienced blade throw or tower collapse; this represents more than 2,400 turbines installed since 2004. *Id.* at 18:21 through 19:2. The turbines have a remote system (the Supervisory Control and Data Acquisition, or “SCADA” system) which monitors several variables and stops the turbine if any operating parameter exceeds a normal threshold. Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 11:19 through 12:2. This system continuously measures issues such as temperature, oil pressure, abnormal vibrations, overspeed, oil condition, grid disturbance, motor protections, breaking issues, blade angle, loss of communication and yaw limits. *Id.* at 12:3-5; Tr. 10/30/12 (Day 2) at 231:9-18. Such a system reduces the risk of tower collapse or blade throw by responding immediately to system imbalances or irregularities. If a safety issue is present, Acciona O & M technicians will have the ability and authority to stop the turbine and evaluate the situation safety before recommencing normal operations. *Id.* at 250:22-24.

f. Acciona AW 116 Turbines – Certified for Safety

From a general standpoint, AWE recognizes that while the Acciona wind turbines proposed for this project are relatively new to the market, they are designed based on Acciona’s proven 1.5 MW platform and that design has been thoroughly vetted by third parties. Tr. 10/30/12 (Day 2) at 159:9 through 160:12. The Acciona turbines already have met third party “design certification” and are seeking third party “type certification” which is expected to be complete during the second quarter of 2013. *Id.* at 162:8 through

163:6; 219:3-6. Such design certification includes a determination that the turbines are designed to operate safely and reliably. *Id.* at 249:9-12. On this point, Sally Wright of GL Garrad Hassan, who co-authored GL-GH's technical due diligence review of the AW3000 turbine platform, stated that she does not foresee any issues with the reliability and safety of the Project's proposed turbines Ex. AWE 9, McCabe, Wright & Segura-Coto Second Supp. Testimony at 3-5.

g. Fire

The weight of the evidence demonstrates that the Project will not have an unreasonable adverse impact on fire safety. Fires associated with wind turbines are very rare; turbines have very few flammable components. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 19:9-10; Tr. 10/30/12 (Day 2) at 230:12-17. In fact, local emergency services have never had to respond to an incident at of the 633 Acciona wind turbines in North America. *Id.* at 231:19-24. The safety plan implemented at the Project will meet Acciona's safety requirements. *Id.* at 244:9-19. Furthermore, the SCADA system, described above and in Exhibit AWE 7, monitors every turbine twenty-four hours a day, seven days a week at Acciona's Remote Operations Center. Ex. AWE 7, McCabe, Crivella & Segura-Coto First Supp. Testimony at 11:17 through 12:7. This system includes a fire detection and alarm system. *Id.* at 11:17-19.

The turbines will also be in compliance with the relevant codes cited by the State Fire Marshall. Ex. COMM 1 (Letter from State Fire Marshall); Ex. AWE 49 (RR regarding State Fire Marshall Standards); *see* Ex. APB 2, AWE resp. to APB DRs (APB 1-16) (regarding AWE's interaction with the Antrim Fire Department and the State Fire Marshall). Furthermore, AWE will engage with the Town of Antrim to develop an

emergency response plan for the Project and to assure that the Town has any emergency equipment necessitated by the Project which would not otherwise be required. Ex. AWE 4, App. 17A (Town of Antrim Agreement) at 6; Tr. 10/30/12 (Day 2) at 107:23 through 108:2.

h. Lightning and Stray Voltage

Lightning strikes do not pose an unreasonable public safety risk because the lightning protection system on modern wind turbine generators and the extensive grounding system prevents damage to the blade, the tower, and the electrical components. As a result, lightning strikes do not present any danger to the health and safety of the public. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 19:4-7. Stray voltage will not be an issue because neutral currents will be minimal, if not zero, and the turbines will be significantly bonded to the grounding system. Ex. AWE 1, Application at 97. All metal structures, equipment, wires and cabling will be isolated and/or guarded to prevent public contact. *Id.*; *see also* AWE 1, Kenworthy Prefiled Direct Testimony at 21:19 through 22:2.

i. Hazardous Materials

The evidence demonstrates that there will be no unreasonable adverse effects due to hazardous materials. In order to manage hazardous substances on the Project site, AWE will prepare a spill prevention control and countermeasures plan (“SPCC”) prior to the commencement of commercial operations. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 21:9-10. The SPCC plan will describe the procedures, methods and equipment that will be used at the facility to comply with the requisite standards. *Id.* at 21:11-14; *see also* Ex. AWE 4, App. 17A (Town of Antrim Agreement) at 9-10. This

plan will include any hazardous materials found in the turbines and any materials associated with the substation. Ex. AWE 1, Kenworthy Prefiled Direct Testimony at 21:1-10. The turbines are designed so that if a leak were to occur within the nacelle, liquids are retained in a drainage system, and the spill is contained within the tower. *Id.* at 20:17-20. The SCADA system referenced above further measures oil pressure and oil conditions, providing information to prevent and mitigate spills. Ex. AWE 7, McCabe, Crivella, & Segura-Coto First Supp. Testimony at 12:2-4.

j. Aviation Safety

The weight of the evidence demonstrates that there will be no unreasonable adverse effect on aviation safety. The Federal Aviation Administration (“FAA”) has issued a Determination of No Hazard to Air Navigation for all ten turbines in the Project. Ex. AWE 1, Application at 97; *see* Ex. AWE 2, App. 2E (FAA Determinations). The Applicant will install lighting on the turbines as required by the FAA and will comply with all other FAA requirements. *Id.* Therefore, any aviation safety concerns have been addressed.

