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Patrick C. Lynch, Attorney General

July 15, 2010

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

**Re: REVIEW OF AMENDED POWER PURCHASE AGREEMENT BETWEEN
NARRAGANSETT ELECTRIC COMPANY D/B/A NATIONAL GRID AND
DEEPWATER WIND BLOCK ISLAND, LLC PURSUANT TO R.I. GEN. LAWS § 39-
26.1-7-Docket No. 4185**

Dear Ms. Massaro,

Enclosed for filing with the Commission are an original and twelve (12) copies of the Direct Testimony of Richard S. Hahn on behalf of the Division of Public Utilities and Carriers in the above matter.

Thank you for your attention to this matter.

Very truly yours,

Jon G. Hagopian
Special Assistant Attorney General

cc: Service List (e-mail only)

BEFORE THE
RHODE ISLAND PUBLIC UTILITIES COMMISSION

DOCKET NO. 4185
REVIEW OF THE AMENDED POWER PURCHASE AGREEMENT
BETWEEN NARRAGANSETT ELECTRIC COMPANY D/B/A NATIONAL GRID
AND DEEPWATER WIND BLOCK ISLAND LLC
PURSUANT TO R.I.G.L. § 39-26.1-7

DIRECT TESTIMONY

OF

RICHARD S. HAHN

ON BEHALF OF THE
RHODE ISLAND DIVISION OF PUBLIC UTILITIES AND CARRIERS

July 15, 2010

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1 **I. INTRODUCTION**

2 **Q. Please identify yourself for the record.**

3 A. My name is Richard S. Hahn. I am a Principal Consultant for La Capra Associates, Inc.
4 (“La Capra Associates”). My business address is La Capra Associates, One Washington
5 Mall, Boston, Massachusetts 02108.

6 **Q. On whose behalf are your testifying?**

7 A. The Rhode Island Division of Public Utilities and Carriers (the “Division”).

8 **Q. Could you please describe your educational background?**

9 A. I have a both a Bachelors of Science and Masters of Science in Electrical Engineering
10 from Northeastern University. I also have a Masters of Business Administration from
11 Boston College.

12 **Q. Mr. Hahn, please summarize your experience and qualifications.**

13 A. I am a Registered Professional Engineer in Massachusetts. I have worked in the electric
14 utility business for more than 35 years. From 1973 to 2003, I worked at NSTAR Electric
15 & Gas (formerly Boston Edison Company). I have held many technical and managerial
16 positions in both regulated and unregulated subsidiaries covering all aspects of utility
17 planning, operations, regulatory activities, and finance. In 2004, I joined La Capra
18 Associates. Since then, I have worked on projects related to power procurement,
19 generating asset valuations, resource planning, transmission, analyzing market rules and
20 prices, mergers, and litigation support. My resume is provided in Exhibit RSH-1.

21 **Q. What has been your experience and expertise relative to Power Purchase**
22 **Agreements (“PPAs”) and assessments of power supply options?**

1 A. At various times throughout my career, I have been involved in planning and procuring
2 power supplies for utilities in both regulated and unregulated markets. I have also been
3 involved in negotiating power sales and purchase agreements, including unit entitlements
4 and system power, and in valuing generating assets. My electrical engineering degrees
5 are from Northeastern University's Power Engineering Program, which specialized in
6 electric utility power systems.

7 **Q. What is the purpose of your testimony in this proceeding?**

8 A. La Capra Associates has been retained by the Division to review the petition submitted
9 by Narragansett Electric Company ("Narragansett" or the "Company") to the Rhode
10 Island Public Utilities Commission ("Commission") for approval of an amended PPA
11 with Deepwater Wind ("Deepwater") to purchase the electrical output of an eight turbine
12 offshore wind facility off the coast of Block Island. This review focused on the revised
13 pricing provision required by the statute.

14 **Q. Have you previously testified before the Commission?**

15 A. Yes. I submitted testimony on behalf of the Division in Docket No. 4111 reviewing the
16 original PPA between Narragansett and Deepwater. I also submitted testimony on behalf
17 of the Division in Docket No. 4041 and Docket No. 4149 in reviewing Narragansett
18 Electric Company's plan to procure standard offer service power supplies and in Docket
19 No. 4065 in reviewing certain aspects of Narragansett Electric Company's rate case.

20 **Q. Did you provide Direct and Surrebuttal testimony that were made full exhibits in**
21 **Docket 4111?**

22 A. Yes

1 **Q. Do you adopt your testimony from Docket 4111 as part of your testimony in the**
2 **docket here?**

3 A. Yes.

4 **Q. Have you reviewed the Company's filing in this case?**

5 A. Yes. I have reviewed the amended PPA that was filed with the Commission on June 30,
6 2010. I have also reviewed certain responses to data requests that were received prior to
7 the finalization of this testimony.

