
AFFIDAVIT OF ROBERT M. FAGAN

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Power Providers Group

v.

PJM Interconnection, L.L.C.

PJM Interconnection, L.L.C.

Docket No. EL11-20-000

Docket No. ER11-2875-000

(not consolidated)

AFFIDAVIT OF ROBERT M. FAGAN
ON THE BEHALF OF THE
NEW JERSEY DIVISION OF RATE COUNSEL

I. Introduction and Summary

1. My name is Robert M. Fagan. I am a Senior Associate at Synapse Energy Economics, an energy consulting firm in Cambridge, Massachusetts. My professional experience is focused on various technical, economic and regulatory issues in the energy utility industry. I am an energy economics analyst and mechanical engineer with over 20 years of experience in the energy industry. My work has focused primarily on electric power industry issues, especially economic and technical analysis of competitive electricity markets development, electric power transmission pricing structures, assessment and implementation of demand-side resource alternatives, and assessment of different aspects of utility-scale wind power. I hold an M.A. from Boston University in Energy and Environmental Studies and a B.S. from Clarkson University in Mechanical Engineering. I have testified before numerous State utility regulatory commissions, Canadian Provincial regulatory authorities, and the FERC on various electric utility policy issues. My resume is included as Attachment 1 to this affidavit.

2. I have been asked by the New Jersey Division of Rate Counsel (“Rate Counsel”) to summarize electric power reliability concerns in New Jersey, to document the status of electric power generation capacity in the state of New Jersey, and to describe current electric power procurement policies in the state and how they relate to PJM’s wholesale electric power capacity construct, known as the Reliability Pricing Model (“RPM”).

3. Based on the information contained in this affidavit, I conclude that the combination of PJM generation retirement concerns; transmission system planning concerns; existing, currently-planned and potential future exports to New York; and limited new unit generation construction arising from PJM's RPM construct illustrates that New Jersey policies to promote baseload and mid-merit generation investment through long-term contracts is a logical and sensible response to the state of the electric system in New Jersey and eastern PJM.

Background of New Jersey's System

4. The Electric Discount and Energy Competition Act of 1999 ("EDECA" or "Act"), N.J.S.A. 48:3-49 et seq., deregulated the New Jersey's electric industry. Since 1999, the four New Jersey Electric Distribution Companies (EDCs), Public Service Gas & Electric Company ("PSE&G"), Atlantic City Electric Company ("ACE"), Jersey Central Power & Light Company ("JCP&L"), and Rockland Electric Company ("RECO") (collectively, the "EDCs") have divested themselves from almost all of their generation assets. Since 2002, the EDCs have procured several billion dollars of electric supply on a yearly basis to serve their Basic Generation Service ("BGS") customers who are not served by a third party supplier or competitive retailer through a statewide auction process called the BGS Auction. The BGS Auction consists of two auctions that are held concurrently, one for larger customers on an hourly price plan ("BGS-CIEP") for a one year term and one for smaller commercial and residential customers on a fixed-price plan ("BGS-FP") laddered for one third of the load every year for a three year term. BGS CIEP and BGS-FP procurement is done in February, roughly four months prior to the commencement of the period in which winning BGS suppliers hold the load serving entities obligation for New

Jersey customers. A large portion of the State's load is purchased through the BGS Auction.

5. Because the BGS procurement auction has not been held for the 2014/2015 PJM planning year (i.e., for June 1, 2014 through May 31, 2015, also known as the 2015 Energy Year for New Jersey load suppliers) the entities that would supply this load, and take on the load serving entity obligation in the PJM marketplace for this period are unknown. Thus, at least for all but third-party supplied load (and perhaps for some of this load as well) the direct counterparty¹ that might be willing to consider self-supply arrangements under PJM RPM auction rules for the next PJM Base Residual Auction ("BRA")(in May of 2011 for PJM planning year 2014/2015) does not exist. In other words, there is no provider with an obligation to serve most² of New Jersey's load beyond May 2014, so there is no private party that could enter into a long-term capacity contract without incurring an unacceptable level of risk.
6. The risk of having no private entity willing or able to enter into long-term capacity contracts was foreseen in the development of the RPM market design; specifically for this reason, states retained the right to act as a counterparty themselves, to order needed capacity to be built and to be treated as self-supply in PJM's BRA. This recognition of state-level procurement arrangements has implications for the manner in which self-supply of any type could be arranged under current procurement practices.

¹ In this instance, the direct counterparty would be the buyer of power or the load serving entity, considering a purchase from the other counterparty, the generation seller. The buyer is "self" supplying by contracting with a generation seller.

² BGS load in New Jersey recently has ranged from roughly 72% (2009) to as much as 80% (2006) of total retail load. Data available at <http://www.bgs-auction.com/bgs.dataroom.asp>.

7. New Jersey procures solar capacity resources using long-term contracting approaches and those resources clear in the PJM RPM BRA. New Jersey is in the process of structuring forms of long-term contracting arrangements for offshore wind power, and it is anticipated that the capacity value associated with such wind generation would be offered, and would clear, in the PJM RPM auctions.
8. All of New Jersey is contained within the Eastern MAAC local deliverability area (“LDA”) of PJM. EMAAC is a relatively dense load region within PJM that has continually exhibited relatively high energy and capacity prices, and along with New Jersey utility service territories of PSE&G and JCP&L, is a “load deliverability” region of concern for PJM’s transmission planners.³ The forecast peak load for EMAAC as published by PJM for the 2014/15 period is 33,678 MW.⁴ Within the EMAAC LDA, two nested New Jersey LDAs exist – known as PS (Public Service Electric and Gas) and PS NORTH (the northern region of PS). The fact that these nested areas have been designated as LDAs by PJM does not necessarily mean that they will be constrained in every PJM RPM BRA; however, the PS North region has been binding in some of the RPM auctions, leading to significantly higher capacity prices than in the PJM region as a whole. The resulting BRA capacity clearing prices for PJM as a whole and for each of these LDAs are shown in Figure 1 below.

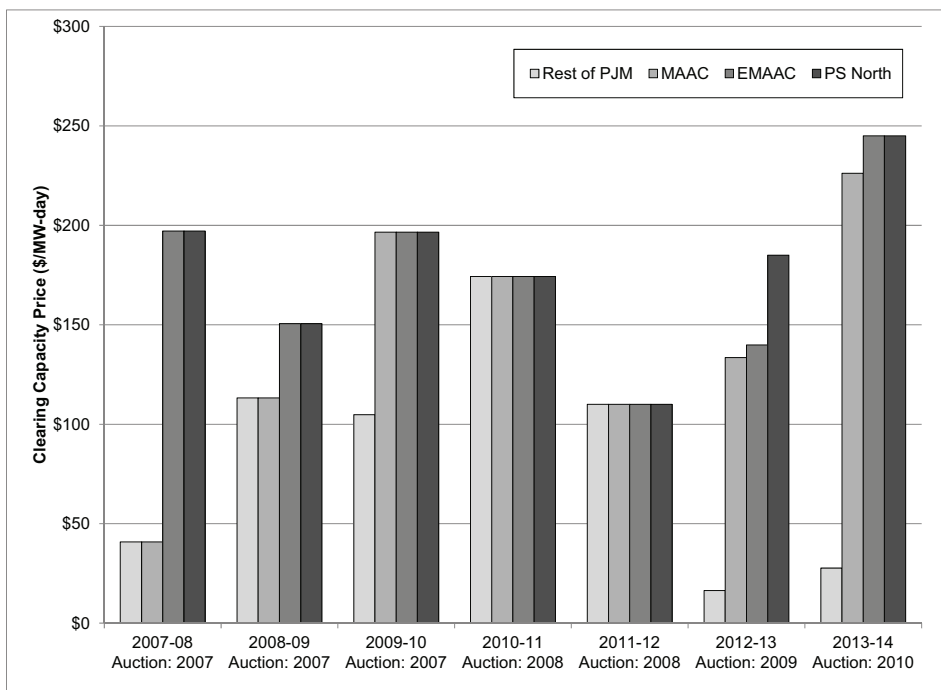
³ In PJM-sponsored testimony in support of the proposed Susquehanna-Roseland 500 kV transmission line into northern New Jersey, PJM had forecasted reliability violations based on requirements to deliver to load in the PSE&G and JCP&L service territory and Eastern MAAC regions.

⁴ 2014/15 Planning Period Parameters, available at <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/rpm-bra-planning-parameters-2014-2015.ashx>.

9. Figures 1 below shows average PJM capacity prices for MACC, EMAAC, and PS North region and for the rest of PJM. PJM wholesale capacity costs are highest in the eastern PJM regions including New Jersey.

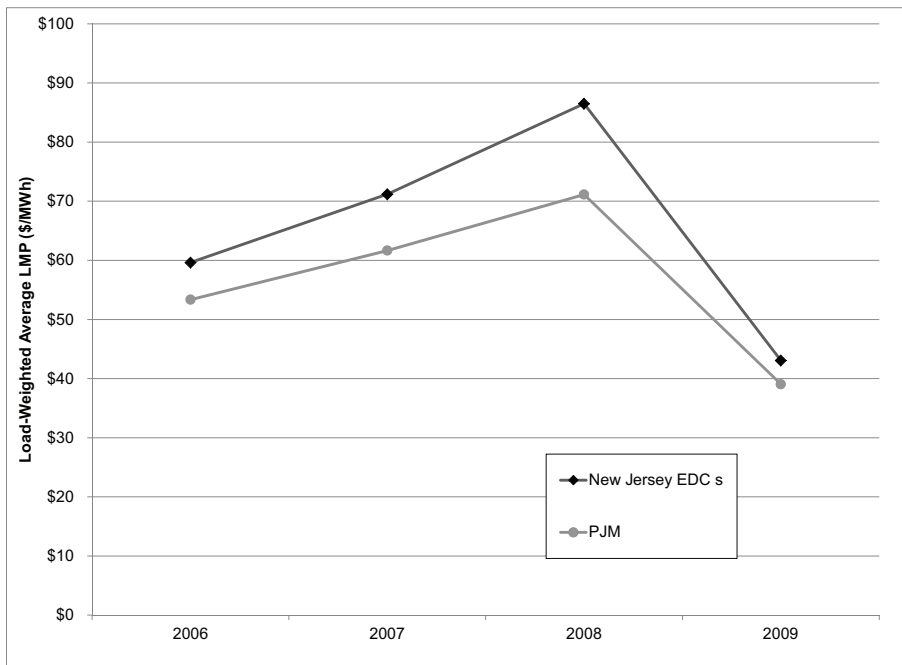
Figures 1 and 2 illustrate the relatively high electricity prices in the New Jersey EDCs, in comparison to prices in the PJM RTO as a whole.

Figure 1. PJM Base Residual Auction Clearing Prices Since Inception of RPM



Source: PJM RPM auction clearing prices, compilation by Synapse.

