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RHODE ISLAND & MASSACHUSETTS

March 23, 2010

Ms. Luly Massaro, Clerk  
Rhode Island Public Utilities Commission  
89 Jefferson Boulevard  
Warwick, RI 02888

**Re:    *Review of Proposed Town of New Shoreham  
Project, Pursuant to R.I.G.L. § 39-26.1-7  
Docket No. 4111***

Dear Ms. Massaro:

Enclosed please find an original and nine (9) copies of Deepwater Wind Block Island, LLC's Memorandum In Support Of Relief. Please note that an electronic version of this document has been previously provided to the service list.

Thank you for your attention to this matter. If you have any questions, please do not hesitate to contact me.

Sincerely,

Joseph A. Keough, Jr.

JAK:prc  
Enclosures

**STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION**

**IN RE: REVIEW OF PROPOSED TOWN OF NEW SHOREHAM PROJECT  
PURSUANT TO RHODE ISLAND GENERAL LAWS § 39-26.1-7**

**DOCKET NUMBER 4111**

**POST- HEARING  
MEMORANDUM  
IN SUPPORT OF RELIEF**

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**SUBMITTED BY:  
DEEPWATER WIND BLOCK ISLAND, LLC**

**MARCH 23, 2010**

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## **I. OVERVIEW AND SUMMARY**

The legislative and executive branches of Rhode Island government have enacted specific legislation and taken other deliberate actions to encourage the development of the offshore wind industry in Rhode Island. The Long-Term Contracting Standard for Renewable Energy Act is a key component of Rhode Island's strategy to be the first state in the nation to host an offshore wind farm. The power purchase agreement for the Block Island Wind Farm is before the Rhode Island Public Utilities Commission solely because the Long-Term Contracting for Renewable Energy Act specifically called for it. That Act calls for a demonstration-scale project of no more than 30 MW, and no more than "eight wind turbines" to provide specific benefits to the Town of New Shoreham. It also called for this project to be vetted on an expedited schedule, to be followed in the future by a proposal for a utility-scale offshore wind project. The Act is a strong endorsement by the General Assembly of the Governor's prior efforts to responsibly utilize the State's unique and abundant off-shore wind resource and to make Rhode Island a center of the emerging offshore wind industry.

The Act provides the Commission with a specific role in the review of this initial project. In addition to an expedited review schedule, the Act requires the Commission to determine if the power purchase agreement supporting this demonstration-scale project is commercially reasonable – in contrast to the Commission's typical and more expansive "public interest" review. The Act sets forth specific project objectives and size limitations that significantly impact the project's economics and make it more expensive than a utility-scale project. But this is not a solicitation for lowest-cost energy. The Block Island Wind Farm is a product of Rhode Island's overarching policy goal of developing renewable energy in-state and hosting the emerging off-shore wind industry. Accordingly, the General Assembly assigned to the

Commission a very narrow question – is the Block Island Wind Farm Project commercially reasonable?

Further, given the very specific requirements set forth in the Act for this project, the Commission's review must take into account the legislative requirements of the project when determining whether the power purchase agreement is commercially reasonable. Otherwise, a review that compares this 30 MW offshore wind farm in the waters off Block Island to, for example, a landfill gas project in Vermont, produces unintended results and would completely frustrate the legislature's intent in developing a new industry here in Rhode Island, including direct economic benefits.

The evidence of commercial reasonableness presented in this docket is unanimous. All three experienced power market analyst experts provided testimony that supports a finding of commercial reasonableness given the requirements of the Act and its legislative intent. It is true that the experts disagreed on what methodology to use in assessing the reasonableness of the power purchase agreement. Given the unique and path-breaking nature of this project, and the lack of readily-available benchmarks, such disagreement is understandable. Because there are no operating offshore wind farms in the United States, and because projects using other renewable energy technologies are very different in scale and subject to site-specific conditions, comparisons across projects are not straightforward. There are reasonable disagreements about whether this project should be compared to other offshore wind farms or to other renewable energy technologies generally. However, these methodological differences have no impact on the final conclusion – no matter how this power purchase agreement is measured or compared, the experts agree that it is commercially reasonable. It is notable that none of the parties, or their

expert power market analysts, provided testimony in this docket that the power purchase agreement was commercially unreasonable.

It is also true that the pricing included in the power purchase agreement is above the current blended power price paid in NE ISO. However, the pricing in the power purchase agreement reflects the costs necessary to construct this renewable resource. Indeed, the costs of newly-developed renewable energy are well understood by state policy makers. Those policy makers also recognize the significant long-term benefits that in-state renewable energy production has over traditional fossil fuels. Given the state's Renewable Energy Standard<sup>1</sup>, the question is not whether Rhode Island ratepayers will pay for renewable energy, but simply whether they will pay for renewable energy from Rhode Island-based projects that supply local jobs and local environmental benefits, or whether they will pay to import renewable energy from other jurisdictions without reaping any of the related benefits.

State policy makers made the decision to encourage local projects and the related jobs and other benefits. The Commission's role is to determine whether the terms and pricing of the power purchase agreement supporting the Block Island Wind Farm are commercially reasonable within the context of the Act. The evidence in the record overwhelmingly supports an affirmative answer to that question.

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<sup>1</sup> See R.I.G.L., §39-26-1, et. seq.

## **II. BACKGROUND**

### ***A. Long-Term Contracting Act***

On June 26, 2009, Rhode Island enacted the Long-Term Contracting Standard for Renewable Energy Act § 39-26.1-1, et. seq. (the “Long-Term Contracting Act”).<sup>2</sup> Section 39-26.1-7 of that Act, entitled Town of New Shoreham Project, specifically called for a renewable energy project serving the Town of New Shoreham. The measures that resulted in this Act were passed by a cumulative vote of 393 to 1.<sup>3</sup> In response to the legislative mandate for a solicitation, Narragansett Electric Company, d/b/a National Grid (“National Grid”) issued a request for proposals for a renewable power project serving Block Island.

### ***B. The Block Island Wind Farm***

In response to the request for proposals mandated by the Long-Term Contracting Act, Deepwater Wind Block Island, LLC (“Deepwater Wind”) proposed the Block Island Wind Farm (“BIWF”) -- an offshore wind farm of no more than 30 MW in nameplate capacity located approximately three miles southeast of Block Island. The BIWF will generate enough energy to displace Block Island’s aggregate electricity needs. Excess power will be exported to the mainland via a new transmission line that will interconnect Block Island and the mainland transmission system.

The BIWF is scheduled to be the first commercial offshore wind farm built in North America. As the first state to host such a project, Rhode Island will enjoy significant economic development advantages as the offshore wind industry develops in the United States. Although many other states are aggressively pursuing offshore wind, Rhode Island currently has a leading position. Rhode Island has adopted important legislative supports for the industry, such as the

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<sup>2</sup> The Long-Term Contracting Act was amended by the General Assembly in October 2009. *See* R.I. Pub. Laws 2009, Ch. 26.1.

<sup>3</sup> Moore Rebuttal, p. 2, lines 14 and 15.

Renewable Energy Standard and the Long-Term Contracting Act. The state also had the foresight to develop the regulatory framework, through the Coastal Resources Management Council's Ocean Zone Special Area Management Plan, to expedite permitting of an offshore wind farm in state waters. The "first mover" advantage that will result from the BIWF being built on schedule can have very significant economic development benefits to the state as this new industry is likely to cluster around real projects.

### *C. The Power Purchase Agreement*

On December 9, 2009, National Grid filed a copy of an executed power purchase agreement ("PPA") between National Grid and Deepwater Wind with the Rhode Island Public Utilities Commission ("Commission").<sup>4</sup>

Pursuant to the PPA, National Grid has agreed to purchase all of the energy, capacity and renewable energy credits ("RECs") generated by the BIWF. Under the PPA, energy, capacity and RECs generated by the BIWF will be sold by Deepwater Wind to National Grid, commencing in 2012 at the price of \$235.75 per megawatt hour ("MWh") of electricity generated and delivered, escalating by 3.5% on January 1 of each calendar year.<sup>5</sup> The PPA also contains a mechanism to credit National Grid with a 50% price reduction for power generated if the BIWF's performance exceeds projections, lowering the effective price under the PPA.

Deepwater Wind respectfully requests that the Commission approve the PPA as commercially reasonable pursuant to the Long-Term Contracting Act.

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<sup>4</sup> The request for proposal issued by National Grid pursuant to R.I.G.L. § 39-26.1-7 was distributed to a wide group of recipients, as noted by Mr. Milhous (Transcript, March 9, 2010, p.150-151). Even though Deepwater Wind was the only respondent to National Grid's RFP, Deepwater Wind anticipated competition in the process, to the point that, alongside a fixed price bid, it also tendered an unconventional and unusually transparent "open book" or structured price bid in order to make its proposal look more attractive (Transcript, March 10, 2010, pp. 18-19).

<sup>5</sup> The price for the 2013 calendar year, the projected first full year of operation, will be \$244 per MWh of electricity generated and delivered.

