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**BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO**

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|--|------------------------|
| In the Matter of the Application of Ohio) | |
| Edison Company, The Cleveland) | |
| Electric Illuminating Company and The) | Case Nos. 09-21-EL-ATA |
| Toledo Edison Company for Approval) | 09-22-EL-AEM |
| of Rider FUEL and Related Accounting) | 09-23-EL-AAM |
| Authority) | |
|) | |
| In the Matter of the Application of Ohio) | Case No. 08-935-EL-SSO |
| Edison Company, The Cleveland) | |
| Electric Illuminating Company, and) | |
| The Toledo Edison Company for) | |
| Authority to Establish a Standard) | |
| Service Offer Pursuant To R.C. §) | |
| 4928.143 in the Form of an Electric) | |
| Security Plan) | |

DIRECT TESTIMONY OF

SCOTT T. JONES

ON BEHALF OF

**OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY**

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Public Utilities Commission of Ohio

**DIRECT TESTIMONY
OF
SCOTT T. JONES**

I INTRODUCTION

I.A Witness Qualifications

1 **Q: Please state your name and professional position.**

2 **A: My name is Scott T. Jones. I am the head of the Global Energy practice of**
3 **FTI Consulting. My firm specializes in strategic, economic, financial, and**
4 **public policy consulting services to private and public organizations.**

5 **Q: What is your professional and educational background?**

6 **A: I have been involved in issues related to the regulation of utilities and**
7 **regulatory policy for more than 23 years. My experience in the energy**
8 **industry, including forecasting and market price formation, spans some 33**
9 **years. Over this period, I have been an executive in the oil and gas industry**
10 **on two occasions and a consultant to numerous regulated utilities. My**
11 **experience includes the provision of expert testimony on a variety of topics**
12 **such as price formation, market power, and regulatory policy. I provided**
13 **testimony on behalf of The Cleveland Electric Illuminating Company, Ohio**
14 **Edison Company, and The Toledo Edison Company ("Ohio Companies" or**
15 **"Companies") in Case No. 99-1212-EL-ETP, which was the Ohio Companies'**

1 electric transition plan, and in Case No. 08-935-EL-SSO, which was their
2 energy security plan application. I hold a Ph.D. in economics from Virginia
3 Tech. My curriculum vitae, attached to this testimony as Exhibit 1, provides
4 further detail about my background and experience.

I.B Purpose

5 **Q: Please state the purpose of your testimony.**

6 **A:** In December 2008, CRA International ("CRA") conducted a solicitation
7 process¹ on behalf of the Ohio Companies in order to procure wholesale
8 generation services to meet the Companies' Standard Service Offer ("SSO")
9 load for the period January 5, 2009, through March 31, 2009.² Bids were
10 submitted on December 31, 2008, and the Companies entered into purchase
11 and sale contracts with four separate bidders to supply their retail SSO load.³
12 I was not involved in the design, development, or implementation of the
13 Companies' request for proposal ("RFP") process. I have, however, been
14 asked to offer my opinion as to whether the Companies' decision to procure
15 wholesale power supplies through term contracts,⁴ as well as the design and

¹ CRA International, Post-RFP Report on the FirstEnergy Ohio Utilities' Competitive Procurement for Standard Service Offer Supply: December 2008 RFP Process, January 9, 2009 ("CRA Report"), at 1.

² In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company for Approval of Rider FUEL and Related Accounting Authority, Application, January 8, 2009 ("Application"), at ¶15.

³ CRA Report at 1, 7; Application at ¶15.

⁴ Consistent with industry usage, I use the phrase "term contract" to refer to purchase and sale contracts with delivery periods that extend beyond the periods covered by "spot" transactions, i.e., those in the real-time and day-ahead markets.

1 implementation of the Companies' solicitation process, was reasonable and
2 prudent.

I.C Summary of Conclusions

3 **Q: Please summarize your conclusions.**

4 **A:** First, I conclude that the Ohio Companies' decision to procure wholesale
5 generation services through term contracts, rather than to rely upon the spot
6 market for such services, is reasonable and consistent with standard practice
7 by electric distribution utilities with similar needs. Indeed, since the 2000-
8 2001 debacle that resulted from the regulatory experiment with mandated
9 spot market provision of wholesale generation services by the regulators of
10 California's electricity industry, I believe reliance on term contracts in such
11 cases has become pervasive. I know of no distribution utility that today relies
12 upon the spot market for any material portion of its default service obligations
13 over an extended period of time.

14 Second, based on the testimonies of Mr. Stathis⁵ and Dr. Miller,⁶ I
15 conclude that the Ohio Companies' procurement process was reasonable and
16 prudent. The decision to use an RFP process to procure the required
17 wholesale generation services is consistent with the objective of procuring
18 competitively priced supplies and is also consistent with common practice in

⁵ Direct Testimony of Dean W. Stathis on Behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, February 20, 2009 ("Stathis Testimony").

⁶ Testimony of Bradley A. Miller, February 20, 2009 ("Miller Testimony").

1 the energy industry. The decision to retain CRA to design and manage the
2 process was reasonable, as CRA is a recognized expert in this area and its
3 work has been relied upon by various companies and regulatory authorities.⁷
4 Finally, the decision to establish reservation prices as part of the procurement
5 strategy was reasonable, prudent, and consistent with sound risk
6 management policies designed to protect the utilities and their customers
7 from unreasonably priced electric energy.⁸

II THE OHIO COMPANIES' PROCUREMENT OF WHOLESALE SERVICES FOR SSO LOAD

8 **Q: Please explain the circumstances that led to the Ohio Companies**
9 **needing wholesale power.**

10 **A:** Subsequent to the implementation of electric restructuring in Ohio in 2001,
11 the Ohio Companies transferred ownership of generation facilities, but
12 retained the statutory obligation to act as the provider of last resort to retail
13 electricity customers who did not purchase services from competitive
14 suppliers.⁹ The Ohio Companies purchased those generation services for
15 their supplier of last resort obligation from FirstEnergy Solutions ("FES"). The

⁷ See, e.g., Miller Testimony at 2.

⁸ The reservation price reflects the companies' analysis of market data and future market conditions, as well as the companies' views of their risk tolerance. Stathis Testimony at 17-18.

⁹ Application at ¶¶3, 10.

1 most recent power supply agreement with FES terminated on December 31,
2 2008.¹⁰

3 On July 31, 2008, the Ohio Companies filed a Market Rate Offer
4 ("MRO") plan with the Commission through which the Ohio Companies would
5 have used a descending clock auction process to procure wholesale
6 generation services in advance of the termination of the power supply
7 agreement with FES. The Commission denied the Companies' MRO
8 application on November 25, 2008.¹¹

9 Also on July 31, 2008, the Ohio Companies filed for approval of an
10 electric security plan ("ESP") pursuant to which they proposed to purchase
11 wholesale generation services from FES. The Commission did not approve
12 the Ohio Companies' ESP as filed, and instead approved a significantly
13 modified ESP on December 19, 2008. The Ohio Companies then exercised
14 their right to withdraw their ESP application.¹²

15 **Q: Please describe the Ohio Companies' procurement process.**

16 **A:** The Companies retained CRA in November 2008 to help design and manage
17 a competitive process for procuring wholesale generation services to meet
18 the Ohio Companies' SSO load.¹³

¹⁰ Application at ¶10.

¹¹ Application at ¶12.

¹² Application at ¶12. Stathis Testimony at 3-4.

¹³ CRA Report at 4.

1 The product to be purchased was defined as wholesale load-following
2 energy and capacity services that the Companies would need to serve their
3 SSO load.¹⁴ For purposes of the procurement, these wholesale
4 requirements were divided into 100 tranches, each of which was equal to 1%
5 of the Companies' aggregate SSO load.¹⁵ No single bidder could win more
6 than 75 tranches.¹⁶

7 In order to be qualified, bidders were required to be members of the
8 Midwest Independent System Operator ("MISO"); to be authorized by the
9 Federal Energy Regulatory Commission to make sales of energy, capacity,
10 and ancillary services at market-based rates; to certify their compliance with
11 the RFP rules; to certify their compliance with the SSO Supply Agreement; to
12 submit their bids with the signature of someone able to bind the company to
13 the SSO Supply Agreement; to be able to execute the SSO Supply
14 Agreement within one business day following the close of the solicitation; and
15 to refrain from entering into direct or indirect agreements with other bidders.¹⁷

16 The process for identifying winning bidders started by ranking the
17 qualifying bids from lowest price to highest price, and then awarding tranches

¹⁴ CRA Report at 9. Stathis Testimony at 10.

¹⁵ CRA Report at 9. Stathis Testimony at 10. Economic theory suggests that the smaller the tranches, the more likely bidders are to respond to the RFP since the 1% slice of system tranches can be more easily crafted into an offer of energy and capacity at fixed prices than larger-sized blocks of wholesale electric power that sellers may be more reluctant to provide, especially on short notice.

¹⁶ CRA Report at 11. Stathis Testimony at 15.

¹⁷ CRA Report at 10-11. Stathis Testimony at 14-15. Miller Testimony at 9-10.

1 to each bidder in order from lowest to highest price.¹⁸ As noted, no single
2 bidder could win more than 75 tranches. In addition, the Companies
3 established two reservation prices and determined that in the event that all
4 100 tranches were not awarded at prices equal to or below the lower
5 reservation price, then up to 95 tranches could be awarded at prices below
6 the higher reservation price, and that no tranches would be awarded at prices
7 in excess of the higher reservation price.¹⁹ Finally, winning bidders were to
8 be "paid as bid," meaning that they would receive the price they bid rather
9 than a single clearing price paid to all winning bidders.²⁰

10 The procurement was announced on December 22, 2008, and CRA
11 directly contacted 26 companies identified as potential bidders.²¹ Sealed bids
12 were accepted on December 31, 2008.²² CRA applied the criteria to identify
13 conforming and non-conforming bids, and then ranked the conforming bids
14 according to the pre-determined criteria.²³ Finally, the Companies entered
15 contracts with the four winning bidders for a total of all 100 tranches.²⁴

¹⁸ Stathis Testimony at 15.

¹⁹ Stathis Testimony at 16. The utility used a common statistical method to replicate the probable behavior of bidders given recent market conditions and known customer risk adversity to set a pair of probabilistic reservation prices. Reservation prices are the means by which the utility insures that it will not face unreasonably high wholesale electricity costs needed to meet SSO obligations.

²⁰ Stathis Testimony at 15.

²¹ CRA Report at 4. Stathis Testimony at 19.

²² CRA Report at 6.

²³ CRA Report at 5.

²⁴ Upon completion of the RFP process, only 97 tranches had been awarded. The Companies contacted the lowest bidder and negotiated to purchase the 3 remaining tranches from that bidder at the bidder's highest-priced tranche. Stathis Testimony at 20-21, 22-23.