8 **II. EXECUTIVE SUMMARY**

9 **Q. Please summarize the results of your review.**

10 A. The amended PPA contains a new pricing mechanism that causes the starting price to
11 decrease if the Total Facility Cost ("TFC") is lower than the "Base Amount," defined in
12 the PPA as "Cost equal to \$205,403,512." The intent of this contractual provision is to
13 comply with the statutory requirement that the amended PPA price be reduced to the
14 extent that the project costs are lower than originally estimated. The statutory
15 requirement is intended to ensure that any savings in the TFC are passed on to Rhode
16 Island ratepayers. In the amended PPA, the initial price in 2012 of \$235.70 per MWH is
17 the same as under the original PPA filed in Docket 4111. Under the amended PPA, if the
18 TFC falls below \$205,403,512 the initial price begins to be reduced. However, based on
19 information provided in Docket 4111 it appears that the original estimate of the total
20 project cost that was associated with the original 2012 starting price of \$235.70 per
21 MWH was \$219,311.412. Therefore, the pricing mechanism in the amended PPA should

1 be revised such that the 2012 starting price per MWH decreases if the TFC is less than
2 \$219,311,412.

3 **III. THE AMENDED PPA**

4 **Q. Please briefly describe the pricing provisions of the amended PPA.**

5 A. Narragansett Electric Company has negotiated an amended twenty-year PPA with
6 Deepwater. Appendix X of Exhibit E of the amended PPA describes how the Bundled
7 Price per MWH shall be determined. Beginning in 2012 and subject to fixed escalation
8 of 3.5% per year, the Bundled Price shall be \$235.70 per MWH if the TFC is greater than
9 or equal to \$205,403,512. If the TFC is less than \$205,403,512, then the Bundled Price
10 in 2012 decreases according to a fixed schedule. Figure 1 below provides an excerpt
11 from Appendix X of the amended PPA.

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Figure 1
Excerpt from Appendix X of the Amended PPA

“Bundled Price” means the per MWh price set forth in the table below for the applicable range of Total Facility Cost, beginning in 2012 and subject to escalation on each Escalation Date pursuant to Exhibit E.

Total Facility Costs (USD)	Savings (USD)	Bundled Price (USD)
≥220,403,512	≥(15,000,000)	235.70
215,403,512	>(10,000,000)	235.70
210,403,512	>(5,000,000)	235.70
205,403,512	0	235.70
200,403,512	5,000,000	231.10
195,403,512	10,000,000	226.50
190,403,512	15,000,000	221.80
185,403,512	20,000,000	217.30
180,403,512	25,000,000	212.70
175,403,512	30,000,000	208.00
170,403,512	35,000,000	203.40
165,403,512	40,000,000	198.80
160,403,512	45,000,000	194.20
155,403,512	50,000,000	189.70

If the actual savings fall within the ranges set forth in the table above, then the Bundled Price shall be interpolated.

IV. STANDARD OF REVIEW

Q. What is the standard for evaluating the price mechanism in the amended PPA between NGRID and Deepwater?

A. The amended PPA between NGRID and DWW was negotiated pursuant to Chapter 39-26.1 as modified by legislation enacted on or about June 16, 2010. Under this legislation, the purchase price is to decrease if savings can be achieved in the actual cost of the project. Specifically, section 39-26.1-7(e)(i) states:

“(i) The amended power purchase agreement subject to section 39-26.1-7(a) shall provide for terms that shall decrease the pricing if savings can be achieved in the

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Figure 3
Deepwater's Response to Div.1-13 in Docket No. 4111

Div. 1-13: Please provide a detailed capital cost for the eight wind turbines showing as many components of the installed cost as possible. Also provide a construction schedule showing assumed start and completion dates at the monthly construction expenditures.

Response: Deepwater Wind is in the process of selecting and negotiating contracts with equipment suppliers and service providers for the Block Island Wind Farm. We expect capital cost categories to include structural engineering, wind turbine generators, jacket foundation fabrication, pile fabrication, pile template fabrication, topside fabrication, electrical cable and substation (connecting the offshore wind turbines to Block Island), offshore transportation of jacket, piles, pile templates, topsides, and turbines, offshore installation of jacket, piles, pile templates, topsides, and turbines, utility system hookup, project management and inspection, insurance during construction, development costs, and project financing costs. As no contracts have been signed, none of these individual cost categories has been finalized. Deepwater Wind's current estimate of the capital cost is \$219,311,412 for installing eight turbines.

