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BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio for Approval of a Market Rate Offer to Conduct a Competitive Bidding Process for Standard Service Offer Electric Generation Supply, Accounting Modifications, and Tariffs for Generation Service.	)))))))	Case No. 10-2586-EL-SSO

VOLUME II

TESTIMONY

DUKE ENERGY OHIO EXHIBIT_____

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DIRECT TESTIMONY OF

JUDAH L. ROSE

ON BEHALF OF

DUKE ENERGY OHIO, INC.

November 15, 2010

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Judah L. Rose. I am a Managing Director of ICF International (ICF). My business address is 9300 Lee Highway, Fairfax, Virginia 22031.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL QUALIFICATIONS.

A. After receiving a degree in economics from the Massachusetts Institute of Technology and a Masters Degree in Public Policy from the John F. Kennedy School of Government at Harvard University, I joined ICF in 1982. I have worked at ICF for over 27 years and am Managing Director of ICF's wholesale power practice. I also have been a member of the Board of Directors of ICF International and am one of three people (in a consulting firm of more than 3,500 people) to have been given ICF's honorary title of Distinguished Consultant.

Q. DOES ICF HAVE PUBLIC SECTOR CLIENTS?

A. Yes. In the United States, ICF has been the principal power consultant to the U.S. Environmental Protection Agency (EPA) continuously for over 30 years, specializing in the analysis of the impact of air emission programs, especially cap and trade programs. We also have worked with the Federal Energy Regulatory Commission (FERC) on transmission issues and the U.S. Department of Energy (DOE). In addition, we have worked with state regulators and state energy agencies, including those in California, Connecticut, Kentucky, New Jersey, New York, Ohio, Texas, and Michigan, as well as with numerous foreign governments.

Q. DOES ICF HAVE UTILITY CLIENTS?

A. Yes. For over 35 years, ICF has provided forecasts and other consulting services to major United States and Canadian electric utilities. In the U.S., ICF has worked with utilities such as American Electric Power, Allegheny, Dominion Power, Delmarva Power & Light, Duke Energy, FirstEnergy, Entergy, Florida Power & Light, Southern California Edison, Sempra, PacifiCorp, Public Service Electric and Gas, Nevada Power and Tucson Electric. ICF also works with Regional Transmission Organizations (RTOs) and similar organizations including the Midwest Independent Transmission System Operator (MISO), the Electric Reliability Council of Texas (ERCOT), and the Florida Regional Coordinating Council (FRCC).

Q. WHAT TYPE OF WORK DO YOU TYPICALLY PERFORM?

A. I have extensive experience in assessing retail and wholesale electric power issues, including regulatory developments, forecasting wholesale and retail prices. I also have extensive experience assessing environmental regulations and their impacts on supply and demand conditions in wholesale power markets as well as valuing power plants.

Q. WHAT SPECIFIC POWER SECTOR EXPERT TESTIMONY EXPERIENCE DO YOU HAVE?

A. I have testified before or made presentations to the FERC, an international arbitration tribunal, federal courts, arbitration panels, and before state regulators and legislators in 20 U.S. states and Canadian provinces: Arizona, Arkansas, California, Florida, Indiana, Kentucky, Louisiana, Massachusetts, Minnesota, Missouri, New Jersey, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Quebec, South Carolina, and Texas. I have testified extensively on the topics of electric power prices and markets,

utility planning and the development of new generation resources and transmission. In addition, I have authored numerous articles in industry journals and spoken at scores of industry conferences. For specific details, please see my resume, attached hereto as Attachment JLR-1.

Q. HAVE YOU TESTIFIED PREVIOUSLY IN THE STATE OF OHIO?

A. Yes. I have filed the following testimony: (1) Direct Testimony on behalf of Duke Energy Ohio, Inc. (Duke Energy Ohio), before the Public Utilities Commission of Ohio, Case No. 08-0920-EL-SSO, July 31, 2008, (2) Second Supplemental Testimony on behalf of Duke Energy Ohio, before the Public Utilities Commission of Ohio, Case Nos. 03-93-EL-ATA, 03-2079-EL-AAM, 03-2081-EL-AAM, 03-2080-EL-ATA, February 28, 2007, (3) Supplemental Testimony on behalf of The Cincinnati Gas & Electric Company, before the Public Utilities Commission of Ohio, Case Nos. 03-93-EL-ATA, 03-2079-EL-AAM, 03-2081-EL-AAM, 03-2080-EL-ATA, May 20, 2004, (4) Direct Testimony on behalf of The Cincinnati Gas & Electric Company, Case Nos. 03-93-EL-ATA, 03-2079-EL-AAM, 03-2081-EL-AAM, 03-2080-EL-ATA, April 15, 2004, and (5) Testimony on behalf of FirstEnergy Corp., before the Public Utilities Commission of Ohio, in Case No. 99-1212-EL-ETP, October 4, 1999 and April 2000.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Duke Energy Ohio, Inc. (Duke Energy Ohio or the Company).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony supports the Application of Duke Energy Ohio to pursue a market rate offer (MRO) with respect to retail power supply.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony is organized into eight sections. The first section (*i.e.*, this section) introduces my testimony. The second section (*i.e.*, the next section) summarizes my testimony. The third section provides a brief description of the background to the MRO proposal of Duke Energy Ohio. The fourth section provides a brief description of the MRO proposal. The fifth section provides a projection of wholesale power prices. This section is subdivided into three sub-sections. The sixth section presents a projection of retail market prices. The seventh section compares the MRO price, the retail market price, and Duke Energy Ohio Electric Security Plan (ESP) prices. The eighth section presents my conclusions.

II. SUMMARY

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. ICF was retained by Duke Energy Ohio to assess retail and wholesale power market prices in its region. In particular, ICF was retained to assess future: (1) retail market prices, (2) the ESP price under Duke Energy Ohio's current retail service, and (3) the price under Duke Energy Ohio's MRO proposal.

BACKGROUND

At this time, under Duke Energy Ohio's ESP, customers can purchase power from Duke Energy Ohio or from a certified retail electric service (CRES) provider. Portions of the ESP are avoidable by customers who switch to another provider. The ESP is formula driven and was established in 2008. The current ESP applies to the 2009 to 2011 period.

The ESP reflects the motivations for which it was designed, especially security against volatile power market prices during the transition to full retail competition.

Hence, the formulas that make up portions of the ESP do not track short-term perturbations in wholesale or retail market conditions. Also, Duke Energy Ohio is not permitted to adjust its ESP SSO price in response to market conditions. For example, after the establishment of the ESP, the economy entered a deep recession and wholesale and retail market prices decreased greatly. Indeed, the change in prices was dramatic. In 2008, wholesale power prices in the Duke Energy Ohio area were $50.4/MWh,[1] the third highest in real dollar terms in the history of the market (*i.e.*, the third highest in the 1997-2009 period). However, by 2009, prices were 43% lower, at $28.9/MWh. Prices in 2009 were the third lowest in the historical record.[2]

In this period, retail market prices tracked wholesale prices and, hence, have also been low since the recession became pronounced. This occurs because wholesale power is the primary input into retail service. As a result, by September 2010, 62% of Duke Energy Ohio load (on a MWh sales basis) had switched to CRES providers. One consequence of this development is that, even though Duke Energy Ohio had offered to hedge its customers against the risks of high market prices with its power plant fleet, it cannot earn a known level of revenues from the ESP arrangement due to the lost volume. Put another way, when retail market prices are low, it loses volume and the revenue from the hedge is decreased. When market prices are high, it cannot raise its prices to match market conditions.

[1] All-hours annual average: 2010$.

[2] Historical pricing is primarily from Platts. This is considered an independent and reliable source of electricity pricing information under Ohio Administrative Code 4901:1-35-03 (B)(1)(c). This has been supplemented by Bloomberg data during periods in which MISO publishes price data. Note, Intercontinental Exchange "ICE" data discussed later is also considered independent and reliable.

At the same time, the fall in power prices has revealed that, at the present time, the retail market has shown the ability to supply customers. Also, Duke Energy Ohio is acting to facilitate market improvements in Ohio. In particular, Duke Energy Ohio is switching to the PJM market in part to have all of Ohio utilities in one RTO and to ensure that the wholesale power market is able to support Ohio's retail needs.

In light of these developments, Duke Energy Ohio is proposing an MRO starting in 2012, rather than an ESP. Under the MRO, the Standard Service Offer (SSO) will closely reflect market conditions as customer SSO service obligations will be auctioned regularly.

MRO TRANSITION

The MRO requires a transition period. Under the proposal, there will be a two-period transition from the ESP to the MRO. The transition proposal results in an SSO that is a blend or a weighted average of the projected ESP at December 31, 2011, and the market price for retail service resulting from an auction. The result of the blending is that this blended SSO price will be intermediate between the market price and the legacy ESP. In the two transition periods, the share of the system served by the auction winner is 10% and 20%, respectively. This is equivalent to a 10% and 20% blending of market and a 90% and 80% blending of the legacy ESP.

By June 1, 2014, the MRO transition is terminated and thereafter the price is 100% based on the auction. At that time, the retail market price of the winner of the auction is expected to be very close to the legacy ESP price. However, today, the market price is generally lower than the comparable ESP price. The MRO proposal reaches market as soon as possible given the constraints of the MRO process and, hence, provides

access to market pricing that might unexpectedly be lower than the legacy ESP price as soon as possible. Also, by ending the transition when the legacy ESP price and market prices are very similar, it creates a situation in which, were pricing to remain constant, the result is the same as a longer blending period.

WHOLESALE PRICE TRENDS

The convergence of the retail market price and the legacy ESP price is the result of the expectation that wholesale power prices delivered to Duke Energy Ohio will increase over time. Wholesale power is the main input to retail power supply. The principal basis for this conclusion is the observable forward prices for the delivery of wholesale power to Duke Energy Ohio that are available from the Intercontinental Exchange (ICE). This data set has a trend of rising wholesale prices in all years. The power prices for forward delivery of electric energy for 2012 are above the prices over the last 12 months, and 2013 and 2014 wholesale prices are even higher than 2012 prices. The price increase between 2009 and 2014 cumulatively on a nominal basis is 54%. As is discussed elsewhere, this increase brings retail prices very close to the avoidable portion of the ESP.

There is the potential for higher power prices past June 1, 2014. This potential for additional upward price movement occurs in part due to the potential for tighter emission regulations and higher natural gas prices. However, recent political developments add to the uncertainty regarding environmental regulations.