1 **Q: Was it reasonable for the Ohio Companies to decide to procure power**
2 **through fixed-price term contracts instead of planning to rely upon spot**
3 **market purchases to meet its default service obligations?**

4 **A: Yes. In my experience, electric distribution utilities virtually never rely upon**
5 **spot market purchases for a large portion of their firm load. Unless ordered to**
6 **do so by regulators, electric distribution utilities do not choose to expose their**
7 **customers (or themselves) to spot market price volatility and other risks**
8 **engendered by sustained reliance on the spot market.**

9 **Q: How has spot market risk been mitigated or avoided in the past?**

10 **A: Traditionally, prior to restructuring, most electric distribution utilities generally**
11 **relied upon generation service provided by their own fleet of generation**
12 **capacity, and economy purchases from neighboring utilities. As a result of**
13 **the restructuring that began in the 1990s that led to the unbundling of electric**
14 **service into "generation" and "wires" services, many load-serving distribution**
15 **utilities now rely upon market purchases of generation service rather than**
16 **having direct access to company-owned generation resources. However, I**
17 **know of no case in which a load-serving distribution utility today relies**
18 **primarily upon spot market transactions in order to meet its firm load.**

19 **Q: Why have utilities and regulators avoided reliance upon spot markets**
20 **for generation services to meet firm load?**

21 **A: I believe the most likely reason is that the importance of reliable generation**
22 **service at stable prices has led utility executives, state regulators, and**

1 legislators to prefer self-generation (traditionally) or fixed-price term contracts
2 with creditworthy counterparties (in the unbundled era).²⁵

3 **Q: Have regulators and policymakers in other states experimented with**
4 **spot market reliance?**

5 **A:** Yes. Policymakers chose to rely almost exclusively on spot markets to
6 procure generation services to meet firm load following a policy implemented
7 by the Public Utilities Commission of California at the time that market was
8 restructured in the late 1990s. Because they were required to procure the
9 bulk of their energy supplies in the spot market, the utility companies had little
10 ability to hedge against price volatility or other risks. Further, because their
11 retail rates were fixed, the utilities quickly incurred substantial financial losses
12 as spot prices spiked in 2000 and 2001, causing the power crisis to become a
13 financial crisis. Several investigations and analyses, including a study by the
14 Federal Energy Regulatory Commission, consistently cited flawed regulatory
15 policy as the source of the "dysfunction" that caused the California electricity
16 crisis.²⁶

²⁵ Further, the distribution utility can efficiently hedge price risk by entering term contracts for supplies, whereas smaller customers may have few (if any) options to hedge such risks.

²⁶ See, e.g., Staff Report to the Federal Energy Regulatory Commission on Western Markets and the Causes of the Summer 2000 Price Abnormalities, Part I of Staff Report on U.S. Bulk Power Markets, November 1, 2000; Federal Energy Regulatory Commission, Order Proposing Remedies for California Wholesale Electric Markets, November 1, 2000; Federal Energy Regulatory Commission, Order Directing Remedies for California Wholesale Electric Markets, December 15, 2000; Steven Peterson and Charles Augustine, "Regulatory Failure in the California Electricity Crisis," *The Electricity Journal*, August/September 2003.

1 **Q: Was it reasonable for the Ohio Companies to conduct a competitive**
2 **bidding process, specifically a sealed bid RFP, to purchase the power**
3 **necessary to fulfill the Companies' standard service obligations (SSO)?**

4 **A: Yes. The use of RFP processes to procure goods and services from markets**
5 **at competitive prices is supported by economic reasoning, and RFPs are**
6 **widely used by business entities. In addition, the use of RFPs is standard**
7 **practice for governments procuring goods and services ranging from**
8 **consulting services to office equipment. Private sector businesses commonly**
9 **use competitive bidding processes such as sealed bid RFPs to purchase**
10 **what they need. As an energy industry executive I have personally received**
11 **and responded to RFPs from buyers wishing to acquire energy supplies, and I**
12 **have caused RFPs to be written in order to ensure a competitive outcome**
13 **when buying energy. As a consultant, I have assisted utility companies in**
14 **designing and implementing RFP processes.**

15 In the electricity sector, a sealed bid RFP is a fairly common and very
16 reasonable manner in which to buy power. For example, Figure 1 is a table
17 of recent RFP processes that were conducted in states that have restructured
18 their electricity sectors. Because RFP processes are likely to be familiar to
19 suppliers, and because they are relatively straightforward to set up and
20 administer, they may be preferable to more elaborate auction mechanisms
21 when there is a need to enter transactions expeditiously, as in the case of the
22 Ohio Companies.

1 **Q: If the evidence against over-reliance on spot market purchases is so**
2 **clear, then why do some intervenors advocate that utilities rely upon**
3 **spot markets?**

4 **A: I have not seen anyone advocate this approach in the past few years. It may**
5 **be that some intervenors intend to engage in *ex post* analysis and compare**
6 **the prices paid in term contracts with the prices that were available in the spot**
7 **market. However, this type of *ex post* analysis cannot be used to assess**
8 **whether a utility's decision was prudent. Assessing the prudence of a utility's**
9 **action is appropriately based on the information that was available to the**
10 **utility at the time of the decision.²⁷ The concept of prudence is always**
11 **forward-looking.**

12 Further, while pundits may opine that current market prices are "too
13 high" (or "too low"), and predict that future prices will be lower (or higher), as a
14 matter of economic principles it is reasonable to accept prices revealed in a
15 market process as representative of information available to the market at the
16 time. While it is a virtual certainty that market conditions will change, causing
17 prices to be higher or lower, it is unwise to attempt to "time the market" and to
18 make decisions based on such speculations. Efforts to "beat the market" or
19 to "time the market" are inconsistent with sound risk management principles
20 and practices. Proper risk management policy is designed not to lower prices

²⁷ See, e.g., Charles F. Phillips, Jr., *The Regulation of Public Utilities: Theory and Practice*, Public Utilities Reports, Inc., Arlington, VA, 1993, at 340-341.

1 but to reduce volatility and to limit extreme outcomes and ensure the
2 sustained supply of reliable electric energy.

3 **Q: If the prices in the contracts the Ohio Companies entered are higher**
4 **than prices observed in the current spot market or prices available for**
5 **standard (bilateral) forward contracts, is that evidence that the**
6 **solicitation process was not competitive?**

7 **A: No. As I explained at length in my testimony in the ESP case, the product**
8 **needed to satisfy SSO service obligations is very different from energy**
9 **purchased under spot or forward market contracts.**

10 For example, spot and forward contracts provide fixed quantities of
11 energy, whereas the costs of providing SSO service have to account for the
12 fact that utility customers do not demand the same amount of energy at all
13 points in time. This is because consumers do not use electricity at constant
14 rates throughout the year. Instead, their consumption varies minute by
15 minute in response to numerous factors. Market prices for power also vary
16 throughout the day. In particular, prices tend to be lower in off-peak hours
17 when relatively less-costly base load generation resources (e.g., nuclear and
18 some coal generation plants) are sufficient to meet all demand; and prices
19 tend to be higher during peak hours, when demand is higher and it is
20 necessary to rely upon relatively higher-cost generation resources (e.g.,
21 natural gas combustion turbines). Because higher load levels necessitate
22 the reliance on higher-cost generating resources, market prices are higher
23 when consumption is higher.

1 Further, forward contract prices can also be imprecise indicators of
2 expected future prices at specific load zones because forward prices are
3 typically reported only for highly liquid trading hubs (e.g., Cinergy Hub), and
4 transmission congestion can make those hubs unrepresentative of the
5 relevant load hub for the SSO load.

6 In addition, standard spot and forward energy contracts do not reflect
7 the cost of capacity required to comply with MISO rules. The Ohio
8 Companies are required to obtain capacity to meet the MISO Resource
9 Adequacy Requirements, a product for which only a bilateral market currently
10 exists.

11 Finally, because both the quantity of the services required to meet
12 SSO load and the costs to the utility that must provide these services are
13 highly uncertain, they cannot be hedged perfectly. Thus, the supplier of SSO
14 service provides highly valuable and costly risk-bearing services.

15 **Q: Please explain why suppliers require a margin to meet SSO load.**

16 **A:** The commitment to meet the Ohio Companies' standard service offer load
17 represents a substantial commitment of capital resources, and as noted
18 above these capital resources are exposed to substantial risk. Economic
19 reasoning, as well as extensive experience with previous similar
20 procurements, shows that potential suppliers will not make such a
21 commitment without an expectation of earning a margin to compensate for
22 these risks.

1 **Q: Please describe the nature of the capital commitment made by a**
2 **supplier of wholesale electric service to meet the Ohio Companies'**
3 **standard service offer obligation.**

4 **A: The SSO Supply Agreement includes terms and conditions that define the**
5 **credit requirements that suppliers had to be able to meet in order to be**
6 **qualified to bid on the RFP.²⁸ The supplier may be required to post security**
7 **in the form of cash or a letter of credit in the amount of \$200,000 per tranche**
8 **awarded to the supplier. Further, the amount of such security may increase**
9 **as a result of daily mark-to-market protocols.**

10 Generally, in order to be competitive, a supplier of wholesale
11 generation services to meet SSO load must have adequate capital to function
12 efficiently in energy markets, including the ability to enter forward contracts
13 and other derivative instruments for the purpose of obtaining sufficient,
14 diversified generation supply and for hedging any costs and/or risk associated
15 with providing the standard service offer.

16 For example, if a supplier enters a forward contract for the purpose of
17 hedging future expected load obligations, the supplier may be required to post
18 letters of credit or provide other assurances of performance to its trading
19 partners. In addition, if market prices move substantially lower, the supplier

²⁸ Standard Service Offer ("SSO") Supply Agreement for the Period from January 5, 2009, through March 31, 2009, Article 6 "Creditworthiness"; CRA Report at 4.

1 may have a significant credit exposure to cover.²⁹ Also, the supplier must
2 have adequate capital to fund the delay between the incurrence of expenses
3 and the collection of revenues.

4 **Q: Please describe the main risks that a supplier would bear if it were to**
5 **commit to supply wholesale electric services to meet the Ohio**
6 **Companies' standard service offer requirements.**

7 **A:** The main risks a supplier faces include load variability risk, price variability
8 risk, regulatory risk, and bidding risk.³⁰

9 **Q: Please define load variability risk.**

10 **A:** Load variability arises because real time customer demand is driven by
11 factors which are unpredictable and outside of the control of the participants
12 in the marketplace. These factors include, for example, weather and
13 changing macroeconomic conditions. Because of these factors, the supplier
14 cannot be certain of future load for any customer taking standard offer
15 service. This uncertainty makes hedging extremely difficult, since a drop in
16 load is often accompanied by a drop in market prices, and the supplier who
17 hedges risks being left with excess supplies at above-market prices. And,
18 alternatively, since an increase in load is often accompanied by an increase in

²⁹ As explained below, a decline in market prices is also likely to decrease the level of standard service offer load as customers will be able to get service at lower prices from alternative providers, leaving the supplier with excess supplies at above-market prices.

³⁰ Shopping risk also exists to the extent that the supplier is exposed to the risk that the Companies' SSO load may become smaller (or larger) as customers switch from SSO service to competitive supply (or from competitive supply to SSO service).

1 market prices, the supplier who does not hedge risks being required to make
2 purchases in the spot market at elevated prices.

3 **Q: Please define price variability risk.**

4 A: Price variability risk arises both because electricity prices are volatile and
5 because suppliers of the standard service offer are unable to perfectly hedge
6 their future needs owing to shopping risk and load variability. A supplier who
7 bids to provide wholesale electric service to meet standard service offer
8 service obligations can be fairly certain the actual market price at the time the
9 service is delivered will be higher or lower than the market price that was
10 expected at the time the bid was prepared. The supplier can hedge some of
11 its costs in forward markets, but forward contracts are typically traded as
12 "blocks" (i.e., fixed quantities of power per hour) and thus do not perfectly fit
13 the shape of actual customer load. Thus, the supplier cannot avoid having to
14 buy and/or sell some power in short-term markets.

15 **Q: Please define regulatory risk as it pertains to suppliers bidding to**
16 **provide wholesale electric service for the Ohio Companies' standard**
17 **service offer.**

18 A: Providers of wholesale electric service for the Ohio Companies' standard
19 service offer face regulatory risk in that the costs they incur to provide the
20 service can be affected by changes in regulatory policies. Well-recognized
21 sources of such risk in the Ohio Companies' service territories include the
22 possibility of future environmental regulations such as controls on greenhouse

1 gas emissions and the possibility that MISO will institute changes to the
2 design of its markets or rules.

