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THE STATE OF NEW HAMPSHIRE BEFORE THE NEW HAMPSHIRE SITE EVALUATION COMMITTEE

DOCKET NO. 2012-01

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

SUPPLEMENTAL PREFILED TESTIMONY OF JOSEPH COFELICE AND MARTIN J. PASQUALINI ON BEHALF OF ANTRIM WIND ENERGY, LLC October 11, 2012

Qualifications of Joseph Cofelice:

- Q. Please state your name and business address.
- 2 A. My name is Joseph Cofelice. My business address is 25 Braintree Hill
- 3 Park, Suite 200, Braintree, MA 02184. My position and qualifications were included in
- 4 my January 31, 2012 prefiled testimony and have not changed.

Qualifications of Martin J. Pasqualini:

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1

- Q. Please state your name and business address.
- 6 A. My name is Martin J. Pasqualini. My business address is One Boston

7 Place, Suite 3825, Boston, MA 02108. My position and qualifications were included in

- 8 my January 31, 2012 prefiled testimony and have not changed.
- 9 **Purpose of Testimony**
- 10 **Q.** What is the purpose of your testimony?

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| 1 | A. The purpose of this testimony is to address certain comments and respond | | |
|----|--|--|--|
| 2 | to certain questions that have been raised in this proceeding regarding the economics of | | |
| 3 | wind power and the competitiveness of the Antrim Wind Project (the "Project"). In | | |
| 4 | addition, we will provide greater detail on Antrim Wind Energy, LLC's ("AWE") | | |
| 5 | financing plan to construct and operate the Project, including an update on the current | | |
| 6 | state of the renewable energy project finance market, as well as the current status of the | | |
| 7 | Production Tax Credit ("PTC") and its implications on the Project's financing plan. | | |
| 8 | Q. Are you familiar with the Project that is the subject of the above- | | |
| 9 | captioned docket? | | |
| 10 | A. Yes. As CEO of one of the Project's sponsors, Westerly Wind, LLC, Mr. | | |
| 11 | Cofelice is aware of the Project by virtue of his management positions with Westerly | | |
| 12 | Wind, LLC and Westerly Antrim, LLC and AWE. As a financial advisor to the AWE | | |
| 13 | Project, Mr. Pasqualini is familiar with the Project based upon his correspondence and | | |
| 14 | meetings with representatives of AWE. | | |
| 15 | Deloitte Report for Public Counsel (dated September 24, 2012) | | |
| 16 | Q. Are you familiar with the Deloitte Report dated September 25, 2012? | | |
| 17 | A. Yes. | | |
| 18 | Q. Do you agree with the statement in the Market Assessment section of | | |
| 19 | the Deloitte Report (p. 1) that: "PPAs are in short supply relative to demand as low | | |
| 20 | gas (and therefore electricity) prices and low Renewable Energy Certificate | | |
| 21 | ("REC") prices have made it less expensive for utilities to meet RPS without | | |

1 entering into PPAs with owners of renewable projects or buying/developing such

2 projects themselves"?

3 No. Deloitte cannot make this statement with any certainty. The A. 4 availability of purchase power agreements ("PPAs") depends upon, inter alia, the value 5 of RECs, the price of natural gas and the wholesale price of electricity in the relevant 6 market at any specific point in time. A given load-serving entity's need to meet the 7 requirements of applicable renewable portfolio standards also potentially affects PPA 8 availability. Recently RECs alone (excluding energy) in New England have been trading 9 for \$50-64 MWh or close to the Alternative Compliance Payment level in New 10 Hampshire and Massachusetts. Deloitte's statement quoted above seems to contradict the 11 following statement they make on p. 22 of the Industry Outlook section of their report: 12 "Moreover, financing conditions have improved since 2009, and the availability of power 13 purchase agreements has also begun to improve". 14 **Q**. In the Market Assessment section (p. 1), do you agree with Deloitte's 15 statement: "Even if the PTC is extended, the availability of tax equity financing (i.e., 16 financing from equity investors with sufficient taxable income to be able to take 17 advantage of the PTC and other tax benefits) is low"?

