BEFORE THE
RHODE ISLAND PUBLIC UTILITY COMMISSION

DOCKET NO. 4227

DIRECT TESTIMONY

OF

RICHARD S. HAHN

IN THE MATTER OF NATIONAL GRID'S STANDARD
OFFER SUPPLY PROCUREMENT PLAN AND RENEWABLE
ENERGY STANDARD PROCUREMENT PLAN FOR 2012

ON BEHALF OF THE

RHODE ISLAND DIVISION OF PUBLIC UTILITIES AND CARRIERS

May 16, 2011

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INTRODUCTION

Q. Please identify yourself for the record.

A. My name is Richard S. Hahn. I am a Principal Consultant for La Capra Associates. My business address is One Washington Mall, 9th floor, Boston, Massachusetts 02108.

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

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

Q. Have you previously prepared testimony before the Commission?

A. Yes. I filed direct and surrebuttal testimony in Docket No. 4149, NGRID's SOS procurement Plan for 2011. In Docket No. 4111, the Town of New Shoreham Renewable Energy Project, I filed direct and surrebuttal testimony. In Docket No. 4065, the National Grid's ("NGRID's" or the "Company's") proposed rate increase, I filed direct and surrebuttal testimony. I also filed direct and surrebuttal testimony in Docket No. 4041, NGRID's SOS procurement Plan for 2010. On April 23, 2009, I submitted comments on

NGRID's accelerated procurement plan for Standard Offer Service ("SOS") power supplies, and appeared at the April 28, 2009 hearing in this proceeding. On April 8, 2009, I submitted direct testimony in Docket No. 4029 regarding the load forecast used in the justification of the Rhode Island Reliability Project. I have also testified before regulatory commissions in other states, as described in Exhibit RSH-1.

Q. What has been your experience relative to power supply procurement?

A. Most recently at La Capra Associates, as noted above, I have assisted the Division in reviewing NGRID's plans to procure Standard Offer Service ("SOS") power supplies and comply with Rhode Island's Renewable Energy Standards ("RES"). I have also assisted the Pennsylvania Office of Consumer Advocate in reviewing the SOS procurement plans of several of Pennsylvania's Electric Distribution Companies, including PECO Energy, PPL Utilities, West Penn Power, Citizens Electric Company, and Wellsboro Electric Company. I was a leading member of La Capra Associates teams that served as the Independent Evaluator of a complex power contract between Consumers Energy and the Midland Cogeneration Venture, and have overseen the implementation of RFPs for long-term contracts between utilities and renewable energy facilities. During my career at NSTAR, I was responsible for integrated resource planning, energy supply planning, and wholesale power purchases and sales.

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

A. La Capra Associates, Inc. ("La Capra Associates") has been retained by the Division to review and comment on NGRID's plan to procure SOS power supplies for 2012 and to

comply with RES for 2012. This testimony presents the results of that review, and my conclusions and recommendations.

SUMMARY

Q. Can you summarize the results of your review and your conclusions and recommendations?

A. My recommendations on the proposed procurement plans can be summarized as follows.

- The Company should retain the option for SOS suppliers to submit monthly priced or shaped bids for the Residential Customer Group. This approach was used in 2011, and it does not burden the Company. However, if the Commission were to approve only flat priced bids for the Residential Customer Group, it should do so only up to a twelve month period.
- The Commission should accept the proposed change in the 2012 RES Plan to evaluate RES compliance through FRS purchases only for the first year.
- The Company has proposed to delete language in the RFP documents that explicitly discourage collusion among bidders. I see no reason to delete this language, and recommend that it be included in these documents.
- The Company should provide a summary of all bids received in response to any solicitation for SOS power supplies.
- I recommend that, each time the Company solicits and receives bids for FRS contract to supply SOS power, the Company should estimate the premium that is included in

each winning bid. This estimate of bid premium provides useful information, which should be shared with the Division and Commission staff.

OVERVIEW OF THE COMPANY'S MARCH 1, 2011 FILING

Q. Can you describe the Company's proposed plan to procure power supplies to meet its SOS obligations?

A. In its filing in this proceeding, the Company proposes to continue to utilize three separate groups of customers for the purposes of SOS power supply procurement. The Industrial Customer group would consist of rate classes G-32, G-62, B-32, B-62, and X-01. The Commercial Customer group consists of rate classes G-02, C-06, S-06, S-10, and S-14. The Residential Customer group consists of rate classes A-16 and A-60.