Figure 2 PJM Average Annual Load Weighted Energy Prices – NJ EDC Zones, PJM



Source: PJM State of the Market Report, 2006-2009 compilation by Synapse.

10. NJ currently relies on imports from more western PJM regions. PJM reported that New Jersey imports comprised 27% of its energy consumption in 2009.⁵ New Jersey is currently reliant on out-of-state imports to meet reliability requirements. PJM has reported that up to 11,000 MW of coal-fired power plants are at risk of retirement.⁶
11. Recently completed merchant transmission lines with a firm transfer capacity of almost 1,000 MW significantly increase the export of power from New Jersey to New

⁵ PJM Presentation to NJ BPU, June 24, 2010, slide 18.

(<http://www.bpu.state.nj.us/bpu/pdf/energy/HERLING%20AND%20KORMOS.pdf>)

⁶ PJM comments to NJ BPU, following the June 24, 2010 technical conference, page 8: “Mr. Kormos also noted that there are between 10,000 MW and 11,000 MW of coal resources in the PJM region, including New Jersey, which may be at risk for retiring due to an inability to recover their fixed, avoidable costs, according to analysis performed by the PJM Independent Market Monitor in the 2009 State of the Market Report.”.

(http://www.bpu.state.nj.us/bpu/pdf/energy/PJM_comments.pdf)

York.⁷ Another New York merchant transmission project (660 MW) is planned for operation in 2013.⁸ Additional merchant projects for further export from New Jersey to New York are discussed in the PJM RTEP report.⁹ All such exports increase the need to ensure reliability in New Jersey and eastern PJM and further support a need for increased capacity resources in the region.

II. New Jersey Electric Power System Reliability and Capacity Concerns

12. The Legislature's enactment of P.L. 2011, c. 9 the Long-Term Capacity Agreement Pilot Program Act ("LCAPP Act") followed a series of public statements and events that raised specific reliability concerns. These events included delays in the construction of new transmission and transmission upgrades, anticipated retirements of existing capacity, and the failure of RPM to encourage new capacity. The statements included PJM forecasts and statements and testimony from PJM officials.
13. In recent RTEP compilations, PJM has repeatedly warned of eastern PJM reliability concerns that can only be alleviated by increased generation resources in the region or increased transmission into the region.¹⁰ In the sections entitled "New Jersey Overview" sections of both the 2008 RTEP and 2009 RTEP compilations, PJM expressed concern that "reliability criteria violations will continue to be identified in New Jersey and other areas of eastern Mid-Atlantic PJM where similar conditions

⁷ The Neptune line, completed in 2007, supports the transfer of 670 MW of power to Long Island. The Linden VFT project, completed in 2010, supports the transfer of 300 MW of power to New York City.

⁸ For example, the Hudson Transmission Partners project will support transfer of an additional 660 MW of power from New Jersey to New York. The project is planned for operation in 2013. (<http://hudsonproject.com/project/status/>).

⁹ PJM RTEP 2009, p. 272.

¹⁰ PJM 2008 RTEP, p.209-210, PJM 2009 RTEP p. 261-262 .

exist.”¹¹ The conditions referenced include both load growth and generation retirements, as well as the failure to develop new generation and transmission solutions.

14. PJM further noted in the RTEP 2009 that:

the absence of these [recently deactivated] units has a quantifiable impact on baseline reliability in New Jersey, compounded by forecasted summer peak load growth and sluggish new generation development. A significant number of these deactivations are clustered in Northern New Jersey. Major transmission upgrades [are] required to address baseline reliability issues driven by these deactivations together with other known baseline reliability transmission needs.¹²

15. The RTEP 2008 and RTEP 2009 New Jersey Overview sections conclude that: together, these [system reliability trends] collectively have a sustained negative impact [on] system reliability in New Jersey and throughout eastern Mid-Atlantic PJM. The extent to which eastern Mid-Atlantic PJM continues to rely on transfers into the area to meet load-serving needs drives the identification and timing of NERC reliability criteria violations.¹³

16. PJM does not conduct integrated resource planning and is not able to direct the construction of generation to resolve reliability concerns.¹⁴ Therefore, to address these identified reliability concerns, PJM ordered the construction of a backbone 500 kv transmission line from Pennsylvania into northern New Jersey called the Susquehanna-Roseland line.

17. The Susquehanna-Roseland Line is a new 145 mile 500 kV transmission line and an upgrade of an existing 230 kV line from Susquehanna, Pennsylvania to Roseland,

¹¹ Ibid.

¹² RTEP 2009 p. 269.

¹³ RTEP 2009 p. 273; RTEP 2008 p. 222.

¹⁴ Herling Direct Testimony, In The Matter of the Petition Of Public Service Electric And Gas Company For A Determination Pursuant To The Provisions of N.J.S.A. 40:55d-19 (Susquehanna – Roseland Transmission Line), BPU Dkt. No. EM09010035, Decision and Order (April 10, 2010) (“Susquehanna-Roseland Final Order”), p. 13. <http://www.pseg.com/family/pseandg/powerline/pdf/BPUwrittenorder.pdf>

- New Jersey. Total cost is estimated at approximately \$1.2 billion, with the NJ portion costing approximately \$750 million for its 45 miles. On October 9, 2007, PSE&G received a notice from PJM to build the NJ portion of the project.¹⁵
18. NJ BPU held public and evidentiary hearings on the project during 2009 and early 2010. The record from these hearings included testimony that PJM performs a five-year and a fifteen-year baseline analysis to assess compliance with reliability criteria and that there were 23 violations identified in the 2007 RTEP, showing the need for the project. The 2008 RTEP and the 2009 Retool Update confirmed there were violations occurring as early as 2012. During a February 4, 2010 supplementary hearing, Steven Herling of PJM stated that the 2010 peak load forecasts were almost identical to those in the 2009 load forecast. During the hearing, Mr. Herling noted that since 2003, 5862 MW of generation has retired and 7500 MW of generation is over 40 years old in the eastern Mid-Atlantic area of PJM.
19. At the hearings, PJM asserted the imminent need for the proposed Susquehanna-Roseland 500 kV transmission line, due to reliability concerns. The reliability of the region is at risk, according to PJM, in part because of concerns regarding generation plant retirement. Testimony from Mr. Herling of PJM illustrated the nature of concern over potential generation retirement in the eastern part of PJM:
- “Since 2003, fifty-six generators have been retired, removing 5862 MW from service. Almost 1250 MW of these generators were in the eastern Mid-Atlantic region of PJM.

¹⁵ Susquehanna-Roseland Final Order, p. 10
<http://www.pseg.com/family/pseandg/powerline/pdf/BPUwrittenorder.pdf>

- There are approximately 7500 MW of generation over 40 years old in the eastern Mid-Atlantic area of PJM.
- In the most recent base residual RPM auctions, 5211 MW of generation capacity failed to clear for the 2011/12 period and 6346 MW failed to clear for the 2012/13 period. Absent a revenue stream for installed capacity, if energy revenues are reduced these generators would have to be considered at risk for retirement. Of these uncleared MW, 50% and 28%, respectively, are in the eastern Mid-Atlantic area for the 2011/12 and 2012/13 periods.
- There are 1130 MW of older coal units in the eastern Mid-Atlantic area of PJM of a size less than 200 MW. As carbon restrictions are implemented, these resources will become at greater risk to be retired and removed from service. If energy use is significantly reduced, it will be very difficult to justify the investment required to operationally maintain these resources.
- In the one year period from June 2008 through May 2009, 102 units (3061 MW) in the eastern Mid-Atlantic region of PJM operated for less than 100 hours. 79 of these units (1848 MW) operated for less than 50 hours.

The conclusion which can easily be reached from this information is that the combination of unit age, environmental restrictions, reduced or non-existent revenue streams and limited operation put a considerable amount of generation in the eastern portion of PJM at risk for retirement.”¹⁶

¹⁶ Source: Rebuttal Testimony, Mr. Steven Herling, before the NJ BPU, In The Matter of the Petition Of Public Service Electric And Gas Company For A Determination Pursuant To The Provisions of N.J.S.A. 40:55d-19 (Susquehanna – Roseland Transmission Line) BPU Dkt. No. EM09010035, pgs. 9-10, (Attachment 2 hereto).

20. In echoing Mr. Herling’s opinion that the Susquehanna-Roseland upgrades are imperative, Mr. Esam A. F. Khadr, Director – Electric Delivery Planning in the Electric Delivery Department of PSE&G submitted testimony in support of the need for the construction of the transmission line. Mr. Khadr added that after his review of PJM’s RTEP studies he agreed that the Project will address the reliability violations and that it will provide the best solution from reliability and planning perspective. He stated that in his opinion, there would be overloaded circuits to serve the northern New Jersey load beginning in the year 2012 if the Project is not placed into service, which would likely cause PJM and the transmission owners to implement emergency operating procedures, such as reducing transmission system voltages (“brown-outs”) or implementing rolling black-outs for network transmission service customers.¹⁷
21. The BPU orally unanimously approved the project on February 11, 2010 and the written order was issued on April 21, 2010.
22. After receiving BPU approval, PSE&G notified PJM that the in-service date for the eastern portion of the project has been delayed by 2 years to 2014 with the in-service date for the western portion of the line delayed until 2015. The delays are due to on-going environmental permit reviews. The National Park Service (“NPS”) is performing an Environmental Impact analysis as a permit is needed from the NPS for the line to cross the Delaware Water Gap National Recreation Area, the Appalachian National Scenic Trail and the Middle Delaware National Scenic and Recreational River.

