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BEFORE THE

PUBLIC UTILITIES COMMISSION OF OHIO

THE DAYTON POWER AND LIGHT COMPANY

CASE NO. 08-1094-EL-SSO
08-1095-EL-ATA
08-1096-EL-AAM
08-1097-EL-UNC

TESTIMONY OF
SCOTT W. NIEMANN
IN SUPPORT OF THE STIPULATION
AND RECOMMENDATION

- ☐ MANAGEMENT POLICIES, PRACTICES, AND ORGANIZATION
- ☐ OPERATING INCOME
- ☐ RATE BASE
- ☐ ALLOCATIONS
- ☐ RATE OF RETURN
- ☐ RATES AND TARIFFS
- ☒ OTHER

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BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO
DIRECT TESTIMONY OF
SCOTT W. NIEMANN
ON BEHALF OF
THE DAYTON POWER AND LIGHT COMPANY

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your full name, title, and business address.

A. My name is Scott W. Niemann. I am a Principal of CRA International ("CRA"), an international economics, finance, and business consulting firm. My business address is 200 Clarendon Street, T-33, Boston, MA 02116.

Q. Please describe your professional and educational background and qualifications.

A. I am a member of the Energy and Environment Practice Group at CRA. The primary focus of my consulting is in the areas of wholesale electricity market analysis, electricity market design and restructuring, regulation, and business strategy in the increasingly competitive U.S. electricity industry. I have advised clients and conducted quantitative studies related to business and regulatory issues affecting wholesale markets for electric power, installed generating capacity, and operating reserves. My work has focused on a broad range of issues including resource adequacy, fuel markets, environmental regulations, market structure, locational marginal pricing, financial transmission rights, seams issues, and market power. I have conducted studies and made numerous presentations to utility and merchant power clients, rating agencies, state agencies and utility commissions, and the U.S. Department of Justice. I have been retained as an independent market expert both in support of asset transactions and in litigation and regulatory proceedings.

I have extensive experience conducting detailed market modeling and financial analysis using a broad range of market analysis tools. Over the past ten years, I have conducted or

22 managed more than 50 modeling studies addressing financial performance of generating
23 assets, rate-payer benefits of potential transmission upgrades, wholesale costs of meeting
24 retail load obligations, market structure issues, market power concerns, and economic
25 damages. These studies have involved forecasting of market prices, cash flows for
26 generating assets, and costs to utility customers, as well as cost-benefit analysis and
27 measurement of ratepayer impacts.

28 Much of my work has focused on the markets administered by Regional Transmission
29 Organizations ("RTOs") in the Midwest and Northeast US, including the PJM
30 Interconnection ("PJM"). I have conducted numerous market modeling studies of the
31 energy and capacity markets, including fundamental market price forecasts and analyses
32 of ratepayer costs. In addition to forecasting wholesale power prices, I have developed
33 detailed models of the capacity markets administered by each ISO, including the recently
34 implemented Reliability Pricing Model ("RPM") for PJM and the Forward Capacity
35 Market for ISO-NE. These models forecast market prices in light of both the economic
36 fundamentals and detailed rules behind each market design. Recently, I have been
37 actively involved in advising numerous market participants on the implications of these
38 markets and the outlook for capacity prices.

39 Prior to joining CRA in 2001, I was a Principal Consultant in the Energy Economics
40 Practice of PA Consulting Group. I hold a BA degree in Mathematics, Economics, and
41 Political Science from the University of Kansas and MS and PhD degrees in Economics
42 from the University of Wisconsin. My resume is attached as Exhibit SWN-1.

43 **Q. Have you provided prior testimony in this docket?**

44 A. Yes. In October 2008, I provided testimony regarding forecasted capacity prices under
45 PJM's RPM capacity market. Those forecasted prices, which were prepared under my
46 direction and provided to Dayton by CRA and as part of a routine capacity market
47 update, were used in DP&L's analysis of the ESP rate structure

48 **Q. What is the purpose of your current testimony in this matter?**

49 A. I have been asked by counsel for The Dayton Power and Light Company ("DP&L") to
50 assess how rates under a proposed settlement in relation to its Energy Security Plan
51 ("ESP") compare to the rates DP&L's customers would pay if fully exposed to market
52 prices. The analysis was conducted pursuant to Sections 4928.142 and 4928.143 of the
53 Ohio Revised Code, which requires benchmarking of rates under an ESP to rates under
54 an equivalent Market Rate Offer ("MRO"). I have evaluated projected market rates for
55 full requirements, including energy, capacity, transmission service, and related products.
56 Based on information provided by DP&L, I have estimated the aggregate customer costs
57 that could be expected in a full requirements MRO and compared the resulting average
58 price to the projected ESP rates under the Settlement.

