

To: The Rhode Island Public Utilities Commission

From: Richard Hahn, La Capra Associates, Inc. on behalf of the Rhode Island Division of Public Utilities and Carriers

Re: NATIONAL GRID'S TARIFF ADVICE FILING FOR CUSTOMER-OWNED STREET AND AREA LIGHTING PROPOSAL – DOCKET NO. 4442

Date: May 30, 2014

Introduction

On May 6, 2014, the Rhode Island Public Utilities Commission (“Commission”) held a technical session to discuss the proceedings in this docket. On May 7, 2014, the Commission issued a procedural memorandum, requiring among other things that the Rhode Island Division of Public Utilities and Carriers (“Division”) file comments by May, 30, 2014 that address the following issues:

“(1) Please review the filings made by National Grid on March 17, 2014 and April 3, 2014 and by the municipalities on March 17, 2014 and provide comments or recommendations related to those filings.

(2) In Mr. Hahn’s comments dated November 26, 2014, he stated, “I agree that it is premature to require metering services at this time, and NGRID’s suggestion for a limited pilot program to address these issues is a reasonable approach. It should be noted that adding metering capability to this rate will increase costs and result in a higher rate being charged by NGRID.” After attending the technical record session on May 6, 2014, please indicate whether Mr. Hahn’s or the Division’s recommendation has changed and please expand upon these comments, particularly with regard to any recommendations for a pilot.”

This memorandum provides my response to the Commission on the above issues.

La Capra Associates November 26, 2013 Memorandum

On November 26, 2013, I prepared a memorandum to the Commission summarizing the results of my review of certain issues in this proceeding. The following is a brief summary of that memorandum. More details are available in the full memorandum, which is available at <http://www.ripuc.org/eventsactions/docket/4442page.html>.

- **Delivery Rate Level**: I recommended a revision to the delivery rate proposed by National Grid.
- **Scope of Proceeding**: I recommended that the closing documents, which include the Agreement of Sale, the Overhead License Agreement, and the Underground License Agreement, be reviewed as part of this proceeding.
- **Maintenance**: NGRID should not be required to offer such services if it does not wish to provide them.
- **Metering**: I opined that it is premature to require metering services at this time, and NGRID's suggestion for a limited pilot program to address these issues is a reasonable approach.
- **Inventory Penalty**: NGRID's proposal to revise the S-05 tariff to remove NGRID's right to terminate service if a municipality does not meet reporting requirements or identify unreported lights should be accepted.
- **Requirement for Fused Disconnects**: I opined that it is reasonable for NGRID to require fused disconnects on municipality-owned street lights.
- **Pole and Infrastructure Access**: I recommended a change in the process to deal with poles that have municipality-owned street lights attached but are no longer of service to NGRID.
- **Assignment of Rights**: NGRID should be required to attempt to transfer such rights if cost of acquiring these rights were included in the plant costs of the lighting facilities being purchased, and NGRID should recover any reasonable costs as part of the purchase price.
- **Labeling of Fixtures**: I opined that it is reasonable to require the removal of any reference to NGRID in street light labels, as is the requirement to maintain some form of location labeling acceptable to the Company.

NGRID March 17, 2014 Filing

On March 17, 2014, National Grid filed a final status report with the Commission. This report identified the outstanding issues about which the Company and the municipalities could not reach agreement. As requested by the Commission, I will provide comments on these outstanding issues.