A. No. There is significant tax equity capacity seeking investment opportunities like AWE. Mr. Pasqualini notes that there is an active market for third party tax equity investment in utility scale wind transactions like AWE. In 2011, approximately \$2.4 billion was committed to the PTC-based financing of 20 separate Supplemental Testimony of Joseph Cofelice and Martin J. Pasqualini Application of Antrim Wind Energy, LLC October 11, 2012 Page 4 of 20

| 1 | wind projects by institutional tax equity investors. Mr. Pasqualini estimates that in 2012 |
|----|--|
| 2 | the aggregate amount of third party tax equity investment in PTC transactions will |
| 3 | approach \$4 billion. Furthermore, Deloitte states in the Federal Incentives section of |
| 4 | their report: "There are over a dozen large entities (financial institutions and other |
| 5 | corporate investors) and numerous smaller entities that have been active in tax equity |
| 6 | investing in renewable energy". Mr. Pasqualini is aware of at least 10 active PTC |
| 7 | investors comprised of both institutional and corporate players. |
| 8 | Q. In the Project Business Plan Assessment section of their report (p. 2), |
| 9 | Deloitte states that: "In general, the Applicant had a reasonable basis for its |
| 10 | estimates of the capital cost, revenue expectations, operating costs, and economic |
| 11 | useful life of the Project". Do you agree with this assessment? |
| 12 | A. Yes. |
| 13 | Q. Would you like to comment on the following statement by Deloitte in |
| 14 | the Funding Plan Assessment section of the report (p. 2): "it appears likely that the |
| 15 | Antrim project can be financed if the Project can attract a PPA with pricing that |
| 16 | allows for adequate return to investors"? |
| 17 | A. Yes. Wind projects in the US are financed with and in certain instances |
| 18 | without long-term PPAs. AWE's strategy is to secure a PPA after receipt of a permit |
| 19 | from the SEC. In a competitive tendering process for a PPA, receipt of permits necessary |
| 20 | to construct a wind facility is an important criterion in project selection. A permitted |
| 21 | project provides the potential power purchaser with greater certainty that the contracted |

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| 1 | generation will be available to meet its requirements. A project with a PPA will also |
|----|---|
| 2 | receive more competitive financing terms than a merchant or quasi-merchant plant. For |
| 3 | this reason, AWE's strategy is to secure a PPA. Having said this, a traditional PPA is not |
| 4 | necessarily a requirement for a project financing. Numerous merchant or quasi-merchant |
| 5 | generation facilities have been constructed in the US, including New England. In a |
| 6 | region with an active and transparently priced power pool like ISO-New England, as an |
| 7 | alternative to a PPA with a load serving entity, a project may enter into a financial |
| 8 | derivative transaction whereby a financial counterparty takes the risk associated with |
| 9 | selling the facility's generation into the market on a wholesale basis. The financial |
| 10 | counterparty will agree to swap the fluctuating price received from the market for the |
| 11 | power generated by the facility for a fixed price. Such an arrangement replicates the |
| 12 | revenue certainty found in a traditional PPA and provides the basis for traditional project |
| 13 | financing for both debt and tax equity. |
| | |

14 **Q**. Do you agree with the following statement by Deloitte in the **Development Team Assessment section of the report (p. 2): "Based on the** 15 16 information provided to us by the Applicant and through our independent research we note that the majority of the development team has direct experience in wind 17 18 and other power project development and financing. Based on additional research, 19 which included searches of a number of propriety databases that we subscribe to, 20 we did not find any information that would negatively impact our conclusion that 21 the team appears qualified to develop the Project"?

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1 A. Yes.

| 2 | Q. Would you like to comment on the following Deloitte statement |
|----|--|
| 3 | contained in the section Overview of US Renewables Group section (p. 5): "We |
| 4 | understand that U.S. Renewables is only expected to contribute approximately \$4 |
| 5 | million to the Project to cover development efforts and that it is not expected to |
| 6 | contribute additional equity capital to the Project"? |
| 7 | A. Yes. AWE advised Deloitte that our funding strategy was to source low |
| 8 | cost capital for the permanent financing of the project to ensure the competitiveness of |
| 9 | the Project. Therefore we currently forecast that US Renewables Group funding through |
| 10 | Westerly Wind will be approximately \$4 million. This amount could change based on |
| 11 | market or financing requirements. |
| 12 | Q. In the Power Purchase Agreements section of their report (p. 12), |
| 13 | Deloitte asserts the following: "It is apparent that wind pricing has come down |
| 14 | significantly in recent years, and is currently competitive with the range of |
| 15 | wholesale power prices seen in 2011 according to data from the DOE". Do you |
| 16 | agree with this assessment? |
| 17 | A. Yes |
| 18 | Q. In the New Hampshire Energy Market section of their report (p. 16), |
| 19 | Deloitte states: "NHPUC data suggest that a downward trend in Class I REC prices |
| 20 | from January 2008 through May 2011 indicates that there is a currently a large |
| 21 | regional supply of RECs relative to the demand for RECs, which suggests that New |

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Hampshire electric service providers would not have difficulty purchasing RECs in
the market and meeting their RPS obligations at reasonable costs". Would you care
to comment on this statement?