59 **Q. What are your principal conclusions?**

60 A. The projected ESP rates for DP&L customers under the proposed settlement are, in
61 aggregate, lower than the estimated costs for equivalent service under an MRO. For
62 commercial purposes, DP&L routinely estimates the competitive, market-based costs for
63 each component of supply for its retail customers. I have reviewed the methodology and

underlying data sources used to derive DP&L's estimates and concluded that the approach is conceptually sound and that it produces reasonable and conservative estimates of costs under an MRO. Moreover, reasonable adjustments to some aspects of the methodology would lead to a higher estimate of costs under an MRO, making the comparison to the ESP rates even more favorable.

II. METHODOLOGY FOR ESTIMATING MARKET RATES

Q. Can you provide a summary of the DP&L methodology?

A. Yes. The approach relies on market prices for each component of DP&L's retail service, including energy, capacity, transmission service, ancillary services, and other costs of competitive supply. The cost estimates for the capacity and energy components are developed from forecasted market prices, which are then applied to projected aggregate volumes for DP&L customers. The estimates for other cost components are developed from either tariff-based rates or average historical costs.

Q. Is DP&L's methodology reasonable for estimating MRO rates?

A. Yes. The estimates capture the market-based cost of the services associated with the by-passable portion of ESP rates. Conceptually, this approach allows an apples-to-apples comparison of what customers would pay under the ESP rates, and what they would pay under rates determined by an MRO. Moreover, DP&L routinely uses this approach to estimate the prices that competitive retail suppliers would be able to offer customers and the resulting potential for customer switching. The process has therefore been used to

inform commercial decisions, demonstrating that it is intended to provide unbiased estimates of market-based costs when considered from DP&L's business perspective.

Q. Are the data underlying DP&L's estimates of market based costs derived from reliable sources?

A. Yes. The forward looking market price data are based on publicly available forward market prices or independent, third-party projections. The data are current and reflect expected costs under today's market conditions. Where projections are based on historical information, they are derived from data for periods that are reasonably similar to the forecast period and therefore provide reasonable forward-looking estimates.

Q. Are there aspects of the DP&L methodology that are conservative in your view?

A. Yes. In particular, the approach to estimating installed capacity costs is likely to moderately understate the actual market-based cost that would be reflected in retail rates. Additionally, some costs that may be incurred in competitive supply have been excluded. For example, the projected rates do not include any cost of meeting the Renewable Portfolio Standard (RPS) for Ohio, which starting this year requires a percentage of energy supply to come from renewable and alternative energy sources. I will discuss these sources of conservatism in more detail as I discuss the approach for estimating each cost component.

Q. How is the price for the energy component of the MRO estimated?

A. The projections are based on forward market prices for energy delivered to the AEP-Dayton Hub. The prices used in this analysis are based on price quotes and transaction

105 data for January 29, 2009. The forward prices for monthly strips provide a market-based
106 estimate of average on- and off-peak power prices for each month of the forecast period.
107 In order to get estimates of the cost of serving DP&L retail load, the monthly strip prices
108 are used to derive hourly locational marginal prices (LMPs) for the Dayton load zone.
109 Translating the monthly strip for the AEP-Dayton Hub into estimates for these hourly
110 LMPs involves two steps. First, AEP-Dayton Hub prices for each hour of each month are
111 estimated by applying the historical relationship between the price in each hour of each
112 month and the monthly strip price. Next, the hub price is adjusted, based on historical
113 data, to reflect the expected locational price differential between the Dayton Load Zone
114 (at which retail load is priced) and the hub.
115 The resulting hourly prices are then multiplied by the projected hourly loads for a
116 collection of customer profiles representing the load shapes of Dayton retail customers. A
117 weighted average of the prices for each profile then provides the average aggregated
118 price for Dayton customers on a \$/MWh basis.

119 **Q. How is the price for the installed capacity component of the MRO estimated?**

120 A. The installed capacity component of the aggregate price is derived by estimating
121 aggregate annual capacity costs for DP&L retail customers and allocating it based on
122 annual retail energy sales. Capacity in PJM's RPM capacity market is an annual product
123 based on an installed capacity requirement determined by peak demand; the cost is
124 therefore independent of energy consumption. In order to estimate the annual cost,
125 DP&L multiplies the expected price of capacity (in \$/kW-year) by the forecast peak

demand of its retail customer base.¹ Dividing by projected annual retail energy sales converts this annual cost to a price in \$/MWh, allowing it to be factored into the MRO rate.