3 **Q: Please define bidding risk.**

4 A: Bidding risk arises because once an offer is submitted, the bidder is typically
5 required to keep the offer "open" for some period of time for review and
6 acceptance by the regulator. During the time the bid is kept open, market
7 prices may change substantially, making it difficult or impossible for the
8 supplier to hedge the price that it offered.

9 **Q: What is the implication of the inability to hedge SSO load requirements?**

10 A: A supplier who commits to provide SSO services, including capacity reserves,
11 at a fixed price will require a premium for accepting the substantial associated
12 risks. In other words, the provision of SSO service at a fixed price will always
13 cost more than then-prevailing energy supplies from spot or corresponding
14 forward contracts. This is one reason why *ex post* comparison between fixed-
15 price contracts and spot market prices is inappropriate. Evidence from
16 previous solicitation events in other jurisdictions has shown that this premium
17 has been quite variable, and in some cases has been more than 50% of the
18 expected cost of providing the services.³¹

³¹ The September 2006 Illinois Auction: Post-Auction Public Report of the Staff, Prepared by the Staff of the Illinois Commerce Commission with the assistance of Boston Pacific Company, Inc., December 6, 2006, at 17.

1 **Q: As of the end of December 2008, what sort of premium over spot and**
2 **forward contract prices would you have expected the Ohio Companies**
3 **to face in the energy market?**

4 **A: Given the terms and conditions of the Ohio Companies' solicitation, including**
5 **the ongoing turmoil in financial markets prevalent now and at the end of**
6 **December 2008, in combination with the unusually short time period from**
7 **start to finish for the solicitation necessitated by the timing of the issuance of**
8 **the Commission's orders, I would expect that the premium required by**
9 **bidders would be relatively high. In addition, bidders may have perceived the**
10 **solicitation as subject to regulatory risk, given the apparent urgency**
11 **surrounding the solicitation. In any case, from the economist's perspective,**
12 **so long as the solicitation process was competitive, then the price that is**
13 **produced by the process is a competitive outcome. As I understand the**
14 **results of the solicitation process, there were four successful bidders. Bids**
15 **with as few as two successful bidders can result in a competitive outcome as**
16 **long as the bidders are knowledgeable and unconstrained in the formation of**
17 **their bid. Further, I understand that the utility agreed in advance to accept**
18 **bids – from lowest to highest – until the requirements to fulfill virtually the**
19 **entire SSO obligation was met given the reservation prices identified by the**
20 **Companies' analysis of customer risk-aversion and energy price volatility.**

III CONCLUSION

1 **Q: Please summarize your conclusions.**

2 A: First, the Ohio Companies' decision to procure the wholesale generation
3 services required to meet their provider of last resort (SSO) obligations via
4 term contracts instead of the spot market was reasonable and prudent.

5 Second, the process the Ohio Companies used for this procurement was
6 reasonable and prudent.

7 **Q: Does this conclude your direct testimony?**

8 A: Yes.

Figure 1
SAMPLE OF RECENT REQUESTS FOR PROPOSALS FOR ELECTRIC DISTRIBUTION COMPANIES

| STATE | COMPANY | TIME PERIOD | CUSTOMER CLASS | SOLICITATION ANNOUNCEMENT DATE | SOURCE | TYPE | DOCKET/ORDER |
|-------|----------------------------------|-------------------------------|--|--------------------------------|--|-----------------------------|---------------------------|
| CT | Connecticut Light and Power | July 2008 - December 2011 | Residential, Small C&I, Large C&I, Industrial | 14-Mar-08 | http://www.cl-p.com/datafeed/wholesale.aspx | Standard Service | 06-01-08 PH01 |
| CT | Connecticut Light and Power | July 2008 - June 2009 | | 14-Mar-08 | http://www.cl-p.com/datafeed/wholesale.aspx | Last Resort Service | 06-01-08 PH01 |
| CT | United Illuminating | April 2009 - June 2009 | | 22-Dec-08 | http://www.uinet.com/uinet/connect/Active+RFPs/ocurement/Active+RFPs/ | Last Resort Service | 06-01-08 PH01 |
| CT | United Illuminating | January 2010 - December 2011 | Residential, Small C&I, Large C&I, Industrial | 22-Dec-08 | http://www.uinet.com/uinet/connect/Active+RFPs/ocurement/Active+RFPs/ | Standard Service | 06-01-08 PH01 |
| DC | Potomac Electric Power Company | June 2009 - May 2012 | Residential | 8-Oct-08 | http://www.pepcoholdings.com/business/suppliers/sos/dcrfp/overview/ | full-requirements/SOS | Docket 1017 / Order 15069 |
| DC | Potomac Electric Power Company | June 2009 - May 2012 | Small Commercial | 8-Oct-08 | http://www.pepcoholdings.com/business/suppliers/sos/dcrfp/overview/ | full-requirements/SOS | Docket 1017 / Order 15070 |
| DC | Potomac Electric Power Company | June 2009 - May 2011 | Large Commercial | 8-Oct-08 | http://www.pepcoholdings.com/business/suppliers/sos/dcrfp/overview/ | full-requirements/SOS | Docket 1017 / Order 15071 |
| IL | Commonwealth Edison Company | June 2008 - May 2009 | residential & non-residential below 100 kW, customers between 100 and 400 kW | 8-Feb-08 | http://www.2008-rfp.com/documents.asp | | Docket 07-0528 |
| MA | NSTAR Electric Company | April 2009 - June 2009 | Industrial | 16-Jan-09 | http://www.nstar.com/business/energy_supplier/supply_wholesale.asp | Default Service Requirement | D.T.E. 02-40-C |
| MA | Massachusetts Electric Company | July 2008 - December 2009 | residential, small C&I, street lighting | 31-Mar-08 | http://www.wmeco.com/Business/ForSuppliers/Whol esalerRFP.aspx | Default Service Requirement | D.T.E. 02-40-B |
| MA | Massachusetts Electric Company | July 2008 - December 2009 | large C&I | 31-Mar-08 | http://www.wmeco.com/Business/ForSuppliers/Whol esalerRFP.aspx | Default Service Requirement | D.T.E. 02-40-C |
| MD | Allegheny Power | January 2009 - May 2011 | Residential | 15-Sep-08 | http://www.alleghenypower.com/rfp/RFPHome.asp | full-requirements/SOS | Docket 9064 / Order 82288 |
| MD | Allegheny Power | December 2008 - February 2009 | Type II Large Commercial | 15-Sep-08 | http://www.alleghenypower.com/rfp/RFPHome.asp | full-requirements/SOS | Docket 9056 / Order 82289 |
| MD | Baltimore Gas & Electric Company | June 2009 - May 2011 | Residential | 15-Sep-08 | http://rfp.bge.com/GeneralInfo.htm | full-requirements/SOS | Docket 9064 / Order 82285 |
| MD | Baltimore Gas & Electric Company | June 2009 - May 2011 | Type I Small Commercial | 15-Sep-08 | http://rfp.bge.com/GeneralInfo.htm | full-requirements/SOS | Docket 9064 / Order 82286 |
| MD | Baltimore Gas & Electric Company | December 2008 - February 2009 | Type II Large Commercial | 15-Sep-08 | http://rfp.bge.com/GeneralInfo.htm | full-requirements/SOS | Docket 9056 / Order 82287 |
| MD | Delmarva Power & Light Company | June 2009 - May 2011 | Residential SOS | 15-Sep-08 | http://www.pepcoholdings.com/business/suppliers/sos/dpl2009mdr/overview/ | full-requirements/SOS | Docket 9064 / Order 82279 |
| MD | Delmarva Power & Light Company | June 2009 - May 2011 | Type I Small Commercial SOS | 15-Sep-08 | http://www.pepcoholdings.com/business/suppliers/sos/dpl2009mdr/overview/ | full-requirements/SOS | Docket 9064 / Order 82280 |
| MD | Delmarva Power & Light Company | December 2008 - February 2009 | Type II Large Commercial | 15-Sep-08 | http://www.pepcoholdings.com/business/suppliers/sos/dpl2009mdr/overview/ | full-requirements/SOS | Docket 905 / Order 82281 |
| MD | Potomac Electric Power Company | June 2009 - May 2011 | Residential SOS | 15-Sep-08 | http://www.pepcoholdings.com/business/suppliers/sos/pep2009mdr/overview/ | full-requirements/SOS | Docket 9064 / Order 82282 |
| MD | Potomac Electric Power Company | June 2009 - May 2011 | Type I Small Commercial SOS | 15-Sep-08 | http://www.pepcoholdings.com/business/suppliers/sos/pep2009mdr/overview/ | full-requirements/SOS | Docket 9064 / Order 82283 |

Figure 1

SAMPLE OF RECENT REQUESTS FOR PROPOSALS FOR ELECTRIC DISTRIBUTION COMPANIES

| STATE | COMPANY | TIME PERIOD | CUSTOMER CLASS | SOLICITATION ANNOUNCEMENT DATE | SOURCE | DOC# | ORDER |
|-------|--|--|-------------------------------------|--------------------------------|---|-----------------------------|--|
| MD | Potomac Electric Power Company | December 2008 - February 2009 | Type II Large Commercial | 15-Sep-08 | http://www.pepcoholdings.com/business/suppliers/sos/pep2009mdrpf/overview/ | full-requirements/SOS | Docket 9056 / Order 82284 |
| ME | Bangor Hydro-Electric | March 2009 - 1-, 2-, or 3-year contracts | Residential & Small General Service | 9-Oct-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/sosmall0309/cmpbhe_small_mar09.htm | SOS | Dockets 2008-400, 2008-413 |
| ME | Bangor Hydro-Electric | March 2009 - August 2009 | Medium & Large Service | 5-Dec-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/somedlarge0309/medlarge0309.htm | SOS | Press Release |
| ME | Central Maine Power | March 2009 - 1-, 2-, or 3-year contracts | Residential & Small General Service | 9-Oct-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/sosmall0309/cmpbhe_small_mar09.htm | SOS | Dockets 2008-400, 2008-394 |
| ME | Central Maine Power | March 2009 - August 2009 | Medium & Large Service | 5-Dec-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/somedlarge0309/medlarge0309.htm | SOS | Press Release |
| ME | Maine Public Service Company | March 2008 - 1-, 2-, or 3-year contracts | Residential, Small Commercial | 9-Oct-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/sosmall0309/mps_allclasses_mar09.htm | SOS | Docket No. 2008-400 |
| ME | Maine Public Service Company | March 2008 - 1-, 2-, or 3-year contracts | Medium C&I | 9-Oct-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/sosmall0309/mps_allclasses_mar09.htm | SOS | Docket No. 2008-400 |
| ME | Maine Public Service Company | March 2009 - 1-, 2-, or 3-year contracts | Large C&I | 9-Oct-08 | http://www.maine.gov/mpuc/electricity/rfps/standardoffer/sosmall0309/mps_allclasses_mar09.htm | SOS | Docket No. 2008-400 |
| NH | Granite State Electric d/b/a National Grid | February 2009 - April 2009 | Large Customer Group | 31-Oct-08 | http://www.puc.state.nh.us/Regulatory/Docketbk/2008/08-011.htm | Default Service Requirement | Dockets DE 08-011 & DE 05-126 / Order 24,922 |
| NH | Unitil Energy Systems | November 2008 - January 2009 | G1 | 31-Jul-08 | http://www.puc.state.nh.us/Regulatory/Docketbk/2008/08-015.htm | Default Service Requirement | Docket DE 08-015 / Order 24,897 |
| NH | Unitil Energy Systems | November 2008 - April 2009 | non-G1 | 31-Jul-08 | http://www.puc.state.nh.us/Regulatory/Docketbk/2008/08-015.htm | Default Service Requirement | Docket DE 08-015 / Order 24,897 |
| PA | Duquesne Light Company | June 2006 - May 2007 | Large C&I | 9-Jan-06 | http://polrnp.customer-choice.com/service | full-requirements | Docket P-00032071 |
| PA | Penn Power | June 2008 - May 2011 | Residential | 20-Sep-07 | http://pennpowernp.com/Penn_Power_Default_Service_Plan_Filing/index.html | Default Service Supply Plan | Docket P-00072305 |
| PA | Penn Power | June 2008 - May 2011 | Commercial | 20-Sep-07 | http://pennpowernp.com/Penn_Power_Default_Service_Plan_Filing/index.html | Default Service Supply Plan | Docket P-00072305 |
| PA | PPL Electric | January 2008 - January 2009 | Residential | 27-Aug-07 | http://www.pplelectric.com/NR/rdonlyres/1C7C9EBC-3940-4EF4-A181-F358918392F6/0/2008_CDS_RFP.pdf | Competitive Default Service | Docket R-00973954 |
| VA | Allegheny Power | June 2009 - June 2011 | | 2-Dec-08 | http://www.allegheny-power.com/rfp/Virginia/VirginiaHome.asp | full-requirements/SOS | Docket PUE-2008-00033 |

