

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
For Approval of a Default Service Program : Docket No. P-2015-2526627
And Procurement Plan for the Period :
June 1, 2017 through May 31, 2021 :

DIRECT TESTIMONY

OF

RICHARD S. HAHN

REGARDING PPL ELECTRIC UTILITIES CORPORATION
2017 DEFAULT SERVICE PROGRAM

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

April 20, 2016

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1 **I. INTRODUCTION**

2
3 **Q. Please state your name and business address.**

4
5 A. My name is Richard S. Hahn. My business address is Daymark Energy Advisors
6 (“Daymark”, formerly La Capra Associates), One Washington Mall, Boston,
7 Massachusetts 02108.
8

9 **Q. On whose behalf do you testify in this proceeding?**

10
11 A. I am testifying on behalf of the Pennsylvania Office of Consumer Advocate
12 (“OCA”).
13

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

15
16 A. PPL Electric Utilities Corporation (“PPL”, Company” or the “Applicant”) has
17 filed a Petition for Approval of its fourth Default Service Program (“DSP IV”), through
18 which PPL will procure default service power supplies for the period from June 1, 2017
19 through May 31, 2021. PPL states that it propose to continue many features from their
20 third Default Service Program (“DSP III”), which procures default service power supplies
21 for the period from January 1, 2015 through May 31, 2017, but have proposed several
22 changes. Daymark has been retained by the OCA to assist in the review of the proposed
23 changes. My testimony in this proceeding, which focuses on the plans to procure default
24 service power for residential customers only, presents the analysis, results, and
25 conclusions of Daymark’s review of the Petition. This testimony is complementary to the
26 direct testimony of Ms. Barbara Alexander (OCA Statement No. 2), also on behalf of the
27 OCA.
28

29 **Q. Please summarize your experience and qualifications.**

1 A. I have a Bachelor's of Science in Electrical Engineering ("BSEE") and a Master's
2 of Science in Electrical Engineering ("MSEE") in power systems engineering, and a
3 Master's in Business Administration ("MBA") degree. I have worked in the electric
4 utility business for nearly 46 years. From 1970 to 2003, I worked at NSTAR Electric &
5 Gas ("NSTAR"). I have held many technical and managerial positions in both regulated
6 and unregulated subsidiaries covering all aspects of utility planning, rates, operations,
7 regulatory activities, and finance. In 2004, I joined Daymark. Since then, I have worked
8 on projects related to power procurement, utility planning, rates, mergers and
9 acquisitions, asset valuations, analyzing market rules and prices, and litigation support. I
10 am a registered professional engineer in Massachusetts. My resume is provided in
11 Exhibit OCA-RSH-1.
12

13 **Q. Have you previously testified before this Commission?**
14

15 A. Yes. I have testified before this Commission on behalf of the OCA on several
16 occasions. I recently testified before this Commission regarding FirstEnergy's DSP IV. I
17 testified in the proceedings to review PPL's DSP II and DSP III. I submitted testimony
18 in the Commission's review of PECO's DSP I, II, and III. I also testified in the
19 proceeding to review the proposed default service plan for Allegheny Power. I have
20 testified in several merger cases, including Exelon – Constellation, PECO – NRG,
21 FirstEnergy – Allegheny Energy, PECO – PSEG, and FirstEnergy – GPU. I have
22 provided testimony that reviewed Energy Efficiency plans for Pennsylvania's electric
23 distribution companies ("EDCs"), and have reviewed time of use ("TOU") rates proposed
24 by PPL in two separate dockets. These projects are listed in Exhibit OCA-RSH-1.
25