In addition, Antrim Wind Energy has entered into an agreement with the AMC regarding the use of Radar-Activated Obstruction Lights (“RALS”). *See* Ex. AMC 5, AMC Agreement. This agreement requires AWE to install RALS after the FAA has approved this technology. *Id.* at 1-2. This technology “addresses nighttime visual impacts by keeping the required obstruction lights on turbines turned ‘off’ unless the radar detects aircraft in the area and activates the obstruction lights.” Ex. AWE 9, Kenworthy Supp. Testimony at 11:22 through 12:2. AWE will await the FAA’s approval

of this technology (and any associated safety determinations made by the FAA) before employing it. *Id.* at 13:1-12; Tr. 11/27/12 (Day 6) PM at 167:22 through 168:5.

k. Decommissioning

The weight of evidence in this proceeding shows that AWE has an adequate and reasonable plan for decommissioning the Project, one that has been agreed to with the Town of Antrim and is consistent with decommissioning plans the SEC has approved for previous wind projects. See Application of Groton Wind, LLC (SEC Docket 2010-01), *Order and Certificate of Site and Facility with Conditions*, Appendix II (May 6, 2011); Application of Granite Reliable Power, LLC (SEC Docket 2008-04), *Order and Certificate of Site and Facility with Conditions*, Appendix II (July 15, 2009); Application of Lempster Wind, LLC (SEC Docket 2006-01), *Order [and] Certificate of Site and Facility with Conditions*, Appendix III (June 29, 2007). The decommissioning plan is contained in the Agreement Between Town of Antrim New Hampshire and Antrim Wind Energy, LLC, Developer/Owner of the Antrim Wind Power Project Dated as of March 8, 2012. Ex. AWE 4, App. 17-A (Town of Antrim Agreement) at 11-13. Section 14 of this Agreement contains a number of decommissioning provisions which obligate AWE to ensure that the appropriate steps are taken to decommission the Project when it has exceeded its useful life.

Under the provisions in the Agreement, AWE or its successors and assigns must submit a detailed estimate of the costs of decommissioning, prepared by a qualified third party consultant, to the Town before construction commences; such estimate must be updated every three years. *Id.* at 11-12. The decommissioning estimate must include the cost of removing the foundations down to 18 inches below grade. *Id.* AWE must

complete decommissioning within 24 months after the end of the useful life of the Project, which is defined in Section 1.5 of the Town Agreement as the time when no electricity has been generated for a continuous period of 24 months. *Id.* at 12. AWE must provide a decommissioning plan to the Town at least three months before commencing decommissioning and receive the Town's approval before beginning decommissioning activities. *Id.*

AWE must also provide Decommissioning Funding Assurance ("Assurance") in a form reasonably acceptable to the Town before commencement of construction on the Project. *Id.* The Assurance must be in an amount equal to (i) the greater of the site-specific decommissioning estimate plus 25% or (ii) \$200,000. *Id.* Mr. Kenworthy testified during the hearing that the cost estimate for decommissioning the Project today would be about \$2 million. Tr. 10/30/12 (Day 2) at 29:1-4. Under the terms of the Agreement, the Assurance is to be provided by posting a bond, letter of credit, or other financial mechanism that provides for an irrevocable guarantee to cover the reasonably anticipated costs of complying with decommissioning obligations. Ex. AWE 4, App. 17A (Town of Antrim Agreement) at 12. The entity issuing or making the bond, letter of credit or other financial mechanism must have and maintain a minimum credit rating of "BBB" from Standard and Poor's, or "Baa2" from Moody's. Funds expended from the Assurance can only be used for expenses associated with the decommissioning cost. *Id.* at 12-13.

In his prefiled testimony, Mr. Edwards expressed concerns about the form of Assurance as described in the Agreement, concerns which he had voiced to the Town of Antrim before it entered into the Agreement. Ex. EA 1, Edwards Prefiled Direct

Testimony at 2-3. As Mr. Edwards' testimony indicates, the Town had "[m]ultiple public meetings . . . to allow material input from the public." *Id* at 3. The Town, which was represented by counsel, chose not to modify the Agreement after hearing Mr. Edwards' concerns. Tr. 11/30/12 (Day 9) PM 174:18 through 175:3; 177:7-9 and 198:9-10. In their supplemental prefiled testimony, Mr. Cofelice and Pasqualini rebutted Mr. Edwards' testimony regarding investment grade credit ratings of institutions providing performance guarantees. They indicated that the guarantee would be provided by an investment grade institution that is maintaining a minimum credit rating and recommended that the SEC not modify the language of the Agreement to limit the ability of the Applicant to obtain assurance only from certain institutions. Ex. AWE 9, Cofelice & Pasqualini Supp. Prefiled Testimony at 19-20.

The Agreement also provides that if AWE fails to complete decommissioning activities within the specified period, the Town may require expenditure of funds from the Assurance and will be entitled to receive the salvage value from the decommissioned materials to reimburse the Town for out-of-pocket expenses. Ex. AWE 4, App. 17A (Town of Antrim Agreement) at 13. The provisions of the Agreement are binding on all successors and assigns of AWE and AWE has the obligation of ensuring that any successors or assigns agree to be bound by the Agreement and must provide written confirmation of this. *Id*.

Mr. Pasqualini testified during the hearing that he would expect there would be a letter of credit "issued with the Project . . . in the Project's credit, in favor of the Town." Project Tr. 10/31/12 (Day 3) AM at 49:22-24. Mr. Pasqualini also offered the following:

The tax equity will want to know that decommissioning obligations have been addressed in the project pro forma, and if

there are current obligations to fund or provide decommissioning security, that they've been taken care of. So this project, at least in my experience, is a little unusual in a good way for the host town, in that there's actually -- on day one, there's a methodology to compute decommissioning and revisit it and to require collateral security. The tax equity will require, for as long as they are in the deal, certainly for the first 10 to 12 years of the transaction, that while they're around, that before they earn their flip, that that's taken care of.

Tr. 10/31/12 (Day 3) PM at 79:5-21. More detail about decommissioning is contained in Section F.6 of the Application. Ex. AWE 1, Application at 38-39. From the evidence presented in the Application and during the course of this hearing, it is clear that decommissioning for this Project has been more than adequately addressed and is consistent with prior decisions of this Committee.

I. Conclusion Regarding Public Health and Safety

For all of the reasons stated above, the proposed Project will not result in an adverse effect on public health and safety.

V. SUBDIVISION ISSUE

AWE is requesting that the Committee approve and sign a subdivision plat submitted as Appendix 19 to the Application. Ex. 5, App. 19 (Subdivision Plat). The creation of a subdivided lot where the Project's interconnection yard will be located is necessary to accommodate Public Service Company of New Hampshire who will ultimately own the interconnection facilities and requires that it own the land underlying them. Ex. AWE. 1, Application at 45. AWE has fully briefed and orally argued the reasons why it is necessary and appropriate for this Committee to create the needed subdivision, and hereby incorporates its prior written submissions and oral arguments concerning this issue into the within brief by reference. *See Applicant's Brief Regarding*

Authority of the Site Evaluation Committee to Create a Subdivided Lot (July 24, 2012); Tr. Hearing for Oral Argument on Subdivision Request (Sept. 6, 2012); *Applicant's Memorandum Regarding Antrim Planning Board's "Residual Authority" Over Subdivision of Land Associated with a Renewable Energy Facility* (Sept. 28, 2012); Tr. Hearing Re: Subdivision Request (Oct. 26, 2012). AWE respectfully requests that as part its Order and Decision in this docket, the Committee approve and sign the subdivision plat submitted in Appendix 19.