RETAIL MARKET PRICES

Retail power prices generally track wholesale power prices. Accordingly, they are also expected to increase over time. Retail prices are not as observable on a forward

basis as wholesale prices in part because they are more heterogeneous. Each customer or class of customers has a different cost of service and, hence, prices can vary. Also, they are often confidential. Furthermore, during some historical periods, retail transaction volume was low. To address this problem, I have projected retail prices on the assumption that prices will reflect the costs of service. This builds on past Ohio testimony I have provided on this subject. This is also roughly consistent with some available retail price data.

The first observation concerning my retail price projections are that retail prices are at a premium to wholesale prices on a per MWh basis to cover the additional costs and risks of providing retail service. In 2012, the retail premiums result in approximately a higher 61% retail price per MWh compared to the wholesale all-hours prices for electrical energy. Specifically, average retail market prices are 5.8¢/kWh versus an all-hours price of $36/MWh in nominal dollars.[3] This premium is a MWh weighted average of all customers;[4] the premiums vary by year, customer class, by month and by time of day. The second observation is that, by 2014, they are expected to average 7.17¢/kWh for Duke Energy Ohio. Thus, the 2014 retail market price is expected to be 23% higher than the 2012 price. This is driven primarily by the wholesale price trends, but also to a lesser extent based on retail trends.

COMPARISON OF LEGACY ESP PRICE, RETAIL MARKET, AND MRO PRICES

[3] ¢/kWh times 10 equals $/MWh. Hence, $58/MWh divided by $36 /MWh is 1.61 or 61% higher.
[4] Assuming no switching.

The 2014 retail market price is very close to the projected legacy ESP price for generation. In 2014, the ESP avoidable generation price is expected to be 7.34¢/kWh. In comparison, the retail market price is 7.17¢/kWh. Thus, when the MRO transition period is scheduled to end in 2014, the two prices, the retail market and the legacy ESP price, are expected to be very close. Thus, the MRO price, which is a blend of the two, in turn, will also equal these two prices. Were market prices and the legacy ESP price for generation to continue as these levels, continued blending would have no effect on the price available to customers relative to the Duke Energy Ohio proposal. Also, in the event that the forecast is wrong and market prices remain at a discount. The proposal has the advantage of maximal access to lower market prices, subject to the constraints of the MRO.

III. BACKGROUND TO DUKE ENERGY OHIO'S MRO PROPOSAL

Q. WHAT IS THE BACKGROUND TO DUKE ENERGY OHIO'S PROPOSAL?

A. The background to Duke Energy Ohio's MRO proposal includes:

- Duke Energy Ohio's Current ESP
- Current retail and wholesale power market conditions

Q. WHAT IS THE CURRENT DUKE ENERGY OHIO ESP?

A. The current ESP started January 1, 2009, and extends for three years until the end of 2011. Hence, a new program is required, starting in January 1, 2012. Under Duke Energy Ohio's current ESP, Duke Energy Ohio offers customers service under its SSO. The price formulas that determine the ESP were set for the 2009 to 2011 period based on forward market conditions in 2008. At the time, the prevailing forward market prices for power were above, but similar to, the projected ESP price. Thus, the current ESP price

reflected in part market conditions prevailing in 2008 when the Duke Energy Ohio ESP proposal was developed and presented to the Commission.

Q. WHAT WAS THE RATIONALE FOR THE ESP?

A. An important part of the rationale for the ESP is that, in exchange for providing protection, *i.e.*, a hedge against high and volatile market prices, Duke Energy Ohio would have an opportunity to recover the costs of this arrangement. This hedge was based on Duke Energy Ohio using its generation fleet. This was done as part of the transition to an even more deregulated market, and as an alternative to proposals for Duke Energy Ohio to have a price that adjusted yearly to market conditions, the Competitive Market Option (CMO).

Q. HOW IS DUKE ENERGY OHIO'S ESP PRICE STRUCTURED?

A. Duke Energy Ohio's ESP has a pricing structure with two main components. The first part is occasionally still referred to as the Price To Compare (PTC), which can be avoided by switching to a CRES provider. As noted, the PTC uses a price formula set in 2008. However, the formulaic adjustment mechanism is only weakly tied to short-term fluctuations in power market prices. The second part is the unavoidable charges associated with Duke Energy Ohio's obligations as Provider of Last Resort (POLR) service. The POLR charge is the sum of the capacity dedication (CD) and System Reliability Tracker (SRT) charge. If non-residential customers waive service at the ESP price to compare such, that upon return, they are charged a premium rate, they do not have to pay the CD or the SRT charge.

Q. WHAT IS THE PRICE OF SERVICE UNDER THE ESP STANDARD SERVICE OFFER?

A. The price on a weighted average basis for the twelve months of July 2009 through June 2010 is 8.04¢/kWh without transmission service charges and without waiving SRT charge (see Exhibit A). This price is the energy sales weighted average of all customers choosing SSO service. Including transmission, but excluding waived the SRT charge, the charge averages 8.56¢/kWh.

EXHIBIT A
Current ESP – Last 12 Months*

Class	Volume (kWh)	Base Gen ($)	FPP ($)	Trans ($)	AAC ($)	SRT ($)	Capacity Dedication ($)	With Transmission Costs		Without Transmission Costs	
								PTC (Waiver) (¢/kWh)	PTC (Non-Waiver) (¢/kWh)	PTC (Waiver) (¢/kWh)	PTC (Non-Waiver) (¢/kWh)
RS	6,628,187	241,525	253,389	35,865	46,367	5,525	15,988	8.71	9.03	8.17	8.49
DM	453,616	16,368	17,844	2,174	3,553	347	1,238	8.80	9.15	8.33	8.67
DP	1,165,671	26,505	44,806	5,347	6,379	589	2,317	7.12	7.37	6.66	6.91
DS	4,267,528	140,451	163,786	22,296	30,607	2,833	10,937	8.37	8.69	7.85	8.17
TP	805,983	12,961	21,923	2,928	4,044	667	1,467	5.19	5.46	4.83	5.09
Total	13,372,134	438,639	503,874	68,818	91,198	9,986	32,028	8.24	8.56	7.73	8.04

Source: Duke Energy Ohio ESP
*Last 12 months is July 2009 to June 2010.

Q. WHAT ARE THE COMPONENTS OF THE PTC?

A. The current ESP PTC has six main components:

- ***Base Generation (Rider PTC-BG)*** – Base generation is capital recovery charges associated with the production of electricity. These charges generally do not correlate closely with short-term fluctuations in power market prices. These charges are 38% of total, and are the second largest component.
- ***Fuel and Purchased Power Rider (Rider PTC-FPP)*** – The Rider PTC-FPP includes charges related to fuel, purchased power, emission allowances, and

alternative energy resource compliance costs used to provide electric generation service. These charges are the largest item and are 44% of the total. Most of these charges are fuel related because Duke Energy Ohio uses its fleet of coal power plants as its primary source of generation. To the extent that short-term fluctuations in power market prices are not correlated with coal prices, this rider does not track well short-term fluctuations in power market prices.

- ***Annually Adjusted Component Rider (Rider PTC-AAC)*** – The Rider PTC-AAC charge is associated with environmental compliance, taxes and homeland security. These charges are 8% of the total.
- ***Transmission Cost Rider (Rider TCR)*** – Rider TCR charges are for the operation, maintenance, and managing the flow of electricity through the transmission system. These charges are 6% of the total.
- ***System Reliability Tracker (Rider SRA-SRT)*** – Rider SRA-SRT are charges that provide dollar for dollar recovery of the costs incurred by Duke Energy Ohio for reserve capacity related to power purchases. Generally, Rider SRA-SRT is not part of the PTC; however, non-residential customers and residential customers served via governmental aggregators have the option to waive this charge. These charges are 1% of the total.
- ***Capacity Dedication Charge (Rider SRA-CD)*** –The capacity dedication charge is for committing the capacity of Duke Energy Ohio's legacy generation for SSO load. Generally, Rider SRA-CD is not part of the PTC; however, this particular charge is avoidable by qualifying non-residential customers. These charges are 3% of the total.

Q. HOW HAS THE PTC CHANGED OVER TIME?

A. The PTC has increased from January 2009 through to May 2010 by 40%. Some of this change is seasonal, but overall the trend has been an increasing price to compare.

Q. WHY HAS THE SSO PTC CHANGED OVER TIME?

A. The increase has in part occurred because coal costs have risen. Also, as part of the stipulation in ESP case, there was a scheduled increase in the Base Generation (BG) rate. Rider AAC has also slightly increased over time.

Q. WHAT IS THE PROJECTED PTC COMPONENT OF THE SSO PRICE FOR THE 2012 TO 2014 PERIOD?

A. The projected ESP price for December 2011 which will be frozen for 2012 to 2014 is shown at 7.34¢/kWh (see Exhibit B).

EXHIBIT B
Projected ESP price including CD and SRT - 2012 – 2014 - Customer Weighted Average (¢/kWh)

Component	Rider	Projected		
		2012	2013	2014
Base Generation	PTC-BG	3.23	3.23	3.23
Fuel, Purchased Power & Alternative Energy Resource Compliance	PTC-FPP	2.97	2.97	2.97
AAC – Environmental & Tax	PTC-AAC	0.79	0.79	0.79
Capacity Dedication	SRA-CD	0.23	0.23	0.23
Reserve Capacity Purchases	SRA-SRT	0.12	0.12	0.12
Total Rider Gen/Price-to-Compare		7.34	7.34	7.34

Q. WHAT HAS BEEN THE RECENT TREND IN CUSTOMER SWITCHING?

A. Since the beginning of 2009, the level of customer switching to CRES providers has risen significantly. This increase has coincided with lower wholesale and retail power prices brought about in part by the very deep recession. As of September 2010, 62% customer demand in MWh has chosen to obtain service from other retail service providers. The

switching by rate class shows that switching is broad-based and occurs across all classes, though it occurs more in the commercial and industrial category.

Q. WHY IS THIS HAPPENING?

A. As noted, the market price of wholesale supply and retail service has fallen. For many customers, the retail market price is currently below the Duke Energy Ohio PTC. Duke Energy Ohio is not allowed to respond to the lower prices by competing and lowering its PTC.

Q. WHY IS THIS HIGH SWITCHING LEVEL SIGNIFICANT?

A. This high level of switching is significant for several reasons. First, the level of switching indicates that the retail market has matured enough to support a very high level of switching, at least temporarily. Second, it highlights a problem with the Duke Energy Ohio ESP. When market prices are temporarily low, Duke Energy Ohio cannot compete for sales volume because it cannot respond via price adjustments. Thus, there is less revenue available to justify providing default service at a relatively known price. Conversely, when market prices are high compared to the ESP, Duke Energy Ohio's upside is limited by the ESP that cannot be increased in response to market conditions. In addition, the unexpected switching has resulted in costs due to unwinding hedges; switching customers do not pay these costs even though they are the reason for this unexpected cost to occur.