SCOTT T. JONES

FTI Consulting, Inc.
20 University Road
Cambridge, MA 02138
(617) 520-0200
(617) 520-0215 (direct)

PROFESSIONAL EXPERIENCE

FTI Consulting, Inc.
Senior Managing Director,
Head, Global Energy, May 2007-Present

Lexecon, an FTI Company, Cambridge, MA
(formerly Lexecon Inc.)
Senior Managing Director, December 2003 – May 2007

Lexecon Inc., Cambridge, MA
(formerly The Economics Resource Group, Inc.)
Managing Senior Vice President, August 2003 – November 2003
Senior Vice President, July 1999 – December 2003

Jointly responsible for the continuing growth in the economics practice, including the strategic focus and business development related to Lexecon's various practices. Directly responsible for numerous clients, including energy, regulated industries, health services, Intellectual property and transportation matters. Head of the Lexecon/FTI offices in Harvard Square (Cambridge), Houston and Tucson.

The Economics Resource Group, Inc., Cambridge, MA
CEO, 1993 - July 1999

Responsible for the strategic focus and development of the management consulting and litigation support services firm in new areas of business. Directly responsible for many energy, transportation and other industry clients.

Coho Resources, Inc., Dallas, TX
Senior Vice President, 1992 - 1993, *Board of Directors*, 1990 - 1993

Responsible for marketing, business development, and all regulatory matters within this oil and gas exploration and production company. Oversaw oil and gas sales. Negotiated pipeline/transportation agreements. Implemented risk management programs and directed acquisitions/divestitures.

AUS Consultants, Industry Analysis Group, suburban Philadelphia, PA

President, 1988 - 1992

Co-founder of the Group. Responsible for the operation of the consulting firm which had over 200 industry clients. Directly responsible for oil and refined products clients, oil pipeline clients and gas utilities. Coordinated the energy risk management and fuel supply management practices.

Chase Econometrics/WEFA, Bala Cynwyd, PA
Senior Vice President, 1986 - 1988

Responsible for the development, enhancement and execution of all consulting services in each of the following areas of this Chase Manhattan Bank subsidiary: oil, gas, coal, electric utilities, non-ferrous metals, steel, plastics and packaging materials.

Atlantic Richfield Company, Los Angeles, CA
Director, Energy Studies, and Director, Market Research, 1980 - 1985

Responsible for the design and implementation of market-related plans/projects for senior management in the U.S. and foreign oil markets, natural gas markets, refining/marketing and metals markets.

General Motors Corporation, Detroit, MI
Senior Staff Associate, 1976 - 1980

Responsible for economic and regulatory policy, energy and long-range marketing strategies, product development strategies for senior management. Worked with every division, plus the technical staffs.

University of Texas, San Antonio, TX
Assistant Professor and Consultant to Industry, 1976
Virginia Tech, Blacksburg, VA
Instructor, School of Business, and Consultant to Industry, 1974 - 1975

Responsible for classes in economics, marketing, finance and statistics.

U.S. Army
Commissioned Officer, 1967 - 1970

EDUCATION

Virginia Tech, Blacksburg, VA
Ph.D. in Economics, 1976
Dissertation: "A Variable Risk Hypothesis for Foreign Exchange Rate Behavior"
University of Texas, Arlington, TX
M.A. in Economics and Marketing, 1973
B.B.A. in Business, 1972

TESTIMONY BEFORE COURTS

E.I. Du Pont de Nemours & Co.

Before the American Arbitration Association, Johnson Matthey Inc., Claimant, v. E.I. Du Pont de Nemours & Co., Respondent, Case no. 14152Y01880 07. Expert Report on behalf of Respondent, November 21, 2008. Trial Testimony December 17, 2008

Unocal Wright

In the United States District Court, Eastern District of Texas, Texarkana Division. United States of America ex rel. Harrold E. (Gene) Wright, vs. Chevron USA, Inc, et al, Defendants. Civil Action No. 5:03CV264, Judge David Folsom. Expert Report of on Behalf of Union Oil Company of California, April 1, 2008. Written, Confidential.

Mobil Cerro Negro, Ltd.

In the High Court of Justice, Queen's Bench Division, Commercial Court, Claim No 2008 Folio 61, Mobil Cerro Negro Ltd v. Petróleos de Venezuela, S.A., Defendants, First Affidavit on Behalf of Defendants, February 26, 2008.

Before the International Court of Arbitration of the International Chamber of Commerce, Mobil Cerro Negro, Ltd., Claimant, v. Petroleos de Venezuela, S.A., PDVSA Cerro Negro S.A., Respondents. Expert Report on behalf of Claimant. September 26, 2008.

Tesoro Petroleum Corporation and Subsidiaries

Before The Office Of Administrative Hearings State Of Alaska, In The Matter of Tesoro Petroleum Corporation and Subsidiaries, Oil and Gas Corporate Income Tax, Tax Period 1994-1998, OAH No. 05-0155-TAX. Expert Report on Behalf of Appellant, November 16, 2007. Testimony before Trial May 8, 2008 and May 15, 2008.

General Atomics Technologies Corp.

In the United States District Court for the District of Colorado, Civil Action No. 06-CV-00848-REB-CBS, ConverDyn, Plaintiff, v. James Neal Blue, Heathgate Resources Pty., Ltd., General Atomic Technologies Corporation, and Nuclear Fuels Corporation, Defendants, Expert Report on Behalf of Defendant, September 17, 2007.

General Atomics Technologies Corp.

In the United States District Court for the Northern District of Illinois, Eastern Division, Case No. 06 C 5516, Exelon Generation Company, LLC, a limited liability company, Plaintiff, v. General Atomics Technologies Corp., a Delaware corporation, Defendant, Expert Report on Behalf of Defendant, September 5, 2007.

Nuclear Fuels Corp.

In the United States District Court for the Northern District of Illinois, Eastern Division, Case No. 06 C 5515, Exelon Generation Company, LLC, a limited liability company, Plaintiff, v. Nuclear Fuels Corp., a Delaware corporation, Defendant, Expert Report on Behalf of Defendant, September 5, 2007.

Peabody COALSALES Company

In the matter of Arbitration between Peabody COALSALES Company N/K/A Coalsales II, LLC vs Dynegy Coal Trading & Transportation, LLC Illinois. Expert Report providing testimony regarding the setting of coal prices pursuant to a contract re-opener clause. October 31, 2006.

Official Committee of Unsecured Creditors in the Entergy New Orleans, Inc. Bankruptcy

In the United States District Court for the Eastern District of Louisiana, In Re: Entergy New Orleans, Inc. Chapter 11 Section B. Expert Report providing testimony regarding the expected price of fuel for electricity generation under three base load contracts, October 12, 2006.

Yemen Exploration & Production Company

Before The International Chamber of Commerce, (Case No. 14108/EC). Yemen Exploration & Production Company, Claimant, v. Republic of Yemen, Respondent, Statement of Expert Witness Scott T. Jones, September 1, 2006; Supplemental Report, March 9, 2007; 2nd Supplemental Report, June 16, 2007, 3rd Supplemental Report, June 29, 2007; Testimony before the Tribunal, September 21, 2007.

Valencia and Singleton

In the United States District Court for the Southern District of Texas, Houston Division, United States of America, vs. Michelle Valencia and Greg Singleton. Report of testimony on Behalf of the plaintiffs in this criminal matter involving allegations about prices reported to publications that list natural gas trading information, July 6, 2006.

L-3 Communications, Inc.

In the United States District Court for the Southern District of New York, L-3 Communications Corporation v. OSI Systems, Inc. Provided expert damages testimony on Behalf of L-3 Communications in a failed negotiation to transfer certain business assets. Deposition July 15, 2005; Trial testimony May 23, 2006.

Jerry Alfred Futch, Jr.

In the United States District Court for the Southern District of Texas, Houston Division, Criminal Action No. H-04-511, United States of America, vs. Jerry Alfred Futch, Jr., Defendant. Expert Report of Scott T. Jones, Ph.D. and Charles Augustine, MPP, testimony on Behalf of the plaintiffs in this criminal matter involving allegations about prices reported to publications that list natural gas trading information January 17, 2006. Response of Scott T. Jones, Ph.D. and Charles Augustine, MPP, To Report of Matthew P. O'Loughlin, February 13, 2006.

NEGT Gas

In the Matter of the Arbitration Between Mirant Americas Energy Marketing, LP, Claimant, and NEGTEnergy Trading-Gas Corporation; Gas Transmission Northwest Corporation; National Energy & Gas Transmission, Inc.; NEGTEnergy Trading Holdings Corporation; and NEGTEnergy Trading-Power, L.P., Respondents. Expert Report on Behalf of Respondents, December 2005. Dispute involved terminated natural gas purchase and sale contracts, claimed breach of contracts, and calculation of damages.

Calpine Corporation

In the Court of Chancery of the State of Delaware in and for New Castle County, Calpine Corporation v. The Bank of New York and Wilmington Trust Company, Dispute between senior debt holders and the company over the disposition of monies from the sale of producing natural gas and steam reserves. Expert Report, November 2, 2005; Deposition November 3, 2005; Trial testimony November 12, 2005.

Travelers

In the Matter of the Arbitration between the Travelers Indemnity Company and Travelers Casualty & Surety Company, Petitioner, and Everest Reinsurance Company, Respondent, Dispute arose over the interpretation of long-term, fixed price forward (physical) contracts (the "Enron-Mahonia" contracts) for the delivery of natural gas at three points in Zone 3 (southern Louisiana). Respondent claims that the contracts were financial vehicles rather than industry standard contracts for physical delivery. Rebuttal Report, October 10, 2005. Deposition testimony, October 21, 2005.

Securities and Exchange Commission (SEC)

In the United States District Court for the Southern District of Texas, Houston Division, Securities and Exchange Commission v. Preston Hopper, Tamela Palla, and Terry Woolley. Provided testimony involving the behavior of trading and financial management in major electricity and natural gas companies from 1999-2002. Expert Report September 1, 2005.

Allegheny Energy, Inc.