VI. APPLICANT'S PROPOSED CERTIFICATE CONDITIONS

The Applicant submits that the following conditions to a Certificate of Site and Facility for this Project are reasonable and therefore allowable under RSA 162-H:16, VII which permits the Committee to impose only those reasonable terms and conditions it deems necessary.

1. Conditions recommended by NHDES for its Alteration of Terrain, Wetland and Individual Subsurface Disposal System Permits. *See* Ex. COMM 12.

2. The Avian and Bat Protection Plan (Revised Version dated June 15, 2012). Ex. AWE 6, App. 12F-1.

3. Town of Antrim Agreement. Ex. AWE 4, App. 17A.

4. The Applicant will take steps to establish the conservation easements described in Ex. AWE 37 and in the Addendum to Post-Hearing Brief.

5. The Applicant will conduct post-construction visual surveys to confirm that the Project's post-construction appearance is aligned with the Project's predicted visual impacts. The Applicant will also conduct intercept surveys in various locations in Antrim and surrounding communities to determine how the Project is perceived by various

groups. The Applicant will report the results of those surveys to the Subcommittee within 18 months after the Project's commercial operation date.

6. The Applicant will not commence construction as defined in RSA 162-H:2, III until such time as construction financing is completely in place. The Applicant shall notify the Subcommittee when construction financing is in place and shall generally advise the Subcommittee of the name and address of the equity and debt entities providing such financing. Nothing in the SEC Decision or Order granting a Certificate of Site and Facility to the AWE Project shall prohibit the owners of land on which the Project is to be constructed from continuing with logging activities, nor prohibit the Applicant from installing the second proposed meteorological tower prior to obtaining construction financing. *See Application of Granite Reliable Power, LLC, SEC Docket No. 2008-04, Order and Certificate of Site and Facility at 4.*

7. The Applicant need not seek prior approval from the New Hampshire Site Evaluation Committee prior to conveying to Public Service Company of New Hampshire, its affiliates, successors and/or assigns, any real or personal property associated with the Project's substation and interconnection facilities.

8. The Applicant will comply with the Radar Activated Lighting System obligations under its Agreement with the Appalachian Mountain Club. Ex. AWE 7, App. 20 (AMC Agreement).

VII. CONCLUSION

Based upon the record evidence in this proceeding, and for all of the reasons set forth above, the Applicant has demonstrated by a preponderance of the evidence that the Project meets the statutory criteria for a Certificate of Site and Facility. Therefore, the Applicant respectfully requests that the SEC forthwith issue a Certificate of Site and Facility for the Antrim Wind, LLC Project subject to the above-referenced conditions.

Respectfully submitted,

Antrim Wind, LLC
By and through its Attorneys,
ORR & RENO, P.A.
One Eagle Square
P. O. Box 3550
Concord, NH 03302-3550
(603) 224-2381

By: /s/ Susan S. Geiger
Susan S. Geiger

By: /s/ Douglas L. Patch
Douglas L. Patch

By: /s/ Rachel Aslin Goldwasser
Rachel Aslin Goldwasser

CERTIFICATE OF SERVICE

I hereby certify that on this 14th day of January, 2013, copies of the within Brief were sent to persons named on the Service List either by electronic or first class mail, postage prepaid.

/s/ Susan S. Geiger

December 31, 2012

Harris Center for Conservation Education
Attn: Stephen Froling
83 King's Highway
Hancock, New Hampshire 03449

Paul Whittemore, Trustee
Whittemore Trust under Indenture dated October 2, 1992
P.O. Box 528
Auburn, New Hampshire 03032

Helen Whittemore, Trustee
Whittemore Trust under Indenture dated October 2, 1992
16501 N. El Mirage Road #735
Surprise, Arizona 85374-3600

Re: Conservation Easement

Gentlemen and Lady:

This letter outlines the terms and conditions upon which Antrim Wind Energy, LLC ("AWE") will facilitate the conveyance of a conservation easement from Paul Whittemore and Helen Whittemore as Trustees of the Whittemore Trust u/i/d October 2, 1992 (the "Owner") to the Harris Center for Conservation Education ("HCCE") on property it leases from the Owner in Antrim, New Hampshire (the "Premises") in connection with its wind energy project (the "Project"). AWE, HCCE and the Owner may be referred to individually as a "Party" or collectively referred to as the "Parties".

This letter is intended to set out the terms of a proposed conservation easement (the "Easement"). The Parties recognize that the terms outlined herein are specifically intended to be binding upon HCCE, AWE, and the Owner, subject to the conditions outlined below. The Owner and HCCE agree to prepare, execute and deliver a definitive Easement that will reflect the terms set forth in this Agreement and be in a form substantially similar to the Easement attached hereto as **Exhibit A**. The Parties further agree that although this Agreement and the Easement are not intended to serve as mitigation for any potential impacts created by the Project, the Easement may be counted by AWE as a component of any habitat conservation or mitigation plan required by any local, state, or federal permitting agency. The Parties further recognize that, if the Project proceeds, the Agreement and Easement will make a valuable contribution to the conservation interests of stakeholders in this region.

In consideration of the mutual promises and covenants contained herein, the Parties hereto agree as follows:

Easement: The Owner will grant the Easement to HCCE or its qualified designee, and HCCE will accept, the Easement, in a form substantially similar to the Easement attached hereto as **Exhibit A** and adapted, if necessary, to accommodate the final parameters of the Project as permitted, but in any event granted pursuant to New Hampshire RSA 477:45-47.

Consideration: Cash consideration shall be paid to the Owner by AWE in exchange for the grant of the Easement in an amount equivalent to [REDACTED] Dollars per acre of land contained in the Easement. Payment shall be due immediately upon the Effective Date of the Easement.

Agreement Effective: This Agreement is one of a series of five Agreements with owners of land in the Project Area and shall take immediate effect upon execution of this Agreement.