IV. DUKE ENERGY OHIO'S MRO PROPOSAL

Q. WHAT IS DUKE ENERGY OHIO PROPOSING FOR THE SSO STARTING ON JANUARY 1, 2012?

A. Duke Energy Ohio is proposing an MRO to replace the ESP, starting January 1, 2012.

Q. WHAT IS THE MRO?

A. An MRO is an option available to utilities under which the SSO offer price is based on a deregulated retail market price that responds to short-term market changes. Under Duke Energy Ohio's MRO proposal, the market price would be based on annual[5] auctions of SSO loads and, hence, have frequent updates.

Q. IS THERE A TRANSITIONAL PHASE-IN REQUIREMENT UNDER THE MRO OPTION?

A. Yes. The phase-in requirement for transitioning from an ESP to an MRO involves "blending" of the ESP price for generation service with a price derived from an auction of a share of the load to be served. There is a gradual increase in the share of the SSO supply priced at then-prevailing auction price. In the case of the Duke Energy Ohio MRO proposal, the share of SSO service met via an auction is gradually increased for the first two periods. This transition effectively results in an SSO price to compare that is a weighted average combination of the offer price that results from the current Duke Energy Ohio's SSO price at the end of its ESP (legacy ESP price) and the offer price resulting from the auction. The weights are the shares auctioned and 100% minus the auction share.

Q. WHAT IS THE SPECIFIC WEIGHTED AVERAGING BEING PROPOSED FOR THE FIRST TWO PERIODS?

A. In the first 17-month period, Duke Energy Ohio proposes that 10% of the offered price be based on the auction. Ten percent of the load responsibility would be offered at

[5] As described by Mr. Northrup in his testimony, the first period is 17 months rather than 12 months in order to align the MRO periods with PJM's June 1 to May 31 schedule for capacity pricing. Thereafter, the periods are 12 months.

auction. In year two, 20% of the MRO price would be based on a market price that emerges from an auction. Accordingly, in years one and two, 90% and 80% of SSO price would be based on the legacy ESP price, respectively. The load choosing SSO service from Duke Energy Ohio would see a single weighted average offer, *i.e.*, a blended price.

Q. WHAT IS THE BASIS FOR THIS APPROACH IN PERIODS ONE AND TWO?

A. In the first two years, a key determinant is that the market share is limited by the rules governing the MRO.

Q. WHAT MRO RULES APPLY AFTER YEAR TWO?

A. After year two, it is my understanding that there is greater discretion about the share of the SSO that is based on the auction price; *e.g.*, in year two it can prospectively be increased up to 100% in year three. However, once an auction market share has been reached, it cannot be decreased. The maximum period for the phase-in is ten years; thus, at no later than that point, the auction share of the SSO must be 100%.

Q. WHAT IS DUKE ENERGY OHIO'S PHASE-IN PROPOSAL?

A. Duke Energy Ohio's witness William Don Wathen Jr. describes the phase in proposal. Exhibit C summarizes Duke Energy Ohio's phase in proposal:

EXHIBIT C
Proposed MRO Blending

Year	Percent of SSO Price from	
	Legacy ESP	Auction
1/1/12 – 5/31/13	90%	10%
6/1/13 – 5/31/14	80%	20%
All Years After 5/31/14	0%	100%

Q. WHAT HAPPENS AFTER MAY 31, 2014?

A. The transition ends and the SSO offer price reflects auction market conditions regardless of market conditions relative to the ESP. Thus, the proposal brings the generation service charge to market as soon as possible given the MRO constraints. Customers can benefit if market prices are lower relative to a prolonged transition. The proposal also terminates at a point when both the ESP and the market price are expected to be very close. If this were to continue, a longer blending period would not have a different effect.

Q. WHAT IS AUCTIONED OFF?

A. Duke Energy Ohio would auction off a slice of system for one year of SSO service.[6] The goal is to have frequent price updating of a significant portion of the load.

Q. HOW IS THE AUCTION CONDUCTED?

A. As described in the testimony of Mr. Robert Lee and Mr. James Northrup, the auction process involves a Competitive Bid Manager who is independent of the Company.

Q. WHAT IS THE AUCTION WINNER RESPONSIBLE FOR?

A. The auction winner is responsible for assuring that the cost of serving the slice of system is at the winner's bid price in $/MWh of load served in a given period. The costs of serving this load include primarily energy purchases from the PJM energy market, and capacity purchases from PJM's forward capacity market. The winner must also cover 3 smaller cost items such as ancillary services needed to supply the load, and other items shown in Exhibit D.

[6] Except for period one at 17 months.

EXHIBIT D
Components of the Auction Winner's Responsibility

	SSO Auction
Energy	Yes
Capacity	Yes
Ancillary Services	Yes
POLR Risk	No
NITS	No
PJM Non-NITS Charges	Yes
Losses	Yes

Q. IS THE DUKE ENERGY OHIO LEGACY ESP PRICE GENERALLY HIGHER THAN THE MARKET PRICE FOR CUSTOMERS TODAY?

A. Yes. To the extent that prices are lower, *e.g.*, the market price unexpectedly turns out to continue to be below the ESP prices, the Duke Energy Ohio MRO proposal achieves the goal of access to market as soon as possible subject to not violating the MRO process requirements.

Q. DO YOU EXPECT THE ESP TO CONTINUE TO BE HIGHER THAN THE MARKET IN THE FUTURE?

A. No. I expect that the market price will rise and close the gap with the ESP by 2014.

Q. WHAT IS THE CONSEQUENCE OF THIS RISE IN MARKET PRICE?

A. Ending the transition to market price is consistent with the MRO price being equal to both the ESP and market price. Were this to continue, additional blending would not change the result from the MRO proposal.

Q. WHAT IS THE BASIS FOR THIS FORECAST OF MARKET PRICES?

A. The basis for this forecast of market prices is a combination of current and observable forward wholesale prices from an independent and reliable source, and estimates of retail premiums above these prices.

V. WHOLESALE POWER PRICES

V.1 INTRODUCTION

Q. HOW IS THIS SECTION ORGANIZED?

A. This section has three subsections. The first sub-section (*i.e.*, this sub-section) introduces my discussion of wholesale power prices and explains the importance of wholesale market conditions for retail price. The second briefly discusses recent wholesale power prices, and the history of wholesale prices in the Duke Energy Ohio marketplace. The third presents recent forward prices for wholesale delivery covering 2012 to 2014. The prices are observable forward prices available from ICE and/or PJM with one exception for part of 2014.

Q. WHY ARE WHOLESALE POWER PRICES IMPORTANT?

A. Wholesale power is the principal input and cost driver of retail service offer. Accordingly, it is necessary to forecast the wholesale power market in order to forecast in market prices for retail service offers. Also, understanding wholesale prices is needed to properly understand the uncertainty and volatility associated with future retail power pricing.

Q. WHY ELSE ARE WHOLESALE POWER PRICES IMPORTANT?

A. If the wholesale market price is high, the retail price will also be high and potentially catch up with the legacy ESP price. As is discussed later, this is expected to occur in 2014. This is also when the MRO transition ends and the offered MRO blended SSO price becomes equal to the market price as reflected in the auction price.

V.2 CURRENT MARKET CONDITIONS

Q. WHAT ARE CURRENT WHOLESALE SPOT POWER PRICES IN THE DUKE ENERGY OHIO ZONE?

A. As of the timing of this filing, they are $31.1/MWh for all-hours supply in 2010 dollars. This particular measure is for all-hours spot market (day ahead Midwest ISO reported by Bloomberg) electrical energy purchases over a recent 12 month[7] period. Note, this is a liquid and well-developed market.

Q. DO THESE PRICES INCLUDE THE PRICE OF A CAPACITY PRODUCT?

A. No. Over this recent historical period, the capacity price in the Midwest ISO has been low. However, the Midwest ISO capacity market has a monthly short-term market structure that has not involved large volumes and that is in the process of being changed. Also, Duke Energy Ohio is transferring from Midwest ISO to PJM. Thus, it is especially useful to keep energy and capacity prices separate. Notwithstanding, when a low capacity price of $10/kW/yr is added, the price increases from approximately $31/MWh to $32/MWh.[8]

Q. HOW DO THE WHOLESALE ELECTRICAL SPOT ENERGY PRICES COMPARE TO HISTORICAL NOMINAL PRICES?

A. Historical all-hours prices are shown in Exhibit E. These prices are in nominal dollars. Current all-hours prices of $30.8/MWh are approximately $18/MWh below the record of $49/MWh in 2005.

[7] Source: Bloomberg. The 12 months are August 2009 to July 2010.
[8] The cost of capacity is actually one plus the reserve margin times the capacity price with this cost amortized across the MWh. This is also equal to a system firm product.