The capacity prices used to calculate capacity costs are based on RPM forward auction outcomes and projections provided by CRA. The vast majority of capacity requirements under the RPM market design are met through mandatory forward auctions held three years in advance of the period for which resulting capacity obligations apply. Because of the forward market design, actual market prices are known 3 years in advance, and hence those prices have already been established through May 30, 2012. For the remaining seven months of the forecast period for this analysis, CRA's most recent estimate of the clearing price for the June 2012 through May 2013 capacity market obligation period was used. I described the methodology behind that projection in my prior testimony in this docket.

Q. Why does this methodology provide a conservative estimate of actual capacity costs?

A. The estimates of installed capacity costs under DP&L's methodology are conservative in two ways. First, because the quantity of capacity purchased is estimated by DP&L based on forecasted peak load, it is likely to be understated. The installed capacity purchase obligation for a load serving entity in PJM is established based on that LSE's share of the regional peak load, plus a specified reserve margin requirement. Using forecasted peak load to estimate the installed capacity requirement excluding the reserve margin therefore will lead to a lower cost and lower rate. The reserve margin requirements for the 2009-

¹ Based on share of the regional coincident peak load.

2012 period ranges from 16.5 percent to 19.2 percent.² After accounting for an adjustment made by PJM to reflect the average forced outage rate among capacity resources, this exclusion reduces the capacity rate by approximately 8 to 10 percent.³ Second, the DP&L projections are based on current expectations for peak load. However, the capacity obligations under RPM were established based on earlier PJM load forecasts. With the recent economic downturn, load growth expectations have declined significantly. Hence, the current DP&L peak load forecasts for 2009-2011 are likely below the actual share of peak load used to calculate the capacity cost for the Dayton load zone in the RPM auctions held to date. For example, PJM's forecast for the Dayton load zone 2009 peak load has decline from 3,639 MW to 3,399 MW.

Q. What transmission service costs would apply under an MRO and how are these estimated?

A. Any supplier of retail load will be responsible for transmission service charges under the PJM Open Access Transmission Tariff (OATT). These charges are therefore reflected in the by-passable portion of the ESP rate and would be reflected in any MRO price. These charges are estimated based on the rates established in the PJM OATT and are allocated to retail customers on a \$/MWh basis based on forecasted annual retail sales.

² See Table 1 of the PJM Base Residual Auction Report for 2011/12, available at <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/20080515-2011-2012-bra-report.ashx>

³ The product bought and sold in the RPM market is unforced capacity (UCAP), which is the full summer installed capacity of a resource multiplied by 1 minus its forced outage rate. LSE's obligations are translated to UCAP by the same process. For example, with a 6 percent average forced outage rate and a 15 percent reserve margin, an LSE's capacity requirement would be $(\text{peak load}) * 1.15 * 0.94 = 1.081 * (\text{peak load})$.

164 **Q. How are ancillary services costs estimated and included in the MRO rate?**

165 A. Ancillary services costs are estimated based on historical costs for the Dayton Load Zone.
166 The total annual costs are allocated to retail customers on a \$/MWh basis based on
167 forecasted annual retail sales. Historical ancillary services costs are generally
168 representative of expected future costs. However, with the addition of more intermittent
169 resources such as wind generation, ancillary services requirements and costs are likely to
170 increase. Hence, the historical values are likely to be a conservative estimate.

171 **Q. Are there any other costs accounted for in the estimated MRO price?**

172 A. Yes. The MRO price estimate also includes a projected margin for a competitive
173 provider. This margin represents the premium over expected spot market prices that such
174 a supplier could be expected to build into an MRO. The premium would cover the
175 additional return needed to compensate for quantity and price risk faced by an
176 unregulated, competitive supplier, as well as administrative and transaction costs
177 associated with entering into an MRO arrangement. This margin was estimated based on
178 the unregulated margin reported by Constellation New Energy in its 2007 Form 10-K.⁴

179 **Q. Are there any additional costs that could factor into an MRO price that are not**
180 **reflected in this analysis?**

181 A. Yes. For example, as mentioned above, retail suppliers may also face cost of complying
182 with the Ohio RPS. Additionally, under the ESP rate, retail customers receive benefits of
183 price stability and rate certainty that would not be provided by market-based pricing. An

⁴ The Constellation 10-K is available at
<http://investing.businessweek.com/research/stocks/financials/secfilings.asp?symbol=CEG>. See page 43.