- **Tariff and closing documents**: It appears that the municipalities wish to attach the closing documents (i.e., those documents that are used by the municipalities to purchase the street lighting assets from National Grid) to the S-05 tariff. The Company believes that the closing documents are legal contractual documents between the individual municipality and the Company and should be separate from the tariff. I believe that it is appropriate to keep the closing documents separate from the tariff. The closing documents facilitate the transfer of the ownership of the assets. The tariff provides the terms and conditions under which the Company will deliver electric energy to the street lighting assets once they are owned by the municipalities. The tariff cannot apply to a municipality until after it has acquired the assets and executed the closing documents. I do believe that these documents should be reviewed in this proceeding to avoid as many disputes down the road as possible. However, I believe they can and should be separate from the tariff.
- **Additional operating schedule**: The municipalities request that National Grid offer additional operating schedules for municipally owned street lights. National Grid states that it is unable to accommodate this request based on limitations of the Company's billing system. While I have not examined the capabilities of National Grid's billing system, I have seen such limitations as legitimate in other venues. It may take time and money to fix these limitations. However, the Company should not be required to implement something it is not capable of doing.
- **Metering**: The municipalities appear to want National Grid to use metering capabilities embedded in systems that control the operation of streetlights that they will install. The Company believes that metering should not be offered at this time. The final status report states that the street lighting law does not require metering. It also states that it is premature to offer metering at this time because of policy issues in unanswered questions regarding metering technology. The Company has offered to conduct a metering pilot

program. In my November 26, 2013 memo, I stated that it was premature to order metering at this time and suggested that a pilot program was a reasonable approach. I continue to take that position. Given the effort that will be required to develop and implement a metering pilot program, I believe that that activity should occur outside of this proceeding. The metering issue will be discussed in greater detail in a later section of this memorandum.

- Warranties: The municipalities have requested that the Company transfer any existing product warranties time of closing. The Company states that it does not have any specific documentation regarding warranties and that the sale is an “as is where is” transaction. I do not believe that the Company should be required to transfer product warranties that it does not have.
- Assignment of rights: The status report states that the municipalities maintain that they should be able to assign their attachment rights, received as a result of the acquisition of Company streetlights, to third-party without consent of National Grid. National Grid opines that the statute and the tariff filed in this proceeding covers ownership of the streetlights only by municipalities. If the municipalities continued to own the streetlights there is no need for them to assign their attachment rights. I agree with the Company on this issue.
- Termination of license: The final status report discusses the issue of termination of attachment licenses. The municipalities do not believe that the Company can terminate these rights. The Company maintains that it needs such termination rights in the event that circumstances arise which would warrant termination. The Company has not provided any examples of situations where termination could be warranted. The municipalities need the attachment licenses in order to continue to operate the acquired streetlights, and therefore the Company should not have the right to terminate these licenses.
- Transfer of existing easements and rights: The towns have requested that National Grid transfer all easements and license rights associated with streetlights to the municipalities. The Company presents several reasons why it cannot make such transfers. National Grid further opines that the majority of easements are associated with public property that is owned or managed by the towns. Finally, the Company argues that it must retain these

easements and rights in order to maintain and operate the equipment they are not selling to the municipalities. I believe it's appropriate for the Company to retain ownership of these easements and rights, as they are needed to operate the electric distribution system.

- Liability and insurance: The final report states that the towns want the liability and insurance provisions in the Attachment Agreement removed or made reciprocal. The Company opposes this change. This section of the Attachment Agreement is substantially similar to provisions contained in the Company's agreement for third party attachments to utility poles jointly-owned by the Company and Verizon, such as those attachments owned by cable TV companies and competitive telecommunications providers. These provisions also appear to be consistent with attachment agreement that exists for the existing municipal attachments, such as fire alarm cables. I see no reason why liability provisions for municipally-owned streetlights should be fundamentally different from other third party attachment agreements.

Municipalities March 17, 2014 Filing

The March 17, 2014 memorandum by the municipalities provides their view of the status of the negotiation and the issues remaining to be resolved. Many of the issues discussed in this document are the same as in National Grid's final status report. I will not add additional response to the issues discussed above, but will respond to issues raised by the municipalities were not addressed in the Company's final status report.