Q. How do these customers groups compare to the Company's procurement groups for 2011?

A. These procurement groups are the same as the procurement groups in the Company's 2011 procurement plan.

Q. How does the Company plan to procure 2012 SOS power supplies for the three customer groups in its March 1, 2011 filing?

A. The 2012 Industrial Group procurement plan is a continuation of the procurement plan for the Large Customer group for 2011. For the Industrial Customer group, NGRID proposes to use Full Requirements Service ("FRS") under short-term (i.e., three month) contracts with a fixed but different per KWH price for each month for 100% of the SOS supply obligation. Requests for Proposals ("RFPs") for SOS power supplies for this customer group will be issued four times per year, with the first solicitation planned for

the fourth quarter of 2011 for deliveries to be made in the first quarter of 2012. Each solicitation will be for 100% of the group load. The schedule for procurement activities for this customer group is provided in Schedule 2A of Ms. Janzen's testimony in the Company's filing.

For the Commercial Customer group, the Company proposes a layering and laddering approach with FRS contracts to supply 90% of the load for this customer group with terms of six months and twelve months, and 10% of the load supplied by ISO-NE spot markets on a steady state basis. RFPs for SOS power supplies for this customer group will also be issued four times per year for 30% of the SOS load obligation. Two of the solicitations will be for staggered twelve month contracts and two will be for sequential six-month contracts. RFPs are issued during the calendar quarter immediately preceding the effective date when deliveries commence. The schedule for procurement activities for this customer group is provided in Schedule 2B of Ms. Janzen's testimony in the Company's filing.

The procurement plan for the Residential Customer group will be based on FRS contracts for 90% of the load with terms of six, twelve, eighteen, and 24 month terms, each for 15% or 20% of the load. These contracts will be layered and laddered to arrive at a repeating pattern of procurements that secures 90% of the load obligation. Four RFPs for FRS contracts will be issued during 2012. Spot market purchases will supply the remaining 10%. The schedule for procurement activities for this customer group is provided in Schedule 2C of Ms. Janzen's testimony in the Company's filing.

Q. How does the Company propose to establish SOS rates for each group of customers?

A. For the Large Customer group, there will be fixed but different rates each month, with the rates for a calendar quarter established one to two months in advance. For the Commercial and Residential Customer groups, the Company will develop rates based upon procurements made in advance and a forecast of the cost of spot market purchases. In 2012, the rates for the Commercial and Residential Customer groups will be set on January 1st for the first six months of the year and on July 1st for the second six months of the year based upon the procurement schedule described above.

Q. What is the Company's proposal for complying with RES?

A. The solicitations of FRS conducted by NGRID will seek separate bids for compliance with RES, which requires that 6.5% of the 2012 power supplies come from renewable energy, with 2.0% coming from existing renewable energy facilities and the balance coming from new renewable energy facilities. This proposal is a continuation of the 2011 plan, with the target requirements as a percent of load increased to the 2012 value. By seeking separate bids, the Company asserts it can evaluate the cost-effectiveness of compliance by either bundled or separate purchases of Renewable Energy Certificates ("RECs").

CHANGES IN THE 2012 RESIDENTIAL PLAN

Q. What changes has the Company proposed for the SOS procurement plan for Residential Customers?

A. The Company proposes to require the suppliers seeking to serve residential load to bid one flat price for the entire contract term for each bid block. In the 2011 plan, prospective suppliers could bid different prices for each month over the term or bid a flat price.