Based on current plans, Deepwater Wind's construction activities will start in the first quarter of 2012 and will be complete by the third quarter of 2012. The spending schedule will depend on terms of supply contracts that are under negotiation

Q. Was the estimated cost of the project of \$219,311,412 linked to the 2012 starting price of \$235.70 per MWH?

A. Yes. In data request Div. 1-17 in Docket No. 4111, the Division requested that Deepwater provide “pro forma financial statements for the project showing revenues, expenses, net income, and after-tax cash flows”. Deepwater did provide such information, subject to protective treatment. While the actual response to Div. 1-17 is confidential, the response includes revenues based upon a starting price in 2012 of \$235.70 per MWH. The response also includes capital outlays and cash flows based upon a capital cost of \$219,311,412. Thus, it is clear from Deepwater's response to Div. 1-17 in Docket 4111 that the capital cost of \$219,311,412 was linked to the initial 2012 price of \$235.70 per MWH.

1 Responses provided in this Docket further make it clear that the total cost estimate
2 underlying the PPA prices presented in Docket 4111 is \$219,311,412. See Deepwater
3 responses to 1-1 and 1-7. Further, in response to Div. 1-4 , there is additional evidence
4 that the original cost of \$219,311,412 was linked to the 2012 price of \$235.70 per MWH.
5 This response specifically states that the Docket 4111 price (i.e., \$237.70 per MWH in
6 2012, escalated by 3.5% to \$244 per MWH in 2013) and the Docket 4111 cost estimate
7 (i.e., \$219,311,412) yielded an unlevered¹ Internal Rate of Return (“IRR”) of 9.7%. The
8 latest project cost estimate of \$205,403,512 and the pricing in Docket 4111 yield an
9 unlevered IRR of 10.5%. According to the response to Div. 1-4, the higher IRR is
10 necessary to attract financing due to the changed risk / reward profile of the cost savings
11 mechanism. In essence, the proposed pricing mechanism allows Deepwater to retain the
12 first \$13.9 million in capital costs savings from the Docket 4111 estimate of
13 \$219,311,412 to generate a higher IRR. Such a change, even if necessitated by the risk /
14 reward profile for this project, does not appear to be allowed under the new legislation.

15 Thus, to be consistent with the statute, any savings in the TFC below
16 \$219,311,412 should be allocated 100% to ratepayers. Under the amended PPA, any
17 savings between \$219,311,412 and \$205,403,512 will be retained by the developer. As
18 proposed, the amended PPA allows Deepwater to retain the first \$13.9 million of the
19 savings in the Total Facility Cost. The amended PPA should be changed such that any
20 savings in the cost to construct the facility below \$219,311,412 directly accrue to
21 ratepayers.

¹ An unlevered IRR is based upon 100% equity financing (i.e., zero debt). Virtually all large projects such as the Deepwater offshore wind project secure a significant portion of their financing via debt. Adding a debt component to the financing will generally increase a project’s IRR.

1 **XII. CONCLUSION**

2 **Q. Does that conclude your testimony?**

3 A. At this time, yes. Should additional information become available, I will update
4 this testimony as appropriate.

Exhibit RSH-1

Resume of Richard S. Hahn

Richard S. Hahn

Principal Consultant

Mr. Hahn is a senior executive in the energy industry, with diverse experience in both regulated and unregulated Company. He joined La Capra Associates in 2004. Mr. Hahn has a proven track record of analyzing energy, capacity, and ancillary services markets, valuation of energy assets, developing and reviewing integrated resource plans, creating operational excellence, managing full P&Ls, and developing start-ups. He has demonstrated expertise in electricity markets, utility planning and operations, sales and marketing, engineering, business development, and R&D. Mr. Hahn also has extensive knowledge and experience in both the energy and telecommunications industries. He has testified on numerous occasions before the Massachusetts Department of Telecommunications and Energy, and also before FERC.