- Inventory pricing methodology: The municipalities state that if the parties cannot agree on a fair price they should be able to submit the pricing dispute to the PUC for resolution within 60 days. They also state that this dispute resolution process is not addressed anywhere in the proposed filing. In response, I note that the Rhode Island street lighting statute does provide for a dispute resolution process regarding the price to be paid in section 39-30-3(e). Therefore, I believe that an additional dispute resolution process is unnecessary.
- Restricted use: National Grid proposes to restrict the municipalities' use of its purchased equipment solely for street lighting and acquire additional licensing for added infrastructure. The municipalities believe that they have the right to use these attachments as they see fit. The usage right provisions of the Attachment Agreement for

municipality-owned streetlights appear to be consistent with the usage right provisions contained in the Company's agreement for third party attachments to utility poles jointly-owned by the Company and Verizon, such as those attachments owned by cable TV companies and competitive telecommunications providers. I believe that such consistency is desirable and appropriate.

- Company work: The municipalities believe that the Company need only be informed of municipality work on the streetlights if that work impacts the Company's distribution system. They also believe that the proposed agreements require excessive supervision and costs to the municipalities. It is unclear what specific provisions the municipalities are concerned about here. However, the other attachment agreements do not appear to require that the attachers notify the Company anytime they perform work on their attachments. It is also my experience that third party attachers do not notify the host utility anytime work is done. Once the municipalities acquire ownership of the streetlights, they should be able to work on their facilities so long as they do not interfere with the delivery of electricity, comply with safety requirements, and indemnify the Company against any damage that might be caused.

NGRID April 3, 2014 Filing

On April 3, 2014, pursuant to Attorney Wilson-Frias' request, the Company filed the following documents:

- Attachment A: A redline comparison of the Proposed S-05 Tariff (the "Tariff") the Company filed on March 17, 2014 with the Tariff the Company filed on November 12, 2013 in response to Commission 2-1;
- Attachment B: A redline comparison of the Agreement of Sale the Company filed on March 17, 2014 with the Agreement of Sale the Company filed on November 12, 2013 in response to Commission 2-2;
- Attachment C: A redline comparison of the Final Agreement the Company filed on March 17, 2014 with the License Agreement for Overhead Electrical Service and Attachments to Utility Structures ("Overhead Agreement") the Company filed on November 12, 2013 in response to Commission 2-2;

- Attachment D: A redline comparison of the Agreement for Customer-owned Street and Area Lighting Attachments the Company filed on March 17, 2014 (“Final Agreement”) with the License Agreement For Underground Electrical Service and Attachments to Utility Structures (“Underground Agreement”) the Company filed on November 12, 2013 in response to Commission 2-22.

It is my understanding that these documents reflect the latest versions and that the issues identified above are the ones that need to be resolved. Therefore, a further review of these documents was not performed.

Meter Services

At the May 6th technical session, there was extensive discussion of metering of streetlights. In its May 7th procedural schedule, the Commission specifically requested that the metering issue be addressed. This section of the memorandum provides additional discussion of metering services.

At the May 6th technical session, the municipalities brought vendors from Sunrise Technologies and Silver Spring Networks to discuss the products that they offer. Sunrise Technologies makes photo controls that measure energy usage and control the output of the streetlight. Silver Spring Networks provides communication systems and licenses data management software. Together, these two systems have partnered to create a technology that allows streetlights to be metered and controlled remotely. It is my understanding that the Company and the municipalities would both like to own the metering system. The Company is also interested in the outage notification aspect of this system, while the municipalities seek the ability to control the output of the street light and be notified if a lamp is burnt out.

Any discussion of metering services for street lights typically includes issues such as (1) should streetlights be metered?, (2) if so, how should street lights be metered?, (3) who should own the metering equipment?, and (4) should a meter pilot be conducted or should a full scale metering system be installed?

As a threshold matter, I believe that electric utilities should own and manage the metering systems that measure the consumption of electricity and form the basis of its billing and revenue.