MRO that included this same level of certainty would require an additional premium not reflected in the MRO price estimated for this analysis. Exclusion of these factors adds to the conservatism of this MRO analysis.

Q. How did you obtain the ESP rates used for comparison to your MRO estimates?

A. The projected rates under the ESP were provided to me by DP&L. It is my understanding that these projected rates fully reflect the terms of the proposed settlement.

III. RESULTS

Q. Can you summarize how your estimate of the MRO rate compares with projected ESP rates?

A. Yes. Table 1 shows a comparison of the aggregate average retail rates under the ESP to the equivalent estimated MRO price. On average over the four-year period 2009-2012, the MRO prices are well below the ESP rates. Additional detail for the MRO rates is provided in Exhibit SWN-2. The exhibit shows each component of the MRO price for each year. The first line of the detailed tables in the exhibit shows the aggregate average across DP&L customers for each component: Energy (weighted LMP) costs, capacity costs, transmission charges under the PJM OATT, and other costs (ancillary services + competitive supply margin). The more detailed tables below the aggregate values show the estimated costs for each DP&L customer profile. Differences among the costs for each profile reflect different hourly load shapes and contributions to peak demand. For example, the "RS" profiles are all representative of residential customers and the energy prices reflect higher consumption during peak hours when prices are higher. By contrast,

the SL01 price is for street lighting, and is lower because the energy is consumed overnight, when off-peak prices are lower.

Table 1: Comparison of ESP and MRO Rates

	2009	2010	2011	2012
By-Passable Retail Rate Under ESP	\$58.88	\$67.34	\$68.28	\$68.94
Cost at Market Rates	\$57.51	\$67.59	\$73.87	\$77.13

Q. You discussed several ways in which the estimate of MRO rates may be conservative. Can you provide an example of the impact of the conservative assumptions?

A. Yes. As discussed, the calculation of capacity costs used to estimate market rates by DP&L is likely to understate the true costs under PJM's RPM market. Table 2 shows the capacity cost component underlying the numbers shown in Table 1, along with an adjusted set of capacity cost estimates that account for the full quantity of capacity that retail suppliers would be required to procure through RPM. As the table shows, adjusting the capacity market costs component to more accurately reflect the capacity purchase obligations of LSEs would add between \$1.09 and \$2.13 to the MRO price. With this adjustment, the MRO costs would exceed the ESP rates not only on average over time, but for each year 2009-2012.

Table 2: Capacity Portion of MRO Prices (\$/MWh)

	2009	2010	2011	2012
DP&L Methodology	\$7.90	\$10.74	\$10.18	\$9.76
Adjusted Methodology	\$9.36	\$12.87	\$11.71	\$10.85
Difference	\$1.46	\$2.13	\$1.53	\$1.09

223 **IV. CONCLUSIONS**

224 **Q. Based on the analysis above, what is your conclusion regarding the comparison of**
225 **the ESP to MRO rates?**

226 A. The rates included in Dayton Power and Light's (DP&L's) settlement are better in the
227 aggregate than the equivalent market rates for the period 2009-2012. This conclusion
228 was reached based on a detailed review of DP&L's approach to determining market rates,
229 and the resulting MRO price estimates. In my opinion, this approach is reasonable and
230 conservative.

231 **Q. Does this conclude your testimony?**

232 A. Yes.

233

Exhibit SWN-1



INTERNATIONAL

SCOTT W. NIEMANN

Principal

Ph.D. Economics,
University of Wisconsin

M.S. Economics,
University of Wisconsin

B.A. Mathematics, Political Science, Economics,
University of Kansas

Scott Niemann is an economist with extensive experience in the design, policy, and analysis of energy markets. As a member of CRA's Energy and Environment Practice, he has advised clients on a broad range of commercial and policy related issues in energy markets and network industries. Much of his recent work has focused on wholesale power markets, addressing market design, LMP pricing, financial transmission rights, resource adequacy markets, seams issues, and market power. Dr. Niemann has conducted numerous market studies addressing financial performance of electric generating assets, benefits of potential electric generation, transmission, and gas infrastructure upgrades, valuation of financial transmission rights, market power concerns, and economic damages. He has been retained as a market expert by a broad range of clients, including utilities, merchant power providers, investors, and trading organizations.

Prior to joining CRA, Dr. Niemann was a Principal Consultant at PA Consulting (and predecessor companies, PHB Hagler Bailly, and Putnam, Hayes, and Bartlett), where he conducted economic analyses in the environmental, energy, and commercial litigation practice areas.