4 A. Since May 2011 REC prices in New England have increased dramatically. 5 Please see Attachment JC & MJP-1 to this testimony. AWE attributes this increase in 6 demand for RECs to increasing RPS requirements and a shortage of renewable generation 7 capacity. As Deloitte states in the same section of their report: "However, forecasting 8 future REC prices is problematic, given the intrinsic link between the New Hampshire 9 market, the markets in other New England states, and the New York market. Changes in 10 the Connecticut and Massachusetts RPS policies are certain to affect the New Hampshire 11 REC market as those states comprise the largest loads for the ISO-NE". Recently REC 12 prices in New England have been trading for over \$60 MWh, approaching ACP levels. 13 AWE expects additional upward pressure on REC pricing as a result of recent legislation 14 in Massachusetts passed on August 3, 2012 which increases RPS requirements from 3% 15 to 7%.

Q. In the Wholesale Electricity and Natural Gas Prices section of their report (p. 20), Deloitte states: "The depressed price of electricity due to the glut of natural gas is putting the near-term comparative economic position of wind energy at risk". Would you care to comment on this statement? Supplemental Testimony of Joseph Cofelice and Martin J. Pasqualini Application of Antrim Wind Energy, LLC October 11, 2012 Page 8 of 20

| 1 | A. Yes. In markets like New England, with growing RPS requirements, | |
|----|---|--|
| 2 | AWE believes that the price paid for wind power under new PPAs will be driven by the | |
| 3 | supply and demand for renewables, not short-term natural gas prices. | |
| 4 | Q. In the Additional Capacity Requirements section of their report (p. | |
| 5 | 21), Deloitte states: "Additional capacity will likely ultimately be needed in New | |
| 6 | England to meet RPS requirements." Would you care to comment on this | |
| 7 | assessment? | |
| 8 | A. Yes. We agree with this statement and would again note that current REC | |
| 9 | pricing in New England supports the view that there is a current demand for wind power | |
| 10 | in New England. | |
| 11 | Q. In the Power Purchase Agreements section of their report (p. 22), | |
| 12 | Deloitte states the following: "As stated by the Applicant in the Application, it is | |
| 13 | essential that a PPA be in place in order for a project to receive equity and/or debt | |
| 14 | financing." Would you care to comment on this statement? | |
| 15 | A. We agree that a PPA or a financial swap replicating the revenue certainty | |
| 16 | of a PPA will be required to finance and commence construction of the Project. AWE's | |
| 17 | current strategy is to secure a PPA after receipt of a permit from the SEC. We would also | |
| 18 | note that it is common industry practice to secure a PPA or financial swap after receipt of | |
| 19 | permits necessary to construct a wind facility. This is in fact how it worked with one of | |
| 20 | the other wind power projects currently operating in New Hampshire that was previously | |
| 21 | approved by the SEC. It is our understanding that in the case of the Granite Reliable | |

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| 1 | Power wind project the SEC granted a certificate while the project was negotiating, but | |
|----|---|--|
| 2 | had not yet obtained, a purchase power agreement. The GRP Project was approved with | |
| 3 | the condition that it have construction financing in place and that it notify the Committee | |
| 4 | of this before it could commence construction. | |
| 5 | Q. In the Renewable Energy Certificates section of their report (p. 22), | |
| 6 | Deloitte asserts that a wide range of expert views on future REC prices may create | |
| 7 | uncertainty that may impact the ability of the Project to raise project financing. Do | |
| 8 | you agree with this conclusion? | |
| 9 | A. No. In almost all wind PPA agreements, the seller agrees to sell all | |
| 10 | attributes from the generating facility, including RECs, at a fixed or known pricing | |
| 11 | schedule. Therefore the risk of future changes in REC prices is not normally a risk in a | |
| 12 | project financing. | |
| 13 | Q. In the Comparison to Comparable Facilities section of their report (p. | |
| 14 | 23), Deloitte states: "Therefore, while we cannot say definitively that the Applicant's | |
| 15 | cost estimate is unrealistically low, it does appear to be 10 to 20 percent lower than | |
| 16 | comparably sized recent projects." Do you care to comment on this statement? | |
| 17 | A. Yes. AWE's project cost contained in the financial model provided to | |
| 18 | Deloitte is based on updated proposals from turbine suppliers and balance of plant | |
| 19 | contractors. For some reason, Deloitte chose not to use the updated project cost provided | |
| 20 | in the financial model. Had Deloitte used the information provided to them, AWE's | |
| 21 | project cost would have been in the middle to upper end of the range of the comparable | |