SELECTED EXPERIENCE – LA CAPRA ASSOCIATES

- Performed an assessment of plans to procure Default Service Power Supplies for a Rhode Island utility. Provided expert testimony before the Rhode Island Public Utilities Commission.
- Served as an advisor to Vermont electric utilities regarding the evaluation of new power supply alternatives.
- Conducted a review of Massachusetts electric utilities' proposal to construct, own, and operate large scale PV solar generating units. Served as an advisor to the Massachusetts Attorney General in settlement negotiations.
- Served as a key member of a La Capra Team evaluating wind generation RFPs in Oklahoma.
- Performed an assessment of plans to procure Default Service Power Supplies for Pennsylvania utilities. Provided expert testimony before the Pennsylvania Public Utilities Commission.
- Performed an assessment of a merchant generator proposal to construct, own, and operate 800 MW of large scale PV solar generating units in Maine.
- Analyzed proposed environmental upgrades to an existing coal-fired power plant in Wisconsin, including an economic evaluation of this investment compared to alternative supply resources. Provided expert testimony before the Public Service Commission of Wisconsin.
- Performed a study of non-transmission alternatives (NTAs) to a proposed set of transmission upgrades to the bulk power supply system in Maine.
- Served as a key member of the La Capra Team advising the Connecticut Energy Advisory Board (CEAB) on a wide range of energy issues, including integrated resources plan and the need for and alternatives to new transmission projects.
- Performed a study of non-transmission alternatives (NTAs) to a proposed set of

transmission upgrades to the bulk power supply system in Vermont.

- Served as an advisor to the Delaware Public Service Commission and three other state agencies in the review of Delmarva Power & Light's integrated resource plan and the procurement of power supplies to meet SOS obligations.
- Served as an expert witness in litigation involving a contract dispute between the owner of a merchant powerplant and the purchasers of the output of the plant.
- Served as an advisor to the Maryland Attorney General's Office in the proposed merger between Constellation Energy and the FPL Group.
- Reviewed and analyzed outages for Connecticut utilities during the August 2006 heat wave. Prepared an assessment of utility filed reports and corrective actions.
- Conducted a study of required planning data and prepared forecasts of the key drivers of future power supply costs for public power systems in New England.
- Reviewed and analyzed Hawaiian Electric Company integrated resource plan and its DSM programs for the State of Hawaii. Prepared written statement of position and testified in panel discussions before the Hawaii Public Utility Commission.
- Assisted the Town of Hingham, MA in reviewing alternatives to improve wireless coverage within the Town and to leverage existing telecommunication assets of the Hingham Municipal Light Plant.
- Conducted an extensive study of distributed generation technologies, options, costs, and performance parameters for VELCO and CVPS.
- Analyzed and evaluated proposals for three substations in Connecticut. Prepared and issued RFPs to seek alternatives in accordance with state law.
- Performed an assessment of merger savings from the First Energy – GPU merger. Developed a rate mechanism to deliver the ratepayers share of those savings. Filed testimony before the PA PUC.
- Prepared long term price forecasts for energy and capacity in the ISO-NE control area for evaluating the acquisition of existing powerplants.
- Conducted an assessment of market power in PJM electricity markets as a result of the proposed merger between Exelon and PSEG. Developed a mitigation plan to alleviate potential exercise of market power. Filed testimony before the PA PUC.
- Performed a long-term locational installed capacity (LICAP) price forecast for the NYC zone of the NYISO control area for generating asset acquisition.
- Served as an Independent Evaluator of a purchase power agreement between a large mid-west utility and a very large cogeneration plant. Evaluated the implementation of amendments to the purchase power agreement, and audited compliance with very complex contract terms and operating procedures and practices.
- Performed asset valuation for energy investors targeting acquisition of major electric generating facility in New England. Prepared forecast of market prices for capacity and energy products. Presented overview of the market rules and operation of ISO-NE to investors.

- Assisted in the performance of an asset valuation of major fleet of coal-fired electric generating plants in New York. Prepared forecast of market prices for capacity and energy products. Analyzed cost and operations impacts of major environmental legislation and the effects on market prices and asset valuations.
- Conducted an analysis of the cost impact of two undersea electric cable outages within the NYISO control area for litigation support. Reviewed claims of cost impacts from loss of sales of transmission congestion contracts and replacement power costs.
- Reviewed technical studies of the operational and system impacts of major electric transmission upgrades in the state of Connecticut. Analysis including an assessment of harmonic resonance and type of cable construction to be deployed.
- Conducted a review of amendments to a purchased power agreement between an independent merchant generator and the host utility. Assessed the economic and reliability impacts and all contract terms for reasonableness.
- Assisted in the development of an energy strategy for a large Midwest manufacturing facility with on-site generation. Reviewed electric restructuring rules, electric rate availability, purchase & sale options, and operational capability to determine the least cost approach to maximizing the value of the on-site generation.
- Assisted in the review of the impact of a major transmission upgrade in Northern New England.
- Negotiated a new interconnection agreement for a large hotel in Northeastern Massachusetts.