Easement Effective: The Easement shall not take effect unless and until the Project, using the amount and specification of turbines as submitted in an application to the New Hampshire Site Evaluation Committee for a Certificate of Site and Facility in Docket 2012-1 (e.g. ten (10) 3.0 Megawatt turbines), achieves Commercial Operations, but will become effective not more than one hundred eighty (180) days following the Commercial Operations Date of AWE's Wind Power Facilities on portions of the Premises and other adjacent land. For the Purposes of this Agreement, the "Commercial Operations Date" shall be the date on which all permitted wind turbines have been fully commissioned and accepted by AWE, in accordance with industry practices, and ISO New England Inc. (or other applicable system operator or regional transmission organization) certifies that commercial operations of the Project have commenced and the Project is capable of delivering electricity on a commercial basis (i.e., in quantities and for periods greater than required for testing) to a third party power purchaser (otherwise referred to as "Commercial Operations").

Appraisal: Not more than 60 days following the Commercial Operations Date, AWE shall, in consultation with HCCE and the Owner, obtain a duly qualified individual or firm to appraise the value of the Easement to determine the fair market value of the Easement and prepare a report documenting the same.

Survey; marking AWE shall share with the other Parties the results of surveys of the Premises and of the areas in which it intends to conduct

Commercial Operations. If so requested by HCCE, it shall cause internal boundaries to be monumented and blazed prior to the Easement Effective Date.

Tax Benefits: The Parties will cooperate to the extent appropriate to allow the Owner to obtain a tax benefit in respect of a charitable deduction as a result of the Easement grant. Notwithstanding the foregoing, nothing contained herein, nor any future course of dealings among the Parties, should be construed as AWE or HCCE providing tax advice to the Owner or as a representation that any such benefit is lawfully available.

Expiration: This Agreement shall expire upon the earlier of (a) the execution of the Easement or (b) December 31, 2015, provided that this date may be extended for up to three (3) one (1) year increments by AWE upon prior notice to HCCE and the Owner and further provided that AWE is working diligently to complete the Project.

Closing: AWE shall specify, upon not less than ten days' notice delivered to the other parties, a time and date not later than the Effective Date for Closing. The Closing shall take place at a location agreed to by the Parties.

Protection of Rights: Between the date of this Agreement and the Effective Date, neither AWE nor the Owner shall, without HCCE's consent,

- a) enter into any agreement or permit any lien or encumbrance on the Premises which would interfere with the rights granted to HCCE in this Agreement or to be granted in the Easement provided that nothing contained herein shall be construed in such a way to prevent or hinder AWE from obtaining financing for the Project and in connection therewith collateralizing its leasehold and contract rights as well as its improvements;
- b) grant to any third party a right of way across the Premises for any purpose except construction and operation of the Project; or
- c) take any other action which would violate the terms of the Easement if it were in force.

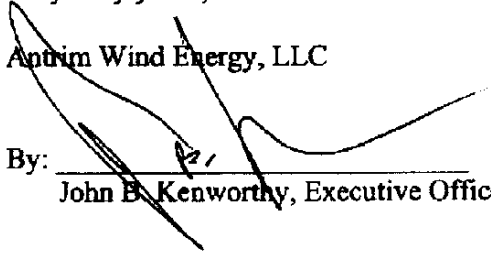
Filing: Upon prior approval of AWE, which shall not be unreasonably withheld, conditioned or delayed, between the date of this Agreement and the Effective Date, HCCE shall have the right to file a notice with the Hillsborough County Registry of Deeds reflecting its right to acquire the Easement in certain circumstances. The Parties agree to give reasonable cooperation in the filing of such notice and to execute, without additional consideration, a form of notice prepared by HCCE at its sole cost and expense.

- Notices: Any notice required or permitted by this Agreement shall be in writing and shall be sent by one Party to the others by certified mail, return receipt requested, at their respective addresses given above or such other address as may be designated by notice so delivered.
- Subordination: In the event that the Premises is encumbered by a mortgage, the Owner shall, prior to the Easement Effective Date, obtain and furnish to HCCE, either (a) a discharge or (b) an agreement subordinating the mortgage to the Easement for each such mortgage in recordable form reasonably satisfactory to HCCE
- Arbitration: Any dispute arising under this Agreement shall be submitted to arbitration in accordance with NH RSA 542 and Article 11 of the Easement and any award made in such arbitration may be entered and enforced in and by any court of competent jurisdiction.
- Governing Law: This Agreement shall be governed by and construed in accordance with the laws of the State of New Hampshire.
- Binding Effect: This Agreement shall be legally binding upon and inure to the benefit of the Parties hereto and their respective successors and assigns.
- Severability: If any term of this Agreement shall to any extent be invalid or unenforceable, the remainder of the Agreement shall not be affected thereby.
- Defined Terms: Capitalized terms not defined herein shall have the meaning ascribed to them in the Easement.

If the foregoing is acceptable to HCCE and the Owner, kindly execute a copy of this Agreement in the place set forth below and return it me by facsimile and expedited delivery, no later than the close of business on December 31, 2012, time being of the essence.

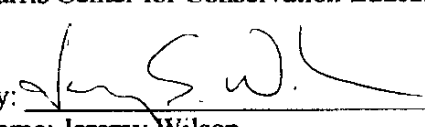
Very truly yours,

Apurim Wind Energy, LLC

By: 
John B. Kenworthy, Executive Officer

ACCEPTED AND AGREED TO:

Harris Center for Conservation Education

By: 
Name: Jeremy Wilson
Title: Executive Director

Owner

Whittemore Trust under Indenture dated October 2, 1992

Paul Whittemore, Trustee

Helen Whittemore, Trustee

Very truly yours,

Antrim Wind Energy, LLC

By: _____
John B. Kenworthy, Executive Officer

ACCEPTED AND AGREED TO:

Harris Center for Conservation Education

By: _____
Name: Jeremy Wilson
Title: Executive Director

Owner

Whittemore Trust under Indenture dated October 2, 1992

Paul Whittemore, Trustee

Helen Whittemore
Helen Whittemore, Trustee

Very truly yours,

Antrim Wind Energy, LLC

By: _____
John B. Kenworthy, Executive Officer

ACCEPTED AND AGREED TO:

Harris Center for Conservation Education

By: _____
Name: Jeremy Wilson
Title: Executive Director

Owner

Whittemore Trust under Indenture dated October 2, 1992


Paul Whittemore, Trustee

Helen Whittemore, Trustee

CONSERVATION EASEMENT DEED

Paul J. Whittemore, whose mailing address is P.O. Box 528, Auburn, County of Rockingham, New Hampshire 03032 and **Helen M. Whittemore**, whose mailing address is 16501 N. El Mirage Road #735, Surprise, Arizona 85374-3600, both successor **Trustees of the Whittemore Trust under Indenture dated October 2, 1992** (hereinafter referred to as the "Grantor", which word where the context requires includes the plural and shall, unless the context clearly indicates otherwise, include the Grantor's executors, administrators, legal representatives, devisees, heirs, successors and assigns),

for consideration paid, with WARRANTY covenants, grants in perpetuity to

the **Harris Center For Conservation Education**, a corporation duly organized and existing under the laws of the State of New Hampshire, with a principal place of business at 83 King's Highway, Town of Hancock, County of Hillsborough, State of New Hampshire 03449, having been determined by the Internal Revenue Service to be an income tax exempt, publicly supported corporation, contributions to which are deductible for federal income tax purposes pursuant to the United States Internal Revenue Code (hereinafter referred to as the "Grantee" which shall, unless the context clearly indicates otherwise, include the Grantee's successors and assigns).

the **Conservation Easement** (herein referred to as the "Easement") hereinafter described with respect to that certain parcel/area of land (herein referred to as the "Property") with any and all buildings, structures, and improvements thereon situated in the western part of the Town of **Antrim**, County of Hillsborough, State of New Hampshire, more particularly bounded and described in Appendix "A" attached hereto and made a part hereof.

The Easement is subject to a Lease between the Grantor and **Antrim Wind Energy, LLC** (the "Lessee"), dated as of January 1, 2011 (the "Lease Effective Date"), and evidenced by a Memorandum of Lease recorded in the Hillsborough County Registry of Deeds ("Registry") at Book 8304, Page 1113 (the "Lease").

The Property is not homestead property.

WHEREAS the Property comprises a relatively natural habitat for diverse plant and animal species and contains approximately 123 acres of forestland; and

WHEREAS the Property comprises a significant portion of a larger, relatively natural habitat for wide-ranging umbrella species such as moose, bear, bobcat, fisher, wild turkey and the like; and

WHEREAS the Property is contiguous to or nearly contiguous to other land now protected by easement or fee ownership under the auspice of the Grantee and other conservation organizations; and

WHEREAS the Property comprises scenic open space which may be viewed from Route 9 in Antrim, NH, a public road, and from other public roads and water bodies; and

WHEREAS the Property has been identified as open space worthy of protection in the Antrim Master Plan of 2010 and the Antrim Open Space Committee Open Space Plan adopted by the Town of Antrim in 2006, both of which state that preservation of unfragmented forest areas in the Western portion of Antrim, including the Property, is one of the principal objectives of its residents; and

WHEREAS the Property has also been identified as being well-suited for the conversion of wind energy to electricity, a renewable form of energy, the furtherance of which is also identified in the aforesaid Master Plan as one of the principal objectives of Antrim residents, who also voted to adopt the NH Climate Change Resolution, which identified the risks climate change presents to the integrity and health of New Hampshire ecosystems in stating:

"Whereas, The protection of our forests, air and water quality, fisheries and other natural resources are important to the health and quality of life of our citizens; and

"Whereas, There is evidence that climate change is already impacting New Hampshire's environment and natural resources, from increased intensity of storms, higher sea level, less snow cover, and more winter rain; and

"Whereas, New Hampshire state government has taken steps to lead by example by reducing energy use of state operations and committing to an overall state goal of using 25 percent renewable energy by 2025

; and

WHEREAS the Property comprises scenic open space forestland, preservation of which is pursuant to the following clearly delineated state conservation policy, that is, NH RSA 79-A:1 which states that "It is hereby declared to be in the public interest to encourage the preservation of open space, thus providing a healthful and attractive outdoor environment for work and recreation of the state's citizens, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural, and wildlife resources."; and

WHEREAS the Property comprises significant area, in conjunction with other adjacent properties, capable of the production of substantial amounts of pollution free wind generated electricity, the advancement of which is pursuant to the clearly delineated state policy on

renewable energy, RSA 362-F:1, which states that "It is therefore in the public interest to stimulate investment in low emission renewable energy generation technologies in New England and, in particular, New Hampshire, whether at new or existing facilities."

all to the benefit of the public and

WHEREAS, the specific conservation values of the Property are documented in an inventory of relevant features of the Property, acknowledged by the signatures of Grantors and Grantee and to be filed at the offices of Grantee, said inventory consisting of a report, maps, photographs, and other documentation (hereinafter referred to as "Baseline Documentation"), which the parties agree provides an accurate representation of the Property at the time of this conveyance and which is intended to serve as an objective information baseline for monitoring compliance with the terms of this Easement.

1. PURPOSES

The Easement hereby granted is pursuant to NH RSA 477:45-47, exclusively for the following conservation purposes:

A. The preservation of the land subject to the Easement granted hereby for outdoor recreation by and/or the education of the general public, through the auspices of the Grantee; and

B. The preservation and conservation of open spaces, particularly the conservation of the 123 acres, more or less, of productive forest land of which the Property consists and of the wildlife habitat thereon, and for the scenic enjoyment of the general public.

The above purposes are consistent with the clearly delineated open space conservation goals and/or objectives as stated in the aforesaid Master Plan and Open Space Plan and with New Hampshire RSA Chapter 79-A

All of these purposes are consistent and in accordance with the U.S. Internal Revenue Code, Section 170(h).