¹⁷ Susquehanna-Roseland Final Order”, p. 10
(<http://www.pseg.com/family/pseandg/powerline/pdf/BPUwrittenorder.pdf>)

23. The delay in the construction of the Susquehanna-Roseland line magnified the concerns of PJM regarding reliability criteria violations in New Jersey. In a June 2010 letter to the New Jersey Department of Environmental Protection urging construction of a portion of the line, Mr. Herling stated “PJM identified the need for the Project to resolve a number of reliability criteria violations that are expected to occur as early as 2012 and extend out through our 15-year planning horizon.” Mr. Herling stated further,

Recognizing that the Hopatcong West Portion will likely be delayed, PJM will be developing specific operational procedures to manage the risk to the reliability of the region. These procedures will define, among other things, the circumstances under which service to customers in northern New Jersey will have to be curtailed to minimize the potential for broader service disruptions. Should the Hopatcong East portion of the line not be completed before June 1, 2012, such procedures will also need to be developed to address the reliability issues that are to be resolved by that portion of the line.¹⁸

24. The NJ BPU held a one-day technical conference on electric power capacity in New Jersey on June 24, 2010. At that conference, PJM presented summary information on New Jersey electric loads, generation capacity, demand response, and capacity additions in New Jersey.¹⁹ The New Jersey Department of Environmental Protection (“NJ DEP”) presented information on “Air Quality Regulation of Generating Units”,

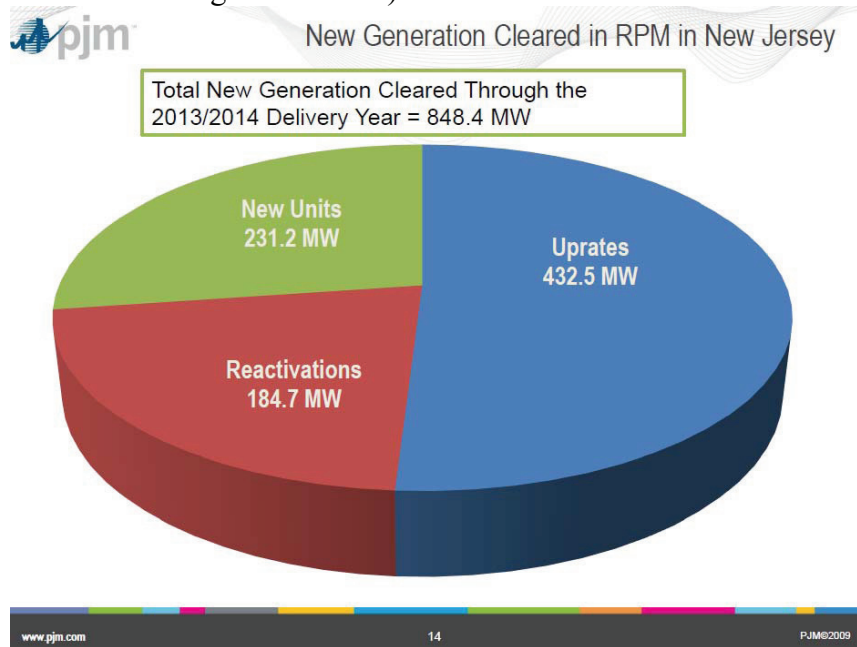
¹⁸ June 17, 2010 letter from Steven Herling, PJM to Lou Cattuna, NJDEP (Attachment 3 hereto).

¹⁹ Steve Herling and Mike Kormos, PJM, Presentation to New Jersey Board of Public Utilities, “New Jersey Power Supply, Load and Capacity Data”, New Jersey Capacity Issues Technical Conference, June 24, 2010. (<http://www.bpu.state.nj.us/bpu/pdf/energy/HERLING%20AND%20KORMOS.pdf>)

including data on the quantity of generation subject to forthcoming emission regulation.²⁰

25. At the technical conference, PJM presented summary information on capacity additions cleared through the first seven PJM RPM auctions held since 2007.²¹ As seen in the chart below, PJM reported that a cumulative total of 231.2 MW of New Jersey, new unit capacity has cleared the PJM RPM BRA. PJM does not report exactly which units comprise that 231.2 MW. A total of 617.2 MW of “uprates” and “reactivations” in New Jersey have also cleared the RPM auctions.

Figure 3. PJM: New Jersey Capacity Cleared Through the First Seven PJM RPM Auctions (2007/2008 through 2013/2014)



Source: PJM Presentation to NJ BPU, June 24, 2010, Slide 14.

²⁰ William O’ Sullivan, P.E., Director, Division of Air Quality, New Jersey Department of Environmental Protection, “Air Quality Regulation of Electric Generating Units”, Presentation to New Jersey Board of Public Utilities, June 24, 2010. <http://www.bpu.state.nj.us/bpu/pdf/energy/OSULLIVAN%20NJDEP.pdf>

²¹ The first RPM Base Residual Auction was held for the planning year 2007/2008, which began June 1, 2007 and ended May 31, 2008.

26. Table 1 below summarizes the electric power capacity in New Jersey up to January 1, 2009, by commercial operation vintage, based on the latest web-posted version of PJM’s EIA 411 database. Without PJM’s unit-specific data on the makeup of units that cleared RPM auctions, it is not possible to map the 231.2 MW of BRA-cleared New Jersey new-unit generation to data in the PJM EIA 411 database.

Table 1. PJM EIA 411 - Electric Power Nameplate Capacity in New Jersey, by Vintage and Plant Type, January 1, 2009

Year of Commercial Operation	Combined Cycle	Combustion Turbine	Hydro/Pumped Storage	Intern. Combustion / Other	Steam	Total
Pre-2000	2,375	3,803	464	31	8,142	14,815
2000		434				434
2001		242		4		246
2002	1,516					1,516
2003		383				383
2004						
2005						
2006						
2007						
2008						
Total	3,891	4,862	464	35	8,142	17,394

Source: PJM EIA 411 Database, data as of January 1, 2009.

27. Based on this data source²², there have been no additional capacity installations in New Jersey since the FERC approval of RPM in 2006. However, PJM’s interconnection queue does contain additional capacity recorded as “in-service” in

²² The EIA 411 data is publicly posted on PJM’s website at <http://www.pjm.com/documents/reports/~media/documents/reports/2009-pjm-eia-411-data.ashx>. PJM indicated via email that the new version of the EIA 411 report would not be posted on the PJM website until June 2011.

- 2006, 2007 and 2008. These capacity increases are apparently at existing sites whose original commercial operation dates were earlier than 2006.
28. PJM reports New Jersey utility service territory demand response and energy efficiency peak reduction Unforced Capacity (“UCAP”) cleared through the RPM auctions for the most recent auction (2013/2014 planning year) as 1,572.3 MW.²³
29. The total peak load in New Jersey is roughly 20,000 MW²⁴, and existing (2010) electric power capacity in New Jersey is roughly 17,000 MW²⁵. For those hours where New Jersey load is at its peak, the state’s capacity needs are met with both in-state and out of state capacity resources.²⁶ Thus, since RPM inception and over the course of seven separate annual planning period Base Residual Auctions, new units located in New Jersey and cleared through RPM represent roughly 1.4% of the state’s existing capacity (231.8/17,000) and roughly 1.2% of the state’s peak load (231.8/20,000).

²³ PJM 2013/2014 RPM Base Residual Auction Results, “Table 2B – Comparison of Demand Resources and Energy Efficiency Resources Offered versus Cleared in the 2013/14 BRA, represented in UCAP”, page 7. The sum of cleared DR and EE in the four New Jersey zones AECO, JCPL, PS and RECO is 1,572.3 MW.

²⁴ PJM Presentation to NJ BPU, June 24, 2010, slide10. The January 2011 PJM Load Forecast Report lists 2010 normalized peak load for the four New Jersey utilities as 20,160 MW (equal to the sum of the four non-coincidental peak values for AE, JCPL, PS, and RECO, as reported on Table B-1, page 34).

²⁵ PJM Presentation to NJ BPU, June 24, 2010, slide9. PJM’s current EIA 411 data posting (data as of January 1, 2009) indicates 17,394 MW (nameplate capacity) and 16,859 MW (summer eRPM capacity).

²⁶ The ability to import energy into New Jersey is reflected by the Capacity Emergency Transfer Limit (CETL) reported by PJM. This value is reported for LDAs in PJM. For example, in the 2012/2013 RPM Base Residual Auction Planning Parameters document (available at <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/2012-2013-rpm-planning-parameters.ashx>) PJM reports an Eastern MAAC LDA CETL of 9,079 MW, a PS (Public Service Electric and Gas) CETL of 6,356 MW, an Atlantic Energy (AE) CETL of greater than 2,127MW, and a JCPL CETL of greater than 5,002 MW. PS, AE and JCPL are nested LDA zones within the Eastern MAAC LDA. The total import CETL for New Jersey from regions west of NJ is a subset of the Eastern MAAC CETL (Eastern MAAC also includes the Philadelphia area (PECO LDA - >2,323 MW CETL) and the Delmarva peninsula south (DPLSouthLDA - 1,746 MW CETL). PJM does not report a New Jersey CETL in the BRA Planning Parameters document.

30. The normalized summer peak load in 2000 for the four New Jersey service territories was roughly 17,785 MW.²⁷ 2010 summer peak normalized load in New Jersey was 20,160 MW, and PJM currently forecasts a 2020 total New Jersey utility service territory peak load of 22,494 MW.²⁸ PJM load forecasts are updated annually, and can change considerably from year to year. Reliability concerns are further exacerbated if actual load is greater than forecast load. From 2000 to 2010, normalized peak load growth was 2,375 MW or 13.3%. Projected summer peak growth between 2010 and 2020 is 2,332 MW, or roughly 11.6%.
31. While load continues to grow, anticipated retirements in EMAAC may reduce supply. At the June 2010 NJ BPU technical conference, the NJ Department of Environmental Protection (“NJ DEP”) presented information on the existence of 7,800 MW of “High Electric Demand Day” (“HEDD”) units in New Jersey. Those units consist of “low efficiency, high operation cost electric generating units used during periods of high electric demand”.²⁹ A subset of these units are at risk of retirement due to emission regulations forthcoming over the next four to six years. Of these 7,800 MW, all are currently subject to phase I NOx restrictions, and 4,630 MW will be subject to phase

²⁷ PJM Load Forecast Report, February 2001, Table B-1. JCPL normalized load for 2000 is estimated based on the GPU normalized load for 2000 and the share of GPU load for JC in 2001. RECO is estimated at 400 MW, based on a 2001 normalized load of 410 MW as reported in the PJM 2002 Load Forecast report, as RECO only joined PJM in 2002.

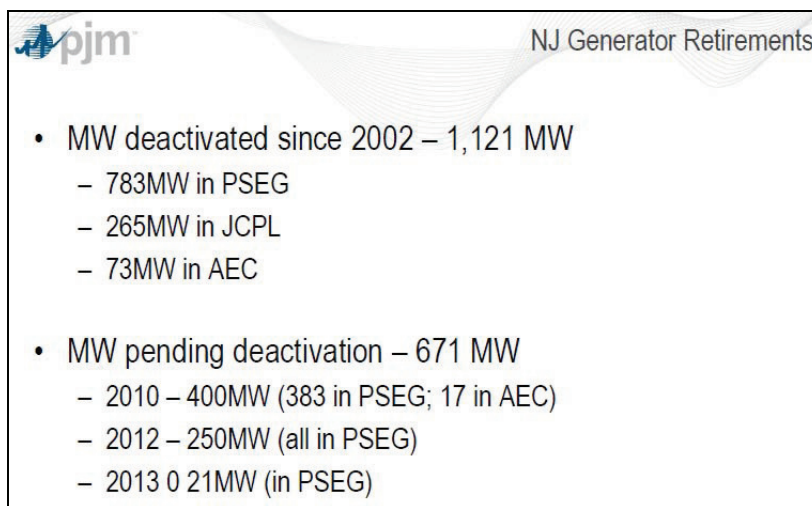
²⁸ PJM Load Forecast Report, January 2011, Table B-1, page 34. The total amount is based on the sum of forecast entries listed for Atlantic Electric (AE), Jersey Central Power and Light (JCPL), Public Service Electric and Gas (PS) and Rockland Electric (RECO).