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| 10 | report, including Tables XII and XIII (pp. 25-26)? |
|----|--|
| 9 | Q. Would you like to comment on Capacity Factor tables of the Deloitte |
| 8 | does not appear that Deloitte adjusted the data for project specific data. |
| 7 | costs contained in Table X of the Deloitte report were pulled from an SNL database and it |
| 6 | approximately 15% more expensive than AWE. The Sample Installed Wind Projects |
| 5 | network upgrade costs of \$0), this would, all other things being equal, make that project |
| 4 | transmission network upgrade costs of \$10 million (compared to AWE's expected |
| 3 | distort the comparisons made by Deloitte. For example, if a similar sized project had |
| 2 | project specific costs such as interconnection costs, and that these costs can materially |
| 1 | projects cited in their report. It is also important to note that a project's cost also includes |

11 A. Yes. Deloitte states that AWE's capacity factor is within the range of 12 observed capacity factors, however, it is near the upper end of the range and well above 13 the mean, median, and upper quartile of the data. This is not surprising because the 14 sample projects provided by Deloitte entered commercial operations between 1997 and 15 2011 and are using older technology which, if applied to AWE, would yield materially 16 lower and in some cases similar capacity factors. We should also point out that some of 17 the capacity factors referred to by Deloitte are obviously incorrect and reflect bad data as 18 a result of confusing partial year operation data for full year data. It does not appear that 19 Deloitte independently verified the accuracy of the data contained in these reports and did 20 not attempt to compare AWE's capacity factor with projects utilizing similar technology.

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| 1 | Q. In the Capacity Factor section of their report (p. 27), Deloitte states: |
|----|--|
| 2 | "We were not provided with and are not aware of any analysis that quantifies what |
| 3 | the improvement in capacity factor might be at a given site (including the |
| 4 | supplemental prefiled testimony of Sean McCabe and Ellen Crivella and prefiled |
| 5 | direct testimony of Ruben Segura-Coto on behalf of Antrim Wind Energy, LLC, |
| 6 | dated August 22, 2012)." Would you care to comment on this statement? |
| 7 | A. Yes. On our call with Deloitte on August 31, 2012, we informed Deloitte |
| 8 | that AWE was submitting wind output data (prepared by the nationally recognized wind |
| 9 | resource consultant V-Bar) to the SEC comparing the output of the Acciona |
| 10 | AW3000/116 to the Vestas V90 3.0 and Games G87 turbines, previously permitted in the |
| 11 | State of New Hampshire. This information was submitted to the SEC on September 5, |
| 12 | 2012. On our call, we explained to Deloitte that this analysis showed that AWE's |
| 13 | capacity would fall by 32% and 14% if AWE built the project utilizing these two turbine |
| 14 | models. We further offered to show Deloitte the detail behind the analysis submitted to |
| 15 | the SEC so they could respond to questions from Public Counsel regarding capacity |
| 16 | factor. Deloitte responded that they did not believe capacity factor analysis was within |
| 17 | their scope and never asked for the more detailed calculations. For reasons unknown to |
| 18 | AWE, Deloitte chose to ignore the information prepared by V-Bar and provided to the |
| 19 | SEC on September 5, 2012 that quantifies the improvement in capacity factor as a result |
| 20 | of utilizing the AW 3000/116. |

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| 1 | Q. Would you care to comment on Deloitte's Estimated "Proxy" PPA | |
|----|---|------|
| 2 | Pricing contained in the Energy Price section of the Deloitte report (pp. 27-28)? | |
| 3 | A. Yes. Deloitte's analysis and conclusion that estimates the all-in market | * |
| 4 | price for wind power at \$65 MWh is deeply flawed. In its analysis, Deloitte ignores th | ie |
| 5 | fact that the price for wind power is determined by the demand for wind power that in | |
| 6 | turn is driven by State RPS requirements. In its analysis, Deloitte ignores the fact that | a |
| 7 | current shortage of renewable generation in New England has resulted in REC prices i | n |
| 8 | New England trading for approximately \$60 MWh, or that recently passed Massachuse | etts |
| 9 | legislation increasing that state's RPS should continue to put upward pressure on REC | |
| 10 | prices in New England. In their report, Deloitte asserts that AWE's capital costs are at | t |
| 11 | the low end of the range for New England and the Project's capacity factor is at the hig | gh |
| 12 | end of the range. Deloitte is therefore asserting that AWE's cost of power should be | |
| 13 | lower than the "comparable" operating projects they refer to in their report, yet they do |) |
| 14 | not explain how these less competitive wind facilities were able to secure PPAs. Base | d |
| 15 | on discussions with off-takers, AWE believes that wind PPAs have been executed in N | Jew |
| 16 | England at prices exceeding \$90 MWh. While most PPA prices are confidential, | |
| 17 | according to the Town of Hingham, MA Municipal Lighting Plant's 2010 annual report | rt, |
| 18 | the Spruce Mountain Wind Project (ME) entered into a PPA for 15 years at a price of S | \$99 |
| 19 | MWh. This level of PPA pricing is consistent with current low energy prices of | |
| 20 | approximately \$45 MWh and REC prices of approximately \$60 MWh. | |