The Easement hereby granted with respect to the Property is as follows:

2. USE LIMITATIONS (Subject to the reserved rights specified in Section 3 below)

A. Subject to the reserved rights specified in Section 3, below, including, without limitation, the Development Activities, the Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except agriculture, forestry and Windpower Facilities, as described below, and provided that the productive capacity of the Property to produce forest and/or agricultural crops shall not be degraded by on-site activities.

i. For the purposes hereof, "agriculture" and "forestry" shall include animal husbandry, floriculture, and horticulture activities; the production of plant and animal products

for domestic or commercial purposes; the growing, stocking, cutting, and sale of Christmas trees or forest trees of any size capable of producing timber or other forest products; and the processing and sale of products produced on the Property (such as pick-your-own fruits and vegetables and maple syrup), all as not detrimental to the purposes of this Easement.

ii. Agriculture and forestry on the Property shall be performed in accordance with a coordinated management plan for the sites and soils of the Property. Forestry and agricultural management activities shall be in accordance with the then current scientifically based practices recommended by the University of New Hampshire Cooperative Extension, U.S. Natural Resources Conservation Service, or other government or private, nonprofit natural resource conservation and management agencies then active. Management activities shall not materially impair the scenic quality of the Property as viewed from public waterways, great ponds, public roads, or public trails.

B. Except as expressly hereinafter provided, the Property shall not be subdivided or otherwise divided in ownership and none of the individual tracts which together comprise the Property shall be conveyed separately from one another nor shall Grantor grant to any third party a right of way across the Property. For purposes of this Easement, the Lease, or any reconfiguration of the area subject to the Lease, shall not be considered to be a subdivision.

C. Except as expressly hereinafter provided, no structure or improvement, including, but not limited to, a dwelling, any portion of a septic system, tennis court, swimming pool, dock, aircraft landing strip, tower or mobile home, shall be constructed, placed, or introduced onto the Property. However, ancillary structures and improvements including, but not limited to, a road, dam, fence, bridge, culvert, barn, maple sugar house, or shed may be constructed, placed, or introduced onto the Property only as necessary in the accomplishment of the agricultural, forestry, conservation, habitat management, or noncommercial outdoor recreational uses of the Property, and provided that they are not detrimental to the purposes of this Easement.

D. No removal, filling, or other disturbances of soil surface, nor any changes in topography, surface or subsurface water systems, wetlands, or natural habitat shall be allowed unless such activities:

i. are commonly necessary in the accomplishment of the agricultural, forestry, conservation, habitat management, or noncommercial outdoor recreational uses of the Property; and

ii. do not harm state or federally recognized rare, threatened, or endangered species, such determination of harm to be based upon information from the New Hampshire Natural Heritage Inventory or the agency then recognized by the State of New Hampshire as having responsibility for identification and/or conservation of such species; and

iii. are not detrimental to the purposes of this Easement.

Prior to commencement of any such activities, all necessary federal, state, local, and other governmental permits and approvals shall be secured.

E. No outdoor advertising structures such as signs and billboards shall be displayed on the Property except as desirable or necessary for public safety or other purposes in association with the reserved rights in Section 3 A.

F. There shall be no mining, quarrying, excavation, or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials on the Property, except in connection with any improvements made pursuant to the provisions of sections 2.A., C., D., or E., above. No such rocks, minerals, gravel, sand, topsoil, or other similar materials shall be removed from the Property.

G. There shall be no dumping, injection, burning, or burial of man-made materials or materials then known to be environmentally hazardous.

3. RESERVED RIGHTS

All uses of the Property not expressly prohibited herein and not inconsistent with the Purposes of this Easement are expressly reserved to the Grantor, its heirs, successors and assigns, including without limitation, the following:

A. To use portions of the Property and to permit the Lessee, its successors and assigns, to use portions of the Property, for wind energy purposes and related uses, activities and development pursuant to the Lease.

i. For purposes of this Easement, "wind energy purposes" means converting wind energy to electrical energy, and collecting and transmitting the electrical energy so converted, together with any and all activities related thereto ("Development Activities"), including, without limitation, (a) determining the feasibility of wind energy generation on the Property, including studies of wind speed, wind direction and other meteorological data, conducting engineering, geotechnical, environmental and other surveys and studies and extracting soil samples; and, (b) accessing via rights of way on the Property, constructing, installing, using, replacing, relocating and removing from time to time, and maintaining, repairing and operating, two (2) wind turbines (including supporting towers and foundations) (collectively, "Wind Turbines"), electrical distribution, collection, transmission and communications lines, substations, electric transformers, telecommunications equipment, power generation facilities to be operated in conjunction with commercial wind turbine installations, roads, meteorological towers and wind measurement equipment, control buildings, maintenance yards, and related facilities and equipment (all of the above, including the Wind Turbines, collectively, "Windpower Facilities") on the Property.

ii. In connection with the development, construction and operation of the Windpower Facilities, the Lessee, its successors and assigns, shall be permitted to:

(a) excavate, remove and export material to adjoining parcels; grade, level, and fill the land; remove trees and shrubs; install and maintain foundations, roadways and walkways; and install, access and maintain utilities, provided all are done in connection with the Windpower Facilities;

- (b) replace, repair, add or otherwise modify its equipment or any portion thereof during the term of the Lease. Lessee shall have the right of subjacent and lateral support to whatever is necessary for the operation and maintenance of the Windpower Facilities on the Property, including, without limitation, guy wires and supports;
- (c) permit the rotors of Wind Turbines located on adjacent properties to overhang the Property; and
- (d) install a chain link or other security fence around the Windpower Facilities or any portion thereof at its sole and absolute discretion if required to do so by any regulatory or permitting agency or if required for insurance purposes or if dictated by industry best practices.

iii. The Lease contemplates that prior to the effective date of this Easement, Lessee shall designate a portion of the Property for use for the Windpower Facilities. ("the Reduced Lease Area") The rights reserved in this Section 3A shall be exercised exclusively within the Reduced Lease Area; provided, however, that Lessee shall retain all rights, and shall be permitted to exercise such rights, over Grantor's property, including the Property, other than the Reduced Lease Area, as provided in the Lease. Lessee shall promptly and, in no event later than the effective date of this Easement, (i) create a survey plan prepared by a licensed surveyor, locating and depicting the said Reduced Lease Area and (ii) notify Grantee of the location of the said area.

iv. Notwithstanding any provision to the contrary contained herein, the reserved rights outlined in this Section 3A shall terminate upon the end of the Lease Term or, at Lessee's option, at the end of the Extension Term, as those terms are defined in the Lease. For clarity, the Lease has a maximum term (including the Extension Term) of 50 years from the Lease Effective Date; accordingly, the rights reserved in this Section 3A shall expire no later than 50 years plus 180 days from January 1, 2011 (to allow for the removal obligations as required in the Lease). Lessee agrees to notify Grantee within 60 days of such termination or such earlier termination, as the case may be.

v. At or before termination of the rights reserved in this Section 3A, Grantee shall ensure that the Lessee has decommissioned and removed the Windpower Facilities as provided in the Lease and in any regulatory permit. In addition, the Grantee shall have the right, but not the obligation, to remove and reseed the Wind Facility access road.