EXHIBIT E
Historical Wholesale Power Spot Prices – Cinergy Hub Delivery

Year	All-Hours Wholesale Spot Price	
	Nominal $/MWh	2010 $/MWh
1997	18.0	24.0
1998	42.3	55.7
1999	38.2	49.5
2000	27.0	34.3
2001	26.1	32.4
2002	20.1	24.6
2003	24.5	29.3
2004	33.1	38.5
2005	48.7	54.8
2006	40.4	44.0
2007	46.0	48.7
2008	48.6	50.4
2009	28.2	28.9
2010 YTD*	33.5	33.5
1997-2010 YTD Average	33.9	39.2

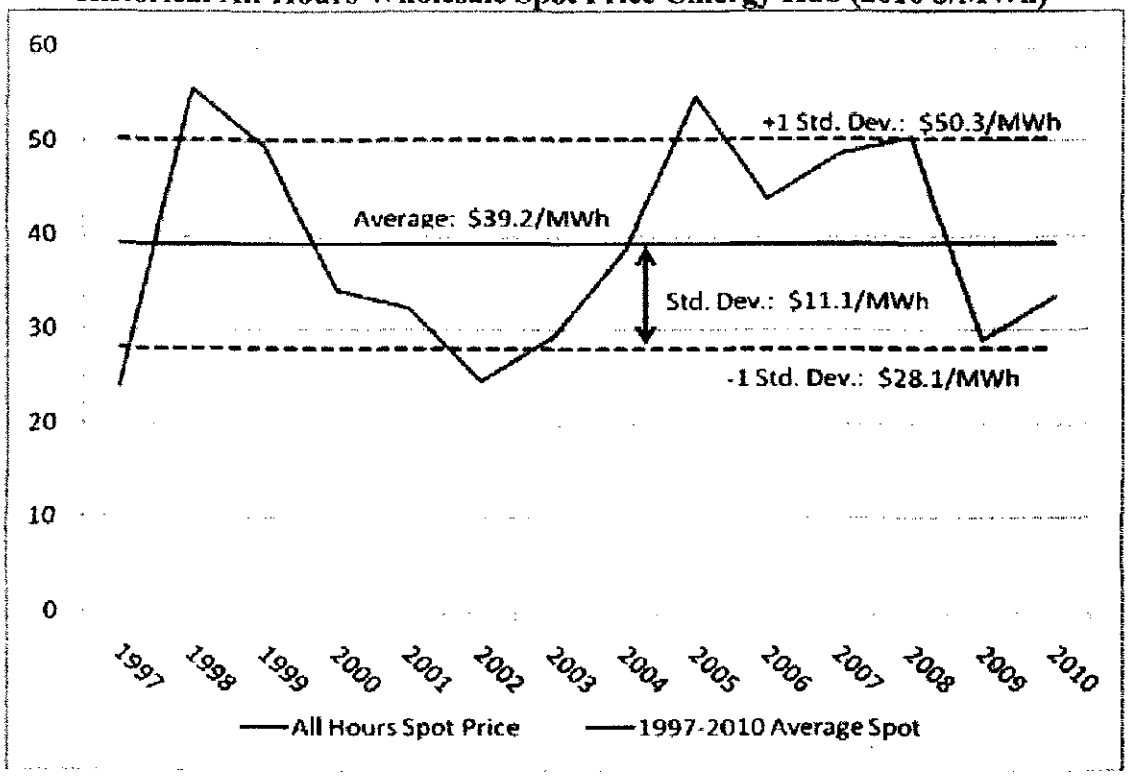
* 2010 YTD is through July 31, 2010. 1997-2003 (Power Market Week), 2004-2005 (Platts' Megawatt Daily), 2006-2007 (Midwest ISO) for Cinergy Hub, 2008-2010 YTD from Bloomberg
Notes: 1997-2001, spot off-peak power prices were not available; the prices for these years were estimated based on the 2002 monthly off-peak price shape. In turn, the all-hours prices were derived based on peak- and off-peak prices.

Q. HOW DO THESE PRICES COMPARE TO HISTORICAL REAL PRICES?

A. August 2009 to July 2010 average prices are below the 1997-2010 YTD average expressed in real 2010 dollars by 21%: $31.1/MWh versus the long term average of $39.2/MWh (see Exhibits F and G). In 2009, prices were $28.9/MWh which was 20% higher than the lowest ever annual wholesale price average which occurred in 1997 when the market was just starting.

EXHIBIT F

Historical All-Hours Wholesale Spot Price Cinergy Hub (2010 $/MWh)



Sources: Spot prices shown for 1997-2010 YTD. 1997-2010 spot prices are based on a 5x16 peak definition.

Q. WHY ARE CURRENT WHOLESALE POWER PRICES LOWER THAN THE AVERAGE?

A. There are four very important factors.

- **Demand and Supply and Capacity Value** – First, there is excess capacity, which lowers the price of capacity in the marketplace. This is in part the result of the recent recession that has lowered peak electricity demand. Electrical energy sales in 2009 in the U.S. were approximately 5% lower than sales in 2007.
- **Natural Gas Prices** – Second, natural gas prices are low. Henry Hub natural gas prices in 2009 were $3.89/MMBtu in 2008$, which was the lowest price of any

year in real dollars since 2000. These low natural gas prices are in part due to the recession.

- **Demand and Electrical Energy Prices** – Third, lower demand also lowers the price of electric energy. Specifically, lower demand decreases the number of hours that natural gas power plants are needed to operate. This lowers the number of hours in which the marginal price setting unit is higher priced natural gas fired units rather than lower cost coal fired units.
- **Environmental Regulations** – Fourth, changes in environmental regulations have lowered the cost of generating electrical energy using coal plants, all else equal. Notably, SO_2 allowance prices are now close to zero.

V.3 2012 TO 2014 PRICE FORECAST BASED ON OBSERVABLE FORWARDS

Q. IS THERE A PUBLISHED SOURCE OF INFORMATION THAT IS AVAILABLE PUBLICLY OR THROUGH SUBSCRIPTION THAT IDENTIFIES PRICING INFORMATION FOR TRADED ELECTRICITY OF ON- AND OFF-PEAK ENERGY PRODUCTS THAT ARE CONTRACTS FOR DELIVERY BEGINNING AT LEAST TWO YEARS FROM THE DATE OF PUBLICATION AND THAT IS UPDATED ON A REGULAR BASIS?

A. Yes. Electricity pricing is available to persons requesting it. Such information is reliable and identifies pricing of on-peak and off-peak energy products that represent contracts for future delivery and is updated on a daily or monthly basis. Sources of this information include ICAP Energy LLC (ICAP), ICE, Platt, and the New York Mercantile Exchange (NYMEX). NYMEX is publicly available, while ICAP, ICE, and Platt are subscription-based offerings, extended under standard terms and conditions. These sources provide

both on-peak and off-peak traded electricity products for contracts available for future delivery, well beyond twenty-four months. The information available from ICE and NYMEX shows actual contracted trades. The published information is representative of prices and changes in prices in Duke Energy Ohio's market. The sources identified herein are updated at least on a monthly basis.

Q. WHAT IS THE FORECAST FOR FUTURE WHOLESALE POWER PRICES FOR 2012 TO 2014?

A. The forecast for all-hours wholesale power prices is $36/MWh, $39/MWh, and $43/MWh (nominal dollars) for 2012, 2013, and 2014, respectively. The forecast is shown in Exhibit G. Thus, the 2012 price is 16% above the spot price over the last 12 months of $30.8/MWh (nominal dollars) and 27% above prices in calendar year 2009. The price increases another 6% in 2013 and 10% in 2014. 2014 prices are 40% above the prices of the last 12 months, and 52% above 2009 prices. Exhibit H shows the same prices by time of day. Exhibits I and J compare the forecast to historical prices.

EXHIBIT G
Wholesale Power Prices – All-Hours (Nominal$/MWh)

Wholesale Power Price	2009	Last 12 Months[1]	2012	2013	2014
Prices	28.2	30.8	35.8	39.0	43.0

Source: Bloomberg for 2009 and last 12 months. ICE for wards for 2012-2014 .traded from January to July 2010.
[1] August 2009 to July 2010 average.

EXHIBIT H
Cinergy Hub Wholesale All-Hours Energy Prices – 2011 to 2014
(Nominal $/MWh)

Year	Source	All Hours	On-Peak[1]	Off-Peak
2011	ICE Forward	34	42	27
2012	ICE Forward	36	44	29
2013	ICE Forward	39	47	32
2014	ICE Forward	43	52	35

[1] 5X16

EXHIBIT I
Wholesale All-Hours Energy Prices – 1997 to 2014

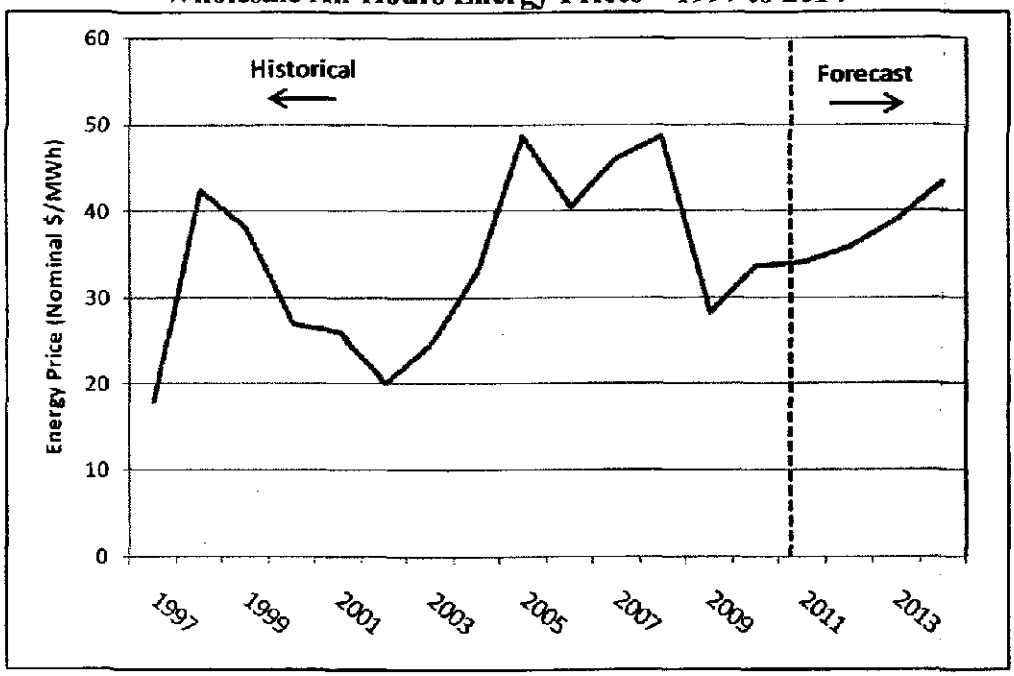


EXHIBIT J
Duke Energy Ohio Zonal Energy Price Projections

Source	Year	All-Hours Energy Price (2010$/MWh)	On-Peak Energy Price (2010$/MWh)	Off-Peak Energy Price (2010$/MWh)
Historical	2007	48.7	63.6	30.4
Historical	2008	50.4	69.8	51.4
Historical	2009	28.9	35.5	21.0
Historical	**2007-2009 Average**	**42.7**	**56.3**	**34.9**
ICE Forward	2011	33.2	41.0	26.3
ICE Forward	2012	34.3	41.9	27.6
ICE Forward	2013	36.2	43.6	29.7
ICE Forward	2014	39.0	47.1	31.7
ICF Forecast	**2012-2014 Average**	**36.5**	**44.2**	**29.7**

Q. WHAT IS THE BASIS FOR THE 2012 TO 2014 PROJECTION OF WHOLESALE POWER PRICES?

A. The 2012 to 2014 prices reflect the recent prices for forward delivery in this period. For example, the 2012 price is the average price of transactions over the seven months of January 2010 to July 2010 from ICE, the Inter-Continental Exchange at the Cinergy Hub for delivery in 2012 of wholesale power. Thus, this is an observable set of prices.[9]

Q. WHAT DOES THIS INDICATE?

A. The forward market signals expectation of strongly rising wholesale power prices. Therefore, a quick transition to market may not necessarily result in lower prices. However, if the forecast is wrong, and current conditions continued, a quick transition would provide customers maximum access to lower prices.