26 **II. SUMMARY AND RECOMMENDATIONS**

27

28 **Q. Please summarize your conclusions and recommendations.**
29

30 A. My conclusions and recommendations can be summarized as follows:
31

- 1 • The Company’s proposed residential procurement plan, which calls for three
2 quarters of the total residential default service load to be procured at one time
3 should not be approved.
- 4 • The proposed residential procurement plan should be modified as described
5 later in this testimony to include 24-month products. This will cause the
6 amount of residential default service power supplies to be procured at any one
7 time to decrease to 50% from 75%.
- 8 • I support the Company’s proposed plan duration of four years, and
9 recommend that it be approved.
- 10 • I support the proposed a cap of 85% for any supplier in any solicitation and
11 the cap of 50% on the amount of each class’s default service supply that can
12 be provided by any single supplier, and recommend that it be approved.
- 13 • Assuming semi-annual procurements, I support the Company’s proposed
14 schedule for rate changes and reconciliations, and recommend that they be
15 approved.
- 16 • The revisions to the plan documents proposed by the Company are acceptable,
17 and I recommend that they be approved, with one minor modification
18 discussed later in this testimony.

20 **III. OVERVIEW OF THE PETITON**

22 **Q. Please briefly describe the DSP IV proposed by the PPL.**

24 A. The following is a brief description of the Company’s proposed plan for 2017
25 regarding issues that I was asked to address.

- 26 • Competitive procurements for power supply, including energy, capacity,
27 transmission (other than Non-market-based Transmission Services), ancillary
28 services, congestion management costs, transmission and distribution losses,
29 and such other services or products that are required to supply Default Service
30 and AECs, similar to DSP III.

- 1 • 6-month and 12-month Fixed Price Full Requirements Contracts (“FPFRC”)
- 2 for 100% of residential default service load, excluding any remaining 50 MW
- 3 blocks.
- 4 • Each tranche is approximately 100 MW or 2.5% of residential default service
- 5 load.
- 6 • No spot products.
- 7 • Procurements twice per year in April and October.
- 8 • Four-year plan from June 1, 2017, through May 31, 2021.
- 9 • No hard stop on May 31, 2021; some contract terms continue after that date.
- 10 • Continue existing residential Time of Use (“TOU”) rate plan.
- 11 • Proposed Supply Master Agreement (“SMA”) allows contracts to be
- 12 transferred to a third party if PPL is no longer the default service provider.
- 13 • Residential default service costs recovered through GSC-1.
- 14 • Costs incurred on DSP IV prior to June 1, 2017 to be amortized over the 48
- 15 month plan period.
- 16 • GSC-1 revised every six months.
- 17 • Alternative Energy Credits (“AECs”) procurement sized for no significant
- 18 banking, and current cost recovery is proposed.
- 19 • Minor changes have been made to the RFP process (electronic signature and
- 20 submission process), and revised requirements for providing 2-years of
- 21 audited financial.
- 22 • One business day for Commission approval (same as DSP III).
- 23 • NERA continues as third party auction manager.
- 24 • Same contingency plan as DSP III.

25 Exhibit OCA-RSH-2, which I created from Company Supplemental Exhibit JC-3,
26 provides a detailed overview of the proposed residential procurement plan.

28 **IV. DEFAULT SERVICE PROCUREMENT PLAN REQUIREMENTS**

29 **Q. What are the requirements for default service procurement plans?**

1 A. Pennsylvania’s Act 129 of 2008 (the “Act”) establishes the requirements that
2 Pennsylvania’s EDCs must comply with in meeting their default service obligations. The
3 provisions of the Act with respect to the provision of default service power supply are
4 summarized below:

- 5 • Power supply to be acquired through competitive processes.
- 6 • Power supply shall include a prudent mix of spot market, short-term, and long-
7 term (i.e., up to 20 years) contracts designed to ensure reliable service at least cost
8 over time.
- 9 • Long-term contracts may constitute up to 25% of the default service obligation.
- 10 • The default service provider is to recover all reasonable costs under a
11 Commission-approved DSP except in the case of (1) non-compliance with a
12 Commission-approved plan, or (2) fraud, collusion, or market manipulation.
13

14 **V. PROPOSED PLAN STRUCTURE**

15

16 **Q. What is your assessment of structure of PPL’s proposed residential procurement**
17 **plan?**