Q. What is the Company's rationale for this change?

A. The Company's filing states that flat prices will minimize deferrals by better aligning Company revenues with supply costs and reduce retail rate volatility. In response to Division 1-7, the Company further states that a flat price would make it easier to evaluate and compare bids. Under the 2011 plan, one supplier could bid monthly prices and another supplier could bid a flat price. In order to compare these two bids, the Company would need to calculate a flat price from the monthly prices to compare to the other bid. The Company also acknowledges that the bid premium may be higher for a flat price bid than for a monthly priced bid, but relied upon a survey of FRS suppliers that purported to indicate that some suppliers would not add a premium for flat prices.[1]

Q. Do you agree with this change and its stated rationale?

A. I agree that a flat price could minimize deferrals. But the implementation of semi-annual rate changes will already minimize deferrals. According to the response to Division 1-7, the Company's SOS revenues exceeded SOS costs by approximately $7.9 million from February 2010 through February 2011. This is less than 2% of total purchased power costs for 2010 of approximately $462 million. I disagree that a flat price will reduce retail rate volatility, as retail rates are changed on the same schedule regardless of

[1] See Company response to Div.1-7.

whether the SOS supply is from flat or shaped pricing. It is not difficult to calculate a flat price for a shaped bid, so I do not agree that this change will make it substantially easier to compare and evaluate bids. In addition, I do not think that a survey of FRS suppliers is a reasonable basis to conclude that the premium in a flat bid is low or non-existent. I note that the Company has not proposed to require flat bids for the Commercial Customer group. If there are benefits to this approach, it would seem that those benefits would also apply to Commercial Customers. Lastly, contract terms for the Residential Customer Group can be as long as 24 months, meaning that a flat bid would apply for the entire 24 month period. I believe that this would make it slightly more difficult to compare such bids that are bundled with REC supplies, because the Company proposes to evaluate RES compliance with FRS bids only for one year.

Q. What do you recommend?

A. I recommend that the Company retain the option for SOS suppliers to submit monthly or shaped bids for the Residential Customer Group. This approach was used in 2011, and it does not burden the Company. However, if the Commission were to approve only flat priced bids for the Residential Customer Group, it should do so only up to a twelve month term. When bids contracts with terms longer than twelve months are sought, such as the 18 or 24 month contract terms, the bid should consist of two flat prices, so that a flat price does not cover more than a twelve month time period.

CHANGES IN THE 2012 RES PLAN

Q. What changes has the Company proposed for the RES plan for 2012?

A. The Company has proposed a slight modification to the RES plan for 2012 by evaluating FRS bids to achieve RES compliance only for the first year of multi-year contracts. Under the 2012 plan, FRS bids with separate prices for RES compliance are compared to "market prices" for RECs. If the market prices are lower than the bid received, the Company will not procure RES compliance with the FRS contract, but rather will procure RECs at a later date in a separate solicitation.

Q. What is the Company's rationale for this change?

A. The stated rationale is that REC prices are typically higher after the first year and the number of sources of REC prices diminishes after the first year.

Q. Do you agree with this change and its stated rationale?

A. I am awaiting responses to discovery questions submitted to the Company on this subject, and would need to review those responses before providing a complete assessment of the Company's rationale. However, market prices for RECs are not as robust as are prices for other traded commodities, such as natural gas at the Henry Hub. Market prices for RECs are based upon a small number of actual transactions, and therefore present reliability and liquidity issues. That leads me to conclude that there is merit to the Company's proposed change.

Q. What do you recommend?

A. I recommend that the Commission accept the proposed change in the 2012 RES Plan and evaluate RES compliance through FRS purchases only for the first year.

CHANGES TO THE RFP DOCUMENTS

Q. Have you reviewed the Procurement Plan Documents filed as part of the Company's filing?

A. I have performed a review of the following Plan Documents provided as attachments to the testimony of Ms. Janzen as part of the Company's filing.

- Master Power Agreement (MPA) – Schedule 4
- SOS RFP Notice (Template) – Schedule 5
- SOS RFP Summary (Template) – Schedule 6
- 2011 Renewable Energy Standard Procurement Plan – Schedule 7
- Certificate Purchase Agreement (CPA) – Schedule 8
- RES RFP Notice (Template) – Schedule 9
- RES RFP Summary (Template) – Schedule 10

Q. Do you have any comments on these Plan Documents?

A. Based upon the redlined versions of these documents provided by the Company in response to Division 1-2, I find that most of the changes are perfunctory and necessary to conform the documents to the current year and docket number. However, the following language was deleted from Schedule 5 - SOS RFP Notice Template and Schedule 9 - RES RFP Notice Template:

> *"Each Respondent certifies, by is submission of a bid, that it is bidding independently and that it has no knowledge of any proposal being submitted by another Respondent in response to this RFP. Each Respondent further certifies that, by its submission of a bid, it has not disclosed and will not disclose prior to any award hereunder any information relating to its proposal which could have an effect on whether another party submits a proposal to this RFP or on the*

> *contents of such proposal that another bidder would be willing to submit in response to this RFP. Such information includes, but is not limited to: the fact that the bidder is submitting a proposal in response to this RFP; the bidder's bids; the bidder's quantities of each product bid; the bidder's estimation of the value of a product; the bidder's estimation of the risks associated with supplying a product; and the bidder's preference for bidding on one or several products."*

It seems that this language was intended to explicitly discourage collusion among bidders. I see no reason to delete this language, and recommend that it be restored to these documents. I see no harm in its inclusion.

ADDITIONAL RECOMMENDATIONS

Q. Do you have any additional recommendations regarding the proposed 2012 procurement plan?

A. I believe that the Company should provide two additional pieces of information regarding the implementation of the SOS procurement process to the Division and Commission Staff. Specifically, shortly after bids are submitted, the Company should provide a summary of all bids received, including any indicative bids. This summary would include but not be limited to the name of the bidder, the amount of power or number of tranches bid, and the price. In addition, I recommend that, each time the Company solicits and receives bids for FRS contract to supply SOS power, the Company should provide an estimate of the bid premium included in any winning bid.

Q. What information does the Company provide now?

A. It is my understanding that the Company files a confidential report showing only the winning bidders and the resulting retail rates.

Q. What is the benefit of providing summary information on all bids received?

A. Knowing the full extent of all bids received, not just the winning bids, will allow the Division and Commission Staff to assess the robustness of the competition to provide SOS power supplies. It is my understanding that the Company did provide such information in the past. I believe that the provision of such information should be resumed.

Q. Regarding your second recommendation, please describe further the estimate of the bid premium that you request.

A. The bid premium would be equal to bid price less cost of components (i.e., energy, capacity, ancillary services etc.).

Q. How would such an estimate of the bid premium be determined?

A. ISO-NE publishes historical data on the wholesale load cost, which includes energy, capacity, reserves, regulation, and ISO-NE and NEPOOL expenses. Capacity and energy represent the vast majority of these actual costs. From 2006 through 2010, capacity and energy costs constituted 97% of the total cost to serve wholesale load. All other cost components averaged $1.8 per MWH or 3% of the total. Looking forward, capacity costs are known three to four years into the future, as Forward Capacity Auctions are held four years in advance of the power year in which these costs are incurred. Energy costs historically averaged 88% of total costs. This component of the bid can be accurately estimated in the near future by examining electricity futures prices for the bid period as of the day the bids were submitted.

Q. What is the benefit of providing an estimate of the bid premium?

A. This estimate of bid premium provides useful information, which would be shared with the Division and Commission staff. This information is an indicator of the robustness of the competition for SOS power supplies, as competition should work to reduce the bid premium. This could also be used to decide whether it is appropriate to accept the bids received. For example, suppose that the Company performs this calculation over time, and determines that a high level of competition results in a bid premium that is in the range of $5 to $8 per MWH. Suppose further that the next bid received contains a premium of $12 per MWH. This would indicate some dramatic change in the marketplace and allow the Company, the Division, and the Commission Staff to investigate further the cause of the dramatic increase in bid premium and appropriateness of accepting this bid.

Q. Is such a calculation difficult to perform or burdensome to the Company?

A. No, it is not. In fact, the Company has already shown that it can do, and has done, such calculations. In previous procurement plans, the Company considered the use of financial swap products as a way to manage power supply costs. In deciding whether to select the FRS bids versus the swap bids, the Company estimated the premium contained in prior FRS bids and added that value to the forward looking cost of the supply components, such as energy and capacity, to arrive at an expected FRS price. An expected price for the swap product was similarly estimated. The Company then selected which bid was closest to its expected price. This process demonstrates that the calculation of the premium in bid prices is neither difficult nor time consuming.