Q. WERE FORWARDS AVAILABLE AFTER 2014?

A. No.

Q. WHAT IS THE BASIS FOR THE 2012 TO 2014 CAPACITY PRICE PROJECTION?

A. The 2012 to 2013 price for capacity is based on the PJM forward capacity price. This is also an observable price. As discussed below, the price forecast for 2014 is composed of observable prices for January through May 31, 2014, and an assumption that this price is constant for the last seven months of 2014 at the January through May level. The 2014 forward price for capacity is based in part on the assumption because the PJM forward market price for capacity is not available for the last 7 months of 2014.

[9] These prices are available monthly but traded daily.

Q. DOES THE WHOLESALE PRICE FORECAST INCLUDE ANCILLARY SERVICES?

A. No. Therefore, it is a mild understatement. Ancillary services are typically only a few percent or less of total costs of generation service.

Q. WHAT ARE THE PROJECTED CAPACITY PRICES?

A. The PJM capacity market is a required forward market and is referred to as the Reliability Pricing Model (RPM) capacity market. The next RPM Auction is for summer 2014 through May 31, 2015 supply and will be held in May 2011.

Q. WHAT ARE YOUR CAPACITY PRICE PROJECTIONS?

A. As noted, PJM capacity prices for 2010 to 2014 reflect actual auction results (blending auction year results into calendar year results) for the PJM RTO sub-region (see Exhibit K).

EXHIBIT K
PJM RPM RTO Capacity Prices

Delivery Period	Source	Price (Nominal $/kW-yr)
2009-2010	RPM	37.2
2010-2011	RPM	63.6
2011-2012	RPM	40.2
2012-2013	RPM	6.1
2013-2014	RPM	10.1
2014[1]	RPM and RPM Extended	10.1
Average 2012 – 2014		8.8

Source: PJM. The delivery period is from June to May of the following year.
[1]Same as 2013-2014. The next RPM auction is for summer 2014 and will be held in May 2011.

Q. WHY MIGHT WHOLESALE POWER PRICES BE INCREASING BETWEEN 2009 AND 2014 AND POTENTIALLY BEYOND?

A. The increase in wholesale power prices reflects:

- **Coal Power Plant Retirements due to Environmental Regulations** – Coal plant retirements could be driven by new environmental regulations including HAPS, CO_2, ash disposal, cooling water and other environmental regulations. This potential loss of capacity results in an increase in the value of existing capacity since buyers next best alternative for securing capacity are new highly expensive new units. Note, recent political developments in the 2010 elections add to this uncertainty.
- **Economic Recovery in the U.S. and PJM** – The economic recovery in the U.S. supports electricity demand growth and natural gas prices.
- **Rising Electricity Demand** – The growing demand for electricity contributes to the need for new capacity and hence a pronounced firming of capacity prices. Rising electricity demand also raises electrical energy prices.
- **Rising Natural Gas Prices** – Rising natural gas prices increase electric energy prices (see Exhibit L).

EXHIBIT L
Henry Hub Natural Gas Prices ($/MMBtu)

Year	Source	Real 2010$	Nominal $
2005	Historical	10.01	8.89
2006	Historical	7.33	6.73
2007	Historical	7.38	6.97
2008	Historical	9.22	8.89
2009	Historical	4.04	3.94
2010	YTD through June 30	4.71	4.71
2011	NYMEX Futures[1]	5.36	5.50
2012	NYMEX Futures[1]	5.51	5.79
2013	NYMEX Futures[1]	5.56	5.98
2014	NYMEX Futures[1]	5.60	6.18
Average 2012 – 2014		5.56	5.98

[1] Traded over the period June 1, 2010 to June 30, 2010.
Source: Bloomberg

Q. ARE THERE OTHER STUDIES INDICATING POTENTIAL FOR PRICE INCREASES DUE TO ENVIRONMENTAL REGULATIONS?

A. Yes. A recent NERC study of environmental regulations concluded:

> Based on the assessment's assumptions, the greatest risk to Planning Reserve Margins occurs in 2015 for the Combined EPA Regulation Scenario. The overall total impact could make 46-76 GW of existing capacity "economically vulnerable" for retirement or derating by 2015. Additionally, the scenario cases assessed in this report indicate capacity reductions evident as early as 2013, resulting from the retirements of coal-fired plants and derate effects associated with plant retrofits. Impacts to Planning Reserve Margins can occur during the next four to eight years that could reduce bulk power system reliability, unless additional resources are constructed or acquired. It is essential that projected Conceptual supply resources be developed as one source of capacity replacement.
>
> The results of this assessment show a significant impact to reliability should the four potential EPA rules be implemented as assumed in this assessment. Impacts to both bulk power system planning and operations may cause serious concerns unless prompt industry action is taken. Planning Reserve Margins appear to be significantly impacted, deteriorating resource adequacy in a majority of the NERC Regions/sub-

regions. Additionally, considerable operational challenges will exist in managing, coordinating, and scheduling an industry-wide environmental control retrofit effort. [10]

VI. RETAIL MARKET PRICE PROJECTION

Q. ARE RETAIL PRICES READILY OBSERVABLE IN A MANNER SIMILAR TO FORWARD WHOLESALE PRICES?

A. No. ICE does not provide retail prices. There is no multi-year time series of retail prices that is available.

Q. WHAT ARE THE RETAIL MARKET PRICES ESTIMATED FOR 2012-2014?

A. The estimated retail market prices including PJM capacity charges are shown below for 2012, 2013, and 2014 and average 6.44¢/kWh (see Exhibit M). In 2012, the retail market price is 5.82¢/kWh. In 2013, the retail market prices are higher due to higher forward energy prices. In 2014, retail prices are also higher than 2013 levels because the forward wholesale electrical energy price is again higher than the 2013 level. By 2014, retail prices are 23% higher than in 2012.

EXHIBIT M
Retail Market Price – Weighted Average of All Consumer Classes (¢/kWh)

Year	Non-Block Including Capacity Charge
2012	5.82
2013	6.34
2014	[illegible]
Average	6.44

Q. DOES THE FORECAST VARY BY CUSTOMER CLASS?

[10] NERC North American Electric Reliability Corporation, 2010 Special Reliability Scenario Assessment: Resource Adequacy Impacts of Potential U.S. Environmental Regulations, pages 41-42, October 2010.

A. Yes. RS is residential, TS is industrial load at high voltage, DM, DP, and DS are various commercial and larger customer rate classes (see Exhibit N).

EXHIBIT N
Retail Market Prices (Nominal ¢/kWh)

Customer Class	2012	2013	2014	Average
RS	5.98	6.52	7.38	6.63
DM	6.02	6.55	7.41	6.66
DP	5.77	6.30	7.11	6.39
DS	5.91	6.44	7.27	6.54
TS	5.27	5.76	6.50	5.84
kWh Weighted Average	5.82	6.34	7.17	6.44

Q. WHAT IS THE FORECAST FOR RESIDENTIAL CUSTOMERS?

A. The forecast of retail prices for generation service to residential customers is approximately 5.98¢/kWh or $59.8/MWh in 2012. This is modestly (+3%) above the weighted average and close to all the other classes except TS customers, which are 9.5% lower than the average. And RS is 13.5% above TS.

Q. WHAT ARE THE IMPLICATIONS OF THE DIFFERENCES BETWEEN CLASSES?

A. There is some potential for auction prices to be closer to the RS level than the average. While the difference is small, classes with a significantly below average cost might be more likely to switch.

Q. ARE THERE PUBLIC RETAIL PRICES IN THE DUKE ENERGY OHIO SERVICE TERRITORY THAT ARE AVAILABLE TO COMPARE?

A. There is only very limited information. On October 26, 2010, there is a Dominion retail price of 6.6¢/kWh for 2011, but it is only available to the first 15,000 residential

customers who enroll, and expires by October 31, 2010. This is available from the Commission's website. I conclude that prices may be roughly comparable but not enough information is available for firm conclusions.

Q. HOW IS THE RETAIL PRICE FORECAST DEVELOPED?

A. Generally, the forecast reflects costs of retail service most notably the costs of wholesale power purchases. Thus, the retail forecast assumes that the primary driver of retail prices is the cost of that service.

Q. MORE SPECIFICALLY, HOW IS THE RETAIL FORECAST DEVELOPED?

A. As noted, the forecast of retail market prices is based on assessing the costs of retail service for each consumer. Specifically, this cost-based assessment is based principally on three inputs:

- **Wholesale Prices** – The starting point is forward or forecast wholesale power prices for the wholesale products that would need to be purchased in the marketplace at the time the service provider is arranging for a service offering. The most important product that would be purchased is on-peak and off-peak power supply by month, which can be thought of as resulting in the need for 24 wholesale product prices per year (12x2). For example, 50 MW or 100 MW blocks for January 2009 on-peak would be expected to be purchased. This is because these products are the most observable and liquidly traded forward products in the wholesale power markets. Also, capacity will need to be procured in the PJM RPM market. The forward power purchases allow providers to manage the risks of meeting the requirements of customers. At the time of contracting to supply power, retail CRES providers offset the forward power sale

to customers (the short) with a forward power purchase (the long), and hence, limit the risks of providing retail service to a manageable level.

- **Consumer Load Shapes** – The second key input is the consumer's load shape, which is an estimate of the expected consumer demands in kWh or MWh over time. The "flatter" the load shape, the lower the average cost and vice versa. This is because the share of lower priced off-peak power is higher. This explains in large part why industrial customers have lower costs of supply: their load shapes are the flattest. While this is a critical parameter, the retail provider is also responsible for unexpected variances in load, *i.e.*, the provider is providing full firm requirements service. Thus, other customer data is also used as discussed below.
- **Formulas/Model for Tailoring Price to Consumer** – A third set of inputs are formulas/models used to create a retail price based on wholesale market prices and customer load shapes. These formulas account for load uncertainty including the potential for unexpected customer demand to occur when wholesale prices are high, and the other costs of serving retail load.

Q. HAS A SIMILAR RETAIL PRICE FORECASTING APPROACH BEEN PREVIOUSLY PRESENTED TO THE COMMISSION?

A. Yes, it was referred to as the Competitive Market Option (CMO). The CMO has been presented to the Commission several times over the last five years. It has been used to forecast retail prices based on wholesale forward prices and as an alternative to Duke Energy Ohio's Rate Stabilization Plan (RSP) and Duke Energy Ohio's ESP.