B. Grantor shall permit public pedestrian access to, on, and across the Property (except the Reduced Lease Area and except within 300 feet of any dwelling) for nature observation, hiking, cross country skiing and similar transitory low-impact, recreational purposes, but not for camping.

C. To the extent that there is an inconsistency between the Use Limitations outlined in Section 2, above, and the provisions of this Section 3 regarding Reserved Rights, the provisions of this Section 3 shall control.

4. NOTIFICATION OF TRANSFER, TAXES, MAINTENANCE

A. The Grantor agrees to notify the Grantee in writing 10 days before the transfer of title to the Property or any division of ownership thereof permitted hereby.

B. The Grantee shall be under no obligation to maintain the Property or pay any taxes or assessments thereon.

5. BENEFITS, BURDENS, AND ACCESS

A. The burden of the Easement conveyed hereby shall run with the Property and shall be enforceable against all future owners and tenants in perpetuity; the benefits of this Easement shall not be appurtenant to any particular parcel of land but shall be in gross and assignable or transferable only to the State of New Hampshire, the U.S. Government, or any subdivision of either of them, consistent with Section 170(c)(1) of the U.S. Internal Revenue Code of 1986, as amended, or to any qualified organization within the meaning of Section 170(h)(3) of said Code, which organization has among its purposes the conservation and preservation of land and water areas and agrees to and is capable of enforcing the conservation purposes of this Easement. Any such assignee or transferee shall have like power of assignment or transfer.

B. The Grantee shall have reasonable access to the Property and all of its parts for such inspection as is necessary to determine compliance with and to enforce this Easement and exercise the rights conveyed hereby and fulfill the responsibilities and carry out the duties assumed by the acceptance of this Easement, provided, however that the Grantee shall give not less than fourteen (14) days written notice to the Lessee of Grantee's intention to inspect and shall comply with all reasonable regulations imposed by Lessee with respect to safety or other operational considerations within the Reduced Lease Area during the Lease Term.

C. The Grantee shall have the right to renew and maintain painted blazes on any Property boundary not monumented by a stone wall for the purpose of identifying it as land subject to this conservation easement.

6. BREACH OF EASEMENT

A. When a breach of this Easement, or conduct by anyone inconsistent with this Easement, comes to the attention of the Grantee, it shall notify the Grantor in writing of such breach or conduct, delivered in hand or by certified mail, return receipt requested.

B. The Grantor shall, within thirty (30) days after receipt of such notice or after otherwise learning of such breach or conduct, undertake those actions, including restoration, which are reasonably calculated to cure swiftly said breach, or to terminate said conduct, and to repair any damage. The Grantor shall promptly notify the Grantee of its actions taken under this section.

C. If the Grantor fails to take such proper action under the preceding paragraph, the Grantee shall, as appropriate to the purposes of this deed, undertake any actions that are reasonably

necessary to cure such breach or to repair any damage in the Grantor's name or to terminate such conduct. The cost thereof, including the Grantee's expenses, court costs, and legal fees, shall be paid by the Grantor, provided that the Grantor is directly or primarily responsible for the breach.

D. Nothing contained in this Easement shall be construed to entitle the Grantee to bring any action against the Grantor for any injury to or change in the Property resulting from causes beyond the Grantor's control, including, but not limited to, unauthorized actions by third parties, natural disasters such as fire, flood, storm, and earth movement, or from any prudent action taken by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes.

E. The Grantee and the Grantor reserve the right, separately or collectively, to pursue all legal remedies against any third party responsible for any actions detrimental to the conservation purposes of this Easement.

7. NOTICES

All notices, requests and other communications, required or permitted to be given under this Easement shall be in writing, except as otherwise provided herein, and shall be delivered in hand or sent by certified mail, postage prepaid, return receipt requested to the appropriate address set forth above or at such other address as the Grantor or the Grantee may hereafter designate by notice given in accordance herewith. Notice shall be deemed to have been given when so delivered or so mailed.

8. SEVERABILITY

If any provision of this Easement, or the application thereof to any person or circumstance, is found to be invalid by a court of competent jurisdiction, by confirmation of an arbitration award or otherwise, the remainder of the provisions of this Easement or the application of such provision to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

9. CONDEMNATION/EXTINGUISHMENT

A. Whenever all or part of the Property is taken in exercise of eminent domain by public, corporate, or other authority so as to abrogate in whole or in part the Easement conveyed hereby, the Grantor and the Grantee shall thereupon act jointly to recover the full damages resulting from such taking with all incidental or direct damages and expenses incurred by them thereby to be paid out of the damages recovered.

B. The balance of the land damages recovered (including, for purposes of this subsection, proceeds from any lawful sale of the Property unencumbered by the restrictions hereunder in lieu of condemnation) shall be divided between the Grantor and the Grantee in proportion to the fair market value of their respective interests in the Property on the date of execution of this Easement. For this purpose and that of any other judicial extinguishment of this Easement, in whole or in part, the Grantee's interest shall be the amount by which the fair market value of the

Property immediately prior to the execution of this Easement is reduced by the use limitations imposed hereby. The value of the Grantee's interest shall be determined by an appraisal prepared for federal income tax purposes by a qualified appraiser within one year of the date of this Easement, and submitted to the Grantee.

C. The Grantee shall use its share of the proceeds in a manner consistent with and in furtherance of one or more of the conservation purposes set forth herein.

10. ADDITIONAL EASEMENT; AMENDMENT; NO MERGER

A. Should the Grantor determine that the expressed purposes of this Easement could better be effectuated by the conveyance of an additional easement, the Grantor may execute an additional instrument to that effect, provided that the conservation purposes of this Easement are not diminished thereby and that a public agency or qualified organization described in Section 5.A., above, accepts and records the additional easement.