Q. Can you provide an illustration of how the bid premium would be estimated?

A. Yes. Exhibit RSH-2 provides an example of how a bid premium could be determined. In this example, I have assumed that a FRS bid was received on May 6, 2011 to supply 100% of the Company's residential load for calendar year 2012 at a flat rate of $70 per MWH. The monthly cost of the energy portion of this bid was estimated based upon ISO-NE futures prices as of May 6th. Monthly capacity costs are based upon actual rates that have been established for 2012. The other costs (i.e., reserves, regulation, etc.) are based upon ISO-NE actual 2010 costs for the RI load zone. The resulting all-in cost is approximately $63 per MWH, yielding a bid premium of $7 per MWH, which covers items such as load shaping and supplier margin or profit. It should be noted that this methodology of determining the bid premium can also be used if the FRS bid is based upon monthly prices, rather than a flat price for the whole year. Exhibit RSH-3 provides an example of the bid premium for such a shaped bid. I recommend that such a calculation be performed each time the Company awards a SOS supply obligation to any successful bidder, include such calculations when the bid results are provided to the Division and Commission staff.

RATE DESIGN

Q. What has the Company proposed for rate design for its 2011 SOS procurement plan?

A. The rate design for 2012 appears to be the same as for the 2011 plan. SOS rates for the Industrial Customers will be a fixed but different rate each month during a calendar quarter. It is my understanding that reconciliation will occur quarterly. For the

Commercial and Residential Customer groups, the Company proposed to change rates every six months with a mid-year reconciliation.

Q. Do you agree with the proposed rate design?

A. Yes. I supported such a rate design in my review of the 2011 procurement plan.

CONCLUSION

Q. Does this conclude your testimony?

A. Yes. I reserve the right to supplement this testimony as appropriate if additional information becomes available.

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 companies. 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 Public Utilities, and also before FERC.

SELECTED EXPERIENCE – LA CAPRA ASSOCIATES

- Reviewed and analyzed a proposed retail rate increase by Fitchburg Gas and Electric Company before the Massachusetts Department of Public Utilities. Provided expert testimony before the Massachusetts Department of Public Utilities regarding the Company's proposed Capital Spending Plan, and an accompanying recovery mechanism.
- Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Georgia, Vermont.
- Reviewed and analyzed damages claimed in litigation between a developer of renewable energy facilities and the owner of the host site.
- Evaluated the decision of PacifiCorp to acquire new generating resources in Utah. Filed testimony before the Public Service Commission of Utah.
- Served as a principal advisor and key team member in La Capra Associates' assessment of strategic options for Entergy Arkansas, Inc. subsequent to its withdrawal from the Entergy System Agreement.
- Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Jay, Vermont.
- Reviewed and evaluated the construction of and cost recovery for a large cogeneration plant for a mid-west utility; utilized heat balance analysis to develop new cost allocators between steam and electric sales.
- Analyzed fuel costs, market sales and revenues, capacity position, and performance parameters for a large- mid-west utility.
- Performed a review and analysis of the proposed merger between FirstEnergy and Allegheny Energy. Provided expert testimony before the FERC and the Pennsylvania Public Utilities Commission regarding merger policy, benefits and market power issues.

- Performed a study of non-transmission alternatives to a proposed transmission project in the Lewiston-Auburn area of Central Maine Power Company's service territory. Testified before the Maine Public Utilities Commission.
- Analyzed a proposed plan by National Grid to procure 2011 default service power supplies and comply with Renewable Energy Standards. Provided expert testimony before the Rhode Island Public Utilities Commission.
- Served as an advisor to the Pennsylvania Office of Consumer Advocate in reviewing 2011 default service plans for Pennsylvania Electric Distribution Companies.
- Analyzed a purchase power agreement between National Grid and on offshore wind project in Rhode Island. Provided expert testimony before the Rhode Island Public Utilities Commission.
- Reviewed and analyzed a proposed retail rate increase by Western Massachusetts Electric Company before the Massachusetts Department of Public Utilities. Provided expert testimony before the Massachusetts Department of Public Utilities regarding the Company's proposed Capital Plan, and an accompanying recovery mechanism.
- Served as an advisor to the developer of a utility-scale Solar PV facility in Massachusetts.
- Evaluated a proposed Solar PV installation for a large retail customer in Massachusetts. Performed an analysis of the appropriate rate of return and its impact on facility electric costs and financial feasibility.
- Assessed the economic impact of an additional interconnection between ISO-NE and NYISO; analyzed impact on market prices and congestion.
- Reviewed and analyzed the capacity position of a large mid-west utility and the impact of that position on electric rates.
- Performed an economic evaluation of a proposed transmission line in New England. Assessed the project's ability to deliver renewable energy to load centers and the impact of the project on Locational Marginal Prices.
- Analyzed a proposed interconnection of a large new industrial load in Massachusetts. Evaluated proposed substation configuration and developed alternatives that achieved comparable reliability at lower costs. Assessed cost recovery options.
- Reviewed the Energy Efficiency and Conservation Programs proposed by Pennsylvania Power & Light and Philadelphia Electric Company in response to Act 129, Pennsylvania legislation that requires Electric Distribution Companies to achieve certain annual consumptions and demand reduction by 2013. Provided expert testimony before the Pennsylvania Public Utilities Commission regarding program design, benefit cost analyses, and cost recovery.
- Assisted in the review and analysis of a proposed retail rate increase by National Grid before the Rhode Island Public Utilities Commission. Provided expert