²⁹NJ DEP Presentation, Slide 6.(<http://www.bpu.state.nj.us/bpu/pdf/energy/OSULLIVAN%20NJDEP.pdf>)

II NOx emission restrictions by 2015 or 2017. Compliance options for these 4,630 MW include retirement, emission control, or placement on “emergency standby”.³⁰

32. At the technical conference, PJM presented summary information on generation retirement in New Jersey. As seen in the slide below, since 2002 New Jersey has seen 1,121 MW of generation retirement. An additional 671 MW was reported as “pending deactivation.”

Figure 4. PJM: Information on New Jersey Generation Retirement



Source: PJM Presentation to the NJ BPU, June 24, 2010, slide 8

33. One of the plants likely to retire, is PSEG’s Hudson Unit #1 (454 MW nameplate) which is already running pursuant to a Reliability Must Run (“RMR”) Order. On February 24, 2005, PSEG Energy Resources & Trade LLC (“PSEG ER&T”) made a filing at FERC, ER05-644-000, requesting RMR rate treatment for five of its

³⁰ NJ DEP Presentation, Slide 9. (<http://www.bpu.state.nj.us/bpu/pdf/energy/OSULLIVAN%20NJDEP.pdf>)

generation units operated by an affiliate company, PSEG Fossil LLC (“PSEG Fossil”). One of the units included is the Hudson Unit #1 located within NJ. Based upon a deactivation study conducted by PJM which determined that PSEG ER&T should continue operation of Hudson Unit #1 for reliability purposes, the PSEG Companies sought approval for an RMR tariff for the facility. Hudson Unit #1 is a gas-fired generator that was first activated in 1964 and is considered by PSEG Fossil as “...inefficient by modern standards and currently operates at very low operating factor.”³¹ The original settlement was approved by FERC on Nov. 28, 2005. Presently, the Hudson Unit #1 is the only remaining facility still in operation under the original RMR tariff agreement.

34. On October 1, 2010, pursuant to the original settlement, PSEG ER&T has filed for two additional extensions of the RMR tariff for Hudson Unit #1: September 1, 2008 to September 1, 2010 and September 1, 2010 through September 1, 2011.
35. In November, 2010, PJM’s Transmission Expansion Advisory Committee (TEAC) reported on its 2012 Retool Update. The TEAC reported that a reliability analysis performed without Susquehanna-Roseland resulted in eight 2010 Common Mode Outage procedure violations. The TEAC reported that incremental upgrades were not a practical substitute due to the number of violations that exceeded conductor limits.³²
36. The TEAC also conducted a market efficiency analysis assuming that PSEG’s Hudson Unit #1 remained in service in 2012 and 2013. The study found a net increase in gross congestion each year primarily in New Jersey of \$160 million in

³¹ *PSEG ER&T, PSEG Fossil Informational Filing, dated Oct. 1, 2010, Affidavit of Kenneth Daleda, p. 3.* As a result of settlement negotiations, FERC granted RMR status for Hudson Unit #1 to operate until September 1, 2008 (Attachment 4 hereto).

³² PJM TEAC November 10, 2010 powerpoint (Attachment 5 hereto).

- 2012 and \$280 million in 2013. PJM has determined that PSEG's Hudson Unit #1 be retained on RMR through at least September 1, 2012.³³
37. PSE&G thereafter amended its filing to extend the RMR tariff for operation of Hudson Unit #1 until September 1, 2012 based upon the additional request by PJM, in a letter dated November 11, 2010. Projected costs for reliable operation of the facility for the remainder of calendar year 2011 was estimated at \$5.84 million; \$52.57 million for 2012; \$8.84 million for 2013; and, \$2.92 million for 2014. A final determination of the RMR tariff extension is pending before FERC.
38. On June 9, 2010, Exelon Generation, LLC filed a petition with the FERC, ER10-1418-000, seeking a RMR rate schedule based on cost-of-service recovery rates pursuant to the PJM Interconnection tariff for two of their generation units located in southeastern Pennsylvania – Cromby Unit #2, Eddystone Unit #2 (“RMR Units”). These units are within the PJM Eastern MAAC LDA. Exelon submitted the petition based upon a deactivation study made by PJM that both Cromby and Eddystone were necessary for transmission reliability purposes beyond their planned deactivation deadline of May 31, 2011. Both RMR Units operate on fossil fuels, have been in operation for over 50 years and are considered by Exelon as “...uneconomic due to the combined effect of market conditions, relatively high capital and operating costs caused by their age, and environmental restrictions that would severely restrict operations or require significant capital investment.”³⁴ Pursuant to a February 11, 2011 settlement agreement, the RMR rate schedule would become effective as of

³³ PJM retirement summary, available at (<http://www.pjm.com/planning/generation-retirements/~media/planning/gen-retire/pending-deactivation-requests.ashx>)

³⁴ Exelon Petition at page 2.

June 1, 2011 and continue until December 31, 2011 for the Cromby Unit and May 31, 2012 for the Eddystone Unit, respectively. A final decision is pending before the FERC.

39. These facilities currently operating pursuant to an RMR will presumably cease operation over the next several years. In addition, several other facilities serving the Eastern MAAC zone face retirement. On December 9, 2010, the New Jersey Department of Environmental Protection and Exelon Corporation entered into an Administrative Consent Order in which Exelon agreed to shut-down the 641 MW (nameplate) Oyster Creek Nuclear Generating Station by December 31, 2019.

III. New Jersey's Long-Term Capacity Agreement Pilot Program

40. Against this backdrop of delayed transmission, increasing New York exports, anticipated retirements, and limited new unit capacity, the New Jersey Legislature created a Long Term Capacity Agreement Pilot Program (LCAPP) to “ensure sufficient generation is available to the region , and thus the users in the State, in a timely and orderly manner.”³⁵
41. While RPM was designed in 2006 to encourage the development of new generation in such circumstances, it has not succeeded in this respect.
42. Table 2 below contains a breakdown of the 4,803 MW currently contained in the PJM generation interconnection queue for New Jersey that has either entered service, is partially in-service, or is under construction. While it may seem to indicate

³⁵ LCAPP legislation at P.L. 2011, C. 9, sec. 1.

considerable generation investment in New Jersey, a more careful review of the data reveals several critical points that illustrate the limited effect PJM's RPM has had on the market for development of baseload or mid-merit generation, the resources targeted by New Jersey's LCAPP policy towards ensuring a reliable supply of electricity. The additions listed as "currently under construction" have generally been limited to increases in capacity at existing sites, peaking units, solar facilities, or small units such as methane –fueled landfill gas generation facilities. The "partially in-service" additions are either solar or peaking units (or pre-RPM), and the in-service units are nuclear uprates, existing station additions, solar or landfill gas. The one baseload facility is the Linden facility addition. It went into service in 2006, and has been in the PJM interconnection queue since 1997.

43. Table 3 below summarizes the remainder of the PJM interconnection queue capacity for New Jersey, the "active" status entries. As seen, most of the capacity in that table does not have an Interconnection Service Agreement ("ISA"), the threshold used by PJM to include such capacity in its planning for reliability purposes³⁶. As noted by Mr. Herling, up to 85% of the energy associated with queued generation has dropped out over the past ten years.³⁷ And of the 5,166 MW of NJ active status queued generation that does not have an ISA, 5,122 MW apparently has not completed a facility study, as no facility study is posted on PJM's interconnection queue page for

³⁶ Susquehanna-Roseland Final Order, p. 13

(<http://www.pseg.com/family/pseandg/powerline/pdf/BPUwrittenorder.pdf>)

³⁷ Steve Herling, PJM, "The generation that is currently in the interconnection queue, there's a fairly substantial amount of that, but we have seen a very, very high dropout rate in our interconnection queue over the ten years, over 85 percent on an energy basis.". Transcript from, I/M/O the New Jersey Board of Public Utilities Review of the State's Electric and Power and Capacity Needs, BPU Dkt. No. EO09110920, (June 24, 2010), pgs.10:23 to 11:2 (Attachment 6 hereto).

this portion of “active” generation. This is a further indication of the speculative nature of much of the “active” status queued generation in New Jersey.

Table 2 PJM Queue: NJ Incremental MW – Capacity - Generation In Service, Under Construction, or Partially In-Service

		Fuel				Wind	All	Notes
		Natural Gas	Nuclear	Other	Solar			
Status: In-Service								
Year of Commercial Operation	Pre-2006	2,344	95	8	-	-	2,447	Pre-RPM
	2006	1,188	-	-	-	-	1,188	Linden facility - Queue dates '97 & '99.
	2007	20	-	39	-	-	59	Existing station; reactivation; landfill gas.
	2008	114	236	7	-	-	357	Nuclear uprates; reactivation ; landfill gas.
	2009	40	-	1	-	-	41	Increased capacity at existing sites.
	2010	-	-	-	1	-	1	Solar
	2011	-	-	-	3	-	3	Solar
	Subtotal	3,706	331	54	3	-	4,095	
Status: Partially In-Service								
Year of Commercial Operation	Pre-2006	8	-	-	-	-	8	Pre-RPM
	2008	-	-	-	-	-	-	
	2009	225	-	-	-	-	225	Peakers
	2010	-	-	-	20	-	20	Solar
	Subtotal	233	-	-	20	-	253	
Status: Under Construction								
Year of Commercial Operation	2010	-	-	-	5	-	5	Solar
	2011	-	-	5	38	-	43	Solar, landfill gas.
	2012	330	-	-	18	-	348	Peakers
	2013	60	-	-	-	-	60	Increased capacity at existing site.
	Subtotal	390	-	5	60	-	455	

Source: PJM Generation Interconnection Queue Data, Under Construction, In-Service, and Partially In-Service status, New Jersey, as of February 14, 2011.

Table 3 PJM: “Active” Status, PJM Generation Queue, New Jersey units

Anticipated Year of Service	MWC, Capacity			Total
	Does Not Have an ISA	Has an ISA	ISA Not Required	
2007	20	44	-	64
2008	63	-	15	78
2009	65	-	-	65
2010	68	-	-	68
2011	1,177	-	50	1,227
2012	1,861	-	10	1,871
2013	440	-	-	440
2014	1,428	-	-	1,428
2015	45	-	-	45
Total	5,166	44	75	5,285

Source: PJM Generation Queue Data, “Active” Status, New Jersey, as of February 14, 2011.

44. Tables 2 and 3 illustrate that New Jersey generation activity as represented by the PJM interconnection queue data consists of either 1) mostly still-speculative generation potential (Table 3), or 2) new capacity at existing stations, uprates of existing units, small facilities, solar resources with long-term contracts, and limited peaking facilities. Tables 2 and 3 illustrate that the PJM RPM mechanism has not resulted in any significant generation development activity for new baseload or mid-merit generation units.