In the United States District Court for the Southern District of New York, Allegheny Energy, Inc v. Merrill Lynch & Co., Inc. Provided expert testimony on fraudulent behavior with regard to trading, breach of contract and damages. Oral Testimony, January 6, 2005. Trial Testimony, May 16 – 17, 2005.

Biomedical Systems Corporation

United States District Court, Eastern District of Missouri, Eastern Division, Biomedical Systems Corporation vs. GE Marquette Medical Systems, Inc., Docket No. 4:99CV01590 CAS, lost income/damages calculation in a medical device breach of contract/failure to perform suit.. Expert report, August 31, 2000; deposition, September 19, 2000; supplemental expert report, February 16, 2001; deposition, February 23, March 2, 2001; Trial testimony, March 27-29, 2001. Upheld on appeal, 2004.

Frontier Oil Corporation

In the Court of Chancery of the State of Delaware, In and For New Castle County, Frontier Oil Corporation v. Holly Corporation. Provided damages testimony related to the economic and financial implications arising from the failed merger between Frontier and Holly. Expert report, November 7, 2003; deposition, November 26, 2003; trial testimony, February 25 – 26, 2004.

Peabody Energy Corporation

United States District Court, Eastern District of Missouri, Eastern Division, Caballo Coal Company, et al., v. Indiana Michigan Power Company, et al. Provided expert testimony on damages stemming from the economics of long-term vs. short-term contracts in the coal industry. Expert report, April 14, 2003; deposition, June 16, 2003; rebuttal report, November 17, 2003; case settled, summary judgment, March 29, 2004.

PacifiCorp

United States District Court for the District of Idaho, Snake River Valley Electric Association v. PacifiCorp. Provided expert testimony on the use of electricity market price indices in estimating damages. Expert report, August 20, 2002; trial testimony, October 16, 2002.

Matthew Ratteree

United States District Court, Southern District of Texas, Houston Division, Coral Finance, L.P., vs. Matthew Ratteree, damages calculation in a suit involving failure to perform under the terms of an asset purchase agreement. Expert report, June 28, 2002.

NESI Power Marketing, Inc.

United States District Court, District of Connecticut, Bridgeport Division, In re: The Power Company of America, LP, Debtor; Goldin Associates, LLC, Trustee for the PCA Liquidating Trust, v. NESI Power Marketing, Inc., expert testimony regarding power market events and bankruptcy litigation. Presentation to mediator, April 12, 2001; expert report, August 23, 2002; deposition, September 4, 2002; trial testimony, July 15-17, 2003.

City of Springfield, IL, City Water, Light and Power

LG&E Energy Marketing v. City of Springfield, Illinois, City Water, Light and Power, in the United States District Court, Western District of Kentucky, Louisville Division, Civil Action No. 3:98 CV 485 H, expert report analyzing the economic implications and content of LG&E Energy Marketing's claims for damages allegedly incurred by LEM arising from the failure of the City of Springfield, Illinois, City Water, Light and Power to deliver in connection with a physical daily call option sold by CWLP to LEM on August 20, 1997, August 26, 1999; deposition testimony, October 25-26, 1999.

City of Springfield, IL, City Water, Light and Power

El Paso Energy Marketing Company v. City of Springfield, Illinois, City Water, Light and Power and Amerex Power, Ltd., in the District Court of Harris County, Texas, 133rd District Court, Case No. 98-31856, testimony regarding the application of economic theories and principles to the electric industry, including the history and performance of wholesale electric markets, price formation, and damages related to the price spikes from the summer of 1998, Oral Testimony: June 25, 1999.

Pennsylvania Power & Light Company

PP&L, Inc., v. John M. Quain, Chairman, Pennsylvania Public Utility Commission, et al., before the United States District Court for the Eastern District of Pennsylvania, Civil Case No. 98-CV-5083. Testimony in support of PP&L's request for a temporary restraining order enjoining defendants from implementing and enforcing a Capacity Order fixing the price of capacity in PJM prior to the start of full retail competition, Trial Testimony: October 2, 1998.

Kansas Pipeline Operations Company, Inc.

Expert Report and Affidavit in Support of KPOC's Complaint for Damages before the United States District Court for the Western District of Missouri, Case No. 97-0642-CV-W-4. Damages estimate stemming from Panhandle Eastern Pipe Line Company's obstruction of KPOC's attempts to construct and operate a gas pipeline lateral from an interconnection with PEPL's

system to local distribution companies serving the Kansas City metropolitan area, July 2, 1998; rebuttal report, October 27, 1998; Oral Testimony, February 9 and 11, 1999.

BP Exploration (Alaska), Inc.

Before the Superior Court for the State of Alaska, Third Judicial District, Anchorage, AK, In the Matter of Prudhoe Bay Unit Litigation, Case No. 3AN-95-8960CI, testimony in damages proceeding involving the quantity, quality, and fair market value of the crude oil and the facilities used to produce/transport hydrocarbons from the Prudhoe Bay Unit. Oral Testimony: November 19, 1996.

Koch Industries, Inc.

Before the United States District Court, Eastern District of Oklahoma, In the Matter of Petro Source Partners, Ltd. vs. Koch Industries, Inc., Koch Gathering Systems, Inc., and Koch Oil Company, Case No. 95-356-B, testimony in an antitrust proceeding involving the market for crude oil and gas liquid sales, transportation and trading in Oklahoma, Kansas, and Texas. Oral Testimony: August 28, 1996.

Koch Industries, Inc.

Before the United States District Court, Eastern District of Oklahoma, Muskogee, OK, In the Matter of Petro Source Partners, Ltd. (plaintiff) vs. Koch Industries, Inc., Koch Gathering Systems, Inc., and Koch Oil Company (defendants), Case No. 95-356-B, written testimony in Support of the Brief of Defendant's Motion for Summary Judgment (with exhibits), August 23, 1996.

Exxon Corporation and Exxon Company USA

Before the Superior Court of the State of California for the County of Los Angeles, In the Matter of The People of the State of California and the City of Long Beach vs. Chevron Corporation; Unocal Corporation; Mobil Oil Corporation; Shell California Production; Texaco Inc.; Exxon Corporation; Exxon Company, USA, No. C 587 912. Oil price dispute. Oral testimony: December 7, 1994.

El Paso Natural Gas Company

Before the U.S. District Court for the Northern District of California, In the Matter of Jonathan C. S. Cox vs. El Paso Natural Gas Company. Oral testimony in a South Texas producing property, natural gas price/contract dispute matter, November 29, 1994.

Mariposa Pipeline Company

Before the Superior Court of the State of California for the County of Santa Barbara, In the Matter of Mariposa Pipeline Company vs. Gaviota Terminal Company, Case No. 194428. Testimony in a condemnation proceeding and rate case focusing on the market value of pipeline and terminal facilities (both marine and on-shore) for heavy crude oil, gas liquids, and emissions recovery plant/equipment in a limited-life producing property. Trial Testimony: April 18, 1994.

TESTIMONY BEFORE REGULATORY AGENCIES

Northern Natural Gas

Before the Federal Energy Regulatory Commission (FERC), Docket No. RP08-29-000, Rockies Express Shippers, Complainants, v. Northern Natural Gas Company, Respondent, Prepared Answering Testimony on behalf of Respondent, May 2008. Prepared Surrebuttal Testimony on behalf of Respondent, July 2008.

FirstEnergy Corp.

Before the Public Utilities Commission of Ohio, In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Company, and the Toledo Edison Company, and the Toledo Edison Company for Authority to a Standard Service Pursuant to R.C. 4928.143 in the Form of an Electric Security Plan, Case No. 08___-EL-SSO. Direct Testimony, August 1, 2008.

Before the Pennsylvania Public Utility Commission, Petition of Metropolitan Edison Company for Approval of a Rate Transition Plan (Metropolitan Edison Company Docket No. R-00061366) and Petition of Pennsylvania Electric Company for Approval of a Rate Transition Plan (Pennsylvania Electric Company Docket No. R-00061367), Direct Testimony of Scott T. Jones, April 10, 2006, Hearing August 24, 2006.

FirstEnergy Solutions Corp.

United States of America, Before the Federal Regulatory Commission, FirstEnergy Solutions Corp. Testimony confirming the auction price result of the Competitive Bidding Process carried out by the Ohio Public Utilities Commission in December 2004, and establishing that Solutions is not charging a rate greater than market prices for wholesale electricity sold to its affiliated Ohio based regulated distribution companies, March 15, 2006.

Cook Inlet Power, LP

In the matter of Arbitration between City Energy, LLC and Cook Inlet Power, LP. American Arbitration Association, Southfield, Michigan. Breach of Contract Dispute. Provided expert testimony on electric power supply agreements, power trading, and damages calculations. Oral Testimony, October 15, 2004.

PPL Montana, LLC, and Puget Sound Energy, Inc.

In the Matter of Arbitration Between Western Energy Company and Puget Sound Energy, Inc., and PPL Montana, LLC. Provided expert testimony on reasonable profit in coal supply agreements as part of a damages case created by a contract "re-opener". Expert report, November 3, 2003; supplemental expert report, December 12, 2003; oral testimony, March 5, 2004.

PPL Corporation

Before the Pennsylvania Public Utility Commission, C&D Technologies et al v. PPL Corporation. Provided testimony describing market forces and quantitative support for the

reasonableness of PP&L's buy-through prices and rate structure supporting their interruptible tariffs, January 28, 2004.

Griffith Energy LLC

United States of America, Before the Federal Energy Regulatory Commission, Griffith Energy LLC, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates, October 27, 2003.

PPL Montana, LLC, PPL Southwest Generation Holdings, LLC, PPL Sundance Energy, LLC, PPL University Park, LLC

United States of America, Before the Federal Energy Regulatory Commission, PPL Montana, LLC, PPL Southwest Generation Holdings, LLC, PPL Sundance Energy, LLC, PPL University Park, LLC, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates, July 17, 2003.

PPL Brunner Island, LLC, PPL Holtwood, LLC, PPL Martins Creek, LLC, PPL Montour, LLC, PPL Susquehanna, LLC

United States of America, Before the Federal Energy Regulatory Commission, PPL Brunner Island, LLC, PPL Holtwood, LLC, PPL Martins Creek, LLC, PPL Montour, LLC, PPL Susquehanna, LLC, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates, January 27, 2003.

PPL Montana, LLC, PPL Colstrip I, LLC, PPL Colstrip II, LLC

United States of America, Before the Federal Energy Regulatory Commission, PPL Montana, LLC, PPL Colstrip I, LLC, PPL Colstrip II, LLC, market power analysis in support of application for authority to sell electric energy and capacity at market-based rates, August 26, 2002.

PPL Lower Mount Bethel Energy, LLC

United States of America, Before the Federal Energy Regulatory Commission, Lower Mount Bethel Energy, LLC, market power assessment in support of application for authority to sell electric energy, capacity, and specified ancillary services at market-based rates, August 1, 2002.

PPL Sundance Energy, LLC, and PPL University Park, LLC

United States of America, Before the Federal Energy Regulatory Commission, PPL Sundance Energy, LLC, and PPL University Park, LLC, market power assessments in support of application for authority to sell electric energy, capacity, and specified ancillary services at market-based rates, March 15, 2002.

PPL EnergyPlus, LLC

United States of America, Before the Federal Energy Regulatory Commission, PPL EnergyPlus, LLC, market power analysis update in support of PPL's application for continued use of market-based rates for wholesale energy, capacity and ancillary services, December 17, 2001; supplemental affidavit, January 22, 2002; second supplemental affidavit, February 20, 2002.