18
19 A. Figure 1 below summarizes the structure of the plan. The product mix is 45% 6-
20 month FPFRCs, 55% 12-month FPFRCs, and no spot products.
21

**PPL DSP IV MONTHLY
RESIDENTIAL TRANCHES PER
SUPPLEMENTAL FILING**

Tranche Size as a % of Residential
Default Service Load 2.50%

Product	Total Tranches	Total % of Load
6 month FPFRC	18	45.00%
12 month FPFRC	22	55.00%
Spot	0	0.00%
Total	40	100.00%

Figure 1

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2
3
4 **Q. Do you have any concerns with this plan structure?**

5
6 A. One concern that I have is the amount of default service power that is being
7 procured at one time. In the first procurement under the 2017 residential plan, which will
8 occur in April 2017, PPL will procure 22 tranches or 55% of residential default service
9 load. This procurement is done to replace contracts that were or will be signed pursuant
10 to DSP III. However, in subsequent procurements under the 2017 plan, with the
11 proposed product mix and procurement schedule, PPL will be procuring 70% to 75% of
12 the total residential DS load in each solicitation. For example, as shown in Company
13 Supplemental Exhibit JC-3, PPL will procure 70% of its residential default service load,
14 or 28 tranches, in October 2017. In April 2018, PPL will procure 30 tranches, or 75% of
15 its residential default service load. This pattern repeats itself for the remainder of the
16 four-year plan. This pattern is the result of using six-month and 12-month contracts and
17 semi-annual procurements. However, I believe that it is unreasonable to procure three
18 quarters of any power supply portfolio at one time. Such an approach exposes residential
19 default service customers to significant price risk if market prices spike at the time of that

1 procurement. This approach also violates generally accepted principles of power
2 portfolios, where layering and laddering of contracts produces more stable pricing.
3

4 **Q. Is there a way to modify the Company’s proposed residential procurement plan that**
5 **would reduce the amount of default service power supply procured at any one time?**
6

7 A. There are many alternative plans that could be deployed to address this issue.
8 One relatively simple way would be to add 24-month contracts to the supply mix. Under
9 the PPL proposed plan, there are procurements for 12-tranches of 12-month contracts in
10 April 2017 and April 2019. Changing the contract term for these two solicitations to 24
11 months from 12 months would reduce the amount of power procured at any one time to
12 45% to 55%, which is about as low a procurement percentage that can be achieved with
13 semi-annual procurements. Exhibit OCA-RSH-3 provides a detailed summary of this
14 alternative. Figure 2 below shows the supply mix.
15

PPL DSP IV MONTHLY RESIDENTIAL TRANCHES PER ALTERNATIVE 1		
Tranche Size as a % of Residential Default Service Load		2.50%
Product	Total Tranches	Total % of Load
6 month FPFRC	8	20.00%
12 month FPFRC	20	50.00%
24 month FPFRC	12	30.00%
Spot	0	0.00%
Total	40	100.00%

16
17 Figure 2
18

19 **Q. Are there other revisions that would address the issue that you raise?**

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A. Yes. A second alternative plan would be to eliminate six-month FPFRCs, add a small amount (5%) in spot products, and utilize more 24-month contracts (i.e., 18 tranches instead of 12 tranches). This approach will allow a lower percentage of the total portfolio to be procured during some solicitations. Exhibit OCA-RSH-4 provides a detailed summary of this alternative. Figure 3 below shows the supply mix. I believe that either alternative 1 or alternative 2 would be a superior plan to what the Company has proposed.

**PPL DSP IV MONTHLY
RESIDENTIAL TRANCHES PER
ALTERNATIVE 2**

Tranche Size as a % of Residential
Default Service Load 2.50%

Product	Total Tranches	Total % of Load
6 month FPFRC	0	0.00%
12 month FPFRC	20	50.00%
24 month FPFRC	18	45.00%
Spot	2	5.00%
Total	40	100.00%

Figure 3

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Q. Do you advocate the inclusion of spot products?