45. The LCAPP law and the resulting structure of any contracts awarded through the NJ BPU competitive process is based on a commonly-understood “contract for differences” mechanism. In this mechanism, the selling and buying parties agree on a price – in this case, a price that is likely to hold for fifteen years – the seller then provides this capacity to the structured market. Based on the actual clearing price in the structured market (through which the product is physically delivered), the buyer and seller settle on the price difference between the contract price and the structured

market price. The procurement mechanism uses competition to obtain the “eligible”³⁸ electric power resource at the lowest competitive price.

46. The physical delivery of the LCAPP power is to the PJM grid. BGS and third-party suppliers then procure from the PJM grid and deliver to retail customers in New Jersey. Any settlement for differences is then completed through a non-bypassable charge that will apply to all ratepayers in New Jersey.

Observations, Conclusions, Recommendations

47. Based on the information provided by PJM and the New Jersey DEP, as noted above, reliability has been an ongoing concern in the eastern portion of PJM, and New Jersey, since at least the commencement of the RPM construct in 2006. It is reasonable to conclude that New Jersey state policy promoting the construction of new generation that can serve as a capacity resource is an entirely appropriate response to the capacity construct conditions in PJM. Actual generation retirements, potential near-term retirements, minimal new unit generation construction, recent and prospective exports to New York, and an apparently pressing need for more transmission into New Jersey (even though New Jersey is already heavily dependent on transmission for imports of power) supports a policy to construct more generation within EMAAC to ensure reliability.
48. PJM’s RPM construct has produced limited new generation development in New Jersey, and even that limited development has been restricted to peaking capacity,

³⁸ Per the LCAPP law, an “eligible” plant must be a mid-merit or baseload power plant.

- incremental onsite generation, small facilities, solar facilities, and capacity uprates at existing power plants.
49. Transmission development uncertainty (for example as reflected in the uncertain status of the Susquehanna – Roseland 500 kV transmission line) exacerbates concerns of reliability for New Jersey’s electric system.
 50. New Jersey’s current reliance on imports to serve a significant part of its own load, coupled with recent activity that results in exports of energy to New York, contributes towards a very real need to consider means to see increased construction of electric power generation in New Jersey.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Power Providers Group

v.

PJM Interconnection, L.L.C.

PJM Interconnection, L.L.C.

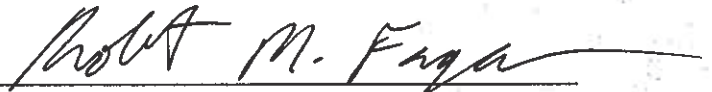
State of Massachusetts

Docket No. EL11-20-000

Docket No. ER11-2875-000

(not consolidated)

I, Robert M. Fagan being duly sworn, depose and state that the contents of the foregoing Affidavit on behalf of the New Jersey Division of Rate Counsel are true, correct, accurate and complete to the best of my knowledge, information, and belief.



Robert M. Fagan

SUBSCRIBED AND SWORN TO before me, the undersigned Notary Public, this
4 th day of March 2011.



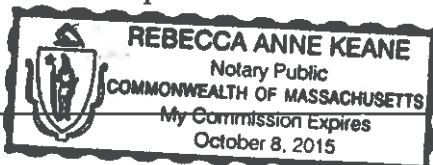
Notary Public

22 Pearl Street
Cambridge, MA 02139

(Address of Notary)

(SEAL)

My Commission Expires:



ATTACHMENT 1

Robert M. Fagan

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SUMMARY

Mechanical engineer and energy economics analyst with over 25 years experience in the energy industry. Activities focused primarily on electric power industry issues, especially economic and technical analysis of transmission pricing structures, wholesale electricity markets, renewable resource alternatives and assessment and implementation of demand-side alternatives.

In-depth understanding of the complexities of, and the interrelationships between, the technical and economic dimensions of the electric power industry in the US and Canada, including the following areas of expertise:

- Wholesale energy and capacity provision under market-based and regulated structures; the extent of competitiveness of such structures.
- Potential for and operational effects of wind power integration into utility systems.
- Transmission use pricing, encompassing congestion management, losses, LMP and alternatives, financial and physical transmission rights; and transmission asset pricing (embedded cost recovery tariffs).
- Physical transmission network characteristics; related generation dispatch/system operation functions; and technical and economic attributes of generation resources.
- RTO and ISO tariff and market rules structures and operation.
- FERC regulatory policies and initiatives, including those pertaining to RTO and ISO development and evolution.
- Demand-side management, including program implementation and evaluation; and load response presence in wholesale markets.
- Building energy end-use characteristics, and energy-efficient technology options.
- Fundamentals of electric distribution systems and substation layout and operation.
- Energy modeling (spreadsheet-based, GE MAPS and online DOE-2 residential).
- State and provincial level regulatory policies and practices, including retail service and standard offer pricing structures.
- Gas industry fundamentals including regulatory and market structures, and physical infrastructure.

PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Inc., Cambridge, MA. 2004 – Present. Senior Associate

Responsibilities include consulting on issues of energy economics, analysis of electricity utility planning, operation, and regulation, including issues of transmission, generation, and demand-side management. Provide expert witness testimony on various wholesale and retail electricity industry issues. Specific project experience includes the following:

- Analysis of need for transmission facilities in Maine, Ontario, Pennsylvania, Virginia, Minnesota.
- Ongoing analysis of wholesale and retail energy and capacity market issues in New Jersey, including assessment of BGS supply alternatives and demand response options.
- Analysis of PJM transmission-related issues, including cost allocation, need for new facilities and PJM's economic modeling of new transmission effects on PJM energy market.
- Ongoing analysis of utility-sponsored energy efficiency programs in Rhode Island as part of the Rhode Island DSM Collaborative.
- Analysis of proposals in Maine for utility companies to withdraw from the ISO-NE RTO.
- Analysis of utility planning and demand-side management issues in Delaware.
- Analysis of effect of increasing the system benefits charge (SBC) in Maine to increase procurement of energy efficiency and DSM resources; analysis of impact of DSM on transmission and distribution reinforcement need.
- Evaluation of wind energy potential and economics, related transmission issues, and resource planning in Minnesota, Iowa, Indiana, and Missouri; in particular in relation to alternatives to newly proposed coal-fired power plants in MN, IA and IN.
- Analysis of need for newly proposed transmission in Pennsylvania and Ontario.
- Evaluation of wind energy "firming" premium in BC Hydro Energy Call in British Columbia.
- Evaluation of pollutant emission reduction plans and the introduction of an open access transmission tariff in Nova Scotia.
- Evaluation of the merger of Duke and Cinergy with respect to Indiana ratepayer impacts.
- Review of the termination of a Joint Generation Dispatch Agreement between sister companies of Cinergy.
- Assessment of the potential for an interstate transfer of a DSM resource between the desert southwest and California, and the transmission system impacts associated with the resource.
- Analysis of various transmission system and market power issues associated with the proposed Exelon-PSEG merger.
- Assessment of market power and transmission issues associated with the proposed use of an auction mechanism to supply standard offer power to ComEd native load customers.
- Review and analysis of the impacts of a proposed second 345 kV tie to New Brunswick from Maine on northern Maine customers.

Tabors Caramanis & Associates, Cambridge, MA 1996 -2004. Senior Associate.

- Provided expert witness testimony on transmission issues in Ontario and Alberta.

-
- Supported FERC-filed testimony of Dr. Tabors in numerous dockets, addressing various electric transmission and wholesale market issues.
 - Analyzed transmission pricing and access policies, and electric industry restructuring proposals in US and Canadian jurisdictions including Ontario, Alberta, PJM, New York, New England, California, ERCOT, and the Midwest. Evaluated and offered alternatives for congestion management methods and wholesale electric market design.
 - Attended RTO/ISO meetings, and monitored and reported on continuing developments in the New England and PJM electricity markets. Consulted on New England FTR auction and ARR allocation schemes.
 - Evaluated all facets of Ontario and Alberta wholesale market development and evolution since 1997. Offered congestion management, transmission, cross-border interchange, and energy and capacity market design options. Directly participated in the Ontario Market Design Committee process. Served on the Ontario Wholesale Market Design technical panel.
 - Member of TCA GE MAPS modeling team in LMP price forecasting projects.
 - Assessed different aspects of the broad competitive market development themes presented in the US FERC's SMD NOPR and the application of FERC's Order 2000 on RTO development.
 - Reviewed utility merger savings benchmarks, evaluated status of utility generation market power, and provided technical support underlying the analysis of competitive wholesale electricity markets in major US regions.
 - Conducted life-cycle utility cost analyses for proposed new and renovated residential housing at US military bases. Compared life-cycle utility cost options for large educational and medical campuses.
 - Evaluated innovative DSM competitive procurement program utilizing performance-based contracting.

Charles River Associates, Boston, MA, 1992-1996. Associate. Developed DSM competitive procurement RFPs and evaluation plans, and performed DSM process and impact evaluations. Conducted quantitative studies examining electric utility mergers; and examined generation capacity concentration and transmission interconnections throughout the US. Analyzed natural gas and petroleum industry economic issues; and provided regulatory testimony support to CRA staff in proceedings before the US FERC and various state utility regulatory commissions.

Rhode Islanders Saving Energy, Providence, RI, 1987-1992. Senior Commercial/Industrial Energy Specialist. Performed site visits, analyzed end-use energy consumption and calculated energy-efficiency improvement potential in approximately 1,000 commercial, industrial, and institutional buildings throughout Rhode Island, including assessment of lighting, HVAC, hot water, building shell, refrigeration and industrial process systems. Recommended and assisted in implementation of energy efficiency measures, and coordinated customer participation in utility DSM program efforts.

Fairchild Weston Systems, Inc., Syosset, NY 1985-1986. Facilities Engineer. Designed space renovations; managed capital improvement projects; and supervised contractors in implementation of facility upgrades.

Narragansett Electric Company, Providence RI, 1981-1984. Supervisor of Operations and Maintenance. Directed electricians in operation, maintenance, and repair of high-voltage transmission and distribution substation equipment.

EDUCATION

Boston University, M.A. Energy and Environmental Studies, 1992
Resource Economics, Ecological Economics, Econometric Modeling

Clarkson University, B.S. Mechanical Engineering, 1981
Thermal Sciences

Additional Professional Training and Academic Coursework

Utility Wind Integration Group - Short Course on Integration and Interconnection of Wind Power Plants Into Electric Power Systems (2006).

Regulatory and Legal Aspects of Electric Power Systems – Short Course – University of Texas at Austin (1998)

Illuminating Engineering Society courses in lighting design (1989).

Coursework in Solar Engineering; Building System Controls; and Cogeneration at Worcester Polytechnic Institute and Northeastern University (1984, 1988-89).

Graduate Coursework in Mechanical and Aerospace Engineering – Polytechnic Institute of New York (1985-1986)

SUMMARY OF TESTIMONY, PUBLICATIONS, AND PRESENTATIONS

TESTIMONY

New Jersey Board of Public Utilities. Oral testimony before the Board, on certain aspects of the Basic Generation Service (BGS) procurement plan for service beginning June 1, 2011. Docket No. ER10040287. Hearing conducted September, 2010.