testimony before the Rhode Island Public Utilities Commission regarding the Company's proposed Inspection & Maintenance Program, its Capital Plan, its Storm Funding Plan, and its Facilities Plan

- Reviewed and analyzed Time-of-Use rates proposed by Pennsylvania Power & Light. Provided expert testimony before the Pennsylvania Public Utilities Commission regarding compliance with Commission requirements, rate design, cost recovery, and consumer education issues.
- Assisted in the review and analysis of a proposed retail rate increase by National Grid before the Massachusetts Department of Public Utilities. Provided expert testimony before the Massachusetts Department of Public Utilities regarding the Company's proposed Inspection & Maintenance Program, its Capital Plan, its Storm Funding Plan, and it's Facilities Plan.
- Performed a review and analysis of the proposed merger between Exelon and NRG. Provided expert testimony before the Pennsylvania Public Utilities Commission regarding merger policy, benefits and market power issues.
- Reviewed the needs analysis and load forecast supporting a proposed Transmission Project in Rhode Island. Provided expert testimony before the Rhode Island Public Utilities Commission.
- 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. Developed and applied a probabilistic planning tool to model uncertainty in costs and operating parameters.
- 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. Performed an analysis of the appropriate rate of return and its impact on ratepayer costs and financial feasibility. Provided expert testimony before the Massachusetts Department of Public Utilities.
- Served as a key member of a La Capra Associates 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 several existing coal-fired power plants in Wisconsin, including an economic evaluation of this investment compared to alternative supply resources. Provided expert testimony in three separate proceedings before the Public Service Commission of Wisconsin.

- Reviewed Pennsylvania Act 129 and Commission rules for Energy Efficiency Plans
- 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 Associates 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 indefeasible-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. **Boston, MA**
Principal Consultant 2004 – present

Advanced Energy Systems, Inc. **Boston, MA**
President and COO 2001-2003

NSTAR Steam Corporation **Cambridge, MA**
President and COO 2001-2003

NSTAR Communications, Inc.
President and COO 1995-2003

Boston Edison Company **Boston, MA**
VP, Technology, Research, & Development 1993-1995
VP, Marketing, Boston Edison Company 1991-1993
Vice President, Energy Planning, Boston Edison Company 1987-1991
Manager, Supply & Demand Planning 1984-1987
Manager, Fuel Regulation & Performance 1982-1984

Assistant to Senior Vice President, Fossil Power Plants	1981-1982
Division Head, Information Resources	1978-1981
Senior Engineer, Information Resource Division	1977-1978
Assistant to VP, Steam Operations	1976-1977
Electrical Engineer, Research & Planning Department	1973-1976

EDUCATION

Boston College Boston, MA
Masters in Business Administration 1982

Northeastern University Boston, MA
Masters in Science, Electrical Engineering 1974

Northeastern University Boston, MA
Bachelors in Science, Electrical Engineering 1973

PROFESSIONAL AFFILLIATIONS

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	2000-2003
Elected Commissioner – Reading Municipal Light Board	2005-present
Registered Professional Electrical Engineer in Massachusetts	