PROJECT EXPERIENCE

WHOLESALE ELECTRICITY MARKET ANALYSIS AND MODELING

- On behalf of companies involved in power marketing, electricity generation, and energy transmission and delivery, performed more than 70 analyses of energy prices, power plant performance, and generation asset values in North American wholesale energy markets. This work has involved contributing to the development of a suite of detailed models, including a GE MAPS model of the North American wholesale energy market, and managing numerous simulations of the Eastern and Western U.S. and Canadian electricity markets using this suite of models.

-
- Served as Independent Market Advisor in several electric power asset transactions. These engagements have involved due diligence support, preparation of Independent Market Advisor's report for the sale and/or financing process, presentations and teleconferences with investors, lenders, and debt rating agencies. Assets have included several Combined-Cycle facilities in the Northeast U.S. Regional Transmission Organizations, peaking facilities in various U.S. Markets, gas- and oil-fired steam electric plants, wind generation, and base load assets.
 - Led the development of CRA's GE-MAPS modeling capabilities, including compilation and auditing of generation, load, fuel price, and transmission data, and incorporation of these data into an MS-ACCESS database and interface with the GE-MAPS model. Managed the model calibration refinement of model inputs, outputs, and post-processing to provide realistic commercial results.
 - Provided on-going market forecasting and valuation of a merchant combined-cycle power plant in the Northeast U.S. and associated power purchase agreements. Analysis is used in the operational and strategic decision making of senior management. Presented results to board of directors and public agencies.
 - Assisted a merchant power provider with a successful bid as part of a public procurement process for long-term power supply. Support included market modeling and price forecasting, estimation of consumer benefits from construction of a new generating facility, presentations to and preparation of materials for counterparty regarding the market impacts of the contract, and strategic analysis for the pricing and structuring of the bid.
 - On behalf of US Power Generating, LLC., conducted an analysis of the New York City capacity and energy markets to support the evaluation and successful acquisition of the Astoria generating portfolio. Prepared independent market assessment and forecast of financial performance to support the financing process.
 - On behalf of a generation owner, estimated the impacts on power prices and the value of the company's portfolio of generation additions and repowering projects under consideration for the company's existing sites in the Northeast U.S.
 - On behalf of a generation owner engaged in merger negotiations, prepared an assessment of the company's existing portfolio of assets and the markets where the assets are located. Assessment was used to guide the company's internal strategic discussions and provided to the counterparty as part of the negotiations.
 - On behalf of a large U.S. utility, assessed the impacts on the value and operation of its assets of integrating its service area into a competitive, LMP-based market. The analysis examined a broad range of issues including the effects of constraints outside the utilities service area on LMPs within the area, mitigation of seams issues, impacts of the precise definition and implementation of constraints within market software on the congestion patterns affecting nodal prices in the utilities territory, and the ability to hedge congestion risks through an FTR portfolio.

-
- On behalf of the Vice President of Energy Management at Con Edison, conducted several studies related to the NYISO market, including:
 - Analysis of the impact of changes in a wheeling arrangement between Con Edison and PSE&G using a GE-MAPS model of the Northeast U.S. The analysis included comparison of location prices, transmission congestion, and generation patterns within the PJM and NYISO systems under a range of PJM-NYISO transfer scenarios. Evaluated various strategies for implementation of the wheeling arrangement in light of market rules, commitment and dispatch methodologies, and transmission constraints within PJM and the NYISO.
 - Evaluation of the impacts on locational prices, generation costs, and costs to retail consumers within both PJM and the NYISO of moving Rockland Electric load from the NYISO to PJM.
 - Evaluation of benefits of potential transmission upgrades both within New York City and other parts of the NYISO system.
 - Analysis of the impacts on locational prices and costs to retail customers of generation and transmission outages within New York, generating capacity additions in various locations, and proposed retirement of existing units.
 - On behalf of participants in auctions for financial transmission rights (FTRs) and Transmission Congestion Contract (TCCs), analyzed bidding strategies, historical and forecasted congestion patterns, impacts of changes in market rules on FTR values, and historical FTR and TCC auction outcomes.

RESOURCE ADEQUACY POLICY AND CAPACITY MARKETS

- On behalf of numerous market participants, conducted independent market assessments of northeast ISO resource adequacy markets. Led the development of CRA's price forecasting models for ISO-NE Forward Capacity Market, NYISO UCAP market, and PJM RPM Market. Served as capacity market expert in numerous assignments to support capacity acquisitions, financing, transfer pricing, and strategic decision making.
- Provided expert testimony (both written and live oral) on behalf of NRG as part of the Connecticut Department of Public Utility Control (DPUC) proceeding regarding procurement of energy and capacity awarded under the Connecticut Energy Independence Act. Testimony focused on the benefit evaluation approach implemented in the selection of winning projects.
- On behalf of the Dayton Power and Light Company, provided expert testimony supporting CRA's forecast of PJM capacity prices under its RPM forward capacity market.