### **III. STANDARD OF REVIEW**

#### ***A. The Legislature Created a Narrow Standard of Review for the Commission***

The Long-Term Contracting Act sets very specific parameters for the “Town of New Shoreham Project.” Although other sections of the Long-Term Contracting Act call for general solicitations of renewable energy projects, the Town of New Shoreham Project is alone in having an expedited schedule and specific project parameters. Rhode Island General Laws § 39-26.1-7 requires that the Town of New Shoreham Project: (1) be limited to 10 MW in net capacity<sup>6</sup>; (2) be limited to 30 MW in nameplate capacity; (3) have no more than 8 wind turbines; (4) enhance the electric reliability of the Town of New Shoreham; (5) enhance the environmental quality of the Town of New Shoreham; and (6) include provisions for a transmission cable between the Town of New Shoreham and the mainland of the state.<sup>7</sup> The evidence clearly demonstrates that the BIWF satisfies each of these specific legislative requirements.

The Commission’s standard of review in this case is unique. Rather than a typical prudence review, the Long-Term Contracting Act specifically provides that the PPA is “commercially reasonable”<sup>8</sup> if it contains “terms and pricing that are reasonably consistent with what an experienced power market analyst would expect to see in transactions involving newly developed renewable energy resources.”<sup>9</sup> The relevant issue before the Commission is whether the PPA is commercially reasonable for a project that was legislatively mandated to satisfy a number of very specific project parameters. The Commission must take the legislative mandates into account when applying the standard of review set forth in the Long-Term Contracting Act to this PPA.

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<sup>6</sup> As measured at a 100% capacity factor in accordance with R.I.G.L. § 39-26.1-2 (7).

<sup>7</sup> In addition, the project must have “a credible project operation date, as determined by the Commission, but a project need not have completed the requisite permitting process.” *See*, R.I.G.L. § 39-26.1-7.

<sup>8</sup> R.I.G.L. § 39-26.1-1.

<sup>9</sup> *Id.*

***B. The BIWF Advances the Legislative Intent of the Long-Term Contracting Act***

The BIWF has garnered strong support from the policy-making branches of state government because it is a critical element in the state's long-term energy, environmental, and economic development plans.<sup>10</sup> Indeed, the statute that set this process in motion -- the Long-Term Contracting Act -- is more than mere energy procurement legislation. The Act sets broad goals for the state in developing renewable energy sources: (1) stabilizing long-term energy prices; (2) enhancing environmental quality; (3) creating jobs in Rhode Island in the renewable energy sector; and (4) facilitating the financing of renewable energy generation within the jurisdictional boundaries of the state or adjacent state or federal waters or providing direct economic benefit to the state.<sup>11</sup>

In a joint letter to the Commission dated March 10, 2010, Speaker of the House of Representatives, Gordon D. Fox, and President of the Senate, M. Teresa Paiva-Weed, endorsed the BIWF as advancing the goals of the Long-Term Contracting Act.<sup>12</sup> They described the BIWF as a "first, but critical, step in launching this new industry here in Rhode Island."<sup>13</sup> They also made clear that costs are not unexpected in the question before the Commission:

"In passing the Long-Term Contracting Act, the General Assembly understood that renewable energy sources are today more expensive than fossil fuels. But the General Assembly also recognized that the development of renewable energy sources provides other benefits to our state and our nation, such as enhancing environmental quality, mitigating the impact of greenhouse gases, increasing our energy independence, and creating jobs in a new industry."<sup>14</sup>

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<sup>10</sup> See Public Comment of Governor Donald L. Carcieri, Transcript, March 9, 2010, pp. 6-14, Joint Public Comment Letter dated March 10, 2010 from Gordon D. Fox, Speaker of the Rhode Island House of Representatives, and M. Teresa Paiva-Weed, President of the Rhode Island Senate.

<sup>11</sup> R.I.G.L. § 39-26.1-1.

<sup>12</sup> See Joint Public Comment Letter dated March 10, 2010 from Gordon D. Fox, Speaker of the Rhode Island House of Representatives, and M. Teresa Paiva-Weed, President of the Rhode Island Senate.

<sup>13</sup> Id.

<sup>14</sup> Id.

As explained by these legislative leaders and the public comments of the Governor before the Commission, the BIWF advances all of these goals.

In-state generation of renewable energy is an important policy goal of Rhode Island. Clearly, the BIWF PPA advances the goal of “facilitating the financing of renewable energy generation” within Rhode Island.<sup>15</sup> Mr. Moore explained why encouraging the financing and construction of local, state-based, sources of renewable power is important to Rhode Islanders:

“as long as Rhode Island, along with other New England states, that have ambitious RPS goals, are willing to spend more on clean power, they’re faced with a choice of either buying RECs from Northern New York, from our projects that are developed in Northern New York, Maine, Canada, and export those jobs to those states or do what it takes to support a new industry here in Rhode Island and create those jobs here in Rhode Island, and this is really what it’s all about, what this effort is all about.”<sup>16</sup>

If Rhode Island fails to build substantial in-state sources of renewable power, it will be forced to satisfy its RES requirements by importing power from other states, effectively exporting jobs in the process.

In enacting the Long-Term Contracting Act, the General Assembly intended that the Commission consider this context as it evaluates the PPA. A finding that the PPA is commercially reasonable advances these important policy goals of the State.

#### **IV. THE PPA FOR THE BIWF IS COMMERCIALY REASONABLE**

The evidence in this case overwhelmingly supports a finding that the PPA is commercially reasonable as that term is defined in the Long-Term Contracting Act. The evidence presented by Deepwater Wind, National Grid and the Division of Public Utilities and Carriers (“Division”) compels this result. Strikingly, not a single party who provided testimony in this docket concluded that the PPA was commercially unreasonable. William Moore,<sup>17</sup>

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<sup>15</sup> R.I.G.L. § 39-26.1-1.

<sup>16</sup> Transcript, March 10, 2010, p.14.

<sup>17</sup> Moore Direct, p. 21, lines 4-17.

Deepwater Wind's Chief Executive Officer, and David Nickerson,<sup>18</sup> Deepwater Wind's experienced power market analyst, submitted evidence and testified that the PPA is commercially reasonable. National Grid also concluded that the PPA is commercially reasonable.<sup>19</sup> Finally, the expert for the Division provided pricing data that placed the pricing of the BIWF PPA well within the range of prices that an experienced power market analyst would expect to see from newly-developed renewable energy resources. The Division's expert concluded that "to the extent that, you know, the state policy makers determined that those economic benefits are worth the price, then you may conclude **that the contract is commercially reasonable**.... So I don't think you can just look at the price in isolation. I think you need to sort of look at the whole picture."<sup>20</sup> The commercial reasonableness of the PPA is uncontested in the record.

*A. The BIWF PPA Meets the Long-Term Contracting Act Standard of Review*

The Long-Term Contracting Act establishes a specific standard of review for this case. To satisfy the requirements of the Long-Term Contracting Act: (1) the BIWF must be a newly-developed renewable energy resource eligible under the Renewable Energy Standard; (2) the pricing in the PPA must be commercially reasonable; (3) the terms of the PPA must be commercially reasonable; and (4) the BIWF must have a credible operation date. The evidence and testimony in this case all strongly support a finding that the BIWF and the PPA satisfy the requirements of the Long-Term Contracting Act.

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<sup>18</sup> Nickerson Direct, p. 49 line 14, p. 50, line 14.

<sup>19</sup> National Grid's response to Division Data Request 2-1: "If the Commission applies the "commercial reasonableness" standard to this power purchase agreement to determine whether it should be approved, National Grid believes it is commercially reasonable in the context of a limited demonstration project that was statutorily capped at eight wind turbines. Because of the statutory limitations, Deepwater was not able to achieve the economies of scale to lower the unit cost of the power. Moreover, National Grid does not have a list of facts to support this conclusion. Rather, there is no precedent for this project. Given these considerations, National Grid believes that it has negotiated the best power purchase agreement possible, that also allows Deepwater a reasonable opportunity to finance the project."

<sup>20</sup> Transcript, March 12, 2010, p. 48, lines 20-24.

***B. The BIWF Is A “Newly Developed Renewable Energy Resource” Eligible Under The Renewable Energy Standard***

The BIWF meets the definition of a “newly developed renewable energy resource” under the Long-Term Contracting Act and the Renewable Energy Standard because: (1) the project exclusively uses wind power, which is an “eligible renewable energy resource” under R.I.G. L. § 39-26-5(2) and, (2) the BIWF has “neither begun operation, nor have the developers of the units implemented investment or lending agreements necessary to finance the construction” of the project. There is no evidence in the record to support a finding that the BIWF is not a “newly developed renewable energy resource.”