A. In past testimonies before this Commission, I have advocated the inclusion of spot products in default service supply portfolios. I believe that the portfolio should be as diverse as possible, and including spot products to diversify that portfolio can be done fairly easily. As I read the Pennsylvania statutory requirements, it seems that spot products are required. If the Commission wished to include spot products in PPL’s DSP

1 IV, it can easily be done, as shown in my alternative 2 plan in Exhibit OCA-RSH-4. If
2 the Commission desires a supply portfolio without spot products, that can also be easily
3 implemented. What is important here is that the aspect of the Company's proposed plan
4 that calls for three quarters of the entire portfolio to be procured at one time should not be
5 approved. The inclusion of 24-month contracts can successfully and easily address that
6 concern, and their inclusion is independent of whether six-month products or spot
7 purchases be included.
8

9 **VI. TERM OF PLAN**

10
11 **Q. PPL has proposed a plan duration of four years. How do you respond?**

12
13 A. I support a plan duration of four years, and offered similar support in the most
14 recent FirstEnergy default service plan proceeding. A four year plan will eliminate the
15 cost of one filing. And, if the Company believes that changes are appropriate during the
16 plan duration, then it can petition for such a change. A four year plan duration would not
17 lessen the ability to make needed changes to the procurement process.
18

19 **VII. SOLICITATION AND SUPPLIER LOAD CAP**

20
21 **Q. What does PPL propose for load caps in its 2017 plan?**

22
23 A. PPL proposes a cap of 85% for any supplier in any solicitation. PPL also
24 proposes a cap of 50% on the amount of each class's default service supply that can be
25 provided by any single supplier.
26

27 **Q. How do you respond?**

28
29 A. I support the Company's proposal. In past reviews of default service procurement
30 plans before this Commission, I have advocated for a supplier load cap of 50%. This

1 represents a balance between getting the absolutely lowest price and limiting any
2 exposure if a supplier fails to fulfill its obligation. The load caps proposed by PPL
3 should be approved.
4

5 **VIII. RATE, RECOVERY, AND RECONCILIATION MECHANISMS**

6

7 **Q. What does PPL propose for rate changes, cost recovery, and reconciliations in its**
8 **2017 plan?**
9

10 A. PPL proposes to change residential default service rates every six months, to
11 comport with the new contracts from the semi-annual procurements. PPL also proposes
12 to recover the cost of providing default service via the existing GSC-1 tariff, and to
13 perform reconciliations of default service revenues and expenses every six months.
14

15 **Q. How do you respond?**
16

17 A. I believe that this proposal makes sense, and recommend approval of these
18 mechanisms, provided that the structure of the plan is modified as I recommend in
19 section IV of this testimony. Semi-annual reconciliations comport very well with semi-
20 annual procurements and price changes, and this structure should be included in the
21 Company's plan regardless of the product mix (i.e., whether spot products or 24-month
22 contracts are include or not).
23

24 **IX. PLAN DOCUMENTS**

25

26 **Q. What are the documents that are used to implement the proposed 2017 plan?**
27

28 A. The primary plan documents are the RFP Rules and the SMA. PPL has proposed
29 revisions to these documents to allow electronic submittals, to lessen the filing
30 documentation requirements for counterparties who provide secured credit, and to

1 advance the timing for the submittal of bids by two hours. My review of the red-lined
2 versions of these documents did not uncover material issues. I do note that Section
3 1.1.19 of the RFP Rules has a placeholder for document numbers, presumably for this
4 proceeding. These should be filled in prior to the documents being used.
5

6 **X. CONCLUSION**

7
8 **Q. Does this conclude your testimony?**

9 A. At this time, yes. Should additional information become available through the
10 discovery process, I will seek to supplement this testimony as appropriate.