I cannot think of any volume-based business where the seller does not own and control the measurement system that records how much product is sold and instead allows the customer to inform the seller how much product is taken. When a municipality provides town water to its residents, it owns the water meter. I do not believe that a municipality would allow its residents to meter their own usage and inform the town of what that usage was. So if streetlights are to be metered, then I believe that the utility should be able to own the metering system. This arrangement has an existing system of checks and balances to ensure accurate meter readings. The Division has regulations that require utilities to test and maintain meter accuracy according to industry standards. If a customer believes that its meter is not accurate, it can request a test of that accuracy. If an entity other than the utility is responsible for metering, the Commission and the Division have no authority to establish and enforce such requirements and standards.

Historically, streetlights have not been metered because the usage was considered small and predictable with photocells controlling electricity usage based upon hours of daylight. A 50W HPS streetlight that uses 61 watts for 4,175 hours per year consumes on average 21 KWH per month. The calculations provided by Ms. Lloyd at the technical session do seem to support the premise that conversion to LED streetlights will yield the bulk of the potential savings from the municipal acquisition of the Company's streetlights. Nonetheless, if the municipalities wish to utilize non-standard, difficult-to-predict operating schedules and desire the streetlight usage to be metered, then the municipalities should have that right. However, National Grid should be able to own the metering system and charge the municipalities a Commission-approved rate for such a service.

Regarding how streetlights should be metered, I note that it would be possible for National Grid to utilize its existing ERT meter reading system to meter streetlights. It is my understanding that the majority of meters on the Company's system are standard electric meters that emit a low-power radio signal that are read by drive-by vans. Such systems are wide spread not only for electric utilities but also for gas and water utilities. Each streetlight could be metered by installing a meter socket between the streetlight and the Company's distribution system mounted on the pole and installing one of these meters. While this system may not be the most efficient use of pole space, it can work and has worked in other applications, such as cable TV pole-

mounted boxes that convert fiber optic signals to electrical signals sent over coax cables. It might be more efficient if the Company and the municipalities could reach some agreement where National Grid owned the metering system and the municipalities could gain access to this system to control the output of the lights and receive notification of the lamp being burnt out. If such a compromise cannot be reached, separate systems for metering and control might be a solution, albeit not necessarily a cost-effective one.

The May 7, 2014 procedural memorandum specifically asked if I still believe that it is premature to require metering services at this time, and that NGRID's suggestion for a limited pilot program to address these issues is a reasonable approach. Earlier in this memorandum, I stated that I continue to hold that opinion. After listening to the information provided at the technical session, I believe that the metering system offered by Silver Spring Networks and Sunrise Technologies, while showing considerable promise, is not a mature system poised for a large scale roll-out. The other installations discussed at the technical session, such as FPL, were pilot programs, not full-scale deployments. The vendors themselves referred to the metering of streetlights as a "newer business". A representative of the municipalities referred to this technology as not widely installed but that "Rhode Island could be a leader". While there was some representation that most, if not all, Rhode Island municipalities would acquire streetlights from the Company, we do not know how many actually will. There was no mention of other vendors providing a comparable product that would be interchangeable with systems provided by other vendors. My concern here is that a particular system and vendor is chosen, and there are no other providers that could step in if that vendor failed or went out of business. Contrast that situation with the mature, fully deployed ERT-based metering system utilized by the Company today. This system has been tested and standardized. If the Company needs to purchase additional meters, it can and likely will receive bids from multiple vendors offering meters that can be seamlessly deployed. The Company is not tied to a single vendor. Proceeding with a pilot metering program for a new streetlight metering system will allow both National Grid and the municipalities to implement such a system on a small scale and learn from the pilot without the risk of spending significant sums on a technology that is required to be abandoned at some point in the future. Based upon this information, I continue to believe that a metering pilot is a preferable approach. The municipalities can still acquire the Company's streetlights and obtain

savings via different lighting technologies and the operating schedules proposed by the Company. While a pilot proceeds, we can find out exactly how many municipalities will acquire the streetlights.

However, I recognize that the Commission may wish to accommodate the municipalities desire to proceed directly with a full-scale roll-out. If that approach is taken, I believe that it is appropriate for the Company to own the metering system, and that the municipalities should be responsible for the cost of this system via Commission-approved rates.