SELECTED EXPERIENCE – *NSTAR ELECTRIC & GAS*

President & COO of NSTAR Unregulated Subsidiaries

Concurrently served as President and COO of three unregulated NSTAR subsidiaries: Advanced Energy Systems, Inc., NSTAR Steam Corporation, and NSTAR Communications, Inc.

Advanced Energy Systems, Inc.

- Responsible for all aspects of this unregulated business, a large merchant cogeneration facility in Eastern Massachusetts that sold electricity, steam, and chilled water. Duties included management, operations, finance and accounting, sales, and P&L responsibility.

NSTAR Steam Corporation

- Responsible for all aspects of this unregulated business, a district energy system in Eastern Massachusetts that sold steam for heating, cooling, and process loads. Duties included management, operations, finance and accounting, sales, and P&L responsibility.

NSTAR Communications, Inc.

- Responsible for all aspects of this unregulated business, a start-up provider of telecommunications services in Eastern Massachusetts. Duties included management, operations, finance and accounting, sales, and P&L responsibility.
- Established a joint venture with RCN to deliver a bundled package of voice, video, and data services to residential and business customers. Negotiated complex infeasible-right-to-use and stock conversion agreements.
- Installed 2,800 miles of network in three years. Built capacity for 230,000 residential and 500 major enterprise customers.
- Testified before the Congress of the United States on increasing competition under the Telecommunications Act of 1996.

VP, Technology, Research, & Development, Boston Edison Company

- Responsible for identifying, evaluating, and deploying technological innovation at every level of the business.
- Reviewed Electric Power Research Institute (EPRI), national laboratories, vendor, and manufacturer R&D sources. Assessed state-of-the-art electro-technologies, from nuclear power plant operations to energy conservation.

VP of Marketing, Boston Edison Company

- Promoted and sold residential and commercial energy-efficiency products and customer service programs.
- Conducted market research to develop an energy-usage profile. Designed a variable time-of-use pricing structure, significantly reducing on-peak utilization for residential and commercial customers.
- Designed and marketed energy-efficiency programs.
- Established new distribution channels. Negotiated agreements with major contractors, retailers, and state and federal agencies to promote new energy-efficient electro-technologies.

Vice President, Energy Planning, Boston Edison Company

- Responsible for energy-usage forecasting, pricing, contract negotiations, and small power and cogeneration activities. Directed fuel and power purchases
- Implemented an integrated, least-cost resource planning process. Created Boston Edison's first state-approved long-range plan.
- Assessed non-traditional supply sources, developed conservation and load-management programs, and purchased from cogeneration and small power-production plants.
- Negotiated and administered over 200 transmission and purchased power contracts.

- Represented the company with external agencies. Served on the Power Planning Committee of the New England Power Pool.
- Testified before federal and state regulatory agencies.

EMPLOYMENT HISTORY

La Capra Associates, Inc. <i>Managing Consultant</i>	Boston, MA 2004 – present
Advanced Energy Systems, Inc. <i>President & COO</i>	Boston, MA 2001-2003
NSTAR Steam Corporation <i>President & COO</i>	Cambridge, MA 2001-2003
NSTAR Communications, Inc. <i>President & COO</i>	1995-2003
Boston Edison Company <i>VP, Technology, Research, & Development</i> <i>VP, Marketing, Boston Edison Company</i> <i>Vice President, Energy Planning, Boston Edison Company</i> <i>Manager, Supply & Demand Planning</i> <i>Manager, Fuel Regulation & Performance</i> <i>Assistant to Senior Vice President, Fossil Power Plants</i> <i>Division Head, Information Resources</i> <i>Senior Engineer, Information Resource Division</i> <i>Assistant to VP, Steam Operations</i> <i>Electrical Engineer, Research & Planning Department</i>	Boston, MA 1993-1995 1991-1993 1987-1991 1984-1987 1982-1984 1981-1982 1978-1981 1977-1978 1976-1977 1973-1976

EDUCATION

Boston College <i>Masters in Business Administration</i>	Boston, MA 1982
Northeastern University <i>Masters in Science, Electrical Engineering</i>	Boston, MA 1974
Northeastern University <i>Bachelors in Science, Electrical Engineering</i>	Boston, MA 1973

PROFESSIONAL AFFILIATIONS

Director, NSTAR Communications, Inc.	1997-2003
Director, Advanced Energy Systems, Inc.	2001-2003
Director, Neuco, Inc.	2001-2003
Director, United Telecom Council	1999-2003

Head, Business Development Division, United Telecom Council
Elected Commissioner – Reading Municipal Light Board
Registered Professional Electrical Engineer in Massachusetts

2000-2003
2005-present