Virginia State Corporation Commission. Pre-filed Direct Testimony filed October 23, 2009 on behalf of the Sierra Club on the need for the Potomac-Appalachian Transmission Highline (PATH), a 765 kV proposed transmission line across West Virginia, Virginia and Maryland. Proceedings are currently terminated as filing party (American Electric Power and Allegheny Power) withdrew the application pending additional RTEP analyses by PJM scheduled for 2010. Testimony addressed issues of need and modeling of DSM resources as part of the PJM RTEP planning processes.

Pennsylvania Public Utility Commission. Direct Testimony filed June 30, 2009 on behalf of the Pennsylvania Office of Consumer Advocate on the need for the Susquehanna-Roseland 500 kv proposed transmission line in portions of Luckawanna, Luzerne, Monroe, Pike, and Wayne counties. Testimony assessed the modeling for the proposed line, including load forecasts,

energy efficiency resources, and demand response resources. Docket number A-2009-2082652. Surrebuttal testimony filed August 24, 2009.

Delaware Public Service Commission. Report on Behalf of the Staff of the Delaware Public Service Commission, filed in Docket No. 07-20, Delmarva's IRP docket, "Review of Delmarva Power & Light Company's Integrated Resource Plan", April 2, 2009. Jointly authored with Alice Napoleon, William Steinhurst, David White, and Kenji Takahashi of Synapse Energy Economics.

State of Maine Public Utilities Commission. Pre-filed Direct Testimony on the Application of Central Maine Power for a Certificate of Public Convenience and Necessity for the proposed Maine Power Reliability Project (MPRP), a \$1.55 billion transmission enhancement project. Direct testimony focus on the non-transmission alternatives analysis conducted on behalf of CMP. Maine PUC Docket 2008-255, filed January 12, 2009 (direct) and surrebuttal (February 2, 2010) on behalf of the Maine Office of Public Advocate. Docket proceeding 2008-255, hearings completed in February 2010.

New Jersey Board of Public Utilities. Oral testimony before the Board, jointly with Bruce Biewald, on certain aspects of the Basic Generation Service (BGS) procurement plan for service beginning June 1, 2009. Docket No. ER08050310. Hearing conducted on September 29, 2008.

Wisconsin Public Service Commission. Direct and Surrebuttal Testimony in Docket 6680-CE-170 on behalf of Clean Wisconsin in the matter of an application by Wisconsin Power and Light for a CPCN for construction of a 300 MW coal plant. The testimony focused on the alternative energy options available with wind power, and the effect of the MISO RTO in helping provide capacity and energy to the Wisconsin area reliably without needed the proposed coal plant. The CPCN was denied by the WPSC in December 2008. Testimony filed in August (Direct) and September (Surrebuttal), 2008.

Ontario Energy Board. Pre-Filed Direct Testimony filed on behalf of Pollution Probe in the matter of the Examination and Critique of Demand Response and Combined Heat and Power Aspects of the Ontario Power Authority's Integrated Power System Plan and Procurement Process, Docket EB-2007-0707. The testimony addressed issues associated with the planned levels of procurement of demand response, combined heat and power, and NUG resources as part of Ontario Power Authority's long-term integrated planning process. Testimony filed on August 1, 2008. Docket is open; additional Power System Plan and Procurement filings expected from the Ontario Power Authority.

Ontario Energy Board. Direct and Supplemental Testimony filed jointly with Mr. Peter Lanzalotta on behalf of Pollution Probe in the matter of Hydro One Networks Inc. application to construct a new 500 kV transmission line between the Bruce Power complex and the town of Milton, Ontario. Docket EB-2007-0050. The testimony addressed issues of congestion (locked-in energy) modeling, need, and series compensation and generation rejection alternatives to the proposed line. Testimony filed on April 18, 2008 (Direct) and May 15, 2008 (Supplemental).

Federal Energy Regulatory Commission. Direct and Rebuttal Testimony on PJM Regional Transmission Expansion Plan (RTEP) Cost Allocation issues in Dockets ER06-456, ER06-954, ER06-1271, ER07-424, EL07-57, ER06-880, et al. The testimony addressed merchant transmission cost allocation issues. Testimony filed on behalf of the New Jersey Department of the Public Advocate, Ratepayer Division. Testimony filed on January 23, 2008 (Direct) and April 16, 2008 (Rebuttal).

Minnesota Public Utilities Commission. Supplemental Testimony and Supplemental Rebuttal Testimony on applicants' estimates of DSM savings in the Certificate of Need proceeding for the Big Stone II coal-fired power plant proposal. In the Matter of the Application by Otter Tail Power Company and Others for Certification of Transmission Facilities in Western Minnesota and In the Matter of the Application to the Minnesota Public Utilities Commission for a Route Permit for the Big Stone Transmission Project in Western Minnesota. OAH No. 12-2500-17037-2 and OAH No. 12-2500-17038-2; and MPUC Dkt. Nos. CN-05-619 and TR-05-1275. Testimony filed December 21, 2007 (Supplemental) and January 16, 2008 (Supplemental Rebuttal).

Pennsylvania Public Utility Commission. Direct testimony filed before the Commission on the effect of demand-side management on the need for a transmission line and the level of consideration of potential carbon regulation on PJM's analysis of need for the TrAIL transmission line. Docket Nos. A-110172 *et al.* Testimony filed October 31, 2007.

Iowa Public Utilities Board. Direct testimony filed before the Board on wind energy assessment in Interstate Power and Light's resource plans and its relationship to a proposed coal plant in Iowa. Docket No. GCU-07-01. Testimony filed October 21, 2007.

New Jersey Board of Public Utilities. Direct testimony before the Board on certain aspects of PSE&G's proposal to use ratepayer funding to finance a solar photovoltaic panel initiative in support of the State's solar RPS. Docket No. EO07040278. Testimony filed September 21, 2007.

Indiana Utility Regulatory Commission. Direct Testimony filed before the Commission addressing a proposed Duke – Vectren IGCC coal plant. Testimony focused on wind power potential in Indiana. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 43114 May 14, 2007.

State of Maine Public Utilities Commission. Pre-filed testimony on the ability of DSM and distributed generation potential to reduce local supply area reinforcement needs. Testimony filed before the Commission on a Request for Certificate of Public Convenience and Necessity to Build a 115 kV Transmission Line between Saco and Old Orchard Beach. Testimony filed jointly with Peter Lanzalotta, on behalf of the Maine Public Advocate. Docket No. 2006-487, February 27, 2007.

Minnesota Public Utilities Commission. Rebuttal Testimony on wind energy potential and related transmission issues in the Certificate of Need proceeding for the Big Stone II coal-fired power plant proposal. In the Matter of the Application by Otter Tail Power Company and Others

for Certification of Transmission Facilities in Western Minnesota and In the Matter of the Application to the Minnesota Public Utilities Commission for a Route Permit for the Big Stone Transmission Project in Western Minnesota. OAH No. 12-2500-17037-2 and OAH No. 12-2500-17038-2; and MPUC Dkt. Nos. CN-05-619 and TR-05-1275. December 8, 2006.

British Columbia Utilities Commission. In the Matter of BC Hydro 2006 Integrated Electricity Plan and Long Term Acquisition Plan. Pre-filed Evidence filed on behalf of the Sierra Club (BC Chapter), Sustainable Energy Association of BC, and Peace Valley Environment Association. October 6, 2006. Testimony addressing the “firming premium” associated with 2006 Call energy, liquidated damages provisions, and wind integration studies.

Maine Joint Legislative Committee on Utilities, Energy and Transportation. Testimony before the Committee in support of an Act to Encourage Energy Efficiency (LD 1931) on behalf of the Maine Natural Resources Council, February 9, 2006. The testimony and related analysis focused on the costs and benefits of increasing the system benefits charge to increase the level of energy efficiency installations by Efficiency Maine.

Nova Scotia Utilities and Review Board (UARB). Testimony filed before the UARB on behalf of the UARB staff, In The Matter of an Application by Nova Scotia Power Inc. for Approval of Air Emissions Strategy Capital Projects. Filed January 30, 2006. The testimony addressed the application for approval of installation of a flue gas desulphurization system at NSPI’s Lingan station and a review of alternatives to comply with provincial emission regulations.

New Jersey Board of Public Utilities. Direct and Surrebuttal Testimony filed before the Commission addressing the Joint Petition Of Public Service Electric and Gas Company And Exelon Corporation For Approval of a Change in Control Of Public Service Electric and Gas Company And Related Authorizations (the proposed merger), BPU Docket EM05020106. Joint Testimony with Bruce Biewald and David Schlissel. Filed on behalf of the New Jersey Division of the Ratepayer Advocate, November 14, 2005 (direct) and December 27, 2005 (surrebuttal).

Indiana Utility Regulatory Commission. Direct Testimony filed before the Commission addressing the proposed Duke – Cinergy merger. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 42873, November 8, 2005.

Illinois Commerce Commission. Direct and Rebuttal Testimony filed before the Commission addressing wholesale market aspects of Ameren’s proposed competitive procurement auction (CPA). Testimony filed on behalf of the Illinois Citizens Utility Board in Dockets 05-0160, 05-0161, 05-0162. Direct Testimony filed June 15, 2005; Rebuttal Testimony filed August 10, 2005.

Illinois Commerce Commission. Direct and Rebuttal Testimony filed before the Commission addressing wholesale market aspects of Commonwealth Edison’s proposed BUS (Basic Utility Service) competitive auction procurement. Testimony filed on behalf of the Illinois Citizens Utility Board and the Cook County State’s Attorney’s Office in Docket 05-0159. Direct Testimony filed June 8, 2005; Rebuttal Testimony filed August 3, 2005.

Indiana Utility Regulatory Commission. Responsive Testimony filed before the Commission addressing a proposed Settlement Agreement between PSI and other parties in respect of issues surrounding the Joint Generation Dispatch Agreement in place between PSI and CG&E. Filed on behalf of the Citizens Action Coalition of Indiana, Consolidated Causes No. 38707 FAC 61S1, 41954, and 42359-S1, August 31, 2005.

Indiana Utility Regulatory Commission. Direct Testimony filed before the Commission in a Fuel Adjustment Clause (FAC) Proceeding concerning the pricing aspects and merits of continuation of the Joint Generation Dispatch Agreement in place between PSI and CG&E, and related issues of PSI lost revenues from inter-company energy pricing policies. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 38707 FAC 61S1, May 23, 2005.

Indiana Utility Regulatory Commission. Direct Testimony filed before the Commission concerning the pricing aspects and merits of continuation of the Joint Generation Dispatch Agreement in place between PSI and CG&E. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 41954, April 21, 2005.