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| 1 | Q. In the Renewable Energy Certificates section of their report (p. 30), |
|----|--|
| 2 | Deloitte states: "The Applicant has indicated that it has knowledge of PPAs that |
| 3 | have been recently signed in New England in the range of \$90 to \$100 per MWh. |
| 4 | While we were not able to verify these prices, based on the Applicant's analysis, the |
| 5 | Project would be economically viable with a PPA priced in this range, even without |
| 6 | the PTC." Would you care to comment on this statement? |
| 7 | A. Yes. We agree with the conclusion and note that Deloitte reviewed |
| 8 | AWE's pro-forma and did not disagree with our analysis or assumptions except as noted |
| 9 | in their report. It is important to note that with current New England RECs trading at |
| 10 | close to ACP, any potential delay in the development of renewables as a result of a |
| 11 | failure to renew the PTC, combined with recent Massachusetts legislation increasing RPS |
| 12 | levels, will likely result in the value of RECs capping out at ACP levels of over \$60 |
| 13 | MWh. A buyer of wind power at \$90 MWh would be able to sell RECs at ACP levels |
| 14 | and lock in energy at less than \$40 MWh. |
| 15 | Q. Would you care to comment generally on the Analysis of Financing |
| 16 | Plan of the Applicant in the Deloitte report (pp. 30-32)? |
| 17 | A. Yes. While AWE generally agrees with much of the discussion in this |
| 18 | section of the Deloitte report we have some additional observations. Mr. Pasqualini |
| 19 | believes that the Pricing section in the Foreign Bank discussion overstates the all-in |
| 20 | interest rates given current underlying interest rates and the spreads currently required by |
| 21 | bank lenders in the wind space. For instance, using current market parameters and rates, |

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| 1 | one would assume a swap rate of 1.75%, a swap provider's risk premium of .25% and an |
|----|---|
| 2 | initial credit spread of 2.75%. This would result in an initial all-in rate of 4.75% for bank |
| 3 | provided debt and not the 5.75% - 6.25% that Deloitte states. Typically, this rate would |
| 4 | adjust upward by .25% every 4 years during the term of the debt. Mr. Pasqualini notes |
| 5 | that, while bank-provided term debt is typically structured as a mini-perm ¹ , balloon terms |
| 6 | have been getting longer with the balloon payment occurring as late as the twelfth |
| 7 | anniversary of the closing with amortizations ranging from 15 - 19 years. Mr. Pasqualini |
| 8 | also notes that some bank lenders - and at least one finance company lender - are willing |
| 9 | in certain instances to extend fully amortizing (i.e., no balloon maturity) term debt |
| 10 | facilities. While AWE agrees with Deloitte's statement that bank financing is coverage |
| 11 | ratio-based, Mr. Pasqualini states the coverage ratios used by banks in sizing their debt |
| 12 | facilities for wind projects are 1.40x -1.45x for the P50 case and 1.0x for the P99 |
| 13 | case. These pricing parameters are common practice for all bank lenders regardless of |
| 14 | whether the bank is foreign or domestic, regional or national. For reasons that are not |
| 15 | clear, the Deloitte Report does not discuss the institutional debt market at all. The |
| 16 | insurance company private placement and the 144a bond market have become an |
| 17 | increasingly common sources of term indebtedness for utility scale renewable projects, |

¹ A mini-perm is a term loan that will have an amortization schedule over a given period of years but have a balloon maturity somewhere in the middle of the term. So a 10/17 mini-perm would be sized and have a payment schedule assuming the debt is repaid over a full 17 years, but at the end of the tenth year the then unpaid principal balance of the loan will be payable in full.