***C. The Pricing of the PPA Is Commercially Reasonable***

The parties to this proceeding have acknowledged that the PPA price is higher than the current spot price of power.<sup>21</sup> However, the question before the Commission is whether the pricing is commercially reasonable within the context contemplated by the statute. Witnesses for Deepwater Wind, National Grid and the Division offered several approaches for analyzing the reasonableness of the PPA pricing. One approach compares the PPA pricing to pricing found in other renewable energy projects. The experts compared the PPA pricing to offshore wind farms and to renewable energy projects more generally. An alternative approach is an analysis of Deepwater Wind’s costs and associated projected rate of return. Regardless of the approach followed, all of the evidence supports a finding that the PPA pricing is commercially reasonable.

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<sup>21</sup> Transcript, March 10, 2010, pp. 7-8. Deepwater Wind notes that the combination of very low natural gas prices, and capacity surplus exacerbated by the recession, today presents the industry with 'market' costs so low that they would be unlikely to support any new generation, in the short-run, without a long-term contract that may appear over-market when compared to today’s spot price-based projections.

***1. The BIWF PPA Price Is Commercially Reasonable When Compared to Other Offshore Wind Farms***

Deepwater Wind's expert witness, David Nickerson, concluded that the terms and pricing of the BIWF PPA are commercially reasonable.<sup>22</sup> Mr. Nickerson based his conclusion on his analysis of the three elements that combine to produce a PPA price: (1) capital costs of the project; (2) ongoing operating and maintenance costs ("O&M"); and, (3) the project's rate of return.<sup>23</sup> The PPA price should be considered commercially reasonable if the project costs and rate of return are commercially reasonable, because the PPA price is a direct mathematical function of the costs and returns.

***a. The BIWF Capital Costs Are Commercially Reasonable***

Mr. Nickerson concluded that the capital costs of the BIWF are commercially reasonable compared to the costs of recent European offshore wind farms, when considering appropriate adjustments for size, water depth, and the maturity of the installation and maintenance support infrastructure. To use the most recent data available, Mr. Nickerson considered fourteen European offshore wind projects that have been financed or are in construction or operation since mid-2008. Mr. Nickerson established a range of actual costs from the European projects on a per megawatt of installed capacity basis.

A number of the European projects reviewed by Mr. Nickerson have intrinsically lower costs because they are built in shallower water depths than the waters near Block Island, and so have less demanding engineering, materials and installation costs than the BIWF. Mr. Nickerson adjusted the capital costs of these projects to account for water depth, allowing for a more accurate comparison of the projects to the BIWF. After making those adjustments, Mr. Nickerson testified that although the capital costs of the BIWF are outside the range of

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<sup>22</sup> Nickerson Direct, pp. 49-50, Nickerson Rebuttal, p. 27.

<sup>23</sup> Transcript, March 10, 2010, pp. 236-240.

comparable capital costs for the European offshore wind, other differences between the European projects and the BIWF help explain why the costs for the BIWF are reasonable.

The average nameplate capacity of the European projects considered by Mr. Nickerson is 185 MWs. The BIWF, in contrast, is legislatively capped at 30 MW of nameplate capacity. The size of an offshore wind farm is a critical cost driver as larger wind farms benefit from significant economies of scale. These economies of scale drive down the unit costs of the power produced. To illustrate the impact of the lack of scale economies available to the BIWF, Mr. Nickerson presented data from a recent KEMA Cost of Generation Study which identified installed cost expectations for offshore wind farms as a function of size. This study showed future installed cost projections (in 2013 dollars) for a 50 MW offshore wind farm was 28% greater than a 350 MW offshore wind farm and 21% greater than a 100 MW offshore wind farm. When considering the impact of project size, Mr. Nickerson calculated that, to the extent the KEMA study assumptions were representative, project size readily accounts for the difference between BIWF and the European data set. When considering reasonable adjustments for scale economies, the \$6.96 million per MW of installed capacity capital costs of the BIWF is reasonably consistent with the range of costs found in the European projects. In fact, the Study's \$6.95 million per MW projected cost of a 50MW wind farm compares very favorably with the BIWF's cost of \$6.96 million per MW.

Similarly, Mr. Nickerson explained that European wind farms benefit from extensive local wind farm construction experience, a substantial and well-established supply chain, and other efficiencies.<sup>24</sup> As the first offshore wind farm in North America, the BIWF will not enjoy the same advantages. The lack of these advantages is tied to the State's decision to seek "first mover" advantage in building the industry here. Although Mr. Nickerson noted that the pricing

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<sup>24</sup> Nickerson Direct, p. 19, lines 19-22.

benefits of scale economies and local wind farm experience are difficult to quantify,<sup>25</sup> he concluded that if the capital costs of the projects could be adjusted for these considerations, the costs of the BIWF would be very close to the average project costs he presented.<sup>26</sup> Accordingly, Mr. Nickerson testified that he considered these factors<sup>27</sup> and “came to the conclusion that the installed cost of this project was reasonable.”<sup>28</sup> Mr. Nickerson’s testimony on installed costs was not contradicted or disputed by the expert witnesses retained by National Grid or the Division.

***b. The BIWF O&M Cost Assumptions Are Commercially Reasonable***

Mr. Moore explained that Deepwater Wind’s “O&M cost assumptions are based on extensive research and have been vetted by Noble Denton, a firm with direct, first-hand experience with these kinds of costs in the context of offshore wind projects built in Europe.”<sup>29</sup> Mr. Nickerson testified that the projected O&M costs for the BIWF were commercially reasonable, having been built up by individual cost line item by Deepwater Wind and vetted by a consulting firm that has extensive experience in the European offshore wind industry.<sup>30</sup>

Mr. Hahn, the Division’s expert, used a lower set of O&M cost assumptions in his calculations. This information was not disclosed. It was identified as confidential and based on a review Mr. Hahn performed of an unidentified offshore wind farm. Given the undisclosed basis of this information, it should not be deemed reliable or credible.

Mr. Hahn also argued that O&M cost assumptions used in a KEMA report<sup>31</sup> are lower than Deepwater Wind’s assumptions. However, the KEMA report analyzed wind farms that are

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<sup>25</sup> Transcript, March 10, 2010, p. 239, lines 1-5.

<sup>26</sup> Transcript, March 10, 2010, p. 243, lines 1-15.

<sup>27</sup> Transcript, March 10, 2010, p. 237, line 20, p. 239, line 1.

<sup>28</sup> Transcript, March 10, 2010, p. 239, lines 1-3.

<sup>29</sup> Moore Supplemental Rebuttal, p. 10, lines 8-20.

<sup>30</sup> Transcript, March 10, 2010, p. 239, lines 5-9.

<sup>31</sup> Nickerson, Direct, p. 18, footnote 7.

much larger than the BIWF, which is legislatively capped at 30 MW. As noted above, scale has a large impact on the unit cost of power from wind farms. Mr. Hahn did not account for the relevance of scale nor did he offer an explanation of how KEMA arrived at its O&M estimates (in stark contrast to the researched and independently reviewed O&M cost assumptions used by Deepwater Wind). Because Mr. Hahn did not adjust for project size nor did he disclose the one specific project he compared, his O&M assumptions should be accorded little weight. Therefore, the record supports Mr. Nickerson's conclusion that the O&M cost assumptions used by Deepwater Wind are commercially reasonable.

*c. The BIWF Rate of Return Is Commercially Reasonable*

Mr. Nickerson also considered the projected range of rates of return for the BIWF PPA and concluded that they are commercially reasonable.<sup>32</sup> The projected rates of return calculated by Deepwater Wind are subject to a Commission confidentiality order. However, Deepwater Wind's position on the evidence concerning rate of return was summarized by Mr. Moore:

“[W]hat I explained this morning is that with a loan guaranty in place we actually expect to get longer term debt and lower interest rates which would allow us to improve that 12 to 14 percent range to under the order of 15 to 18 percent is what we would anticipate for our final range of return for this project with the possibility of getting closer to 20 in the event that we could save tens of millions of dollars in building the project, but that's a pretty remote possibility.”<sup>33</sup>

Mr. Moore testified that these returns are necessary to attract investment in the BIWF, a first-of-its-kind project in the United States.<sup>34</sup> The question of whether the rate of return cited by Mr. Moore is reasonable was the subject of examination by Chairman Germani:

“MR KEOUGH: Based on your experience in this area, is that a reasonable rate of return for a project of this type?  
THE WITNESS: It's at the low end of target rates for a project that has as much commercial risk as this. The first offshore project in an industry

<sup>32</sup> Transcript, March 10, 2010, p. 239, lines 12-16.

<sup>33</sup> Transcript, March 10, 2010, p. 185, lines 1-19.

<sup>34</sup> Transcript, March 10, 2010, p. 23, lines 10-24, p 32, lines 14-22.

that doesn't have an established supply chain, in a project that has a fairly substantial schedule risk, and you know, I think that I would expect most investors would like to see a levered return probably in the mid 20s, so we're certainly at the low end of that.

THE CHAIRMAN: Mr. Moore, in terms of supply risk, if you've got a contract with a major utility for 20 years that they're going to buy output. Where's the risk? What risk are you talking about?