State of Maine Public Utilities Commission. Testimony filed before the Commission on an Analysis of Eastern Maine Electric Cooperative, Inc.'s Petition for a Finding of Public Convenience and Necessity to Purchase 15 MW of Transmission Capacity from New Brunswick Power and for Related Approvals. Testimony filed jointly with David Schlissel and Peter Lanzalotta, on behalf of the Maine Public Advocate. Docket No. 2005-17, July 19, 2005.

State of Maine Public Utilities Commission. Testimony filed before the Commission on an Analysis of Maine Public Service Company Request for a Certificate of Public Convenience and Necessity to Purchase 35 MW of Transmission Capacity from New Brunswick Power. Testimony filed jointly with David Schlissel and Peter Lanzalotta, on behalf of the Maine Public Advocate. Docket No. 2004-538 Phase II, April 14, 2005.

Nova Scotia Utilities and Review Board (UARB). Testimony filed before the UARB on behalf of the UARB staff, In The Matter of an Application by Nova Scotia Power Inc. for Approval of an Open Access Transmission Tariff (OATT). Filed April 5, 2005. The testimony addressed various aspects of OATTs and FERC's *pro forma* Order 888 OATT.

Texas Public Utilities Commission. Testimony filed before the Texas PUC in Docket No. 30485 on behalf of the Gulf Coast Coalition of Cities on CenterPoint Energy Houston Electric, LLC. Application for a Financing Order, January 7, 2005. The testimony addressed excess mitigation credits associated with CenterPoint's stranded cost recovery.

Ontario Energy Board. Testimony filed before the Ontario Energy Board, RP-2002-0120, et al., Review of the Transmission System Code (TSC) and Related Matters, Detailed Submission to the Ontario Energy Board in Response To Phase I Questions Concerning the Transmission System Code and Related Matters, October 31, 2002, on behalf of TransAlta Corporation; and Reply Comments for same, November 21, 2002. Related direct and reply filings in response to the Ontario Energy Board's "Preliminary Propositions" on TSC issues in May and June, 2003.

Alberta Energy and Utilities Board. Testimony filed before the Alberta Energy and Utilities Board, in the Matter of the Transmission Administrator's 2001 Phase I and Phase II General Rate Application, no. 2000135, pertaining to Supply Transmission Service charge proposals. Joint testimony filed with Dr. Richard D. Tabors. March 28, 2001. Testimony filed on behalf of the Alberta Buyers Coalition.

Ontario Energy Board. Testimony filed before the Ontario Energy Board, RP-1999-0044, Critique of Ontario Hydro Networks Company's Transmission Tariff Proposal and Proposal for Alternative Rate Design, January 17, 2000. Testimony filed on behalf of the Independent Power Producer's Society of Ontario.

MAJOR PROJECT WORK – BY CATEGORY

Electric Utility Industry Regulatory and Legislative Proceedings

For Pollution Probe, analysis of need for a proposed 500 kV transmission line in Ontario. (2008)

For the Iowa Office of Consumer Advocate, testimony in the case against the proposed Marshalltown coal plant expansion, addressing the ability of wind resources to help eliminate the need for the plant. (2007-2008)

For the Minnesota Center for Environmental Advocacy, preparation of expert testimony on wind energy and DSM in Minnesota and the upper Midwest in the case against the proposed Big Stone II coal plant. (2006-2008)

For the New Jersey Department of the Ratepayer advocate, ongoing analysis of myriad issues affecting New Jersey electricity consumers, including: review of BGS supply structures, participation in working group designing demand side response pilot programs, analysis of PSE&G solar PV initiatives, review of ongoing FERC proceedings on PJM transmission planning and impacts on New Jersey. (2007-2008)

For the Citizens Action Coalition of Indiana, analyzed the potential for increased wind penetration as an alternative to a proposed new coal-fired power plant. (2007)

For the Maine Office of Public Advocate, technical review of issues pertaining to potential withdrawal of Maine utilities from the ISO NE RTO. Also, technical review and expert testimony preparation on energy efficiency and demand side response resource impact on sub-transmission supply needs in the Saco Bay area. (2006-2007)

For the staff of the Nova Scotia Utility and Review Board, conducted an economic analysis of the proposed installation of flue gas desulphurization equipment by Nova Scotia Power, Inc., and alternatives to the installation, to conform to Nova Scotia provincial emission regulations. (2005-2006)

For the staff of the Nova Scotia Utility and Review Board, analyzed a proposed Open Access Transmission Tariff by Nova Scotia Power, Inc. (2005)

For the Maine Office of Public Advocate, analyzed multiple aspects of the proposed installation of a second 345 kV tie line between Maine and New Brunswick. The analyses focused on the impacts to Northern Maine electric consumers. (2005)

Electric Utility Industry Restructuring

For the Citizens Action Coalition of Indiana, analyzed the proposed merger between Duke and Cinergy, with a focus on global protections available for PSI ratepayers and the allocation of projected merger cost and savings. (2005)

For the Citizens Action Coalition of Indiana, analyzed the termination of the Joint Generation Dispatch Agreement between Cincinnati Gas and Electric and PSI with a focus on PSI ratepayer impacts. (2005)

For TransAlta Energy Corporation, developed an issues and information paper on recent Ontario and Alberta market development efforts, focusing on the likely high-level impacts associated with day-ahead and capacity market mechanisms considered in each of those regions. (2004)

For a wholesale energy market stakeholder, participate in New England and PJM RTO markets and market implementation committee meetings, review and summarize material, and advocate on behalf of client on selected market design issues. (2004) Performed similar activities for separate client in New England. (2001)

For a group of potential generation investors in Ontario, analyzed the government's proposed wholesale and retail market design changes and produced an advocacy report for submission to the Ontario Ministry of Energy. The report emphasized, among other things, the importance of retaining a competitive wholesale market structure. (2004)

For a large midwestern utility, supported multiple rounds of direct and rebuttal testimony to the US FERC by Dr. Richard Tabors on the proposed start-up of LMP markets in the Midwest ISO utility service territories. Testimony substance included PJM-MISO seams concerns, FTR allocation options, grandfathered transactions incorporation, FTR and energy market efficiency impacts, and other wholesale market and MISO transmission tariff design issues. Testimony also included quantitative analysis using GE MAPS security-constrained dispatch model runs. (2003-2004)

For the Independent Power Producers Society of Ontario, with TCA Director Seabron Adamson, developed a position paper on resource adequacy mechanisms for the Ontario electricity market. (2003)

For TransAlta Energy Corp., provided direct and reply testimony to the Ontario Energy Board on the Transmission System Code review process. Analyzed and reported on transmission "bypass" and network cost responsibility issues. (2002-2003)

For a commercial electricity marketer in Ontario, with TCA staff, analyzed Ontario market rules for interregional transactions, focusing primarily on the Michigan and New York interties, and assessed the current Ontario electricity market policy related to "failed intertie transactions". (2002)

For ESBI Alberta Ltd., then Transmission Administrator (TA) of Alberta, served as a key member of the TCA team exploring congestion management issues in the Province, and providing guidance to the TA in presenting congestion management options to Alberta stakeholders, with a particular focus on new transmission expansion pricing and cost allocation issues. (2001)

For a coalition of power producers and marketers in Alberta, filed joint expert witness testimony with Dr. Tabors on the nature of certain transmission access charges associated with supply transmission service. (2001)

For a prospective market participant, served as a core member of the project team that developed summary reports on the New York, New England and PJM wholesale electricity spot market structures. The reports focused on market structure fundamentals, historical transmission flow patterns, forecasted transmission congestion and costs, transmission availability and FTR valuation and market results. (2001)

For the ERCOT ISO, served as a key TCA team member helping to develop and assemble a set of protocols to guide the principles, operation and settlement of the forthcoming Texas competitive wholesale electricity market. (2000)

For the Independent Power Producer's Society of Ontario, served as expert witness and filed evidence with the Ontario Energy Board supporting an alternative transmission tariff design, and critiquing Ontario Hydro Networks Company's (OHNC) proposed rate structure. Also a member of OHNC's Advisory Team on net versus gross billing issues and a leading proponent of a progressive, embedded-generation-friendly tariff structure. (1999-2000)

For a large midwestern utility, designed transmission tariff and wholesale market structures consistent with the proposed establishment of an Independent Transmission Company paradigm for transmission operations. (1999-2000)

For a coalition of independent power producers and marketers in Alberta, helped develop evidence submitted by Dr. Tabors and Dr. Steven Stoft with the Alberta Energy and Utilities Board supporting an alternative to ESBI's proposed transmission tariff. The evidence critiqued the fairness and efficiency of ESBI's proposed tariff, and offered a simple alternative to deal with Alberta's near-term southern supply shortage. (1999)

For Enron Canada Corp., provided ongoing technical support and policy advice during the tenure of the Ontario Market Design Committee (MDC). Presented material on congestion pricing before the committee, and submitted technical assessments of most wholesale market development issues. (1998-1999)

Member of the Ontario Wholesale Market Design Technical Panel. The panel's responsibilities included refinement of the wholesale market design as specified by the Market Design Committee, and specification of the market's initial operating requirements. Also served on two sub-panels: bidding and scheduling; and ancillary services. (1998-1999)

For Enron Canada Corp, assessed the generation markets in Ontario and Alberta and recommended policies for maximizing competitive market mechanisms and minimizing stranded cost burdens. Authored reports on stranded costs in Ontario, and on the legislated hedges structure in Alberta. (1997 - 1998)

For an independent power producer, assessed New England markets for electricity and assisted in valuation of generation assets for sale. (1997)

In support of testimony filed by CCEM (Coalition for Competitive Electric Markets) with the FERC, assessed alternative transmission pricing and wholesale market structures proposed for the NY, NE and PJM regions. The filings proposed market mechanisms to produce competitive wholesale electric energy markets and zonal-based transmission pricing structures. (1996-1997)

Electric Utility Mergers and Market Power Analysis

For the New Jersey Ratepayer Advocate, provided jointly sponsored expert testimony (with Bruce Biewald and David Schlissel) on the potential market power effects of the proposed Exelon-PSEG merger. (2005-2006)

For the Citizens Utility Board (Illinois), provided direct and rebuttal testimony on potential market power and transmission impacts and other issues associated with ComEd's proposal to procure standard offer power through a market-based auction process. (2005)

For the Citizens Utility Board and other clients (Illinois), provided direct and rebuttal testimony on issues associated with Ameren's proposal to procure standard offer power through a market-based auction process. (2005)

In support of FERC-filed testimony by Dr. Richard Tabors, conducted a detailed examination of the accessibility of transmission service for wholesale energy market participants on the American Electric Power and Central and Southwest transmission systems. This included evaluating all transmission service requests made over the OASIS for the first six months of 1998 for the two utility systems, and a subsequent, more detailed assessment of AEP's transmission system use during all of 1998. (1998-1999)

For a US western electric utility, served as a member of the team that conducted detailed production cost modeling and strategic market assessment to determine the extent or absence of market power held by the client. (1998)