LIST OF EXHIBITS – SEPARATELY ATTACHED

Exhibit OCA-RSH-1
Resume of Richard S. Hahn

Exhibit OCA-RSH-2
PPL Proposed Residential Procurement Plan
Per Supplemental Filing

Exhibit OCA-RSH-3
Revised Residential Procurement Plan – Alternative 1

Exhibit OCA-RSH-4
Revised Residential Procurement Plan – Alternative 2

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EXHIBIT OCA-RSH-1
ACCOMPANYING THE
DIRECT TESTIMONY
OF
RICHARD S. HAHN
REGARDING PPL ELECTRIC UTILITIES CORPORATION
2017 DEFAULT SERVICE PROGRAM
ON BEHALF OF THE
PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

April 20, 2016

Richard S. Hahn

Principal Consultant

SUMMARY

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, procurement of power supplies and portfolio management, transmission planning, rates, financial analysis, mergers and acquisitions, 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 has testified on numerous occasions before state utility commissions, and has also testified before FERC.

DETAILED CHRONOLOGY – DAYMARK ENERGY ADVISORS, INC.

- Daymark Energy Advisors was retained by the Wisconsin Citizens Utility Board to evaluate the application Wisconsin Power & Light for a Certificate of Public Convenience and Necessity to construct a 650 MW natural gas -fired combined cycle plant. We also reviewed a Purchased Power Agreement that was proposed as an alternative to the new plant.
- Reviewed a purchased power agreement between National Grid and Copenhagen Wind for the Rhode Island Division of Public Utilities and Carriers
- Performed an audit of Rocky Mountain Power Company's 2014 Energy Balancing Account, including a review of the Company's hedging program.
- Reviewed National Grid's 2016 Standard Offer Supply ("SOS") and Renewable Energy Standard ("RES") Procurement Plans
- In 2014 and 2015, Daymark Energy Advisors was retained by the Wisconsin Citizens Utility Board (WI CUB) to evaluate the application American Transmission Company ("ATC") for a Certificate of Public Convenience and Necessity (CPCN) to construct a 345 kV and a 230 KV transmission line from eastern Wisconsin to the Upper Peninsula of Michigan.
- Daymark Energy Advisors was retained by the Citizens Utility Board of Wisconsin (WI CUB) to evaluate the proposed merger between WEC and Integrys. Our assignment was to review the transaction and determine whether it complied with the Wisconsin merger standard, and if not, to develop implementable actions to ensure compliance.
- Maine Public Utilities Commission ("MPUC") retained Daymark Energy Advisors to evaluate possible non-transmission alternatives ("NTAs") to a proposed transmission substation and other ancillary transmission upgrades in the Lakes Region. This transmission project is proposed by Central Maine Power Company ("CMP"). CMP has filed for a Certificate of Public Convenience and Necessity ("CPCN") for the proposed transmission enhancements and its filing states that this project is needed to resolve reliability concerns. Daymark Energy Advisors performed an independent reliability assessment and developed Alternative Resource Configurations ("ARCs") that could serve as NTAs and adequately

address the reliability issues over the 2015 to 2030 planning horizon for this project. Daymark Energy Advisors also performed a life-cycle economic analysis of the ARCs versus the transmission project.