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

1. Reviewed proposed TOU rates by PPL Electric on behalf of the Pennsylvania Office of Consumer Advocate
2. Performed an analysis of a proposal to convert the Valley Power Plant in Milwaukee to switch from coal to natural gas; included a reliability assessment of the need for the plant to maintain local reliability
3. Reviewed the adequacy of the supply of renewable energy certificates for 2015 and 2016 for impact on the Rhode Island Renewable Energy Standard
4. Reviewed a purchased power agreement between National Grid and Champlain / Bowers Wind for the Rhode Island Division of Public Utilities and Carriers
5. La Capra Associates was retained by the Nova Scotia Small Business Advocate to review and analyze the 2013 Annual Capital Expenditure (“ACE”) Plan for Nova Scotia Power Incorporated (“the Company” or “NSPI”). I served as a key member of the team responsible for reviewed transmission projects.
6. Served as an advisor to the Belmont Municipal Light Department in its efforts to upgrade its transmission interconnection to 115KV.
7. Performed an assessment of the proposed merger of Peoples Natural Gas and Equitable Gas Company for the Pennsylvania Office of Consumer Advocate.
8. Reviewed the proposed default service procurement of UGI Utilities to procure standard offer service power supplies for its non-shopping customers for 2014 to 2017.
9. Performed an audit of Rocky Mountain Power Company’s 2012 Energy Balancing Account, including a review of the Company's hedging program.
10. Reviewed a request by Wisconsin Public Service to implement the System Modernization and Reliability Project, a large-scale capital program to improve system reliability in Northern Wisconsin.
11. Served as a member of a La Capra Associates team advising the Arkansas Public Service Commission Staff regarding Entergy's Application to transfer ownership of transmission assets to ITC.

12. Reviewed and analyzed NGRID proposed 2013 LTCRER factor; provided written comments to RI PUC.
13. Reviewed Rocky Mountain Power Company's Energy Balancing Account filing for 2011; filed testimony before the Utah PSC.
14. Reviewed NGRID proposed tariff revisions for recovery of Long-Term Renewable Energy Contracts; provided written comments to RI PUC.
15. Analyzed proposed environmental upgrades to the Flint Creek coal unit in Arkansas; filed written testimony before the Arkansas PSC.
16. WI CUB WEPCO 2013 Rate Case; review prudence of capital and fuel costs; filed written testimony before the Wisconsin PSC.
17. Reviewed and analyzed a request for an Advanced Determination of Prudence for a new wind generation facility; filed written testimony before the North Dakota PSC.
18. Reviewed proposed 2013 -2015 Default Service Procurement Plan for PPL Utilities; filed written testimony before the Pennsylvania PUC.
19. Analyzed forecast of projected capital additions to plant in service for forward-looking test year in Utah rate case. Filed testimony before the Utah Public Service Commission.
20. Review and analysis of National Grid's proposed 2013 Standard Offer Service and Renewable Energy Standard procurement plan on behalf of the Rhode Island Division of Public utilities and Carriers.
21. Review and analysis of National Grid's proposed long term renewable contracting plan on behalf of the Rhode Island Division of Public utilities and Carriers.
22. Review and analysis of a long-term renewable energy contract between Black Bear Hydro and National Grid on behalf of the Rhode Island Division of Public Utilities and Carriers.
23. Reviewed proposed 2013 -2015 Default Service Procurement Plan for PECO Energy on behalf of the Pennsylvania Office of Consumer Advocate.
24. Review National Grid's 2012 Electric Retail Rate Filing requesting Commission approval of various charges and adjustment factors for the Rhode Island Division of Public Utilities and Carriers.
25. Analyzed the request to the Wisconsin Public Service Commission for a CPCN for the Hampton - Rochester - La Crosse Baseline Reliability Project.
26. Performed an assessment of the TOU rates proposed by PPL Electric Utilities before the Pennsylvania Public Utilities Commission; Presented expert testimony providing the results of that assessment.
27. Reviewed the proposed merger between Exelon and Constellation Energy for its impact on market power; filed testimony before the Pennsylvania Public Utilities Commission.
28. Reviewed the proposed merger between Exelon and Constellation Energy for its impact on market power; filed testimony before the Federal Energy Regulatory Commission and the Maryland Public Service Commission.
29. Conducted an assessment of the request to the North Dakota Public Service Commission for an Advanced Determination of Prudence for the Montana Dakota Utilities GT; filed testimony before the North Dakota Public Service Commission.