For an independent power producer, supported FERC-filed testimony on market power issues in the New York State energy and capacity markets. This included detailed supply-curve assessment of existing generation assets within the New York Power Pool. (1997)

Worked with a local economic consulting firm for a Western State public agency in conducting an analysis of the projected savings of a series of proposed electric and gas utility mergers. (1997)

For a southwestern utility company, supported CRA in conducting an analysis of the competitive effects of a proposed electric utility merger. For a northwestern utility company, analyzed the competitive effects of a proposed electric utility merger. (1995-1996)

For the Massachusetts Attorney General's Office, conducted a study of the potential for market power abuse by generators in the NEPOOL market area. (1996)

Energy Efficiency and Demand Side Management

For the United States Department of the Interior: Minerals Management Service, analyzing issues related to the integration of offshore renewable resources into the electrical grid. (2009–present)

For the Missouri Department of Natural Resources-Energy Center, Kansas City Power & Light demand-side management and integrated resource plan evaluations. (2009 – 2010)

For the Pennsylvania Office of Consumer Advocate, analysis of the ability of demand-side management efforts to reduce peak loading and affect the need for the 502 Junction – Prexy 500 kV line proposed by Allegheny Power. (2007 – 2008)

For the New Jersey Division of Rate Counsel, Department of Public Advocate, participation in demand response working group and assessment of proposal for state-sponsored demand response program. (2007)

For the Rhode Island Division of the Public Utilities Commission, ongoing technical support and participation in the statewide DSM collaborative process. (2007)

For the Maine Office of the Public Advocate, evaluated the ability of DSM and distributed generation to affect the need for transmission and distribution system reinforcement in the Saco Bay area of Central Maine Power's service territory. (2007)

For the Natural Resources Council of Maine, analyzed the costs and benefits of increasing the system benefits charge (SBC) in Maine to increase efficiency installations by Efficiency Maine. Testimony before the Maine Joint Legislative Committee on Energy and Utilities. (2006)

For Southern California Edison (SCE), working as a sub-contractor to Sargent and Lundy, analyzed the potential for an interstate transfer of a DSM resource between the desert southwest and California. For the same project, also analyzed transmission impacts of various alternatives to replace power supply from the currently closed Mohave generation station for SCE. (2005)

For two separate large New England utilities, conducted impact evaluations of large commercial and industrial sector DSM programs. (1994-1996)

For a New England utility, worked on the project team developing a set of DSM evaluation master plans for incentive-type and third-party-contracting type DSM programs (1994)

For EPRI, wrote an overview of the status of DSM information systems and the potential effects of an increasingly competitive utility environment. (1993)

For two separate large New England utilities, helped to develop competitive procurement documents (DSM RFPs) for filing before the Massachusetts Department of Public Utilities. (1993, 1994)

For a midwestern utility, conducted a trade ally study designed to determine the influence of trade allies on the market for energy efficient lighting and motor equipment. (1992-1993)

DSM Implementation

Conducted detailed site visits and suggested efficiency improvement strategies for over 1,000 commercial, industrial and institutional buildings in Rhode Island. Performed end-use energy analysis and coordinated implementation of improvements. Worked with local utility DSM program personnel to educate building owners on DSM program opportunities. (1987-1992)

Energy Modeling

For Pollution Probe, development of simplified congestion (locked-in energy) model to estimate congestion quantity effects of an alternative to a proposed new 500 kV transmission line. (2008)

For various clientele, worked closely with the TCA GE MAPS modeling group on various facets of security-constrained dispatch modeling of electric power systems across the US and Canada. Specific tasks included assisting in designing MAPS model run parameters (e.g., base case and alternative scenarios specification); proposing modeling designs to clients; supporting input data gathering; interpreting model results; and writing summary reports, memos & testimony describing the results. (2002-2004)

For a group of potential electricity supply investors in Ontario, modeled the impact of proposed generation plant phaseout trajectories on investment requirements for new supply in Ontario. (2004)

For the Independent Power Producer's Society of Ontario, conducted a retrospective quantitative analysis of the Ontario market energy and ancillary service prices during the 15 months of the new wholesale market to determine the extent of infra-marginal rents available that could have supported entry for new generation. (2003)

In support of proposals to the US Dept. of Defense for military housing privatization, performed DOE-2 model runs using an online tool; and created a spreadsheet modeling tool to analyze the efficiency and cost effectiveness of new and renovated residential construction for base housing. Performed life-cycle utility cost analysis and prepared energy plans specifying building shell, equipment and appliance efficiency measures at 15 separate Army, Navy, and Air Force installations around the nation. (2001-2003)

For the Independent Power Producer's Society of Ontario, conducted a rate impact analysis of Ontario Hydro Networks Company proposed transmission tariff. (1999-2000)

For the University of Maryland at Baltimore, conducted a life-cycle cost analysis of alternative proposals for district-type thermal energy provision, comparing existing steam delivery systems to new hot-water systems. (1998)

For the UMass Medical Center (Worcester), conducted an energy use and cost allocation analysis of a large hospital complex to assist in choosing among electric and thermal energy supply options. (2000)

For an independent power producer, developed a spreadsheet-based tool to assess the rate impact of a “clean coal” facility compared to alternative gas-fired supply options. (1996-1997)

For a private consulting firm, examined electric end-use and generation capacity information in seven industry energy models and reported the sensitivities of each model to varying levels of input aggregation. (1995)

For a private industrial firm in Virginia, developed a Monte-Carlo simulation-based spreadsheet model to solve a capital budgeting problem involving long-term choice of industrial boiler equipment. (1995)

For a New England utility, developed a spreadsheet model to help determine economic decision-making processes used by energy service companies when delivering third-party procured DSM. (1995)

Petroleum and Natural Gas Industry Analysis

For a private independent power producer, conducted an analysis of the rate impacts of the Warrior Run clean coal (fluidized bed combustion) power plant in Maryland under various assumptions of natural gas prices and environmental regulation scenarios. (1996-1997)

For a British consulting firm, researched the current status of natural gas restructuring efforts in the US and their impact on regional US power generation markets. (1996)

For a Canadian law firm representing Native Canadian interests, conducted a detailed analysis of natural gas netback pricing for Alberta gas into US Midwest and West Coast markets over a thirty-year period. (1995)

For a US natural gas pipeline consortium, performed an econometric analysis of the demand for natural gas in the state of Florida. (1992-1993)

PAPERS, PUBLICATIONS AND PRESENTATIONS

Assessing the Multiple Benefits of Clean Energy: A Resource for States, with a multi-disciplinary team of consultants. Prepared for U.S. Environmental Protection Agency, February 1, 2010.

Synapse Report and Ohio Comments in Case No. 09-09-EL-COI, "The Value of Continued Participation in RTOs", with Rick Hornby and Bruce Biewald. Prepared for Ohio Consumers' Counsel, May 26, 2009.

Review of AmerenUE February 2008 Integrated Resource Plan, with Rick Hornby, Jeff Loiter, Phil Mosenthal, Tom Franks, and David White. Prepared for Missouri Department of Natural Resources, June 18, 2008.

LMP Electricity Markets: Market Operations, Market Power, and Value for Consumers with Ezra Hausman, David White, Kenji Takahashi, and Alice Napoleon. Prepared for American Public Power Association, February 5, 2007.

Interstate Transfer of a DSM Resource: New Mexico DSM as an Alternative to Power from Mohave Generating Station. Jointly authored with Tim Woolf, Bill Steinhurst and Bruce Biewald. Presented at the 2006 ACEEE Summer Study on Energy Efficiency in Buildings and published in the proceedings. (2006)

SMD and RTO West: Where are the Benefits for Alberta? Keynote Paper prepared for the 9th Annual Conference of the Independent Power Producers Society of Alberta, with Dr. Richard D. Tabors, March 7, 2003.

A Progressive Transmission Tariff Regime: The Impact of Net Billing, presentation at the Independent Power Producer Society of Ontario annual conference, November 1999.

Tariff Structure for an Independent Transmission Company, with Richard D. Tabors, Assef Zobian, Narasimha Rao, and Rick Hornby, TCA Working Paper 101-1099-0241, November 1999.

Transmission Congestion Pricing Within and Around Ontario, presentation at the Canadian Transmission Restructuring Infocast Conference, Toronto, June 2-4, 1999.

The Restructured Ontario Electricity Generation Market and Stranded Costs. An internal company report presented to the Ontario Ministry of Energy and Environment on behalf of Enron Capital and Trade Resources Canada Corp., February 1998.

Alberta Legislated Hedges Briefing Note. An internal company report presented to the Alberta Department of Energy on behalf of Enron Capital and Trade Resources Canada, January 1998.

Generation Market Power in New England: Overall and on the Margin. Presentation at Infocast Conference: New Developments in Northeast and Mid-Atlantic Wholesale Power Markets, Boston, June 1997.

The Market for Power in New England: The Competitive Implications of Restructuring. Prepared for the Office of the Attorney General, Commonwealth of Massachusetts, by Tabors Caramanis & Associates with Charles River Associates, April 1996. R. Fagan was a key member of the team that produced the report.

Estimating DSM Impacts for Large Commercial and Industrial Electricity Users. Lead investigator and author, with M. Gokhale, D.S. Levy, P.J. Spinney, G.C. Watkins. Presented at The Seventh International Energy Program Evaluation Conference, Chicago, Illinois, August 1995, and published in the Conference Proceedings.

Sampling Issues in Estimating DSM Savings: An Issue Paper for Commonwealth Electric. Prepared with G.C. Watkins, Charles River Associates. Report for COM/Electric System, filed with the MA Dept. of Public Utilities (MDPU), April 28, 1995, Docket # DPU 95-2/3-CC-1.

Demand-side Management Information Systems (DSMIS) Overview. Electric Power Research Institute Technical Report TR-104707. Robert M. Fagan and Peter S. Spinney, principal investigators, prepared by Charles River Associates for EPRI, January 1995.

Impact Evaluation of Commonwealth Electric's Customized Rebate Program. With P.J. Spinney and G.C. Watkins. Charles River Associates, Initial and Updated Reports, April 1994, April 1995, and April 1996. 1995 updated report filed with the MDPU, April 28, 1995, Docket # DPU 95-2/3-CC-I. The initial report filed with the MDPU, April 1, 1994.

Northeast Utilities Energy Conscious Construction Program (Comprehensive Area): Level I and Level II Impact Evaluation Reports. With Peter S. Spinney (CRA) and Abbe Bjorklund (Energy Investments). Charles River Associates Reports prepared for Northeast Utilities, June and July 1994.

The Role of Trade Allies in C&I DSM Programs: A New Focus for Program Evaluation, Paper authored by Peter J. Spinney (Charles River Associates) and John Pelozo (Wisconsin Electric Power Corp.). Presented by Bob Fagan at the Sixth International Energy Evaluation Conference, Chicago, Illinois, August 1993.

Resume dated September 2010.