- Maine Public Utilities Commission (“MPUC”) retained Daymark Energy Advisors to evaluate possible non-transmission alternatives (“NTAs”) to a proposed transmission substation and other ancillary transmission upgrades in the Waterville-Winslow Region. This transmission project is proposed by Central Maine Power Company (“CMP”). CMP has filed for a Certificate of Public Convenience and Necessity (“CPCN”) for the proposed transmission enhancements and its filing states that this project is needed to resolve reliability concerns. Daymark Energy Advisors performed an independent reliability assessment and developed Alternative Resource Configurations (“ARCs”) that could serve as NTAs and adequately address the reliability issues over the 2015 to 2030 planning horizon for this project. Daymark Energy Advisors also performed a life-cycle economic analysis of the ARCs versus the transmission project.
- Reviewed and analyzed a proposed pilot program to implement a new street lighting program in Rhode Island that included metered, directly controlled LED street lights
- Reviewed and analyzed a risk assessment model prepared by Black and Veatch for Duke Energy Indiana, which was utilized to identify investments for the replacement of Transmission and Distribution (“T&D”) infrastructure for its Transmission, Distribution, and Storage System Improvement Charges 7-year plan (“T & D Plan”)
- Reviewed the Application of Rocky Mountain Power seeking approval from the Public Service Commission of Utah to increase electric rates. The scope of the assignment was to review the proposed additions to plant in-service
- Performed an audit of Rocky Mountain Power Company's 2013 Energy Balancing Account, including a review of the Company's hedging program.
- Performed an asset valuation to estimate the market value of all power plants owned by Public Service of New Hampshire. Presented results to the New Hampshire Public Utilities
- Reviewed a proposed Default Service Procurement Plan for PECO Energy for 2015-2017
- Reviewed a proposed Default Service Procurement Plan for PPL Electric Utilities for 2015-2017
- Reviewed a request by Wisconsin Public Service to increase retail rates.
- Reviewed and analyzed a proposed tariff and related documents for Rhode Island to acquire street lighting assets owned by NGRID. Presented findings to the Rhode Island Public utilities Commission.
- Analyzed a proposed interconnection of a 30mw off-shore wind project to the ISO New England grid. Presented findings to the Rhode Island Public Utilities Commission
- Reviewed NGRID's 2014 Electric Retail Rate Filing requesting Commission approval of various charges and adjustment factors as well as NGRID's 2014 RES Charge and Reconciliation filing.
- Reviewed proposed TOU rates by PPL Electric on behalf of the Pennsylvania Office of Consumer Advocate
- 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
- Reviewed the adequacy of the supply of renewable energy certificates for 2015 and 2016 for impact on the Rhode Island Renewable Energy Standard

- Reviewed a purchased power agreement between National Grid and Champlain / Bowers Wind for the Rhode Island Division of Public Utilities and Carriers
- Daymark Energy Advisors 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.
- Served as an advisor to the Belmont Municipal Light Department in its efforts to upgrade its transmission interconnection to 115KV
- Performed an assessment of the proposed merger of Peoples Natural Gas and Equitable Gas Company for the Pennsylvania Office of Consumer Advocate.
- 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.
- Performed an audit of Rocky Mountain Power's 2012 Energy Balancing Account, including a review of the Company's hedging program.
- 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
- Served as a member of a Daymark Energy Advisors team advising the Arkansas Public Service Commission Staff regarding Entergy's Application to transfer ownership of transmission assets to ITC
- Reviewed and analyzed NGRID proposed 2013 LTCRER factor; provided written comments to RI PUC
- Reviewed Rocky Mountain Power Company's Energy Balancing Account filing for 2011; filed testimony before the Utah PSC
- Reviewed NGRID proposed tariff revisions for recovery of Long-Term Renewable Energy Contracts; provided written comments to RI PUC
- Analyzed proposed environmental upgrades to the Flint Creek coal unit in Arkansas; filed written testimony before the Arkansas PSC
- WI CUB WEPCO 2013 Rate Case; review prudence of capital and fuel costs; filed written testimony before the Wisconsin PSC
- 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
- Reviewed proposed 2013 -2015 Default Service Procurement Plan for PPL Utilities; filed written testimony before the Pennsylvania PUC.
- 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.
- 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.
- 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.
- 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.

- Reviewed proposed 2013 -2015 Default Service Procurement Plan for PECO Energy on behalf of the Pennsylvania Office of Consumer Advocate
- 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
- Analyzed the request to the Wisconsin Public Service Commission for a CPCN for the Hampton - Rochester - La Crosse Baseline Reliability Project
- 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
- Reviewed the proposed merger between Exelon and Constellation Energy for its impact on market power; filed testimony before the Pennsylvania Public Utilities Commission
- 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
- 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
- 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
- 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
- Analyzed proposed ceiling prices for Distributed Generation procurement for the Rhode Island Division of Public Utilities and Carriers in Docket 4288
- Reviewed proposed changes to National Grid's Distributed Generation Enrollment Process for the Rhode Island Division of Public Utilities and Carriers in Docket 4276
- Reviewed proposed changes to National Grid's interconnections standards for the Rhode Island Division of Public Utilities and Carriers in Docket 4277
- 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
- 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
- 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
- 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