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| 1 | including uti | lity scale wind projects. These facilities are structured so as to meet rating |
|----|---|--|
| 2 | agency criteria for investment grade status. For a project with a 20 year PPA, the debt | |
| 3 | facility would have a term of up to 19.5 years and would be fully amortizing (i.e., no | |
| 4 | balloon matu | rity). The debt is typically sized to satisfy both a 1.30x - 1.40x coverage |
| 5 | ratio for the P90 case and 1.0x for the P99 case. The private placement and bond market | |
| 6 | prices debt at a spread over the 10 year Treasury and the rate is fixed for the duration of | |
| 7 | the term. Spreads range from 350 - 450 basis points (depending on a variety of | |
| 8 | factors). With the 10 year Treasury as of October 8 priced at approximately 1.74%, an | |
| 9 | all-in interest rate would equate to 5.24% - 6.24%. It should be noted that the financial | |
| 10 | projections for AWE incorporate sizing and pricing metrics that are conservative and | |
| 11 | which comport to the current market for both the bank and private placement/bond | |
| 12 | markets. | |
| 13 | Prefiled Testimony of Jean Vissering (dated July 31, 2012) | |
| 14 | Q. | Are you familiar with the Visual Impact Assessment report prepared |
| 15 | by Ms. Visso | ering? |
| 16 | А. | Yes. |
| 17 | Q. | Would you care to comment on the economic impacts of Ms. |
| 18 | Vissering's | conclusions in her Visual Impact Assessment report on the Antrim Wind |
| 19 | Project? | |
| 20 | Α. | Yes. Ms. Vissering does not address the financial impact of her |
| 21 | conclusions, | including the negative impacts of higher costs to consumers. AWE selected |

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| 1 | the Acciona turbine to minimize the cost of power from the Antrim wind facility, |
|----|---|
| 2 | maximize the Project's competitiveness and also to minimize the visual impacts (fewer |
| 3 | turbine sites to create an economic project). In a report prepared by the nationally |
| 4 | recognized wind consultant V-Bar and provided to the SEC on September 5, 2012, V-Bar |
| 5 | analysis shows the significant improvements to capacity factor and output as a result of |
| 6 | utilization of the Acciona 3000/116 turbine. Based on V-Bar's calculations, substituting |
| 7 | the Vestas V90 3.0 and Gamesa G87 turbines (turbines previously permitted in New |
| 8 | Hampshire) for the Acciona 3000/116 turbine reduces the Project's capacity factor by |
| 9 | 32% and 14% respectively. The corresponding decrease in output from those two turbine |
| 10 | models is 32% for Vestas and 43% for Gamesa. The Gamesa turbine provides materially |
| 11 | less output than the Vestas machine because a ten (10) turbine configuration only yields |
| 12 | 20 MW of capacity compared to 30 MW from the Acciona and Vestas machines. Even |
| 13 | if AWE were to increase the number of Gamesa G87 turbines to fifteen (15) to achieve |
| 14 | 30 MW of capacity, the Gamesa project would still be more expensive to build (15 |
| 15 | turbines versus 10 turbines) and would still produce less energy due to its significantly |
| 16 | lower capacity factor. Based on this analysis, AWE believes that using the Vestas V90 |
| 17 | 3.0, the Gamesa G87 or a turbine of comparable height makes the Project less |
| 18 | competitive (and more expensive to consumers) by requiring a significantly higher PPA |
| 19 | or a financial swap price than that required using the Acciona 3000/116 machine. |
| 20 | The evolution of turbines as represented by the Acciona 3000/116 represents the |
| 21 | next step in both minimizing visual impact (by reducing the number of turbines required |

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| 1 | to develop an economic project) and lowering the cost of renewable power to consumers. | | | | | | |
|----|--|--|--|--|--|--|--|
| 2 | In addition to reducing the size of the turbines, Ms. Vissering also suggests that the | | | | | | |
| 3 | Project reduce the number of turbines from 10 to 8. This suggestion would further | | | | | | |
| 4 | increase the PPA or Financial Swap pricing required by the Project - in addition to lost | | | | | | |
| 5 | capacity factor, the Project would have materially higher construction costs per MW of | | | | | | |
| 6 | capacity due a loss of economies of scale in the construction of the Project. | | | | | | |
| 7 | Prefiled Testimony of Lisa Linowes (dated July 31, 2012) | | | | | | |
| 8 | Q. Are you familiar with the pre-filed testimony of IWAG submitted to | | | | | | |
| 9 | the SEC on July 31, 2012? | | | | | | |
| 10 | A. Yes. | | | | | | |
| 11 | Q. Would you care to comment on IWAG's response to question #6 | | | | | | |
| 12 | regarding the Gittel report? | | | | | | |
| 13 | A. Yes. In Ms. Linowe's comments on Dr. Gittell's report, IWAG asserts | | | | | | |
| 14 | "Dr. Gittell's model ignores the fact that onshore wind in New England demands between | | | | | | |
| 15 | 9-11 cents per KWh, more than twice the wholesale price of natural gas." In this | | | | | | |
| 16 | comparison, Ms. Linowes is comparing the cost of new unamortized wind generation to | | | | | | |
| 17 | the spot price of power in ISO-NE. Ms. Linowes ignores the cost of building new natural | | | | | | |
| 18 | gas generating plants. To meet new New England generating requirements, a more | | | | | | |
| 19 | correct comparison would compare the cost of new wind generation to new build coal, | | | | | | |
| 20 | nuclear and natural gas generation. This comparison would show that wind is one of the | | | | | | |
| 21 | most competitive forms of generation available to ISO-NE. In the U.S. Energy Information | | | | | | |