MARKET DESIGN

- Advised market participants during the Federal Energy Regulatory Commission (FERC) proceedings related to the design and implementation of the ISO-New England Forward Capacity Market (FCM), PJM Reliability Pricing Model (RPM), and New York ISO Installed Capacity (ICAP) Market.
- Provided expert testimony on behalf of Pepco Energy Services to support a complaint before FERC regarding RPM market rules for performance incentives and penalties.
- Served as Project Manager for a CRA team engaged by ESB National Grid, the Irish system operator, to assist in the design of a competitive wholesale market for Ireland and develop the rules for the market. As Project Manager, coordinated team staffing and deliverables schedule, working on-site in Dublin. Led or participated in meetings with CRA team and client staff to develop straw man proposals for market design aspects. Drafted and presented discussion papers outlining aspects of the proposed design.

NATURAL GAS

- Led analytical efforts to estimate the gas demands related to steam and electric generation for a New York utility, examining a range of scenarios based on the relative prices of natural gas and other fuels, electricity demand, and the future mix of generating technology and fuel options.
- On behalf of the New York Research and Development Authority, managed a team to develop an integrated natural gas and electric modeling system to evaluate the adequacy of the gas delivery system for meeting the future demands of electric generators. Led electricity modeling efforts related to the estimation of fuel demands among electric generators in New York and neighboring regions, accounting for transmission constraints, gas delivery constraints, and fuel switching by generations.
- On behalf of a large power generating and trading organization, acted as independent market expert supporting antitrust approval of a natural gas asset acquisition. Led an evaluation of potential market power concerns stemming from the acquisition of natural gas transportation and storage assets and presented analysis to the Department of Justice in support of the company's successful application for agency approval under the Hart Scott Rodino Act.

COST-BENEFIT ANALYSIS

- On behalf of Dominion Virginia Power, led analytical efforts related to wholesale power markets in an assessment of the costs and benefits of integration of Dominion into the PJM market.
- On behalf of a U.S. utility, conducted an assessment of the power market related costs and benefits of adding a base load coal plant with the utility's service area.

- On behalf of various U.S. clients, contributed to studies of the costs and benefits of forming Regional Transmission Organizations and implementing economic congestion management and LMP in place of physical congestion management. Specifically, the studies address the elimination or alleviation of seams issues between markets, FTR allocations, formation of regional load prices in markets with nodal prices for generators, and impacts of market changes on retail electric rates.
- Evaluated benefits of potential transmission upgrades in the northeastern U.S. and Canada. The analysis used a GE MAPS model of the Eastern interconnection to measure the change in energy prices, and consumer and producer surplus in the Great Lakes Region.
- Evaluated the costs and benefits of adding new transmission lines at various locations within the Northeast U.S.
- Evaluated the economic and environmental impact on a North American regional energy market of retiring coal-fired generation. The analysis involved estimation of the resulting changes in energy prices, power plant emissions, costs to consumers, and financial performance of generation assets.

MARKET POWER

- Led analytical efforts supporting CRA expert testimony before the Federal Energy Regulatory Commission regarding the manipulation of electric power prices in the Pacific Northwest during the California Energy Crisis. Analysis addressed the reasonableness of a wholesale power contract in light of spot and forward market prices and the ability of power markets and traders to influence those prices.
- Studied generator bidding behavior in northeastern electricity markets and the impacts of market power mitigation measures.
- On behalf of clients in the wholesale electric power and natural gas industries involved in mergers or assets sales, assessed market power concerns under the FERC's Appendix A Merger Guidelines for transactions in several U.S. regions, including NYISO, ISO-NE, PJM, SERC, ECAR, SPP, ERCOT, and WECC.

OTHER ENERGY LITIGATION

- Conducted analyses supporting CRA expert testimony in commercial litigation and FERC proceedings, including:
 - Wholesale power contract disputes.
 - Disputes over transmission rights.
 - Market design and market power mitigation issues.

- Allegations of market power abuses.
- Damages analysis related to generating unit outages.
- Provided expert testimony regarding expected electricity prices, generator unit operations, and the corresponding value of transmission credits held by the owners of a merchant power plant in the Southeast U.S.