30. Conducted an assessment of the request to the North Dakota Public Service Commission for an Advanced Determination of Prudence for the Big Stone Air Quality Control System; filed testimony before the North Dakota Public Service Commission.
31. Analyzed proposed 2012 monitored and non-monitored fuel costs, market sales and revenues, capacity position, and performance parameters for Wisconsin Electric Power; filed testimony before the Public Service Commission of Wisconsin.
32. Analyzed proposed ceiling prices for Distributed Generation procurement for the Rhode Island Division of Public Utilities and Carriers in Docket 4288.
33. Reviewed proposed changes to National Grid's interconnections standards for the Rhode Island Division of Public Utilities and Carriers in Docket 4276.
34. Reviewed proposed changes to National Grid's Distributed Generation Enrollment Process for the Rhode Island Division of Public Utilities and Carriers in Docket 4277.
35. Analyzed proposed 2012 monitored and non-monitored fuel costs, market sales and revenues, capacity position, and performance parameters for Northern States Power Wisconsin; filed testimony before the Public Service Commission of Wisconsin.
36. Analyzed proposed 2012 monitored and non-monitored fuel costs, market sales and revenues, capacity position, and performance parameters for Madison Gas & Electric; filed testimony before the Public Service Commission of Wisconsin.
37. Analyzed proposed 2012 monitored and non-monitored fuel costs, market sales and revenues, capacity position, and performance parameters for Wisconsin Public Service; filed testimony before the Public Service Commission of Wisconsin.
38. Reviewed the proposed merger between Duke Energy and Progress Energy for compliance with merger approval standards and the impact of the merger on customers; filed testimony before the North Carolina Public Utilities Commission and the South Carolina Public Service Commission.
39. Analyzed the De-List Bid submitted by Vermont Yankee in ISO-NE capacity auctions. Filed statement at FERC presenting the results of that assessment.
40. Performed an assessment of a proposal by Nova Scotia Power to increase spending on vegetation management activities as part of the 2012 rate case; filed testimony before the Nova Scotia Utility and Review Board.
41. Reviewed and analyzed a proposed Purchased Power Agreement between National Grid and Orbit Energy; filed testimony before the Rhode Island Public Utility Commission in Docket 4265.
42. Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Ascutney Vermont.
43. Reviewed and analyzed NGRID proposed SOS procurement plan and RES Compliance plan for 2012; provided testimony before the Rhode Island Public Utility Commission in Docket 4227.
44. Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Bennington Vermont.
45. Prepared follow-on analysis of Utah resource acquisition in rate case in Docket 10-035-124
46. 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.
47. Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Georgia, Vermont.
 48. Reviewed and analyzed damages claimed in litigation between a developer of renewable energy facilities and the owner of the host site.
 49. Evaluated the decision of PacifiCorp to acquire new generating resources in Utah. Filed testimony before the Public Service Commission of Utah.
 50. 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.
 51. Reviewed the issues and documentation related to a complaint regarding the net metering issues for the Portsmouth Wind Turbine for the Rhode Island Divisions of Public Utilities and Carriers
 52. Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Jay, Vermont.
 53. 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.
 54. Analyzed fuel costs, market sales and revenues, capacity position, and performance parameters for a large- mid-west utility.
 55. 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.
 56. 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.
 57. 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 in Docket 4149.
 58. Served as an advisor to the Pennsylvania Office of Consumer Advocate in reviewing 2011 default service plans for PECO Energy.
 59. Served as an advisor to the Pennsylvania Office of Consumer Advocate in reviewing 2011 default service plans for PPL Electric Utilities.
 60. 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.
 61. 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.
 62. Served as an advisor to the developer of a utility-scale Solar PV facility in Massachusetts.