THE WITNESS: Well, I mean, there are several. We only get paid for energy delivered, and yesterday one of the public witnesses said, you know, that in the event of a bankruptcy of Deepwater, the ratepayers and taxpayers of Rhode Island would be stuck with the tab. There's no tab to be paid. We only earn this REC subsidy for energy that's delivered to the market, and if we deliver none, there's no subsidy to be paid. Just now I was referring to the supply chain gaps, Mr. Chairman which -- by which I meant that, as we sit here now, we do not know exactly how much it's going to cost us to build this project. We can make some estimates about the cost of the vessels required to build in the offshore environment, but for the most part, we cannot lock in a price today for construction that's taking place three years from now, so we're taking that risk."<sup>35</sup>

In other words, if the wind resource proves to be weaker than estimated, less power will be generated, and Deepwater Wind will not earn its projected return from the BIWF. Similarly, Deepwater Wind bears the risk of cost overruns that would decrease its rate of return. In addition, Deepwater Wind's investors face permitting risk (if the project cannot go forward because it cannot receive all its permits, the investment made so far is written off) and scheduling risk (if the project cannot be completed by the end of 2012 because of permitting delays, unexpected construction delays, or weather conditions during the short summer installation window, the project might not qualify for federal incentives, significantly reducing the return to investors). In light of these risks, and given the continuing aftershocks of the recent financial crisis, and the relative scarcity of investment capital for infrastructure and energy projects, a return of investment in the 15-20% range is commercially reasonable.<sup>36</sup>

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<sup>35</sup> Transcript, March 10, 2010, p. 32, line 11, p. 33, line 22.

<sup>36</sup> Transcript, March 10, 2010, p. 23, lines 10-24, p. 32, lines 14-22, p. 239, lines 12-16.

The Division's expert, Mr. Hahn, testified that "a typical IRR for renewable projects...would be in the 12% to 15% range, based upon my experience."<sup>37</sup> Mr. Hahn then went on to make a recommendation to the Commission that would have produced an internal rate of return in the range of 15.7% to 19.7%, which he himself described as "in line with expectations."<sup>38</sup>

Conflicting evidence was provided in pre-filed testimony and during the hearing by Mr. Moore and Mr. Hahn as to Deepwater Wind's rate of return on the BIWF project. Mr. Hahn calculated extraordinary rates of return, approaching the triple digit mark. Deepwater Wind projected a far lower levered rate of return in the mid-to-high teens. Deepwater Wind presented evidence that Mr. Hahn made several fundamental errors in calculating his projected rate of return for the BIWF. Because of these significant errors, Mr. Hahn's projections are deeply flawed and should be given no weight.<sup>39</sup> In summary, Mr. Hahn made six errors.

First, Mr. Hahn assumed that the entire value of the federal incentive known as the investment tax credit cash grant, equal to approximately \$55 million - \$60 million, would be paid to Deepwater Wind and its investors soon after their initial investment. On the contrary, most of this amount will be used to repay the bank loan used to finance the BIWF. Mr. Moore testified that based on his extensive experience in project finance, the lenders for the BIWF will not lend hundreds of millions of dollars to a project where the equity investors have no 'skin in the game' (having been already paid out in full through the investment tax credit cash grant).<sup>40</sup>

Second, Mr. Hahn assumed that the entire cost of the BIWF would qualify for the

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<sup>37</sup> Hahn Direct, p. 14, lines 14-16.

<sup>38</sup> Hahn Direct, p. 25, line 12.

<sup>39</sup> These errors are set forth in the supplemental rebuttal testimony of Mr. Moore (Moore Supplemental Rebuttal, p. 3, line 20, p. 11, line 7) and were explained in detail by Mr. Moore at the hearing (Transcript, March 10, 2010, p. 26, line 16, p. 31, line 10).

<sup>40</sup> Moore Supplemental Rebuttal, pp. 5-6. For example, considering Mr. Hahn's 80/20 debt/equity example, the repayment of the grant to the equity holders would imply that not only was there no equity in the project, but that the project was over-leveraged.

investment tax credit cash grant and accelerated depreciation. Mr. Moore testified that based on his experience, not all expenditures will qualify.<sup>41</sup> Only capital expenditures for “specified energy property” that qualify for 5- year depreciation under the IRS’ Modified Accelerated Cost Recovery System qualify.<sup>42</sup> As such, certain financing costs, certain electrical system costs, and certain real estate costs do not qualify.<sup>43</sup>

Third, Mr. Hahn assumed that lenders will not require a debt service reserve fund to be maintained. Mr. Moore testified that based on his experience, this assumption is not realistic because banks will require such a reserve to service debt in the event there is inadequate project revenue, which is not an uncommon periodic circumstance given the intermittent and seasonal nature of wind resources.<sup>44</sup> The debt service reserve effectively smoothes out the impact of variability in the wind resource and is a common feature.

Fourth, Mr. Hahn projected that the entire capital cost for the project will be expended in one year, in 2012. As explained by Mr. Moore, this is an incorrect assumption since Deepwater Wind has already incurred significant costs related to the BIWF in 2009, and is expected to incur significant additional expenses between now and the completion of construction in 2012.<sup>45</sup> These expenditures lower the internal rate of return because they will have been incurred up front but are waiting to earn a return while the project is still in development or construction.

Fifth, Mr. Hahn treated the entire value of depreciation benefits as current cash flow. Mr. Moore testified that this treatment might be appropriate where the investor or developer has significant taxable income, and so the depreciation deductions could be used to offset tax that

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<sup>41</sup> Moore Supplemental Rebuttal, pp. 4-7.

<sup>42</sup> Moore Supplemental Rebuttal, pp. 9-10.

<sup>43</sup> Moore Supplemental Rebuttal, p. 5.

<sup>44</sup> Transcript, March 10, 2010, p.30, lines 16-23.

<sup>45</sup> The actual year-by-year projected expenditures have been disclosed to the Commission and the Division on a confidential basis. *See*, Deepwater Wind Confidential Response to Division Data Request, Div. 1-17.

would otherwise be payable.<sup>46</sup> However, as a development company, Deepwater Wind does not have such taxable income, and so this assumption is inapplicable on the facts.<sup>47</sup> Rather, Deepwater Wind will carry forward its losses and use the deduction in future years when its interest expense has been substantially reduced and it has adequate taxable income.<sup>48</sup>

Sixth, as noted above, Mr. Hahn disputed the O&M cost assumptions utilized by Deepwater Wind. Deepwater Wind's evidence respecting its O&M cost assumptions are fundamentally sound and should be preferred to Mr. Hahn's confidential and undisclosed data.

It is important to quantify the impact of these adjustments to determine if they account for the differences between Deepwater Wind's calculations and the Division's calculations. At the hearing, the Commission asked Mr. Hahn to confirm that these changes would have the impact on the return calculations stated by Deepwater Wind. Following the hearings, Deepwater Wind provided Mr. Hahn a copy of the revised pro forma that quantified the impact of its corrections. As of the date of this memorandum, Mr. Hahn has not responded to the Commission's Record Request, nor has he refuted Mr. Moore's testimony on this issue.

The Commission should reject Mr. Hahn's projected rates of return because of the errors identified by Mr. Moore. Two of the disputed assumptions pertain to actual project specific spending by Deepwater Wind for which Deepwater Wind is in the best position to provide accurate information. The remaining four disputed assumptions recounted above relate directly to project financing and the investment tax credit cash grant. Accordingly, in weighing the contrasting approaches of Mr. Hahn and Deepwater Wind, Deepwater Wind notes that Mr. Hahn's expertise does not extend to the project financing of power facilities. Nor does Mr. Hahn

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<sup>46</sup> Moore Supplemental Rebuttal, p. 3.

<sup>47</sup> Id.

<sup>48</sup> Moore Supplemental Rebuttal, pp. 3, 9, 10.

have experience in how the recent investment tax credit cash grant rules are applied, or what capital expenditures might or might not qualify for the grant. By his own admission, Mr. Hahn has never secured project financing for any renewable energy projects whose capital costs exceed \$100 million, or any project that has qualified for the investment tax credit cash grant.<sup>49</sup>

In contrast, the experience of Deepwater Wind's management and investors include project financings for many gigawatts of power projects and large infrastructure projects, including numerous renewable energy projects, totaling billions of dollars of capital outlay.<sup>50</sup> This experience includes recent financing of three onshore wind projects totaling 382 MW, each of which qualified for the investment tax credit cash grant.<sup>51</sup> Deepwater Wind therefore urges the Commission to reject the erroneous assumptions made by the Division's expert in calculating rates of return, and to accept Deepwater Wind's calculations of its projected rates of return, all of which have been disclosed to the Commission and the Division for review.<sup>52</sup>

The history of the negotiations between Deepwater Wind and National Grid supports Mr. Nickerson's conclusion that the projected rate of return for the BIWF is commercially reasonable. First, as noted by Mr. Milhous<sup>53</sup> and Mr. Moore,<sup>54</sup> Deepwater Wind disclosed its capital expenditure projections and its projected rate of return to National Grid in the course of negotiations. The context for these disclosures was Deepwater Wind's willingness to enter into an "open book" arrangement under which it would be paid a power price consistent with a fixed rate of return. Second, Mr. Milhous noted<sup>55</sup> that National Grid negotiated to the point where "[i]t was our belief that the final pricing would take -- would actually take Deepwater below their

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<sup>49</sup> Division response to Deepwater Wind Data Request, DWW 1-4.