Q. PLEASE PROVIDE ADDITIONAL DETAIL ON THE COMPONENTS OF THE RETAIL PRICE PROJECTION.

A. The components of the retail price projection include:

- **Market Index of Energy Prices** – The first and largest component of the retail price is the Energy Price also referred to as the Market Index. This is the weighted average purchase price of wholesale electrical energy for monthly on-peak and off-peak expected MWh sales volumes.
- **Capacity Price** – The supplier must obtain capacity equal to the load's expected peak times one plus the reserve margin.
- **Ask-Adder** – The ask-adder can be thought of as a broker's fee. This is based on Duke Energy Ohio's experience that it pays more than the index price of power when it is a purchaser, and receives less when it is a seller. This factor increases costs.
- **Covariance Adjustment** – This factor accounts for the covariance between customer load variation and price variation. Loads which move with the price – *i.e.*, are correlated with the price, have high covariances and vice versa. For example, a load that increases during summer peaks when prices are the highest has a high covariance and vice versa. This covariance increases costs of service above what would be indicated by expected average prices and demands. Put another way, covariance creates risks of costs exceeding revenues for a period, in spite of hedging. For example, if, during periods in which customer demand is higher than expected (*e.g.*, extreme weather), power prices are also higher, there are additional costs for the supply that must be procured. Therefore, procurement

needs to be designed to reliably provide sufficient coverage for the potential of unexpectedly high prices during the summer peak coinciding with unexpectedly high customer demand. In the highly simplified example shown in Exhibit O, the retail supplier purchases power in advance of the summer based on an assumption of a normal summer at costs equal to $100. During the half the summers when it is hotter than average, the retail suppliers incur an extra $20 in cost as demand is 2 MWh higher and prices have doubled. In the other half of the summers, when it is cooler than average, they earn $10 from sales of extra supply; they sell 2 MWh less at depressed prices. On average, costs are $15/MWh above the level based on expected sales and prices.

EXHIBIT O
Simplified Example of How Covariance Affects the Costs of Managing Load Variation

Procurement Situation	Quantity (MWh)	Price ($/MWh)	Net Cost of Purchases ($)
Hot Summer Supplemental Purchases	+2	20	140 (+40)
Expected Summer – Forward Purchase in Advance Based on Expected Conditions	10	10	100
Cool Summer – Sale of Excess Supply	-2	5	90 (-10)

- **Energy Losses and Adjustments** – This factor captures energy and demand losses in the transmission and distribution system. This is similar to traditional existing tariffs.
- **Supply Management Fee** – This fee includes the cost of scheduling, balancing, procurement and risk management, hourly adjustment, load following, natural

consumer migration (in and out), managing odd lots and floats between billing cycles, and is initially proposed at 6% of energy cost.

- **Operating Risk Adjustment** – This adjustment creates margin to, in part, cover potential commodity-related risks, including: (1) booking and settlement, (2) modeling/forecasting methods, (3) contracts and delivery, (4) security and personnel, (5) programming, faulty data, meter reading, (6) information systems and telecommunications, (7) legal, regulatory and political issues, (8) economic downturns, and (9) natural disasters. This does not include sales, general and administrative costs. This estimate was based on Value Line estimates of operating margin for 2002-2007 for all industries which equaled 18.6%.

Q. WHAT ARE THE PARAMETERS FOR THESE COMPONENTS?

A. The parameters for estimating these components are summarized in Exhibit P. The largest cost factor as noted is the energy price index. The second largest is for operating risks. The third largest adjustment for most customers is the covariance adjustment, though for some customers, this is small.

EXHIBIT P
Selected Auction ESP (CMO) Retail Rate Components

Components	Current
Market Index of Electricity Prices Energy Cost Adjustments – Ask Adder	2011 – 1% 2012 – 2% 2013 – 3% 2014 – 4%
Energy Cost Adjustments – Covariance Adjustment	Varies[1]
Supply Management Fee	6%
Margin/Operating Risk Adjustment[2]	18.6%
Energy Losses	6.8%

[1] Covariance adjustments are 9.8% for RS, 9.1% for DM, 8% to DS, 3.2% for DP, and 1.2% for TS based on the 50% percentile rates.
[2] Operating Risk Adjustment is the 2002-2009 average of annual Average Operating Income over Sales/Revenue for all industries.
Source: Value Line Datafile

Q. ARE THERE ANY OTHER POTENTIALLY LARGE COSTS OF PROVIDING SERVICE IN ADDITION TO THOSE LISTED ABOVE IN THE CMO ESTIMATE?

A. Yes, retail supplies will be responsible for obtaining PJM capacity in the PJM RPM market. This charge is a function of the customers peak demand plus reserve margin times the capacity price.

Q. ARE THERE COSTS PREVIOUSLY INCLUDED IN SIMILAR CALCULATIONS OR IN THE ESP, BUT NOT INCLUDED IN THE CURRENT RETAIL COST FORMULA?

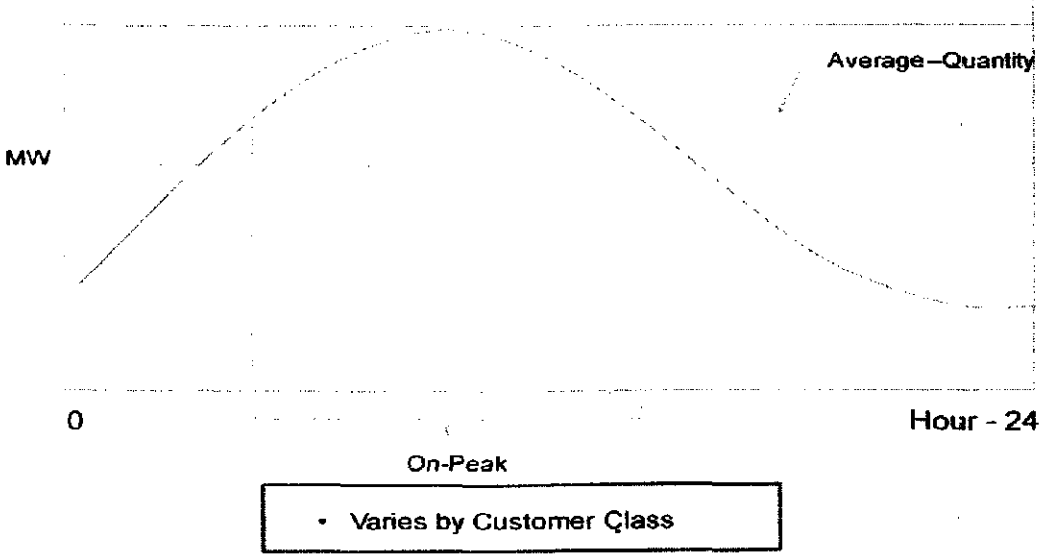
A. Yes. The uncollectible fees or the credit fees have been removed from CMO calculation. Duke Energy Ohio will seek approval from the Commission to recover this cost through a

separate Rider. Also, the network integrated transmission service (NITS) transmission charge is being removed.

Q. WHAT IS THE ENERGY MARKET INDEX?

A. The energy market index is the customer electric energy price weighted by its monthly usage of MWh of on-peak and off-peak power (see Exhibit Q). As noted, this is used to calculate the first cost component of retail market price. Because the load shape varies by customer, the relative quantities of monthly off- and on-peak varies. Thus, the energy market index varies across customers even if all prices are the same.

EXHIBIT Q
Market Energy Index – Monthly On-Peak and Off-Peak Weighted Average



Q. HOW DO ENERGY INDEX AND RETAIL MARKET PRICE COMPARE TO THE ALL-HOURS WHOLESALE MARKET PRICE?

A. The index price is 2% to 5% higher than the all-hours energy price for different classes and rises on average from approximately 3.8¢ to 4.6¢/kWh (see Exhibit R).

EXHIBIT R
Index Price With Capacity Adder (¢/kWh)

Customer Class	2012		2013		2014	
	Ratio of Index to The All-Hours Wholesale Price	Energy Index	Ratio of Index to The All-Hours Wholesale Price	Energy Index	Ratio of Index to The All-Hours Wholesale Price	Energy Index
RS	1.03	3.77	1.03	4.10	1.03	4.57
DM	1.05	3.84	1.04	4.17	1.04	4.64
DP	1.02	3.74	1.02	4.06	1.02	4.52
DS	1.05	3.84	1.04	4.16	1.04	4.63
TS	1.00	3.69	1.00	4.01	1.00	4.46
Simple Average	1.03	3.78	1.03	4.10	1.03	4.56
Weighted Average	1.03	3.78	1.03	4.10	1.03	4.57

Q. WHAT ARE THE LARGEST COMPONENTS OF THE RETAIL MARKET PRICE?

A. In 2012, in all cases, the largest component of the retail market price is by far the market index of electricity prices. The second largest is the operating risk adjustment which is still much smaller than the electric energy index. The third largest is the energy loss and covariance adjustments (Exhibit S). Over time, the capacity charge component grows from 0.18¢/kWh in 2012 to 0.22¢/kWh in 2014.

EXHIBIT S
Summary of Retail Price by Component Before POLR Rider – Weighted Average of all Consumer Classes – 2012 (¢/kWh)

Component	2012	2013	2014
Market Index of Electrical Energy Prices[1]	3.78	4.10	4.57
Covariance Adjustment	0.29	0.32	0.35
Capacity	0.18	0.17	0.22
Ask Adder (2 to 4%)	0.08	0.14	0.21
Energy Losses and Adjustments (7%)	0.29	0.32	0.36
Supply Management Fee (5%)	0.28	0.30	0.34
Operating Risk Adjustment (18.1%)	0.91	0.99	1.12
Average Energy Charge, excluding POLR Costs	5.82	6.34	7.17

Q. WHAT IS THE PREMIUM BETWEEN THE RETAIL MARKET PRICE AND THE ELECTRIC ENERGY PRICE INDEX?

A. In the above example where prices are weighted by the volume of sales to five rate classes examined before switching, the retail price has, on average, a 60% premium above the energy price (see Exhibit T).