PPL Montana, LLC, and PPL EnergyPlus, LLC

United States of America, Before the Federal Energy Regulatory Commission, San Diego Gas & Electric Company v. Sellers of Energy and Ancillary Services into Markets Operated by the California Independent System Operator and the California Power Exchange; Investigation of Practices of the California Independent System Operator and the California Power Exchange. Testimony supporting PPL Montana and PPL EnergyPlus in a suit claiming refunds from them for sale of energy into California markets. Issue 1 prepared responsive testimony, November 6, 2001; deposition, December 4, 2001; oral testimony, March 14, 2002.

PPL Montana, LLC, and PPL EnergyPlus, LLC

United States of America, Before the Federal Energy Regulatory Commission, Puget Sound Energy, Inc., v. All Jurisdictional Sellers of Energy and/or Capacity at Wholesale into Electric Energy and/or Capacity Markets in the Pacific Northwest, including Parties to the Western Systems Power Pool Agreement. Testimony supporting PPL Montana and PPL EnergyPlus in a suit claiming refunds from them for sale of energy into Northwest markets. Prepared responsive testimony, August 27, 2001; oral testimony, September 6, 2001.

PPL Wallingford Energy, LLC

United States of America, Before the Federal Energy Regulatory Commission, PPL Wallingford Energy, LLC, Docket No. ER01-1559-000, affidavit in support of PPL Wallingford's application for authority to sell electric energy, capacity, and ancillary services at market-based rates and to resell transmission rights and associated ancillary services, March 15, 2001.

PPL Electric Utilities Corporation

Before the Pennsylvania Public Utility Commission, Docket Number C-00003811, Hofmann Industries Inc. t/a Bernard M. Hofmann v. PPL Electric Utilities Corporation. Written testimony supporting PPL Electric Utilities' Provider of Last Resort tariffs as approved by the PPUC. The case involves an attempt by the Opposing Parties to redefine negotiated, approved tariffs for a group of returning commercial and industrial customers, including the one-year stay requirement; direct testimony, November 3, 2000, January 29, 2001.

Potomac Electric Power Company

United States of America, Before the Federal Energy Regulatory Commission, Joint Application of Potomac Electric Power Company, Southern Energy Chalk Point, LLC, Southern Energy Mid-Atlantic, LLC, Southern Energy Peaker, LLC, Southern Energy Potomac River, LLC, Allegheny Energy Supply Company, LLC, PPL Montour, LLC, and Potomac Power Resources, Inc., for Authorization of the Disposition of Jurisdictional Facilities under Section 203 of the Federal Power Act, Disclaimer of Jurisdiction Relating to Certain Passive Participants, Waiver of Orders 888 and 990 with Respect to Certain Limited Transmission Facilities, and Request for Expedited Approval, Docket Nos. EC00-141-000 and ER00-3727-000. Affidavit examining the potential competitive impact of Pepco's divestiture of direct ownership interests in generation assets and power purchase entitlements in connection with electricity industry restructuring in Maryland and the District of Columbia, September 20, 2000.

PPL Electric Utilities Corporation

United States of America, Before the Federal Energy Regulatory Commission, PPL Electric Utilities Corporation, Docket No. ER00-1712-001, market power analysis update in support of

PPL's application for continued use of market-based rates for wholesale energy, capacity and ancillary services, July 17, 2000.

PP&L, Inc.

Before the Pennsylvania Public Utility Commission, Docket Number P-00001788, Petition of PP&L Industrial Customer Alliance for a Declaratory Order Prohibiting the Implementation of a Tariff Interpretation Change for Billing PP&L Rate Schedule IS-P and IS-T Customers. Oral testimony in dispute over interruptible service tariffs for large industrial customers, in support of PPL Electric Resources IS-P and IS-T tariffs and tariff policy, February 24, 2000.

PP&L Resources, Inc.

United States of America, Before the Federal Energy Regulatory Commission, PPL Martins Creek, LLC; PPL Montour, LLC; PPL Brunner Island, LLC; PPL Holtwood, LLC; and PPL Susquehanna, LLC, Docket No. ER00-744-000. Affidavit in support of the realigned companies' application for authority to sell electric energy, capacity, and ancillary services at market-based rates, to resell transmission rights and associated ancillary services, and for acceptance of power sales agreements, December 7, 1999.

FirstEnergy Corp.

Before the Public Utilities Commission of Ohio, In the Matter of the Application of FirstEnergy Corp. on Behalf of Ohio Edison Company, the Toledo Edison Company, and The Cleveland Electric Illuminating Company: for Approval of an Electric Transition Plan and for Authorization to Recover Transition Revenues (Case No. 99-1212-EL-ETP); for Approval of New Tariffs (Case No. 99-1213-EL-ATA); for Certain Accounting Authority (Case No. 99-1214-EL-AAM). Direct testimony providing estimates of market-clearing electricity prices (energy and capacity) and generation output by power plant which were used in determination of market value of FirstEnergy's generation assets as part of the Company's determination of stranded costs, December 22, 1999; supplemental testimony, April 4, 2000; deposition, April 7, 2000; oral testimony, May 4, 2000.

Joint testimony (with Dr. Susan F. Tierney) providing an explanation of the economic and policy contest in which the FirstEnergy Companies were requesting recovery of transition costs and, separately, the calculation of the market value of the Companies' generation assets, December 22, 1999; supplemental testimony, April 4, 2000; deposition, April 7, 2000.

Marathon Ashland Petroleum LLC

United States of America, Before the Federal Energy Regulatory Commission, Colonial Pipeline Company, Docket No. OR99-16-000, prepared direct testimony evaluating Colonial's petition to construct a stub pipeline and challenging Colonial's justification for the project, August 5, 1999.

TransMontaigne Product Services Inc.

United States of America, Before the Federal Energy Regulatory Commission, TE Products Pipeline Company, L.P., Docket No. OR99-6-000, prepared direct testimony evaluating TEPPCO's application for authority to charge market-based rates in several origin and

destination markets, challenging TEPPCO's methodology used to determine the relevant geographic market facing shippers of refined petroleum product, July 26, 1999.

Lion Oil Company

United States of America, Before the Federal Energy Regulatory Commission, TE Products Pipeline Company, L.P., Docket No. OR99-6-000, prepared direct testimony evaluating TEPPCO's application for authority to charge market-based rates in the El Dorado, AR, origin market and the Little Rock destination market, and evaluating TEPPCO's approach regarding the definition of the relevant geographic market in which shippers of refined petroleum products operate, July 26, 1999.

WPS Power Development, Inc.

United States of America, Before the Federal Energy Regulatory Commission, Sunbury Generation, LLC, Docket No. ER99-3420-000, prepared direct testimony supporting PDI's newly-acquired Sunbury generation facility's application for authority to charge wholesale and retail market-based rates in and outside of PJM, June 30, 1999.

TransMontaigne Product Services Inc.

United States of America, Before the Federal Energy Regulatory Commission, Colonial Pipeline Company, Docket No. OR99-005-000, testimony evaluating and opposing Colonial's application for authority to charge market-based rates on its interstate pipeline system in Texas, Louisiana and Mississippi; prepared direct testimony, June 8, 1999; prepared reply testimony, August 23, 1999.

Penobscot Hydro, LLC

United States of America, Before the Federal Energy Regulatory Commission, Penobscot Hydro, LLC, Docket No. ER99-1940-000, prepared direct testimony in support of Penobscot's application for authority to sell energy, capacity, and ancillary services at market-based rates in and outside of the New England interconnection, February 25, 1999.

Baltimore Gas and Electric Company

Prepared Direct Testimony before the Public Service Commission of Maryland, Case No. 8794. Fuel price forecast testimony in support of BGE's estimated market-clearing electric energy prices for PJM as part of the Company's restructuring filing before the PSC, July 1, 1998; rebuttal report, March 22, 1999.

Pennsylvania Power & Light Company, PFG Gas, Inc., North Penn Gas Company

Prepared Rebuttal Testimony before the Pennsylvania Public Utility Commission, Docket Nos. A-120650F0006, A-122050F0003, Statement No. 2. Economic benefits and an expanded market power analysis in support of the application to merge the utilities, February 17, 1998.

Pennsylvania Power & Light Company, PFG Gas, Inc., North Penn Gas Company

Prepared Direct Testimony before the Pennsylvania Public Utility Commission, Docket Nos. A-120650F0006, A-122050F0003. Economic analysis and market power determination in support of the application of Pennsylvania Power & Light Company, PFG Gas, Inc., and North Penn Gas Company for approval of a proposed merger, December 22, 1997.

Pennsylvania Power & Light Company

Before the Pennsylvania Public Utility Commission, Docket No. R-00973975. Economic theory and regulatory policy principles supporting stranded cost recovery for PP&L, Inc., from UGI Utilities, Inc., customers subject to an ongoing power supply agreement. Also, market-clearing prices for energy and capacity for UGI's two facilities in PJM under conditions of retail and wholesale competition, 1999-2001. Re: PAPUC v. UGI Utilities, Inc. - Application of UGI Utilities, Inc., for Approval of its Restructuring Plan under §2806 of the Public Utility Code. Prepared direct testimony, November 21, 1997; surrebuttal testimony, March 2, 1998.

Pennsylvania Power & Light Company

Before the Pennsylvania Public Utility Commission, Docket No. R-00973954. Market-clearing prices for energy and capacity, plus unit revenue estimates for PP&L and PJM facilities to support the company's stranded cost recovery and corporate restructuring filing in accordance with the State of Pennsylvania, Electricity Generation Customer Choice and Competition Act of 1996, Harrisburg, PA. Prepared rebuttal testimony, August 4, 1997; direct examination, August 25, 1997.

Pennsylvania Power & Light Company

Affidavit in Support of PP&L's Petition before the Federal Energy Regulatory Commission, Docket No. ER97-3055-000. Application for Authority to Sell Energy and Capacity at Market-Based Rates. Market power analysis of the Pennsylvania-New Jersey-Maryland Interconnection ("PJM pool") in support of the application to sell electricity at market-based rates, May 23, 1997.

Pennsylvania Power & Light Company

Before the Federal Energy Regulatory Commission, Docket No. SC97-1-000. Market price of electric energy and capacity in a competitive environment. The formation of market prices support PP&L's claim for stranded cost relief before the Commission in response to comments by the staff and plaintiffs in this matter. Prepared rebuttal testimony, April 22, 1997; oral testimony, June 19, 1997.

Pennsylvania Power & Light Company

Prepared Direct Testimony before the Pennsylvania Public Utility Commission, Docket No. R-00973954. Market price and revenue estimates for PP&L and PJM to support the company's stranded cost recovery and corporate restructuring filing in accordance with the State of Pennsylvania, Electricity Generation Customer Choice and Competition Act of 1996, April 1, 1997.

BP America, Inc.

Affidavit in Support of BP's Petition before the United States Internal Revenue Service. Tax dispute involving the transfer of North West Shelf net profits royalty interest (NPRI) owned by BP Property Developments Australia (BPPDA) to Standard Oil Company, a subsidiary of BP America. Testimony as to the fair market value of the property, February 28, 1997.

BP Exploration (Alaska), Inc.

Before the State of Alaska, Department of Natural Resources and Department of Revenue, Joint Hearing In the Matter of the Appropriate Reservoir Management for Optimization of Natural Gas Liquids Blending and Utilization; and Economic and Physical Recovery within the Prudhoe Bay Unit. Prepared direct testimony involving the valuation and use of hydrocarbon producing properties as well as the valuation of facilities used on the North Slope for transportation and treatment, August 22, 1995.

BP Exploration (Alaska), Inc.