<sup>50</sup> Deepwater Wind response to Division Data Request, Div. 4-2.

<sup>51</sup> Deepwater Wind response to Division Data Request, Div 4-2.

<sup>52</sup> Deepwater Wind has also provided to the Division an analysis that replicated the inappropriate assumptions made by Mr. Hahn.

<sup>53</sup> Transcript, March 9, 2010, p. 172, line 21, p. 174, line 4.

<sup>54</sup> Transcript, March 10, 2010, p. 19, line 5, p. 21, line 19.

<sup>55</sup> Transcript, March 9, 2010, p. 150, lines 11-13.

target internal rate of return.”<sup>56</sup> The openness and transparency of the open book process proposed by Deepwater Wind, as well as the check on Deepwater Wind’s return served by National Grid’s insights into the project’s financial information, is consistent with Mr. Nickerson’s conclusion of commercial reasonableness.

These factual circumstances should, in addition, be considered in light of the testimony of the Division’s own expert. Mr. Hahn noted that in arms-length negotiations, the contract price tends to find a reasonable, market-appropriate middle-ground as a natural result of market forces motivating both the buyer and seller of power:

“Equity investors seek projects with an IRR that is high enough to meet their expectations of the return of and on that invested capital. If the expected IRR is lower than the target level, these entities will invest their funds elsewhere. Conversely, the buyer of the output of such a project seeks an IRR that is not excessive, but is the minimum necessary to allow the project to be financed, built and operated. In successful projects, the agreed-upon price yields an IRR through arms-length negotiation that is acceptable to both parties.”<sup>57</sup>

National Grid testified that it negotiated the PPA price to the point where Deepwater Wind had dropped below its target rate of return. Mr. Moore testified that Deepwater Wind felt pressure, through the course of negotiations and through its dealings with stakeholders other than National Grid, to reduce its price multiple times to the point that “we may have difficulty arranging a financing.”<sup>58</sup> This history of give-and-take negotiations supports the conclusion that Deepwater Wind’s projected rate of return is commercially reasonable.

***d. The PPA Price is Commercially Reasonable Because the Combined Capital Costs, O&M Costs, and Rate of Return are Commercially Reasonable***

Based on his analysis that the capital costs, O&M costs, and rate of return of the BIWF are individually commercially reasonable, Mr. Nickerson concluded that the PPA pricing is

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<sup>56</sup> Transcript, March 9, 2010, p. 150, lines 11-13.

<sup>57</sup> Hahn Direct p. 13.

<sup>58</sup> Transcript, March 10, 2010, p. 22, lines 3-24, p. 23, lines 1-24.

commercially reasonable.<sup>59</sup> This conclusion was not contested by any other experienced power market analyst in this docket.

***2. The BIWF PPA Price Is Commercially Reasonable When Compared to Other Types of Renewable Energy Projects***

Experts for National Grid and the Division produced pricing data for renewable energy projects using other technologies, such as solar power, onshore wind power, and landfill gas. Although Mr. Nickerson concluded that the most appropriate comparison of the BIWF is to other offshore wind farms, comparison of the BIWF pricing to the projects presented by the other experts also supports the conclusion that the pricing is commercially reasonable. The legal standard simply requires “reasonable consistency” with other newly-developed renewable energy resources. In other words, it might be possible for a power price to exceed the range of recent historical power prices for renewable power projects and yet be reasonably consistent with that range. However, the power price for the BIWF is, more compellingly, firmly *within* the ranges cited by the Division’s expert and National Grid’s expert, and therefore meets the “commercially reasonable” standard.

***a. Mr. Hahn’s Testimony Supports A Finding That The PPA Price Is Reasonable When Compared To The Price Of Other Projects***

Mr. Hahn compared the BIWF pricing to that of several other projects, including pricing from studies of hypothetical projects, across several renewable energy technologies. The BIWF pricing was well within the range of these other projects, with several projects with significantly higher pricing.<sup>60</sup> Because the BIWF pricing is within the range of prices of other actual projects and project projections, it is by definition commercially reasonable. As discussed above, the Long-Term Contracting Act does not mandate that the project have the lowest cost of all possible

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<sup>59</sup> Nickerson Direct, pp. 49-50, Nickerson Rebuttal, p. 27.

<sup>60</sup> See Hahn Surrebuttal, Table 1.

renewable energy projects. It simply mandates that the pricing of the BIWF be reasonably consistent with other projects.

Even though the BIWF PPA price is well within the range of prices projected by Mr. Hahn for other projects, a number of the projects on Mr. Hahn's list with lower prices are inappropriate comparisons. When those projects are excluded from the analysis, the price of the BIWF is rightly seen in an even more favorable light. The Commission should exclude from consideration the significant number of projects that would not meet the eligibility or size requirements imposed by Rhode Island General Laws § 39-26.1-7. A detailed review of each project used by Mr. Hahn, and whether each such project is a realistic benchmark, was provided by Mr. Nickerson in pre-filed testimony and is summarized below.<sup>61</sup>

First, eight of the seventeen comparison projects identified by Mr. Hahn are for projects of nameplate generation capacity larger than 30 MW and a capacity of more than 10 MW if measured at a 100% capacity factor, and therefore cannot meet the requirements of the legislation or qualify to participate in National Grid's RFP. As Mr. Hahn stated, larger projects are capable of achieving lower power prices due to the potential for economies of scale.<sup>62</sup> For this reason, larger projects are not useful as comparables, since they do not accurately indicate a reasonable power price achievable by a smaller project that meets the legislative requirements. In addition, one of these eight large projects is the Delmarva Power & Light Co. ("Delmarva Power")-Bluewater Wind contract, which, as explained below, is not directly comparable with the PPA because it does not provide for the sale of all products generated by the facility to Delmarva Power.<sup>63</sup> Finally, some projects, such as the Milford Wind project based in Utah,

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<sup>61</sup> Nickerson Rebuttal, pp. 6-13.

<sup>62</sup> Id.

<sup>63</sup> Nickerson Rebuttal, pp. 9-11.

would not qualify as an “eligible renewable energy resource” within the meaning of Rhode Island General Laws § 39-26.1-2, and therefore must be excluded from the analysis.

Of the remaining nine projects identified by Mr. Hahn, five (solar, fuel cells, tidal, small hydro and landfill gas) are termed by Mr. Hahn as “generic” projects. Using these “generic” (hypothetical) projects as a basis for comparison is problematic for a number of reasons.

First, because they are hypothetical in nature, they do not represent actual prices in arms-length negotiations between a power generator and a power purchaser. No contracts have been entered into for these projects, since these projects do not actually exist. There is no evidence that projects using these technologies could attract debt or equity financing based on their hypothetical revenue streams. Further, these are not actual power prices, but merely estimated power prices. Since only capital cost data was available, Mr. Hahn calculated what power prices might be necessary to support a hypothetical project of a given technology, based on the estimated cost of building these projects.<sup>64</sup> If this cost data is inaccurate, or not achievable in practice, or does not represent the real world costs of developing a project, then the required prices calculated by Mr. Hahn would be wrong. Mr. Nickerson provided examples of how this might be the case.<sup>65</sup> If the cost of building these technologies is higher than the estimate used by Mr. Hahn, higher power prices would be required to support the project, rendering the data unreliable.

The problems inherent in using hypothetical projects are demonstrated by examining Mr. Hahn’s own data. For example, the 50 MW Linden onshore wind project cited by Mr. Hahn executed a power purchase agreement with a price nearly 25% higher than the comparable “generic” 50 MW onshore wind project cited by Mr. Hahn. Similarly, the actual 4.88 MW

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<sup>64</sup> Hahn Direct, p. 20, and Exhibit RSH-5.

<sup>65</sup> Nickerson Rebuttal, p. 5, lines 1-24.

NGRID MA Solar project is approximately 25% more expensive than the “generic” 5 MW solar project. If, following this pattern, the cost of the “generic” offshore wind project cited by Mr. Hahn is increased by 25%, the resulting PPA price is increased from \$195 to \$243.75, comparable to the Deepwater Wind price of \$262.83 on a levelized basis, as calculated by Mr. Hahn.<sup>66</sup>

Second, in calculating the price required to support a hypothetical project, Mr. Hahn solved for the rate of return using the same financial model and related assumptions that have been disputed by Deepwater Wind and are discussed above in this memorandum. If these financial assumptions are corrected, the power price required to support the same rate of return would be much higher, because certain cash flows that Mr. Hahn treated as enhancing the developer’s return would not be available.<sup>67</sup> These include the ability to distribute the entire investment tax credit cash grant to the developer, the ability to claim the investment tax credit cash grant and accelerated depreciation for all capital investments rather than just those that are eligible, the ability of the developer to fully monetize depreciation deductions, and omitting the necessity for the developer to put in place a debt service reserve. If any, or all, of these features are not present, the developer would require a higher price to achieve the requisite return. As previously stated, Deepwater Wind provided Mr. Hahn with a financial model that corrected his assumptions. As of the date of this memorandum, he has not refuted that Deepwater Wind’s rate of return is lower when his assumptions are corrected.