OTHER ENERGY PROJECTS

- On behalf of a generation owner selling in the ISO-NE market, conducted an audit of payments for out-of-merit generation and associated uplift payments and production costs to identify recoverable costs and potential underpayments by the ISO.
- As part of a team working for an electric transmission and distribution utility, designed and conducted the econometric analysis for a study of customer value of service reliability. The study involved design and implementation of a survey and econometric analysis of the resulting data to measure residential and commercial customers' outage costs and willingness-to-pay to avoid various outage scenarios.

ENVIRONMENTAL LITIGATION

- On behalf of a municipal utility involved in litigation involving alleged natural resource damage, assisted in estimating the economic value of damaged resources. Project work included review of documents, collection of data, formulation of an economic framework for measuring damages, and support of an academic expert witness.
- On behalf of a Middle-Eastern country making a claim for environmental damages arising out of the 1990 Gulf War, assisted in the assessment and valuation of potentially recoverable economic damages. Conducted substantial in-country research and developed techniques to value changes in health and environmental conditions. The confidential assessment was submitted to the United Nations Compensation Commission.
- For a property value dispute in the western United States, evaluated alternative valuations of environmentally impaired commercial real estate. The project involved review and critique of a survey used to elicit willingness-to-pay and evaluation of alternative measures based on market transactions.
- For a residential property value dispute, conducted an econometric analysis of survey-based willingness-to-pay measures for changes in groundwater quality and associated health risks. The effort involved analysis of data from several surveys, each with a different design and format, to assess potential biases in the survey responses and determine the effects of various demographic characteristics.

- For companies engaged in settlement discussions and litigation regarding environmental insurance coverage claims, estimated the cleanup costs and potential natural resources and property damage liability at hazardous waste sites. The work involved development of detailed, site-specific estimates using probabilistic assessment methods to determine the expected present value and distribution of future costs, which reflect technical and regulatory uncertainty.

OTHER COMMERCIAL LITIGATION

- For a major corporation involved in an intellectual property and antitrust dispute, performed analyses of market share, production capacity, output prices, and production costs. Assisted in the estimation of alternative measures of economic damages using market share, lost profits, and stock market valuation methods. Provided support in the preparation of expert reports.
- For a privately held company involved in a tax dispute, evaluated cash retention strategies of publicly and privately held firms. The analysis involved reviewing academic literature and evaluating implications of finance theory for the decisions of different types of firms in various industries.

Exhibit SWN-2

Exhibit SWN-2

Final Summary Comparison

	2009	2010	2011	2012
ESP Avg Rate Projection	\$56.88	\$67.34	\$68.28	\$68.84
Market Price Projection	\$57.51	\$67.59	\$73.87	\$77.13

Market Pricing Process

Market Pricing based on broker energy quotes, capacity, transmission, ancillaries and margin assumptions as of 2-2-2009

Total Profile Weighted LUP

	2009	2010	2011	2012
Total Profile Weighted LUP	\$40.86	\$47.31	\$53.68	\$57.12

Historical DP&L Load Profile Make-Up

Profile	2009	2010	2011	2012
R2000	3.221%	2.277%		
R2001	3.221%	4.122%		
R2002	25.405%	17.899%		
R2003	9.725%	12.264%		
R2004	1.323%	1.309%		
R2005	0.425%	0.499%		
R2006	0.875%	0.799%		
R2007	5.177%	4.809%		
R2008	4.401%	4.809%		
R2009	4.801%	4.809%		
R2010	3.154%	2.889%		
R2011	3.154%	4.144%		
R2012	0.222%	0.169%		
R2013	0.000%	0.000%		
R2014	0.000%	0.000%		
R2015	1.400%	1.000%		
R2016	0.700%	0.400%		
R2017	2.122%	2.729%		
R2018	7.189%	8.810%		
R2019	6.077%	8.391%		
R2020	4.314%	6.039%		
R2021	1.501%	1.789%		
R2022	0.700%	1.809%		
R2023	0.000%	0.400%		
R2024	0.001%	0.001%		