Before the State of Alaska, Alaska Oil and Gas Conservation Commission In the Matter of a Hearing to Review the Plan of Development and Operation and Other Agreements as They Affect Natural Gas Liquid Throughput, Miscible Injectant Utilization and Ultimate Recovery from Prudhoe Bay. Prepared direct testimony, May 12, 1995; rebuttal testimony, June 12, 1995.

Northern Natural Gas Company

Before the Federal Energy Regulatory Commission, Docket No. RP95-185-000, prepared direct testimony in a natural gas pipeline rate case, regarding market-based storage, March 13, 1995.

Florida Gas Transmission Company

Before the Federal Energy Regulatory Commission, Docket No. RP95-103-000, prepared direct testimony in a natural gas pipeline rate case, regarding incentive rate-making and market-based rates, January 10, 1995.

Association of Oil Pipelines

Before the Federal Energy Regulatory Commission, In the Matter of Market-Based Ratemaking for Oil Pipelines, Notice of Inquiry, Docket No. RM94-1-000; testimony, January 25, 1994.

ARCO Pipe Line Company and Four Corners Pipe Line Company

Before the Federal Energy Regulatory Commission, In the Matter of Market-Based Ratemaking for Oil Pipelines, Notice of Inquiry, Docket No. RM94-1-000; testimony, January 24, 1994.

Santa Fe Pacific Pipe Line Company

Before the Federal Energy Regulatory Commission, Docket No. IS92-39-000, testimony about the market facing shippers on a southwest U.S. petroleum products pipeline, May 24, 1993.

Buckeye Pipe Line Company, L.P.

Before the Federal Energy Regulatory Commission Technical Conference, In the Matter of the Interstate Oil Pipe Line Industry, Docket No. OR92-6-000. Expert testimony on the matter of market-based rates for oil pipelines, April 30, 1992.

Williams Pipe Line Company

Before the Federal Energy Regulatory Commission, In the Matter of Williams Pipe Line Company, Docket No. IS90-21-000. Bifurcated rate case, oil pipeline market power showing, Phase I; prepared direct testimony, July 12, 1990; prepared supplemental direct testimony, February 4, 1991; prepared rebuttal direct testimony, May 28, 1991; oral testimony, July 1991.

ARCO Pipe Line Company

Before the Federal Energy Regulatory Commission, Docket No. IS90-34-000. Bifurcated rate case, oil pipeline market power showing, Phase I; prepared direct testimony, February 1991.

Amoco Pipe Line Company

Before the Federal Energy Regulatory Commission, Docket No. IS90-30-000. Bifurcated rate case, Rocky Mountain crude oil pipeline market power showing, Phase I; prepared direct testimony, August 1990.

Hawaiian Electric Company, Inc.

Before the Public Utilities Commission of the State of Hawaii on Behalf of Hawaiian Electric Company for approval of AES Power Purchase Contract, Docket No. 6177; testimony, November 1989.

Buckeye Pipe Line Company, L.P.

Before the Federal Energy Regulatory Commission, Docket IS87-14-000. Bifurcated rate case, oil pipeline market power showing, Phase I; testimony, October 1988.

Sacramento Municipal Utility District

Before the Sacramento Municipal Utility District Board, In the Matter of the Rancho Seco Nuclear Facility; testimony, May 1988.

U.S. Senate

Before the U.S. Senate Committee on Energy and Natural Resources, Senator Bennett A. Johnson, Chairman, Oversight Hearing on the World Oil Outlook; testimony, March 11, 1987.

SELECTED INDUSTRY PROJECTS

Retained as the lead industry expert and witness in an international arbitration between a leading financial institution and an exploration/production company. Dispute involves the production, pricing and determination of costs associated with the oil and gas as well as the terms and conditions of the underlying loans used to acquire and exploit properties in the U.S. and Latin America. To be heard in the High Court of Justice, Queen's Bench Division, London, 2006-2007.

Retained as the lead industry expert, by the Unsecured Creditors to analyze existing Power Purchase Agreements (PPA), fuel costs and coal market conditions facing Entergy New Orleans (ENO) and it's sister companies in the wake of hurricane Katrina. Provided detail regarding the "value" of these long-term contracts relating to the alleged cost of service to

ENO's customers under these contracts. The US Bankruptcy Court, Eastern District of Louisiana has to rule on a request by ENO to assume the PPA's. 2006.

Lead industry expert in a dispute between two energy companies involving a claim and counterclaim for damages related to the failure to consummate an agreement. Claims for damages included the potential for loss of income related to contamination of property, improper valuation of assets, nonperformance related to contract terms and conditions, and improper representation of the claims and counterclaims. Matter is on appeal before the Court of Appeals in Colorado. 2005.

Lead industry expert in a medical devices contract dispute involving a major financial institution and a medical devices manufacturer/distributor. The report led to testimony before a jury in Missouri where the key issue was lost wages/income related to the failed consummation of the agreement between the parties. The \$75 million award to my client was upheld on appeal to the Superior Court, State of Missouri. 2004.

Lead industry expert in the second phase of a case involving a major northwest U.S. oil pipeline's construction proposal to deliver significantly more product into eastern Washington. The Second Supplemental Report (March 1999) specifies the competitive arguments that ought to underlie the regulatory policy issues facing the Forest Service, who is charged with approving the pipeline expansion. The report concludes that all the alternatives to the pipeline's proposal are less economically efficient and ought to be abandoned. An Affidavit (November 1999) analyzes the Draft Environmental Impact Statement and the "Final Specialist Report, Supply & Demand Analysis" pertaining to the proposed pipeline. 2003.

Lead damages witness in an arbitration between First Energy ("FE") and NRG over a breach of contract involving the purchase of three of FE's Ohio-based electricity generation facilities (the "lake plants"). Provided a damages report to the arbitration panel on Behalf of FE. FE settled with NRG prior to hearing. FE received several hundred million dollars as part of the settlement. 2002-2003.

Lead negotiator and consultant to the municipal government of the City of Springfield, Illinois, seeking to market its excess electric generation capacity. Advised the utility management and the City government regarding the structure of the sales agreement, the terms and conditions of the agreement, and the disposition of damages related to events from the summer of 1998. Testified three times before the City Council in support of the completed contract which results in a revenue-sharing scheme and a \$30 million up-front payment. 2000.

Leader and project manager for a multi-disciplinary, multi-organization study of the petrochemical industry in a Southeast Asian nation. The team consisted of Harvard and INSEAD, faculty at the University of Indonesia, international petrochemical consultants, and Lexecon professional staff. The project found that while the petrochemical industry is sound and competitive, it has been severely hurt by the Asian crisis and various government policies that are no longer working to promote the survival of the industry. The report recommended a variety of changes to government policy that will encourage the infusion of foreign direct investment. 1999.

Lead market power analyst for a major independent oil company seeking Federal Trade Commission permission for a proposed merger. The project was a market power and market structure assessment of crude oil and refined product transportation and storage assets in Texas, Oklahoma, Colorado, and New Mexico. The assessment included conducting a series of in-the-field interviews as well as developing the inputs for measures of market concentration and possible mitigation strategies. 1999.

Lead author of a special client study providing an assessment of a major crude oil pipeline company's ability to exercise market power in its origin and destination markets. The study also used the information gathered in the market power study to provide a vivid picture of the company's current and prospective competitive environment. The study analyzed how changes inside and outside the relevant markets were likely to affect the pipeline over the next few years. 1998.

Lead strategic market consultant for a team advising the non-regulated subsidiary of a major Mid-Atlantic electric utility on wholesale electric market strategies ranging from asset acquisitions to pricing for energy and capacity. This wide-ranging assignment included the use of financial instruments for risk management, competitor analysis, and the assessment of target markets for direct sales to industrial users as well as sales into power pools. 1998.

Lead economist for a major investor-owned utility that wanted to assess the going-forward market value of three generation facilities. The company had to decide whether to maintain, sell, or partially dismantle its assets in order to strategically reposition its electric generation business. The project included the impact on the firm's portfolio of generation assets given a unionized labor force and increasingly costly emissions compliance costs. 1998.

Lead economic and industry expert for Colorado Interstate Gas Pipeline in a case involving competing gas pipeline projects to serve a major western metropolitan area. The report required that issues of market power and affiliate self-dealing be defined and sorted out from other competitive issues stemming from right-of-way conflicts, local market requirements, and the extent of the relevant geographic market. 1998.

Lead industry expert and financial economist for a major oil company who wanted to conduct a (confidential) "events study" to assess, in advance, what the impact of a major press release would have on the price of its publicly-traded shares. 1998.

Lead economic and industry valuation expert in the hostile takeover attempt by Union Pacific Resources, Inc., of Pennzoil Company. Prepared *Valuation of Pennzoil Company* for the Chancery Court in Delaware based on proprietary documents provided by Pennzoil through discovery. The report required that all of Pennzoil's operations and plans be modeled and integrated into a valuation by business segment (upstream and downstream) and collectively as enterprise value. 1997.

Lead industry expert in a case involving the construction of an oil products pipeline with planned access through national forest and private lands. The route and several alternate routes were heavily protested by private interests that argued potential environmental damage outweighed the economic benefits of constructing the pipeline needed to serve the fast-growing markets of Washington, Idaho, and Montana. Several reports were produced for the Forest Service on Behalf of the pipeline. 1997.

Senior market strategist to Columbia Gulf Transmission regarding their Gulf Coast corporate, marketing, and regulatory strategy. The proprietary projects included asset acquisition and divestiture, developing alternative marketing opportunities for jurisdictional and non-jurisdictional businesses, rate design, and planned expert testimony. 1997.

Senior market strategist on electric industry restructuring for a major investor-owned utility in the northeast. Responsible for directing a team charged with rate design, market analysis, corporate

restructuring and strategy. Project included an assessment of expected market-clearing prices, market structure, and strategies under conditions of competitive wholesale prices. 1996.

Senior energy economist as part of a team advising a major southwestern U.S. investor-owned electric utility regarding strategy and testimony needed to support a petition against the merger of competing firms. The work considered competitive conditions throughout Texas, Oklahoma, New Mexico, and Louisiana as well as interconnects with Mexico. 1994-1995.

Senior energy economist to the Single Participating Area (SPA) team for BP Exploration, Inc., formed as a result of Order 360, Alaska Oil and Gas Conservation Commission, September 1995. Team member (on-site) from November 1995 to August 1996. The issues were: the value of the hydrocarbons produced 1995-2030 from the Prudhoe Bay Unit; the market value of the facilities used to treat and transport those hydrocarbons; the probable value of alternative uses for natural gas from the North Slope in the global market; the use of various valuation techniques as applied to the hydrocarbon resources from the PBU; and the impact of oil and gas production on the workforce/economy of Alaska. All work was proprietary and considered highly confidential. 1995-1996

SELECTED INDUSTRY STUDIES/ASSIGNMENTS

"The Natural Gas Liquids Business: South Louisiana and the Gulf Coast", A study that provided facts in support of a non-jurisdictional business opportunity for Columbia Gulf Transmission Company, a subsidiary of Columbia Gas. The company was considering an expansion of its primary business to related energy assets. 1996.

"The Relationship Between Fuel Oil and Natural Gas Prices in the 1990's," proprietary client report that examined the statistical relationships that are embedded in the way oil and gas prices move together. The objective was to provide a risk management tool to the client to use when hedging exposure to oil price changes linked to gas procurement contracts. 1993.

"An Assessment of Competition: Amoco Pipe Line Company's Rocky Mountain Crude Oil System," prepared by AUS Consultants. March 1992.

"Competition in the Atlantic Pipe Line Company Market: Theory and Evidence of the Battle for Transportation Services," proprietary study prepared for Sun/Atlantic Pipe Line Company. April 1990.