In order to apply the legal standard consistently with the enabling legislation, and given the lack of evidence to appropriately adjust the “generic” or hypothetical projects to reflect the actual costs associated with such projects or the statutory size requirements, it is appropriate to

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<sup>66</sup> Hahn Surrebuttal, p. 9, Table 1.

<sup>67</sup> Moore Supplemental Rebuttal, p. 11, line 25, p. 12, line 6.

disregard or to assign lower weight to these five “generic” or hypothetical projects in the absence any supporting evidence that such renewable resources are available for delivery to Rhode Island. Excluding these generic projects leaves a comparison set of five projects including the BIWF. Within this set, three projects have power prices that are higher than the BIWF, while one project has a lower power price. A modified version of this list, derived from Mr. Hahn’s surrebuttal testimony,<sup>68</sup> is reproduced below:

<b>Project</b>	<b>MW</b>	<b>Hahn’s Price Calculation (\$/MWh)</b>
WMECO Solar	6	650.50
NGRID MA Solar	4.88	544.98
MA Solar	0.5	318.00
<b>DWW without cable costs</b>	<b>28.8</b>	<b>262.83</b>
VT landfill	1.6	40.60

If projects larger than 30 MW, the generic projects, and the Vermont landfill project are disregarded as useful precedents, the evidence clearly establishes that the BIWF is one of the least expensive of the comparable real projects identified by Mr. Hahn that also are able to meet the requirements of the legislation.

Further, since the testimony of the Division’s expert was based on a review of real levelized prices, which, by necessity, takes into consideration the effects of any price escalation, the price escalation provisions of the PPA are commercially reasonable. In fact, as Mr. Moore

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<sup>68</sup> *Ibid.*

noted, any escalator clause shifts risk from ratepayers to the project owner, and thus should be looked upon favorably by the Commission.<sup>69</sup>

***b. Mr. Hamal's Testimony Supports the Conclusion that the BIWF PPA Price Is Commercially Reasonable***

Cliff Hamal, National Grid's expert, produced a list of power prices for offshore wind power projects ranging from \$139/MWh to \$225/MWh in 2013 prices.<sup>70</sup> These prices compare to the 2013 starting price of \$244/MWh for the BIWF PPA. However, several factors must be considered to make an appropriate comparison of Mr. Hamal's prices. The result shows that Mr. Hamal's data supports the commercial reasonableness of the BIWF PPA.

First, the offshore wind power projects cited by Mr. Hamal are based in Europe and, generally speaking, are of a significantly larger scale than the BIWF. As noted earlier, these projects therefore reflect the economies of scale, and thus, lower prices, that can be achieved by building, operating and maintaining larger offshore wind facilities. The power prices for these projects would be higher if they were subject to the legislative cap of 30 MW that the BIWF is subject to. As Mr. Hahn stated in cross-examination:

- Q. Would you reasonably expect an offshore wind project that is limited to eight wind turbines to be able to achieve a unit cost price that is equal to or lower than other offshore wind projects that have far more wind turbines contained in the project?
- A. I think all else being equal, if you're putting in more foundations and you bring in a ship to install the foundations and you're writing the cost of bringing that ship in over 100 foundations as opposed to eight, your unit costs should go down, yes.<sup>71</sup>

Second, the lowest-priced power purchase agreement cited by Mr. Hamal is the power purchase agreement between Delmarva Power and Bluewater Wind. As noted by Mr. Nickerson, the contract between Delmarva Power and Bluewater Wind, which is the only other power

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<sup>69</sup> Transcript, March 10, 2010, pp. 15-17, pp. 71-74.

<sup>70</sup> Hamal Direct, Exhibit 3.

<sup>71</sup> Transcript, March 12, 2010, p. 55 line 5, p. 56 line 1.

purchase agreement for an offshore wind project in the United States, is not a relevant comparable for several reasons, one of which is the unique arrangement under Delaware law. As applied in the Bluewater Wind contract, this law effectively treats Delmarva Power as receiving all of the RECs associated with the energy delivered even though a substantial majority of the RECs are actually retained by Bluewater Wind and available for sale separately, generating a supplemental revenue stream that enables an artificially low PPA price.<sup>72</sup> As such, the Delmarva Power contract, in which Bluewater Wind is selling less than all the environmental attributes of its project in Delaware, cannot be compared to the BIWF PPA, in which Deepwater Wind is selling all of the environmental attributes to National Grid. Further, the Bluewater Wind project is at least a 200 MW project, which could be up to 600 MW, and is located in shallower water that allows the use of less expensive monopile foundation technology.

These attributes of much larger scale and lower cost project elements are significant contributors to being able to set a lower PPA price. Finally, the Bluewater Wind project has not yet been financed or built, leaving uncertainty as to whether the power price expressed in that contract would be adequate to ensure that the project is economically sound and therefore would have a credible operation date. Mr. Nickerson's testimony on the Delmarva Power contract was neither disputed nor contradicted by any other evidence before the Commission.

Third, as Mr. Hamal stated, any extra-contractual incentives in the form of European government subsidies that facilitate a lower power price (and accordingly mask the true price of power) are not reflected in his analysis, and the data should be interpreted accordingly.<sup>73</sup>

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<sup>72</sup> As explained by Mr. Nickerson, mechanically, Delmarva Power is permitted by legislation to count, as a numerical example, 57 out of 200 RECs as meeting a requirement of 200 RECs, leaving 143 RECs to Bluewater Wind's account and available for sale into the open market, or under another long-term contract for RECs, as a supplemental revenue stream. (See Nickerson Rebuttal, pp. 9-11, Transcript, March 10, 2010, p. 235-236).

<sup>73</sup> Transcript, March 9, 2010, p. 106, lines 1-15.

Once these three factors are taken into account, it is clear that the price under the PPA is reasonably consistent with the range of power prices supplied by Mr. Hamal for offshore wind projects in Europe.

Mr. Hamal also identified a list of other renewable energy projects, with power prices ranging from \$110/MWh to \$754/MWh.<sup>74</sup> It is relevant to note that he did not adjust all prices to 2013 prices, so some upward adjustment to these prices is appropriate in order to compare them to the \$244 power price in 2013 for the BIWF. Even absent these adjustments, however, the \$244 price is clearly within the range of prices cited by Mr. Hamal.

Finally, neither the analysis provided by Mr. Hamal, nor Mr. Hahn, took into account the provisions in the PPA providing for a Wind Outperformance Credit Adjustment, which rewards National Grid in the form of free energy and RECs if the BIWF performs in excess of projections. The potential impact of this adjustment is described by Mr. Nickerson in his rebuttal testimony.<sup>75</sup> The adjustment, once applied, further reduces the levelized price of the BIWF. The value of this adjustment must be considered when reviewing the PPA.

#### ***D. The Terms of the PPA Are Commercially Reasonable***

Mr. Nickerson concluded that the terms of the PPA are commercially reasonable.<sup>76</sup> National Grid also concluded that the terms of the PPA are commercially reasonable.<sup>77</sup> These conclusions are supported by the history of negotiations, since the PPA was the product of a detailed negotiation between Deepwater Wind and National Grid where both parties were represented by individuals with extensive commercial backgrounds and by competent counsel.

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<sup>74</sup> Hamal Direct, Exhibit 4.

<sup>75</sup> Nickerson Rebuttal, p. 13, line 7, p. 14, line 13.

<sup>76</sup> Nickerson Direct, pp. 49-50, Nickerson Rebuttal, p. 27.

<sup>77</sup> National Grid's response to Division Data Request, Div. 2-1.

In fact only two contractual provisions were highlighted by the Division in the course of the hearings as potential issues for consideration by the Commission.

The first provision related to the duration, or term, of the PPA. The PPA clearly provides that National Grid's obligation to buy, and Deepwater Wind's obligation to sell, power, RECs and capacity, begins on the date of "Commercial Operation."<sup>78</sup> This obligation continues for the Services Term,<sup>79</sup> which is defined as twenty years from Commercial Operation. The PPA clearly provides that there may be no more than twenty Escalation Dates.<sup>80</sup>

Deepwater Wind's right to extend the Commercial Operation Date by five years under Section 3.1(b) of the PPA does not change the foregoing arrangements. If any such extension is exercised, the escalation provisions of the contract are suspended<sup>81</sup> and the escalation mechanism is "tolled" as a result.<sup>82</sup> Extending the Commercial Operation Date by five years would likewise postpone National Grid's obligation to buy power, RECs and capacity under Section 4.1(a). Mr. Hahn appears to suggest that Deepwater Wind could complete building the facility, extend the Commercial Operation Date by five years, and then sell test power under Section 4.1(b) during the interim period. However, under Section 4.1(b), products would not be sold at the negotiated prices but would be sold at the Real Time Locational Marginal Price – a price that is projected to be lower than the PPA price. No reason was offered as to why Deepwater Wind would even consider doing so, since Deepwater Wind would likely be lowering its returns by selling power at this lower price.