Exhibit RSH-2
Example of Bid Premium Calculation – Flat Price

EXAMPLE OF BID PREMIUM CALCULATION

2012 RI Residential Load

Month	Annual Energy (MWH)	Annual Capacity Obligation (MW)	Energy Futures ($/MWH)	Capacity Costs ($/KW-month)	Other Costs ($/MWH)	Total Wholesale Cost	FRS Bid ($/MWH)	Total FRS Bid Cost
Jan	298,511	760	$65.07	$3.60	$1.60	$22,637,728	$70.00	$20,895,770
Feb	255,082	760	$65.07	$3.60	$0.96	$19,579,064	$70.00	$17,855,740
Mar	248,310	760	$47.06	$3.60	$1.16	$14,709,508	$70.00	$17,381,700
Apr	220,100	760	$47.06	$3.60	$0.84	$13,278,790	$70.00	$15,407,000
May	231,982	760	$44.47	$3.60	$2.83	$13,708,749	$70.00	$16,238,740
Jun	294,631	760	$45.66	$2.95	$2.69	$16,486,696	$70.00	$20,624,170
Jul	406,893	760	$51.76	$2.95	$4.99	$25,331,903	$70.00	$28,482,510
Aug	342,816	760	$51.76	$2.95	$3.18	$21,075,357	$70.00	$23,997,120
Sep	263,157	760	$45.53	$2.95	$3.43	$15,125,611	$70.00	$18,420,990
Oct	231,772	760	$50.04	$2.95	$1.68	$14,228,849	$70.00	$16,224,040
Nov	244,846	760	$50.04	$2.95	$6.53	$16,092,474	$70.00	$17,139,220
Dec	292,644	760	$50.04	$2.95	$3.25	$17,836,296	$70.00	$20,485,080
sum	3,330,744					$210,091,025		$233,152,080
						$63.08		$70.00

Notes:

1 annual energy is 100% of residential class per Schedule 3

2 annual capacity obligation is illustrative

3 energy futures costs per NYMEX 5-6-2011

4 capacity costs per ISO-NE FCAs

5 other costs per 2010 actuals per ISO-NE

6 FRS bid is illustrative

Exhibit RSH-3
Example of Bid Premium Calculation – Shaped Price

EXAMPLE OF BID PREMIUM CALCULATION

2012 RI Residential Load

Month	Annual Energy (MWH)	Annual Capacity Obligation (MW)	Energy Futures ($/MWH)	Capacity Costs ($/KW-month)	Other Costs ($/MWH)	Total Wholesale Cost	FRS Bid ($/MWH)	Total FRS Bid Cost
Jan	298,511	760	$65.07	$3.60	$1.60	$22,637,728	$70.00	$20,895,770
Feb	255,082	760	$65.07	$3.60	$0.96	$19,579,064	$75.00	$19,131,150
Mar	248,310	760	$47.06	$3.60	$1.16	$14,709,508	$70.00	$17,381,700
Apr	220,100	760	$47.06	$3.60	$0.84	$13,278,790	$65.00	$14,306,500
May	231,982	760	$44.47	$3.60	$2.83	$13,708,749	$65.00	$15,078,830
Jun	294,631	760	$45.66	$2.95	$2.69	$16,486,696	$70.00	$20,624,170
Jul	406,893	760	$51.76	$2.95	$4.99	$25,331,903	$75.00	$30,516,975
Aug	342,816	760	$51.76	$2.95	$3.18	$21,075,357	$70.00	$23,997,120
Sep	263,157	760	$45.53	$2.95	$3.43	$15,125,611	$65.00	$17,105,205
Oct	231,772	760	$50.04	$2.95	$1.68	$14,228,849	$60.00	$13,906,320
Nov	244,846	760	$50.04	$2.95	$6.53	$16,092,474	$65.00	$15,914,990
Dec	292,644	760	$50.04	$2.95	$3.25	$17,836,296	$70.00	$20,485,080
sum	3,330,744					$210,091,025		$229,343,810
						$63.08		$68.86

Notes:

1 annual energy is 100% of residential class per Schedule 3

2 annual capacity obligation is illustrative

3 energy futures costs per NYMEX 5-6-2011

4 capacity costs per ISO-NE FCAs

5 other costs per 2010 actuals per ISO-NE

6 FRS bid is illustrative