EXHIBIT T
Ratio of Retail Market to Wholesale Price Index

Customer Class	2012	2013	2014	Average
RS	1.59	1.59	1.62	1.60
DM	1.57	1.57	1.60	1.58
DP	1.54	1.55	1.57	1.56
DS	1.54	1.55	1.57	1.55
TS	1.43	1.44	1.46	1.44
Simple Average	1.53	1.54	1.56	1.54
Weighted Average	1.54	1.54	1.57	1.55

Q. WHAT WAS THE RANGE OF RETAIL PRICES ACROSS RATE CLASSES?

A. The retail prices can vary significantly across rate classes reflecting different costs of service. The retail average price is 5.82¢/kWh. However, the price for TS customers, which take power at high voltages and have a relatively flat load profile, is 5.27¢/kWh in 2012, while a residential customer has a price of 5.98¢/kWh. This is because of the large variation among the customers with respect to demand characteristics such as load shape, especially the ratio of peak in MW to sales in MWh, and covariance (see Exhibit U).

EXHIBIT U
Structure of the Retail Market Across Customer Classes Price – 2012

2012	Value					
Component	RS	DM	DP	DS	TS	Weighted Average
Market Index of Electrical Energy Prices[1]	3.77	3.84	3.74	3.84	3.69	3.78
Covariance Adjustment	0.37	0.35	0.34	0.31	0.04	0.29
Capacity	0.23	0.20	0.14	0.17	0.12	0.18
Ask Adder – (1-4%)	0.09	0.09	0.08	0.09	0.08	0.08
Energy Losses and Adjustments (6.8%)	0.30	0.31	0.29	0.30	0.27	0.29
Supply Management Fee (6%)	0.29	0.29	0.28	0.28	0.25	0.28
Margin/Operating Risk Adjustment (18.6%)	0.94	0.94	0.90	0.93	0.82	0.91
Average Energy Charge, Excluding POLR Costs – Weighted Average of all Consumer Classes	5.98	6.02	5.77	5.91	5.27	5.82

[1] Energy price is calculated based on 180 days rolling average price of forwards for Cinergy Hub between 1/1/2009 and 7/9/2010 for delivery in 2012.
Source: Forward wholesale power prices are from ICE. No POLR Rider.

Q. WHAT HAPPENS TO THE RETAIL MARKET PRICE WHEN THE WHOLESALE ELECTRIC ENERGY PRICE INDEX CHANGES?

A. The retail market price moves approximately proportionally to the wholesale price index. Thus, a ten percent increase in weighted average wholesale power prices increases the retail market price by approximately ten percent. This is important because wholesale power prices are volatile, and hence, the costs of CRES providers will also be volatile. Spot wholesale on-peak power prices have moved as much as $21/MWh per year or 50% (2004 to 2005).

VII. MRO PRICE PROJECTION

Q. HOW DO YOU CALCULATE MRO PRICES?

A. As discussed, the blended MRO price is a weighted average of the legacy ESP price and the retail market price.

Q. WHAT IS YOUR MRO PRICE PROJECTION FOR 2012 TO 2014?

A. Under Duke Energy Ohio's MRO, the SSO price is assumed to gradually move to market price from Duke Energy Ohio's expected legacy ESP price. It is accomplished by a blending of 90% of the legacy ESP price and 10% market rate in 2012; 80% of legacy ESP price and 20% market rate in 2013 and 100% market rate starting June 1, 2014; etc. On a calendar year basis, in 2012 to 2014, the resulting weighted average MRO price is in a narrow range of 7.19¢/kWh to 7.17¢/kWh.

Q. HOW DO THE MRO PRICES COMPARE TO THE MRO PRICE IN THE 2012 TO 2014 PERIOD?

A. The estimated 2012-14 ESP component of the SSO prices are higher than the blended MRO prices in all three years (See Exhibit V). However, it is extremely close in 2014.

EXHIBIT V
MRO Option – Weighted Average Prices

Year	Legacy ESP Price[1] (¢/kWh)	ESP Weight (%)	Retail Market Price[2] (¢/kWh)	Retail Market Price Weight (%)	MRO[3] (¢/kWh)	MRO vs. ESP (¢/kWh)
2012	7.34	90	5.82	10	7.19	-0.15
2013	7.34	80	6.34	20	7.14	-0.20
2014	7.34	0	7.17	100	7.17	-0.17
Average	7.34	56.7	6.44	43.3	7.17	-0.17

[1]Legacy ESP is the estimated price SSO price at 12/31/2011.
[2]Based on current forwards. ICE forwards transaction date from 1/1/2010 through 12/31/2010 for delivery in 2012, 2013, and 2014.
[3]MRO is the weighted average of legacy ESP price and the retail market price based on ESP and retail market weights shown in the table.

VIII. CONCLUSIONS

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS?

A. The Duke Energy Ohio's MRO proposal would replace the current Duke Energy Ohio ESP starting in January 2012. Under the proposal, SSO service would be auctioned off to enable the SSO to be close to market even during short-term perturbations in market conditions such as caused by recessions.

Currently, the avoidable portion of the ESP SSO is above retail market prices. Under the proposal, the MRO proposal has a two period transition in which increasing shares of the SSO service are auctioned off. The remaining share is priced at the estimated SSO price as of December 31, 2011. The proposal allows the price of SSO generation to reach market as soon as possible, subject to MRO rules. Thus, were market prices to continue at current levels, customers would be able to maximally take advantage of low market prices.

However, retail market prices are expected to rise. It is my opinion that projected legacy ESP SSO price is above retail market prices until approximately 2014. This conclusion is based in part on observable wholesale power prices which indicate prices will rise. By 2014, the two prices, the ESP and the market will be very close: 7.17 ¢/kWh for market prices, and 7.34 ¢/kWh for the avoidable portion of the ESP price. At that time, the MRO price will also be equal to the ESP price and the retail market price. The convergence is also supportive of ending the transition period in 2014. Were the market and ESP PTC to remain the same, a longer blending period would not change the outcome.

ATTACHMENT JLR-1
JUDAH ROSE RESUME

JUDAH L. ROSE

EDUCATION

1982 M.P.P., John F. Kennedy School of Government, **Harvard University**

1979 S.B., Economics, **Massachusetts Institute of Technology**

EXPERIENCE

Judah L. Rose joined ICF in 1982 and currently serves as a Managing Director of ICF International. Mr. Rose has 30 years of experience in the energy industry. Mr. Rose's clients include electric utilities, financial institutions, law firms, government agencies, fuel companies, and IPPs. Mr. Rose is one of ICF's Distinguished Consultants, an honorary title given to three of ICF's 3,500 employees, and has served on the Board of Directors of ICF International as the Management Shareholder Representative.

Mr. Rose has supported the financing of tens of billion dollars of new and existing power plants and is a frequent counselor to the financial community.

Mr. Rose frequently provides expert testimony and litigation support. Mr. Rose has provided testimony in over 100 instances in scores of state, federal, international, and other legal proceedings.

Mr. Rose has also addressed approximately 100 major energy conferences, authored numerous articles published in Public Utilities Fortnightly, the Electricity Journal, Project Finance International, and written numerous company studies. Mr. Rose has also appeared in TV interviews.

Mr. Rose received a M.P.P. from the John F. Kennedy School of Government, Harvard University, and an S.B. in Economics from the Massachusetts Institute of Technology.

PRESS INTERVIEWS

TV: "The Most With Allison Stewart," MSNBC, "Blackouts in NY and St. Louis & ongoing Energy Challenges in the Nation," July 25, 2006
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Public Utilities Fortnightly
Power Markets Week

Magazine: Business Week
Power Economics
Costco Connection

Newspapers: Denver Post
Rocky Mountain News
Financial Times Energy
LA Times
Arkansas Democratic Gazette
Galveston Daily News
The Times-Picayune
Pittsburgh Post-Gazette
Power Markets Week

Wires: Bridge News
Associated Press
Dow Jones Newswires

TESTIMONY

104. Declaration of Judah Rose in re: Boston Generating LLC, et al., Chapter 11, Case No. 10-14419 (SCC) Jointly Administered, September 29, 2010.

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102. Direct Testimony of Judah Rose on behalf of Plains and Eastern Clean Line LLC, in the Matter of the Application of Plains and Eastern Clean Line Oklahoma LLC to conduct Business as an Electric Utility in the State of Oklahoma, Cause No.PUD 201000075, July 16, 2010.

101. Supplemental Testimony on Behalf of Entergy Arkansas, Inc., In the Matter of Entergy Arkansas, Inc., Request for a Declaratory Order Approving the Addition of the Environmental Controls Project at the White Bluff Steam Electric Station Near Redfield, Arkansas, Docket No. 09-024-U, July 6, 2009.

100. Rebuttal Testimony on Behalf of TransEnergie, Canada, Province of Quebec, District of Montreal, No.: R-3669-2008-Phase 2, FERC Order 890 and Transmission Planning, July 3, 2009.

99. Direct Testimony of Judah Rose on behalf of Plains and Eastern Clean Line LLC, in the Matter of the Application of Plains and Eastern Clean Line LLC for a Certificate of Public Convenience and Necessity to Operate as an Electric Transmission Public Utility in The State of Arkansas, Docket No. 10-041-U, June 4, 2010.

98. Surrebuttal Testimony – Revenue Requirement of Judah Rose on Behalf of Dogwood Energy, LLC, before the Missouri Public Service Commission, In the Matter of the Application of KCP&L GMO, Inc. d/b/a KCP&L Greater Missouri Operations Company for Approval to Make Certain Changes to its Charges for Electric Service, Case No. ER-2009-0090, April 9, 2009.

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96. Coal Price Report for Harrison Coal Plant, February 6, 2009. Allegheny Energy Supply Company, LLS and Monongahela Power Company versus Wolf Run Mining Company, Anker Coal Group, etc., Civil Action. No. GD-06-30514, In the Court of Common Pleas, Allegheny County, Pennsylvania.

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94. Rebuttal Testimony of Judah Rose on behalf of Kelson Transmission Company, LLC re: Application of Kelson Transmission Company, LLC For A Certificate of Convenience and Necessity For the Amended Proposed Canal To Deweyville 345 kV Transmission Line Within Chambers, Hardin, Jasper, Jefferson, Liberty, Newton, And Orange Counties, SOAH Docket No. 473-08-3341, PUCT Docket No. 34611, October 27, 2008.

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90. Direct Testimony of Judah L. Rose on behalf of Duke Energy Ohio, Inc., Before the Public Utilities Commission of Ohio, In the Matter of the Application of Duke Energy Ohio, Inc. for Approval of an Electric Security Plan, July 31, 2008.

89. Rebuttal Testimony, Judah L. Rose on Behalf of Duke Energy Carolinas, in re: Application of Duke Energy Carolinas, LLC for Approval of Save-A-Watt Approach, Energy Efficiency Rider and Portfolio of Energy Efficiency Programs, Docket No. E-7, Sub 831, July 21, 2008.