Further, purposefully tolling the escalation clause would be a highly perverse approach to managing project risk by the developer. Mr. Hahn suggests that Deepwater Wind would elect to

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<sup>78</sup> PPA, Section 4.1(a).

<sup>79</sup> PPA, Section 2.2(a).

<sup>80</sup> PPA, Section 5.1(b).

<sup>81</sup> PPA, Section 5.1(b)(i).

<sup>82</sup> PPA, Section 5.1(b)(i).

sell power at a lower price during the warranty period, when the equipment is still new and operating well, and attempt to sell power at a higher price outside the warranty period when the equipment is at or near the end of its useful life. No evidence was presented to explain why a developer would elect to defer higher revenues to a period of less certain operating conditions, when it could guarantee higher revenues under the protective cover of the manufacturer's warranty obligations. Mr. Hahn's testimony is contrary to common sense. No modification of the PPA on this point is appropriate or necessary.

The second contractual provision at issue is the right of assignment. During the hearing, Chairman Germani asked if Deepwater Wind could "sell the contract to another entity for a fixed particular price and pull out of this operation."<sup>83</sup> Under the PPA, assignment by Deepwater Wind without National Grid's consent is only allowed in the context of a financing.<sup>84</sup> In addition, Section 14.2 provides that Deepwater Wind may assign the contract to an Affiliate. This provision facilitates necessary corporate reorganizations from time to time, but keeps the PPA within the Deepwater Wind group of companies. In all other circumstances, assignment is subject to National Grid's consent. Flexibility in assignment for financing and corporate reorganizations is important. Deepwater Wind does not know, in the context of such financing or corporate reorganizations, what National Grid's response time would be to a request for consent, especially considering that the BIWF provides a very small portion - a fraction of a percent - of National Grid's total managed resources. Any delay in providing such consent could have serious adverse consequences on the viability of the project. Since a successful financing of the project is a clearly stated legislative goal under Rhode Island General Laws §39-26.1-1, and an assignment of the contract within the Deepwater Wind group of companies would not

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<sup>83</sup> Transcript, March 10, 2010, p. 74, lines 16-21.

<sup>84</sup> Transcript, March 10, 2010, p. 171, lines 3-20.

result in any change of control, there is no compelling reason for the Commission to require a modification of the contract along these lines.

***E. The Project Has A Credible Operation Date***

The PPA provides for an anticipated date of commercial operations that the parties to the contract negotiated. Mr. Nickerson reviewed Deepwater Wind's development and construction schedule and concluded that the schedule was reasonable.<sup>85</sup> There is no evidence in the record to suggest that such schedule was not reasonable.

**V. STATUTORY REQUIREMENTS**

It is uncontested that the BIWF meets all of the eligibility requirements set forth in Rhode Island General Laws § 39-26.1-7:

- (1) 10 MW limit on net capacity. This requirement, difficult to calculate for a wind farm with a range of potential capacity factors, is displaced in the Long Term Contracting Act by the next requirement.
- (2) 30 MW limit on aggregate nameplate capacity. The BIWF will have aggregate nameplate capacity of 30 MW or less.
- (3) 8 wind turbine limit. The BIWF will have between 6 and 8 turbines.
- (4) Requirement to enhance the electric reliability of the Town of New Shoreham. By providing a secondary source of electrical power that could supplement the existing power generation facilities on Block Island, the BIWF will enhance the electric reliability of the Town of New Shoreham.
- (5) Requirement to enhance the environmental quality of the Town of New Shoreham. The BIWF is likely to displace the diesel generators on Block Island and replace them with a zero emissions renewable energy facility.

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<sup>85</sup> Nickerson Direct, p. 21, Lines 6-7.

- (6) Requirement to include provisions for a transmission cable between the Town of New Shoreham and the mainland of the state. This concept is provided for in the PPA. As explained in greater detail below, the PPA expressly provides that its effectiveness is contingent on an agreement between National Grid and Deepwater Wind with respect to such a transmission cable, and the approval of such a transmission cable by the Commission under a separate or related Docket.

## **VI. STATUTORY GOALS**

The BIWF also advances the goals of the Long-Term Contracting Act:

- (1) Stabilizing long-term energy prices. The PPA satisfies this goal because it is a fixed price contract with a fixed escalation clause. The only possible adjustments to the power price are downward adjustments related to the Wind Outperformance Credit Adjustment and reductions for the value of capacity.
- (2) Enhancing environmental quality. As a wind power project, the BIWF is a zero emissions facility and is likely to displace the existing diesel generators on Block Island. In addition, it will likely displace generation from existing fossil fuel powered plants. Any such displacement would improve environmental quality relative to the status quo and has been quantified by Mr. Nickerson.<sup>86</sup>
- (3) Creating jobs in Rhode Island in the renewable energy sector. The BIWF will result in 35-50 construction jobs and 6 permanent jobs.<sup>87</sup> In addition, Deepwater Wind's development of the BIWF has contributed to Rhode Island's award of a \$3.7 million grant for green jobs training from the U.S. Department of Labor to BuildRI and a grant of \$22.3 million for the development of the port facilities at

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<sup>86</sup> Nickerson Direct, p. 8.

<sup>87</sup> Deepwater Wind response to Division Data Request, Div. 1-1.

Quonset Point, in part to create the infrastructure for offshore wind farms, which will also create jobs in the near term.<sup>88</sup>

- (4) Facilitating the financing of renewable energy generation within the jurisdictional boundaries of the state or adjacent state or federal waters or providing direct economic benefit to the state. The approval of the PPA by the Commission will by definition facilitate the financing of the BIWF.

Mr. Nickerson discusses the ways that the BIWF advances the goals of the Long-Term Contracting Act extensively in his testimony.<sup>89</sup>

## **VII. ADDITIONAL BENEFITS OF THE BIWF**

In addition to achieving the goals and meeting the requirements of the Long-Term Contracting Act, the BIWF is expected to provide several additional benefits that can be quantified and can be considered in the context of the project's expected net costs. Mr. Nickerson analyzed the expected PPA costs, the market value of the products delivered and the net cost to ratepayers, all on a present value basis.

Mr. Nickerson estimated that the net costs to ratepayers, that is the PPA payments net of the market value of all the products delivered, based on a stated set of assumptions would range between \$114 and \$152 million in 2013 dollars.<sup>90</sup> His base case estimate is a net cost of \$144 million also in 2013 dollars.<sup>91</sup>

The widespread impacts of renewable power are only just beginning to be understood. As Mr. Moore and Mr. Nickerson noted at the hearings, a report prepared by the consulting firm Charles River Associates ("CRA") indicates that as much as 40% of the cost of the power under

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<sup>88</sup> Transcript, March 10, p. 13, lines 1-4, March 11, 2010, p. 15, lines 7-24.

<sup>89</sup> Nickerson Direct, p. 6, line 10, p. 11, line 12.

<sup>90</sup> Nickerson Updated Direct, p. 3, line 20.

<sup>91</sup> Nickerson Updated Direct, p. 43, line 1 (table).

the PPA is offset by price suppression benefits.<sup>92</sup> The cost of power in the PPA will be further reduced if, for example, natural gas prices rise above current forecasts, the cost of power from existing facilities increases due to increasingly stringent emissions regulations, or the price of RECs exceed projections. When considered together with improvements to environmental quality, price stability, and economic development benefits, the PPA price is much lower than advertised by the Division's expert. Accordingly, in addition to the project benefits stated above that relate directly to the Long-Term Contracting Act, several other benefits of the BIWF have been quantified:

- 1) Electric Price Suppression Benefits (\$59 million ratepayer benefit, present value 2013 dollars). This value is based on the CRA Study.<sup>93</sup> In summary, CRA looked at the overall incremental impact on electricity costs in the region first by adding the BIWF and then separately, Deepwater Wind's planned larger utility-scale offshore wind project, and then analyzing the resultant impact on the wholesale market. By adding energy to the New England wholesale electric market that has a zero or very low incremental cost (the PPA price is unrelated to how the BIWF would be operated in the wholesale market), other higher-cost generating units on the margin are backed down. CRA performed a detailed projection of this effect through 2038 using a security-constrained production cost model that replicates the operation and dispatch of the wholesale market and takes into account limitations on the bulk transmission system to move power between subareas. The result is a lower cost of energy in the entire wholesale electric market that applies to all load and which can then be analyzed for Rhode Island alone. The energy cost savings to Rhode Islanders of

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<sup>92</sup> Transcript, March 10, 2010, p. 15, lines 1-13.