Profile	2009	2010	2011	2012
R2000	\$41.63	\$40.25	\$45.88	\$55.29
R2001	\$41.40	\$47.96	\$54.85	\$67.87
R2002	\$41.67	\$48.31	\$54.95	\$68.38
R2003	\$41.12	\$47.63	\$54.04	\$67.50
R2004	\$41.15	\$47.76	\$53.81	\$67.70
R2005	\$41.14	\$47.68	\$53.85	\$67.70
R2006	\$38.88	\$44.83	\$50.29	\$62.69
R2007	\$42.23	\$49.11	\$55.01	\$68.45
R2008	\$41.35	\$47.03	\$53.73	\$68.07
R2009	\$40.34	\$46.33	\$52.05	\$65.76
R2010	\$40.18	\$46.52	\$52.13	\$66.00
R2011	\$42.88	\$50.05	\$57.02	\$67.07
R2012	\$38.57	\$45.70	\$51.82	\$64.97
R2013	\$34.50	\$39.22	\$42.38	\$45.50
R2014	\$30.58	\$45.87	\$51.88	\$54.93
R2015	\$40.55	\$46.97	\$55.18	\$67.73
R2016	\$40.41	\$46.76	\$53.64	\$66.80
R2017	\$40.00	\$46.11	\$53.31	\$66.65
R2018	\$39.77	\$45.91	\$52.21	\$65.26
R2019	\$39.67	\$45.76	\$52.07	\$65.05
R2020	\$40.67	\$46.98	\$54.06	\$66.79
R2021	\$39.88	\$46.02	\$52.39	\$65.40
R2022	\$42.62	\$49.07	\$57.44	\$69.53
R2023	\$40.82	\$46.95	\$57.44	\$69.53

Stares with the Onygon Load Zone Profile Weighted LUP

Total Profile Weighted Capacity Cost

	2009	2010	2011	2012
Total Profile Weighted Capacity Cost	\$7.90	\$10.74	\$10.18	\$9.76

Then add the MW equivalent transmission DATT cost determined by estimated profile contribution to coincident peak

Total Profile Weighted DATT Cost

	2009	2010	2011	2012
Total Profile Weighted DATT Cost	\$2.72	\$2.72	\$2.72	\$2.71

Then add other cost adders evenly to each customer

Total Ancillary & Margin Cost Adders

	2009	2010	2011	2012
Total Ancillary & Margin Cost Adders	\$6.04	\$6.82	\$7.29	\$7.55

	2009	2010	2011	2012
Day Ahead Operating Reserve	\$0.11	\$0.11	\$0.11	\$0.11
Rotating Reserve Charge	\$0.06	\$0.06	\$0.06	\$0.06
Spinning Reserve Charge	\$0.06	\$0.06	\$0.06	\$0.06
Regulation Charge	\$0.85	\$0.85	\$0.85	\$0.85
Reactive Supply and Dispatch	\$0.34	\$0.34	\$0.34	\$0.34
System Control and Dispatch	\$0.31	\$0.31	\$0.31	\$0.31
Margin	\$4.46	\$5.24	\$5.72	\$5.83

Margin assumption based on Constellation New Energy 2007 unregulated margin

http://investing.businessweek.com/research/stocks/articles/constellationnewenergy.asp?article=CE3

2007 annual 10-K, filing data Feb 27 2008

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Revenue \$16,745

Fuel and purchased energy exp. \$15,502

Operating exp. \$1,792

% Mark-up

8.4%

Above DATT Transmission prices are based upon the following \$/kWh-year rate

13.32

Above Capacity Costs are based on the following P&L RVM annualized \$/MWh-Day Prices

\$108.13 \$144.17 \$158.78 \$173.63

Above Capacity costs are based on the following DP&L Peak Load projections

3,765 3,776 3,785 3,795

DP&L Average By-Variable ESP Rate

	2009	2010	2011	2012
ESP Avg Rate Projection	\$56.88	\$67.34	\$68.28	\$68.84

DP&L Assumptions

1. DP&L rate plan: contract through 2012. Assume total does not go to market in 2011.
2. RST Rider in effect through 2012.
3. USF Rider remains in place at current rate.
4. GTS increases in 2010. Collection ending through 2012.
5. P&L Rider becomes part of TCRB when it is implemented.
6. TCRB rate implemented June 2009.
7. ESP&L - no renewal unchanged at \$0.0001.
8. Concession Fee User - rate remains unchanged.
9. Energy Efficiency Rider (EER) to be effective in April 2009.
10. RST non-by-possible through 2012.

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing Testimony of Scott W. Niemann in Support of the Stipulation and Recommendation has been served via electronic mail upon the following counsel of record, this 23rd day of February, 2009:

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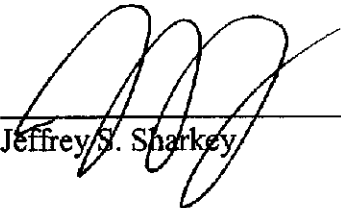
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