"Competition in the Williams Pipe Line Company Market: Theory and Evidence of the Battle for Transportation Services" (2 volumes), proprietary study prepared for Williams Pipe Line Company. February 1990.

"The Competitive Environment Faced by Sun Pipe Line Company's FERC-Regulated Crude Oil System," (2 volumes), proprietary study prepared for Senior Management of the Sun Pipe Line Company. November 1989.

"Sun Pipe Line Company Market Analysis of the Eastern Products System, 1985-1988," proprietary study prepared for Sun Pipe Line Company. July 1989.

"An Analysis of Refined Product Use in Buckeye Pipe Line Company, L.P. Market Areas: 1989-1994," proprietary study prepared for the Senior Management of Buckeye. June 1989.

"Market Analysis of Ohio and Indiana for Refined Petroleum Product Pipelines", proprietary study prepared for Buckeye Pipe Line Company, L.P. June 1989.

"Standing on the Brink: The North American Natural Gas Market," published by Chase Econometrics. Detailed analysis of the prospects of gas producers, distributors, IPP's/co-gen and transmission companies in the rapidly unfolding environment of deregulated markets. 1988.

"Power Wheeling in North America," published by Chase Econometrics. The first market analysis of its kind, showing the detailed quantitative effects of open access in North America. The work covered all NERC regions including Canada. 1988.

"Natural Gas Procurement: Supply Options and Solutions" (with Matt Dutzman), produced for several pipelines and utilities. Complete analysis of the natural gas industry's evolving market. The study included the role of brokers, IPP's, co-gen plus several scenarios regarding the evolving relationship between gas buyers and sellers. 1988.

"The Impact of a Gasoline Tax," proprietary study prepared for Mobil Oil Corporation. This widely quoted study demonstrated the impact of either a 25 or 50 cent per gallon gas tax on the auto, gasoline and labor markets. 1987.

"China's Energy Supply/Demand Balance," proprietary study prepared for the Atlantic Richfield Company. Demonstrated that China could remain an important exporter of energy if it instituted certain measures to conserve domestic demand during the 1990s. 1987.

"U.S. Oil and Gas Drillings: Beyond the Current Crisis," published by WEFA, demonstrated why drilling activity could sink toward 1,000 active rigs before recovering in the 1990s. January 1987.

"The Next Oil Shock," published by Chase Econometrics (2 volumes). Complete global analysis of the prospects for much higher oil and gas prices by 1992 once energy consuming-countries become increasingly dependent on oil from countries in politically unstable regions or those nations hostile to the United States. 1986.

"Oil and Natural Gas Supply/Demand Balances" (Oil and Gas Market Trends Team Member), National Petroleum Council, Washington, DC. 1986.

PUBLICATIONS: REFEREED JOURNALS AND TRADE PRESS

"Accounting for Uncertainty in Discounted Cash Flow Valuation of Upstream Oil and Gas Investments" (with William H Knull III, Timothy J Tyler and Richard D Deutsch), *Journal of Energy & Natural Resources Law*, Vol. 25, No. 3, 2007.

"Accounting for Uncertainty in Discounted Cash Flow Valuation of Upstream Oil and Gas Investments" (with W H Knull III, TJ Tyler and RD Deutsch), *Transnational Dispute Management*, Vol. 4, Issue 6, November 2007.

"Electric Company Affiliate Transfer and Self Build Policies: Renewed Regulatory Challenges" (with J. Cavicchi), *The Electricity Journal*, Vol. 25, No. 3, 2004.

"Market Share in Generation: The Impact of Retail Competition on Investor-Owned Utilities" (with M. Krepps), *Public Utilities Fortnightly*, July 1, 1998.

"Regulatory Reform and the Economics of Contract Confidentiality: The Example of Natural Gas Pipelines" (with J. Kalt, A. Jaffe, and F. Felder), *Regulation*, No. 1, 1996.

"Natural Gas Pipelines: Roadmap to Reform" (with F. Felder), *Public Utilities Fortnightly*, April 1, 1995.

"Focusing In On Futures and Options" (with F. Felder), *Electric Perspectives*, Edison Electric Institute, January/February 1995.

"Using Derivatives in Real Decision Making" (with F. Felder), *Public Utilities Fortnightly*, October 15, 1994.

"OCTG Markets are Hammered by Natural Gas," *Center Lines*, Cleveland, OH, January 1992.

"Least-Cost Planning for Investor-Owned Natural Gas Distribution Companies: What's Needed and What's Not" (with G. Schink), *City Gate Magazine*, Pennsylvania Gas Association, Harrisburg, PA, June 1989.

"Oil and Natural Gas Markets: Change is on the Way," *Chemical Marketing & Management*, Vol. 2, No. 4, summer 1987.

"Energy Resources and the Global Marketplace," *The Canadian Mining and Metallurgical Bulletin*, spring 1987.

"Forecasting Oil Prices to 1995," *Hydrocarbon Processing*, Vol. 66, No. 8, August 1987.

"Negotiating Agreements for China's Energy Future," *East Asian Executive Reports*, Vol. 8, No. 4, April 1986.

"Multiple Scenario Planning—Atlantic Richfield's Experience," *Journal of Business Forecasting*, Vol. 4, No. 3, 1985.

"Exchange Rate Movements and Oil Demand," in M. Wionczek, ed., *Strategic Planning in the Oil and Gas Industry*, Westview Press, 1985.

"Political Instability and Foreign Direct Investments: The Motor Vehicle Industry, 1948-65" (with K. Bollen), *Social Forces*, Vol. 60, No. 4, June 1982.

"A Perspective on the Cost of Energy Technologies," *SAE Transactions*, Spring 1982.

"Political Instability's Impact on Output: Motor Vehicles Production in Argentina, Brazil, and Mexico" (with K. Bollen), *Studies in Comparative International Development*, Vol. 17, No. 4, 1982.

"Aluminum Markets and Supply Elasticity," *Light Metals Age*, May 1981.

Authored: "Undervaluation and the Dollar, 1974-1978", *The Financial Review*, 15(4), Pg. 49, 1980.

PUBLICATIONS IN PROCEEDINGS

"To Be or Not to Be, a Restructured Regional Powerhouse or a Boutique Wires Company," The Maguire Energy Institute Conference: Electricity Deregulation Report Card, Dallas, TX, November 1, 2000.

"Same Sharks-New Meat: Never Jump in the Water without Protection" (with J. Farr), The Maguire Oil and Gas Institute Energy Trends Conference: The New Energy Marketer, Dallas, TX, November 29, 1998.

"Estimating Market-Clearing Prices for Energy and Capacity: Competitive Markets and Stranded Costs" (with F. Felder and H. Tookes), Electric Utility Consultants, Inc., Denver, CO, December 2, 1997.

"Strategies by Electric Generators Will Impact Additions to Capacity and Natural Gas Pipeline Opportunities," Institute of Gas Technology, Washington, DC, November 7, 1997.

"The Golden Handcuffs: Securitization of Stranded Assets and the Utility's Earnings per Share," The Center for Business Intelligence, Hilton Head, SC, June 24, 1997.

"Valuing Assets: Using Options Methods Applied to Standard Costs" [with Mathew B. Krepps] Presented at the 17th annual North American Conference of the U.S. Association for Energy Economics. June 1997

"Twenty Years Is a Long Time: Tomorrow's Oil & Gas Market with Lessons from the Past," in *20th Annual Petrochemical Review*, DeWitt & Company, Houston, TX, pp. A-1 to A-18, March 22, 1995.

"Fuel-Switching Between Distillates and Natural Gas: The Search for a New Rule of Thumb," in *The World Oil & Gas Industries in the 21st Century*, Proceedings from the 16th Annual North American Conference, International Association of Energy Economists, Dallas, TX, November 9, 1994.

"Acorns Do Not Fall Far from the Tree: Why Natural Gas Prices Will Not Go Their Own Way" in *1994 Petrochemical Review*, DeWitt & Company, Houston, TX, March, 1994.

"The Energy Market Outlook: Costs Going Down and Reliability Improving," in *Forecast '94*, Steel Service Center Institute, Chicago, IL, September 27, 1993.

"Good News for the Petrochemicals: Will the Energy Market Play Along?" in *1993 Petrochemical Review*, DeWitt & Company, Houston, TX, pp. 1-16, March, 1993.

"New Age Energy Markets," in *1992 Petrochemical Review*, DeWitt & Company, Houston, TX, pp. 1-21, March 1992.

"Energy & Oil—What Can We Anticipate in the Near Term?," in *1991 Petrochemical Review*, DeWitt & Company, Houston, TX, March 1991.

"Oil & Gas Market Outlook: Opportunities for New Mexico Producers, 1990-95," in *Proceedings: Oil and Gas '91*, Robert O. Anderson School of Business, University of New Mexico, February 13, 1991.

"Clearing Away the Fog: A Look at Oil and Gas in the 1990s," in *1990 Petrochemical Review*, DeWitt & Company, Houston, TX, pp. 1-16, March 1990.

"Time to Get on With the Job at Hand," in *Forward to the Nineties*, The Alliance, Anchorage, AK, pp. 1-15, January 1990.

"Energy Markets: Have Petrochemical Producers Found a Safe Haven or Just the Eye of the Storm?" in *1989 Petrochemical Review*, DeWitt & Company, pp. 1-16, March 1989.

"Alaska-On the Threshold of a Dream," in *Proceedings from Meet Alaska, 1989*, The Alliance, pp. 1-9, January 1989.

"Crude Oil Outlook," in *1988 Petrochemical Review*, DeWitt & Company, Houston, TX, pp. 1-20, March 1988.

"Oil and Natural Gas Markets: Change is on the Way," in *Review and Forecast: Prospects for Profitability*, The Chemical Marketing Research Association, pp. 174-179, May 1987.

"Petroleum Product Market in Transition," in *Proceedings*, National Petroleum Refiners Association, San Antonio, TX, pp. 15-25, April 1987.

"Low World Crude Oil Price - How Long Do We Have?," in *1987 Petrochemical Review*, DeWitt & Company, Houston, TX, pp. 1-15, April 1987.

"OPEC May Stumble, But It Won't Fall," *The New York Times*, February 8, 1987.

OTHER PROFESSIONAL ACTIVITIES

Invited Speaker (Partial Listing)

American Association of Energy Economics, American Gas Association, American Petroleum Institute, Association of Oil Pipelines, Canadian Energy Research Institute, Canadian Petroleum Association, Center for Business Intelligence, Central Electricity Generating Board of the U.K., DeWitt Petrochemical, Energy Daily, Gas Daily and Gas Buyer's Guide, Georgia Mining Association, Independent Petroleum Association of Canada, International Association of Energy Economists, Institute of Gas Technology, Maguire Oil and Gas Institute (SMU), National Association of Business Economists, National Petroleum Council, Oil Daily, Remedies in Commercial, Investment and Energy Arbitrations, Society of Gas Operators, Society of Rate of Return Analysis, State of North Dakota, State of Texas, Steel Service Center Institute, Transportation Research Board, U.S. Association of Energy Economists, University of New Mexico, University of Southern California, University of Texas (Arlington)

Directorships and Advisory Committees

COHO Resources, Inc., Dallas, TX. Director, 1990-93 (an oil and gas exploration and production company)
Remuda Corporation, Denver, CO. Advisory Committee, 1991-1996 (a natural gas exploration, production and marketing company)
Member, National Petroleum Council, Economic and Environmental Impacts Task Group of the Committee on U.S. Oil & Gas Outlook, 1987

Professional Associations and Certifications

Petroleum Economics & Management Program, Northwestern University
International Association of Energy Economists
National Association of Business Economists
American Economic Association