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Administration's (EIA) *Annual Energy Outlook 2012*, the EIA projects the levelized cost of new
wind power facilities without government subsidies to compare favorably to new nuclear and coal
generation but is more costly than new conventional natural gas power plants. Please see
Attachment JC & MJP-2 to this testimony.

5 AWE would also note that natural gas generating costs are highly dependent on 6 natural gas prices and these prices can fluctuate dramatically, leading to dramatic changes 7 in wholesale power prices. As recently as 2008, the average real time price of electricity 8 in ISO-NE was approximately \$80 MWh as compared to \$46 MWh in 2011. AWE 9 would argue that an "all gas" strategy for meeting future ISO-NE generation 10 requirements is not only imprudent from a price risk perspective, but it is impractical. 11 This view is confirmed by a recent study performed by ICF International on behalf of 12 ISO-NE. The draft report is titled "Assessment of New England's Natural Gas Pipeline 13 Capacity to Satisfy Short and Near-Term Electric Generation Needs" and is dated June 14 15, 2012. The ICF report conclusions include the following: 1)"New England's gas 15 delivery system is already in very tight balance on a winter design day, even before any 16 future gas demand growth is factored in"; 2) "on winter design days, supplies available to 17 electric generators are usually below the imputed fuel "reserve margin" (the amount of gas pipeline capacity that would be needed to supply "operating reserve" units on the 18 19 power system), indicating that there is not enough supply for generators with interruptible 20 pipeline service."; and 3) "the results of this analysis suggests that regional gas supply 21 capability is inadequate to satisfy both the LDCs firm load and the projected gas demand

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| 1 | from electric generators on a winter design day over the next decade, barring incremental |
|----|---|
| 2 | expansion of the gas delivery system beyond the expansions assumed in this study." |
| 3 | Q. Would you care to comment on following statement made by Ms. |
| 4 | Linowes in section 8 of her testimony: "The applicant presumably believes he can |
| 5 | achieve the high capacity factors based on turbine hub height and rotor diameter |
| 6 | but there is no verifiable proof of this fact." |
| 7 | A. Yes. The capacity factor range contained in AWE's Application is based |
| 8 | on wind analysis performed by the nationally recognized wind consulting firm V-Bar. |
| 9 | Ms. Linowes provides no evidence that the capacity factor range provided by AWE is |
| 10 | inaccurate. |
| 11 | Prefiled Testimony of Robert L. Edwards (dated July 31, 2012) |
| 12 | Q. Regarding Mr. Edwards' Prefiled Testimony, on p. 2, do you agree |
| 13 | with his statements about investment grade credit ratings of institutions providing |
| 14 | performance guarantees for the Applicant's decommissioning requirements in the |
| 15 | Town of Antrim, New Hampshire Agreement? |
| 16 | A. No. Section 14.2.3 of the Agreement between the Applicant and Town of |
| 17 | Antrim, New Hampshire ("Town Agreement"), calls for an institution that is rated by a |
| 18 | rating agency to provide the decommissioning bond, letter of credit, or other financial |
| 19 | mechanism for an irrevocable guarantee to cover the reasonably anticipated costs or the |
| 20 | amount of complying with Owner's decommissioning obligations. This guarantee will be |
| 21 | provided by an investment grade institution that has or is maintaining a minimum credit |