B. If, owing to unforeseen or changed circumstances, Grantor and Grantee agree that an amendment to, or modification of, this Easement would be appropriate and desirable, Grantor and Grantee may jointly amend this Easement pursuant to the provisions and limitations of this section; the then-current amendment policies of the Grantee; and applicable state and federal law. Any amendment shall be consistent with the Purposes of this Easement, and shall not impair the conservation attributes of the Property protected by this Easement. No amendment shall affect the qualification of this Easement or the status of the Grantee under any applicable laws, including Sections 170(h) and 501(c)(3) of the Internal Revenue Code of 1986, as amended, and NH RSA 477:45-47 as may be amended from time to time, nor shall any amendment affect the perpetual duration of this Easement. Any amendment shall be executed by the Grantor and the Grantee and shall be recorded in the Registry. Nothing in this paragraph shall require Grantor or Grantee to agree to any amendment or to consult or negotiate regarding any amendment.

C. The Grantor and Grantee explicitly agree that it is their express intent, forming a part of the consideration hereunder, that the conservation restrictions of this Easement are to last in perpetuity, and that, to that end, no conveyance of the underlying fee interest in the Property to the Grantee shall be deemed to eliminate this Easement, or any portion thereof, under the doctrine of "merger" or any other legal doctrine.

11. ARBITRATION OF DISPUTES

A. Any dispute arising under this Easement shall be submitted to arbitration in accordance with New Hampshire RSA 542.

B. The Grantor and the Grantee shall each choose an arbitrator within 30 days of written notice from either party. The arbitrators so chosen shall in turn choose a third arbitrator within 30 days of the selection of the second arbitrator.

C. The arbitrators so chosen shall forthwith set as early a hearing date as is practicable which they may postpone only for good cause shown. A decision by two of the three arbitrators,

made as soon as practicable after submission of the dispute, shall be binding upon the parties and shall be enforceable as part of this Easement.

The Grantee, by accepting and recording this Easement, agrees to be bound by and to observe and enforce the provisions hereof and assumes the rights and responsibilities herein granted to and incumbent upon the Grantee, all in the furtherance of the conservation purposes for which this Easement is delivered.

The undersigned, Helen M. Whittemore and Paul J. Whittemore, successor Trustees under the Whittemore Trust, under indenture dated October 2, 1992, and any amendments thereto, hereby certify the Trust remains in full force and effect and that we are the sole successor Trustees of said Trust, and the Trustees have full and absolute power in said Trust Agreement to convey any interest in real estate and improvements thereon held in said Trust and no person dealing with the Trustees hereunder shall be under any obligation or liability to see to the application of any purchase money or to any other money or property loaned or delivered or transferred to the Trustees nor to see that the terms and conditions of this Trust have been complied with.

Whittemore Trust u/d/t dated October 2, 1992, by its duly authorized Trustees:

By: _____
Helen M. Whittemore, Trustee

By: _____
Paul J. Whittemore

STATE OF NEW HAMPSHIRE
COUNTY OF _____

On this _____ day of _____ 2012, before me, the undersigned officer, personally appeared Paul J. Whittemore, as the duly authorized Trustee of the Whittemore Trust and executed the foregoing instrument as his voluntary act and deed for the purposes therein contained on behalf of said Trust.

Justice of the Peace/Notary Public
My commission expires on _____

STATE OF NEW HAMPSHIRE
COUNTY OF _____

On this _____ day of _____ 2012, before me, the undersigned officer, personally appeared Helen M. Whittemore, as the duly authorized Trustee of the Whittemore Trust and executed the foregoing instrument as her voluntary act and deed for the purposes therein contained on behalf of said Trust.

Justice of the Peace/Notary Public
My commission expires on _____

Accepted:

Grantee: Harris Center for Conservation Education

By: _____
Jeremy Wilson, Executive Director

STATE OF NEW HAMPSHIRE
COUNTY OF _____

On this _____ day of _____ 2011, before me, the undersigned officer, personally appeared Jeremy Wilson who acknowledged himself to be the Executive Director of the Harris Center for Conservation Education, and acting in said capacity, and being authorized to do so, executed the foregoing instrument on behalf of the Harris Center for Conservation Education as its voluntary act and deed for the purposes therein contained.

Justice of the Peace/Notary Public
My commission expires on _____

Appendix A

That certain tract of land, situated in the southwesterly part of Antrim, County of Hillsborough and State of New Hampshire, bounded and described as follows:

Tract 3:

Beginning at the northwesterly corner of the premises at the corner of walls running southerly and westerly; thence southerly by land formerly of Lee and Holden to the southwest corner of the premises to land now or formerly of William Weston; thence easterly by land now or formerly of said Weston and land now or formerly of Worthley and Hill to the southeast corner of the premises at the corner of land now or formerly of Samuel Fletcher by the corner of walls; thence northerly by land now or formerly of said Fletcher and land now or formerly of Davis to the northeast corner at land formerly of Darias Hubbard; thence westerly by land formerly of said Hubbard to the bound first mentioned. Containing one hundred twenty-three (123) acres and thirty-six (36) rods, more or less.

The above tract of land being shown on the Town of Antrim tax maps as a portion of Map 239, Lot 001-000.

For title reference see deed dated October 2, 1992, recorded at the Registry, Volume 5480, Page 1135.

[The parties intend to substitute a description based on a recent survey in lieu of the foregoing language]

APPENDIX B
Consent of Lessee

Antrim Wind Energy LLC, its successors and assigns ("Lessee") does hereby consent to be bound by such terms and conditions contained in this easement as are intended to apply to it.

Notices to be sent to Lessee shall be delivered to the address set forth below, or at any other address provided by the Lessee to the Grantor and Grantee in the manner set forth for Notices under this Easement.

To Lessee: Antrim Wind Energy LLC
 155 Fleet Street
 Portsmouth, NH 03801
 Facsimile: (603) 386-6743

Copy to: James Callahan, Esq.
 Bowditch and Dewey, LLP
 45 Main Street
 Peterborough, NH

Signed and Agreed

John Kenworthy
Executive Officer

Date:

STATE OF NEW HAMPSHIRE
COUNTY OF _____

On this _____ day of _____ 20__, before me, the undersigned officer, personally appeared John Kenworthy, who acknowledged himself to be an Executive Officer of Antrim Wind Energy LLC, and acting in said capacity, and being authorized to do so, executed the foregoing instrument on behalf of Antrim Wind Energy LLC as its voluntary act and deed for the purposes therein contained.

Justice of the Peace/Notary Public
My commission expires on _____

Antrim Wind Energy Project Area & Conservation

Total Project Impact = 63 Acres
Total Newly Conserved Lands = 808 Acres