<sup>93</sup> Deepwater Wind response to CLF Hearing Record Request 1 – CRA Study entitled “Analysis of the Impact of Southern New England Offshore Wind and Block Island Wind on New England Energy Prices.”

adding just the BIWF over the 20-year life of the PPA<sup>94</sup> totals \$59 million on a present value basis at the Commission-specified 7.2% discount rate and expressed in 2013 dollars. The subsequent utility-scale project, which is enabled by the BIWF, provides Rhode Island with an estimated additional energy cost savings of \$173 million on a present value basis in 2013 dollars over a 20-year period assuming a start in 2014.

- 2) Gas Price Suppression Benefits. The same effect that produces electric price suppression benefits has an impact on the price of natural gas. This is because during most hours, natural gas fired generating units are on the margin in the New England wholesale market. To the extent these units generate less energy, there is a corresponding decrease in demand for natural gas and thus downward pressure on natural gas prices.<sup>95</sup> The Lawrence Berkeley National Laboratory report on this issue that is referenced in Mr. Nickerson's testimony<sup>96</sup> estimates that each MWh of renewable energy provides average savings on natural gas bills due to this effect in a typical range of about \$10 to \$20/MWh on a national basis.<sup>97</sup>
- 3) Direct Economic Benefits. (\$30 million, present value 2013 dollars).<sup>98</sup> In New York, the actual direct economic impacts of recently contracting for 1,325 MWs of onshore wind were verified by KEMA. Here, direct impacts include short-term construction jobs up to 3 years, construction-related payments to municipalities, long-term jobs and payroll, taxes and payments in lieu of taxes, land leases, purchases of equipment and expenses for operations and maintenance – all in-state. For New York, this

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<sup>94</sup> Note that savings of \$9.6 million for 2013 are shown in footnote 6 on page 5 of the CRA study.

<sup>95</sup> Nickerson Updated Direct, p. 48, line 12.

<sup>96</sup> Nickerson Direct, p. 48, line 16.

<sup>97</sup> Nickerson Updated Direct, p. 48, line 12.

<sup>98</sup> Nickerson Updated Direct, p. 10, line 21.

benefit was the equivalent of almost \$24/MWh. Applied to the expected output of the BIWF, the equivalent benefit for Rhode Island would be \$30.2 million on a present value basis in 2013 dollars.

- 4) Indirect Economic Benefits. (approximately \$30 million, present value 2013 dollars).

In the KEMA review of direct benefits of new renewable projects in New York, the indirect benefits were also reviewed and projected to be at least as great as the direct benefits.<sup>99</sup> For purposes here, it is assumed they are the same.

To summarize, the base case net cost of the PPA of \$144 million in 2013 present value dollars is offset by an estimated \$119 million of benefits also expressed on an apples-to-apples basis in 2013 present value dollars. Therefore, the projected net cost to Rhode Island of this first-in-the-US offshore wind project is \$25 million in 2013 present value dollars.

## **VIII. TRANSMISSION CABLE**

The Commission does not need to approve an agreement for the transmission cable from Block Island to the mainland in order to approve the PPA. As noted in testimony presented by National Grid,<sup>100</sup> the transmission cable arrangements are still being negotiated and have not been finalized.

Deepwater Wind's response to National Grid's solicitation for the Town of New Shoreham project included a proposal for a transmission cable connecting Block Island to the mainland. Further, the PPA clearly contemplates a transmission cable integrating the Town of New Shoreham with the main electrical grid on mainland Rhode Island. However, Section 8.5(a) of the PPA provides that the PPA may be terminated by either National Grid or Deepwater Wind if the Transmission Cable Conditions are not satisfied by December 31, 2010, or an

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<sup>99</sup> Nickerson Updated Direct, p. 10, lines 26-28.

<sup>100</sup> See, generally, Transcript, March 12, 2010, Testimony of Daniel Glenning.

approval that is not satisfactory to either party is issued. The Transmission Cable Conditions are defined as: (a) the negotiation, execution and delivery by National Grid and Deepwater Transmission of the Transmission Cable Purchase Agreement,<sup>101</sup> (b) the negotiation, execution and delivery of the Interconnection Agreement<sup>102</sup> by the parties thereto, (c) the finalization, execution and delivery of the Transmission Cable Cost Arrangement,<sup>103</sup> and, (d) the receipt of the Transmission Cable Regulatory Approvals.

The Transmission Cable Regulatory Approvals are defined as: (a) the approval of the Transmission Cable Purchase Agreement by the PUC pursuant to R.I.G.L. § 39-26.1-7, including to the extent applicable the recovery by Buyer of its costs incurred under the Transmission Cable Purchase Agreement, (b) the approval of the Transmission Cable Cost Arrangement by the FERC pursuant to Section 205 of the Federal Power Act, (c) to the extent applicable, the approval of the Transmission Cable Purchase Agreement by the FERC pursuant to Section 203 of the Federal Power Act, (d) to the extent applicable, the approval by the FERC of the Interconnection Agreement by the FERC pursuant to Section 205 of the Federal Power Act, and (e) any other filing or registration with or approval or consent of any Governmental Entity that may be required or determined by Buyer to be desirable in connection with the Interconnection Agreement, the Transmission Cable, the Transmission Cable Purchase Agreement and the Transmission Cable Cost Arrangement, each of which filings, registrations, consents and

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<sup>101</sup> Defined in the PPA as an agreement between Deepwater Transmission and Buyer pursuant to which Deepwater Transmission will construct the Transmission Cable and, subject to the satisfaction of the terms and conditions set forth therein, Buyer will purchase the Transmission Cable, which agreement will be acceptable in form, scope and substance to each of Buyer and Deepwater Transmission in their sole discretion.

<sup>102</sup> Defined in the PPA as an agreement among some or all of Seller, Buyer, the Interconnecting Transmission Provider and the ISO regarding interconnection of the Facility to the transmission system of the Interconnecting Transmission Provider or its affiliate, which agreement shall be acceptable in form, scope and substance to each of the parties thereto in their sole discretion.

<sup>103</sup> Defined in the PPA as the documentation selected by Buyer and/or the Interconnecting Transmission Provider to determine the means of collecting the cost of purchasing the Transmission Cable pursuant to the Transmission Cable Purchase Agreement (including any return on investment on that cost) and the allocation of those costs among the relevant parties, which documentation shall be acceptable to Buyer in its sole discretion.

approvals shall be final and not subject to appeal or rehearing and shall be acceptable to Buyer in its sole discretion; provided that Buyer may waive the need for any specific item of the Transmission Cable Regulatory Approvals in its sole discretion.

In short, approval of the PPA is subject to an extensive list of additional factors that need to be satisfied. Some of these factors are within the control of National Grid and Deepwater Wind. However, ultimate control over the transmission cable is vested in regulatory agencies, specifically the Commission and FERC. The Commission will therefore have the opportunity to address any questions with respect to the transmission cable, including its cost, siting and rate-making, and any other considerations, in the context of the approval of those arrangements, as contemplated by the power purchase agreement.

Deepwater Wind urges the Commission to approve the PPA independently and separately, as contemplated by Rhode Island General Laws §39-26.1-7, which outlines, in sub-clause (a), a process for the Commission to approve the “contract conditioned upon approval by the commission”, and, in sub-clause (b), a separate process by which National Grid may elect whether or not “to own, operate or otherwise participate in such transmission cable project, subject to commission approval.”

## **IX. CONCLUSION**

Deepwater Wind looks forward to working with the State of Rhode Island as its partner in establishing Rhode Island as the hub of the emerging offshore wind industry. Early dividends have already been paid in the form of federal grants totaling more than \$25 million awarded to the state to support offshore wind. Further, as Mr. Moore and Mr. Fred Hashaway of the Rhode Island Economic Development Corporation testified, at least one manufacturer of renewable energy equipment has conducted high-level discussions with Rhode Island officials concerning a

possible facility in the State.<sup>104</sup> Other states are now attempting to copy Rhode Island's model for the Block Island project by proposing similar projects in their own state waters.<sup>105</sup>

The PPA for the BIWF satisfies the requirements and advances the goals of the Long-Term Contracting Act. The evidence presented in this proceeding supports a finding by the Commission that the PPA is "commercially reasonable" as that term is used in the Long-Term Contracting Act. Mr. Moore testified that if this PPA is not approved, Rhode Island's early mover advantage could be lost to other states also pursuing the clean energy and good-paying jobs produced by offshore wind.<sup>106</sup> Rhode Island has a rare opportunity to emerge as a leader in an important new global industry. The Commission plays an important role in determining that role by approving the PPA.

WHEREFORE, and for the reasons set forth herein, Deepwater Wind respectfully requests that the Rhode Island Public Utilities Commission approve the PPA pursuant to the Long Term Contracting Act.

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<sup>104</sup> Transcript, March 11, 2010, p. 47, lines 20-24, p. 48, lines 3-12.

<sup>105</sup> Transcript, March 11, 2010, p. 21, lines 7-18.

<sup>106</sup> Transcript, March 10, p. 87, lines 17-24

**CERTIFICATION**

I hereby certify that on March 23, 2010, I sent a copy of the within to all parties set forth on the attached Service List by electronic mail and copies to Luly Massaro, Commission Clerk, by electronic mail and regular mail.

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