63. 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.
64. Assessed the economic impact of an additional interconnection between ISO-NE and NYISO; analyzed impact on market prices and congestion.
65. Reviewed and analyzed the capacity position of a large mid-west utility and the impact of that position on electric rates.
66. 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.
67. 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.
68. Reviewed the Energy Efficiency and Conservation Programs proposed by Pennsylvania Power & Light 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.
69. Reviewed the Energy Efficiency and Conservation Programs proposed by 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.
70. 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
71. 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.
72. 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 its Facilities Plan.
73. 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.
74. 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.

75. 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.
76. 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.
77. Conducted a review of Massachusetts Electric Company's 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.
78. Conducted a review of Western Massachusetts Electric Company's 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.
79. Served as a key member of a La Capra Associates Team evaluating wind generation RFPs in Oklahoma.
80. Performed an assessment of plans to procure Default Service Power Supplies for Pennsylvania utilities. Provided expert testimony before the Pennsylvania Public Utilities Commission.
81. Performed an assessment of a merchant generator proposal to construct, own, and operate 800 MW of large scale PV solar generating units in Maine.
82. Analyzed proposed environmental upgrades to the Columbia Energy Center coal-fired generating station in Wisconsin, including an economic evaluation of this investment compared to alternative supply resources. Provided expert testimony before the Public Service Commission of Wisconsin.
83. Analyzed proposed environmental upgrades to the Edgewater 5 coal-fired generating unit in Wisconsin, including an economic evaluation of this investment compared to alternative supply resources. Provided expert testimony before the Public Service Commission of Wisconsin.
84. Analyzed proposed environmental upgrades to the Oak Creek coal-fired generating units in Wisconsin, including an economic evaluation of this investment compared to alternative supply resources. Provided expert testimony before the Public Service Commission of Wisconsin.
85. Reviewed Pennsylvania Act 129 and Commission rules for Energy Efficiency Plans
86. Performed a study of non-transmission alternatives (NTAs) to a proposed set of transmission upgrades to the bulk power supply system in Maine.
87. 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.
88. Performed a study of non-transmission alternatives (NTAs) to a proposed set of transmission upgrades to the bulk power supply system in Vermont.

89. 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.
90. 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.
91. Served as an advisor to the Maryland Attorney General's Office in the proposed merger between Constellation Energy and the FPL Group.
92. Reviewed and analyzed outages for Connecticut utilities during the August 2006 heat wave. Prepared an assessment of utility filed reports and corrective actions.
93. 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.
94. 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.
95. 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.
96. Conducted an extensive study of distributed generation technologies, options, costs, and performance parameters for VELCO and CVPS.
97. Analyzed and evaluated proposals for three substations in Connecticut. Prepared and issued RFPs to seek alternatives in accordance with state law.
98. 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.
99. Prepared long term price forecasts for energy and capacity in the ISO-NE control area for evaluating the acquisition of existing powerplants.
100. 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.
101. Performed a long-term locational installed capacity (LICAP) price forecast for the NYC zone of the NYISO control area for generating asset acquisition.
102. 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.
103. 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.
104. 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.

105. 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.
106. 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.
107. 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.
108. 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.
109. Assisted in the review of the impact of a major transmission upgrade in Northern New England.
110. 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. Principal Consultant	Boston, MA	2004 – present
Advanced Energy Systems, Inc. President and COO	Boston, MA	2001-2003
NSTAR Steam Corporation President and COO	Cambridge, MA	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 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	2000-2003
Elected Commissioner – Reading Municipal Light Board	2005-2012
Registered Professional Electrical Engineer in Massachusetts	