- Analyzed the De-List Bid submitted by Vermont Yankee in ISO-NE capacity auctions. Filed statement at FERC presenting the results of that assessment.
- 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
- 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
- Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Ascutney Vermont
- 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
- Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Bennington Vermont
- Prepared follow-on analysis of Utah resource acquisition in rate case in Docket 10-035-124
- 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 Daymark Energy Advisors' assessment of strategic options for Entergy Arkansas, Inc. subsequent to its withdrawal from the Entergy System Agreement
- 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
- Conducted a study of non-transmission alternatives to a proposed substation and related transmission upgrades in Jay, Vermont
- Reviewed and evaluated the construction and cost recovery of 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 in Docket 4149.
- Served as an advisor to the Pennsylvania Office of Consumer Advocate in reviewing 2011 default service plans for PECO Energy
- Served as an advisor to the Pennsylvania Office of Consumer Advocate in reviewing 2011 default service plans for PPL Electric Utilities.
- 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 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.
- 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.
- 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 its 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 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.
- 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.
- Served as a key member of a Daymark Energy Advisors 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 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.
- Analyzed proposed environmental upgrades to the Columbia Energy Center 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.

- 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.
- 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 Daymark Energy Advisors 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 power plant 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 power plants.
- 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

Daymark Energy Advisors, Inc. (formerly 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

VP, Technology, Research, & Development

Boston, MA

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

Engineering co-op student

1970-1973

EDUCATION

Boston College

Masters in Business Administration

Boston, MA

1982

Northeastern University

Masters in Science, Electrical Engineering

Boston, MA

1974

Northeastern University

Bachelors in Science, Electrical Engineering

Boston, MA

1973

PROFESSIONAL AFFILIATIONS

Director, La Capra Associates, Inc.

2005-2015

Elected Commissioner – Reading Municipal Light Board

2005-2012

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

Registered Professional Electrical Engineer in Massachusetts

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
For Approval of a Default Service Program : Docket No. P-2015-2526627
And Procurement Plan for the Period :
June 1, 2017 through May 31, 2021 :

EXHIBIT OCA-RSH-2
ACCOMPANYING THE
DIRECT TESTIMONY
OF
RICHARD S. HAHN
REGARDING PPL ELECTRIC UTILITIES CORPORATION
2017 DEFAULT SERVICE PROGRAM
ON BEHALF OF THE
PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

April 20, 2016

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
For Approval of a Default Service Program : Docket No. P-2015-2526627
And Procurement Plan for the Period :
June 1, 2017 through May 31, 2021 :

EXHIBIT OCA-RSH-3
ACCOMPANYING THE
DIRECT TESTIMONY
OF
RICHARD S. HAHN
REGARDING PPL ELECTRIC UTILITIES CORPORATION
2017 DEFAULT SERVICE PROGRAM
ON BEHALF OF THE
PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

April 20, 2016

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
For Approval of a Default Service Program : Docket No. P-2015-2526627
And Procurement Plan for the Period :
June 1, 2017 through May 31, 2021 :

EXHIBIT OCA-RSH-4
ACCOMPANYING THE
DIRECT TESTIMONY
OF
RICHARD S. HAHN
REGARDING PPL ELECTRIC UTILITIES CORPORATION
2017 DEFAULT SERVICE PROGRAM
ON BEHALF OF THE
PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

April 20, 2016

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
For Approval of a Default Service Program : Docket Nos. P-2016-2526627
And Procurement Plan for the Period :
June 1, 2017 through May 31, 2021

VERIFICATION

I, Richard S. Hahn, hereby state that the facts above set forth in my Direct Testimony, OCA Statement No. 1 are true and correct and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

Signature:



Richard S. Hahn

Consultant Address: Daymark Energy Advisors
One Washington Mall, 9th Fl.
Boston, MA 02108

DATED: April 20, 2016