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| 1 | rating of BBE | B by S&P or Baa2 by Moody's, or the commercial equivalent. Mr. Edwards' | | | | | |
|----|---|--|--|--|--|--|--|
| 2 | assertion in the question is incorrect because the Applicant, pursuant to the Town | | | | | | |
| 3 | Agreement, cannot utilize an institution that is "Ba" from Moody's. Furthermore, a | | | | | | |
| 4 | limited amount of insurance companies provide letters of credit and, normally in the | | | | | | |
| 5 | power industry, banks are the main providers of these instruments. If the SEC were to | | | | | | |
| 6 | rule that only an insurance company could provide this guarantee, then it could limit the | | | | | | |
| 7 | ability for the | Applicant to adhere to the contractual obligations under the Town | | | | | |
| 8 | Agreement. | | | | | | |
| 9 | Conclusion | | | | | | |
| 10 | Q. | Would AWE be willing to accept a permit condition that requires that | | | | | |
| 11 | AWE to dem | onstrate to the SEC that it has secured construction financing for the | | | | | |
| 12 | project prior | to the start of construction? | | | | | |
| 13 | А. | Yes. Customarily, sources of construction financing require permanent | | | | | |
| 14 | financing con | nmitments from capital providers to be in place prior to releasing funds for | | | | | |
| 15 | construction. | Therefore, a demonstration of construction financing should be deemed an | | | | | |
| 16 | adequate fina | l verification that the Applicant has satisfied all requirements under RSA | | | | | |
| 17 | 162-H with respect to its financial capability. AWE is willing to accept such a | | | | | | |
| 18 | requirement i | n the Certificate. | | | | | |
| 19 | Q. | Do you have anything further to add to this testimony? | | | | | |
| 20 | А. | No, not at this time. | | | | | |
| 21 | 926127 <u>-</u> | _1 | | | | | |



Compliance Market (Primary Tier) REC Prices (January 2008 to June 2012)

Source: Spectron Group (2012)

| | | U.S. Average Levelized Costs (2010 \$/megawatthour) for Plants En Service in 2017 | | | | Plants Entering |
|---------------------------------------|------------------------|--|--------------|----------------------------------|----------------------------|--------------------------------|
| Plant Type | Capacity Factor (%) | Levelized Capital Cost | Fixed O&M | Variable O&M (including fuel) | Transmission Investment | Total System Levelized Cost |
| Dispatchable Techn | ologies | | | | | |
| Conventional Coal | 85 | 64.9 | 4.0 | 27.5 | 1.2 | 97.7 |
| Advanced Coal | 85 | 74.1 | 6.6 | 29.1 | 1.2 | 110.9 |
| Advanced Coal with CCS | 85 | 91.8 | 9.3 | 36.4 | 1.2 | 138.8 |
| Natural Gas-fired | | | | | | |
| Conventional Combined Cycle | 87 | 17.2 | 1.9 | 45.8 | 1.2 | 66.1 |
| Advanced Combined Cycle | 87 | 17.5 | 1.9 | 42.4 | 1.2 | 63.1 |
| Advanced CC with CCS | 87 | 34.3 | 4.0 | 50.6 | 1.2 | 90.1 |
| Conventional Combustion Turbine | 30 | 45.3 | 2.7 | 76.4 | 3.6 | 127.9 |
| Advanced Combustion Turbine | 30 | 31.0 | 2.6 | 64.7 | 3.6 | 101.8 |
| Advanced Nuclear | 90 | 87.5 | 11.3 | 11.6 | 1.1 | 111.4 |
| Geothermal | 91 | 75.1 | 11.9 | 9.6 | 1.5 | 98.2 |
| Biomass | 83 | 56.0 | 13.8 | 44.3 | 1.3 | 115.4 |
| Non-Dispatchable T | echnologies | | | | | |
| Wind | 33 | 82.5 | 9.8 | 0.0 | 3.8 | 96.0 |
| Solar PV^1 | 25 | 140.7 | 7.7 | 0.0 | 4.3 | 152.7 |
| Solar Thermal | 20 | 195.6 | 40.1 | 0.0 | 6.3 | 242.0 |
| Hydro ² | 53 | 76.9 | 4.0 | 6.0 | 2.1 | 88.9 |

Estimated Levelized Cost of New Generation Resources, 2017

¹Costs are expressed in terms of net AC power available to the grid for the installed capacity.

 2 As modeled, hydro is assumed to have seasonal storage so that it can be dispatched within a season, but overall operation is limited by resources available by site and season.

Note: These results do not include targeted tax credits such as the production or investment tax credit available for some technologies, which could significantly affect the levelized cost estimate. For example, new solar thermal and PV plants are eligible to receive a 30-percent investment tax credit on capital expenditures if placed in service before the end of 2016, and 10 percent thereafter. New wind, geothermal, biomass, hydroelectric, and landfill gas plants are eligible to receive either: (1) a \$22 per MWh (\$11 per MWh for technologies other than wind, geothermal and closed-loop biomass) inflation-adjusted production tax credit over the plant's first ten years of service or (2) a 30-percent investment tax credit, if placed in service before the end of 2013 (or 2012, for wind only).

Source: U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2012*, (June 2012)