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83. Rebuttal Testimony of Judah Rose, In the Matter of the Application of Tucson Electric Power Company for the Establishment of Just and Reasonable Rates and Charges Designed to Realize A Reasonable Rate of Return on the Fair Value of Its Operations Throughout the State of Arizona, Estimation of Market Value of Fleet of Utility Coal Plants, April 1, 2008.

82. Rebuttal Report of Judah Rose, Ohio Power Company and AEP Power Marketing Inc. vs. Tractebel Energy Marketing, Inc. and Tractebel S.A. Case No. 03 CIV 6770, 03 CIV 6731 (S.D.N.Y.), January 28, 2008

81. Proposed New Gas-Fired Plant, on behalf of AEP SWEPCO, 2007

80. Rebuttal Report, Calpine Cash Flows, on behalf of Unsecured Creditor's Committee, November 21, 2007.

79. Expert Report. Calpine Cash Flows, on behalf of Unsecured Creditor's Committee, November 19, 2007.

78. Application of Duke Energy Carolina, LLC for Approval of Energy Efficiency Plan Including an Energy Efficiency Rider and Portfolio of Energy, Docket No. 2007-358-E, Public Service Commission of South Carolina, December 10, 2007.

77. Independent Transmission Cause No. PUD200700298, Application of ITC, Public Service of Oklahoma, December 7, 2007.

76. Verified Petition of Duke Energy Indiana, Inc. Requesting the Indiana Utility Regulatory Commission to Approve an Alternative Regulatory Plan Pursuant to Ind. Code §8-1-2.5-1, et. Seq. for the Offering of Energy Efficiency Conservation, Demand Response, and Demand-Side Management Programs and Associated Rate Treatment Including Incentives Pursuant to a Revised Standard Contract Rider No. 66 in Accordance With Ind. Code §§8-1-2.5-1 et seq. and 8-1-2-42(a); Authority to Defer Program Costs Associated with its Energy Efficiency Portfolio of Programs; Authority to Implement New and Enhanced Energy Efficiency Programs, Including the PowerShare® Program in its Energy Efficiency Portfolio of Programs; and Approval of a Modification of the Fuel Adjustment Cause Earnings and Expense Tests, Indiana Utility Regulatory Commission, Cause No. 43374, October 19, 2007.

75. Rebuttal Testimony, Docket No. U-30192, Application of Entergy Louisiana, LLC For Approval to Repower the Little Gypsy Unit 3 Electric Generating Facility and for Authority to Commence Construction and for Certain Cost Protection and Cost Recovery, October 4, 2007

74. Direct Testimony of Judah Rose on Behalf of Tucson Electric Power Company, In the matter of the Application of Tucson Electric Power Company for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of Its Operations Throughout the State of Arizona, Estimation of Market Value of Fleet of Utility Coal Plants, July 2, 2007.

73. Portfolio of New Plants, Testimony on behalf of AEP: SWEPCo, before the Arkansas Public Service Commission, In the Matter of Application of SWEPCO for a Certificate of Environmental Compatibility and Public Need for the Construction, Ownership, Operation, and Maintenance of a Coal-Fired Base Load Generating Facility in the Hempstead County, Arkansas, dated June 2007.

72. Rebuttal Testimony, Causes No. PUD 200500516, 200600030, and 20070001 Consolidated, on behalf of Redbud Energy, before the Corporation Commission of the State of Oklahoma, June 2007.

71. IGCC Coal Plant, CPCN Rebuttal Testimony on behalf of Duke Energy Indiana, Cause No. 43114 before the Indiana Utility Regulatory Commission, May 2007.

70. Responsive Testimony, Causes No. PUD 200500516, 200600030, and 200700012 Consolidated, on behalf of Redbud Energy, before the Corporation Commission of the State of Oklahoma, May 2007.

69. Rebuttal Testimony, FPL – CO_2 Emissions and the Everglades Coal-Fired Power Plant, Docket No. 070098-EL, March 2007

68. Rebuttal Testimony, Electric Utility Power Hedging, on behalf of Duke Energy Indiana, Cause No. 38707-FAC6851, May 2007.

67. Direct Testimony for Southwestern Electric Power Company, Before the Louisiana Public Service Commission, Docket No. U-29702, in re: Application of Southwestern Electric Power Company for the Certification of Contracts for the Purchase of Capacity for 2007, 2008, and 2009 and to Purchase, Operate, Own, and Install Peaking, Intermediate and Base Load Coal-Fired Generating Facilities in Accordance with the Commission's General Order Dated September 20, 1983. Consolidated with Docket No. U-28766 Sub Docket B in re: Application of Southwestern Electric Power Company for Certification of Contracts for the Purchase of Capacity in Accordance with the Commission's 'General Order of September 20, 1983, February 2007.

66. Second Supplemental Testimony on Behalf of Duke Energy Ohio Before the Public Utility Commission of Ohio, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA, February 28, 2007.

65. Electric Utility Power Hedging, on behalf of Duke Energy Indiana, Cause No. 38707-FAC6851, February 2007.

64. CPCN for Cliffside Coal-Fired Plant, on behalf of Duke Carolinas, Docket No. E7, SUB790, December 2006.

63. Expert Report, Chapter 11, Case No. 01-16034 (AJG) and Adv. Proc. No. 04-2933 (AJG), November 6, 2006.

62. IGCC Coal Plant, Testimony on behalf of Duke Energy Indiana, Cause No. 43114, October 2006.

61. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, Supplemental Testimony March 20, 2006.

60. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, Surrebuttal Testimony December 27, 2005.

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58. Brazilian Power Purchase Agreement, confidential international arbitration, October 2005.

57. Cost of Service and Fuel Clause Issues, Rebuttal Testimony on behalf of Public Service of New Mexico, Docket No. EL05-151, November 2005.

56. Cost of Service and Peak Demand, FERC, Testimony on behalf of Public Service of New Mexico, September 19, 2005, Docket No. EL05-19.

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54. Cost of Service and Peak Demand, FERC, Responsive Testimony on behalf of Public Service of New Mexico, August 23, 2005, Docket No. EL05-19.

53. Prudence of Acquisition of Power Plant, Testimony on behalf of Redbud, September 12, 2005, No. PUD 200500151.

52. Proposed Fuel Cost Adjustment Clause, FERC, Docket Nos. EL05-19-002 and ER05-168-001 (Consolidated), August 22, 2005.

51. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU, FERC, Docket EC05-43-000, May 27, 2005.

50. New Air Emission Regulations and Investment in Coal Power Plants, rebuttal testimony on behalf of PSI, April 18, 2005, Causes 42622 and 42718.

49. Rebuttal Report: Damages due to Rejection of Tolling Agreement Including Discounting, February 9, 2005, CONFIDENTIAL.

48. New Air Emission Regulations and Investment in Coal Power Plants, supplemental testimony on behalf of PSI, January 21, 2005, Causes 42622 and 42718.

47. Damages Due to Rejection of Tolling Agreement Including Discounting, January 10, 2005, CONFIDENTIAL.

46. Discount rates that should be used in estimating the damages to GTN of Mirant's bankruptcy and subsequent abrogation of the gas transportation agreements Mirant had entered into with GTN, December 15, 2004. CONFIDENTIAL

45. New Air Emission Regulations and Investment in Coal Power Plants, testimony on behalf of PSI, November 2004, Causes 42622 and 42718.

44. Rebuttal Testimony of Judah Rose on behalf of PSI, "Certificate of Purchase as of yet Undetermined Generation Facility" Cause No. 42469, August 23, 2004.

43. Rebuttal Testimony of Judah Rose on behalf of the Hopi Tribe, Case No. A.02-05-046, Mohave Coal Plant Economics, June 4, 2004.

42. Supplemental Testimony "Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, May 20, 2004.

41. "Application of Southern California Edison Company (U338-E) Regarding the Future Disposition of the Mohave Coal-Fired Generating Station," May 14, 2004.

40. "Appropriate Rate of Return on Equity (ROE) TransAlta Should be Authorized For its Capital Investment Related to VAR Support From the Centralia Coal-Fired Power Plant", for TransAlta, April 30, 2004, FERC Docket No. ER04-810-000.

39. "Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, April 15, 2004.

38. "Valuation of Selected MIRMA Coal Plants, Acceptance and Rejection of Leases and Potential Prejudice to Leasors" Federal Bankruptcy Court, Dallas, TX, March 24, 2004 CONFIDENTIAL.

37. "Certificate of Purchase as of yet Undetermined Generation Facility", Cause No. 42469 for PSI, March 23, 2004.

36. "Ohio Edison's Sammis Power Plant BACT Remedy Case", In the United States District Court of Ohio, Southern Division, March 8, 2004.

35. "Valuation of Power Contract," January 2004, confidential arbitration.

34. "In the matter of the Application of the Union Light Heat & Power Company for a Certificate of Public Convenience and Necessity to Acquire Certain Generation Resources, etc.", before the Kentucky Public Service Commission, Coal-Fired and Gas-Fired Market Values, July 21, 2003.

33. "In the Supreme Court of British Columbia", July 8, 2003. CONFIDENTIAL

32. "The Future of the Mohave Coal-Fired Power Plant – Rebuttal Testimony", California P.U.C., May 20, 2003.

31. "*Affidavit in Support of the Debtors' Motion*", *NRG Bankruptcy, Revenues of a Fleet of* Plants, May 14, 2003. CONFIDENTIAL

30. "IPP Power Purchase Agreement," confidential arbitration, April 2003.

29. "The Future of the Mohave Coal-Fired Power Plant", California P.U.C., March 2003.

28. "Power Supply in the Pacific Northwest," contract arbitration, December 5, 2002. CONFIDENTIAL

27. "Power Purchase Agreement Valuation", Confidential Arbitration, October 2002.

26. "Cause No. 42145 - In support of PSI's petition for authority to acquire the Madison and Henry County plants, rebuttal testimony on behalf of PSI. Filed on 8/23/02."

25. "Cause No. 42200 - in support of PSI's petition for authority to recover through retail rates on a timely basis. Filed on 7/30/02."

24. "Cause No. 42196 - in support of PSI's petition for interim purchased power contract. Filed on 4/26/02."

23. "Cause No. 42145 - In support of PSI's petition for authority to acquire the Madison and Henry County plants. Filed on 3/1/2002."

22. "Analysis of an IGCC Coal Power Plant", Minnesota state senate committees, January 22, 2002

21. "Analysis of an IGCC Coal Power Plant", Minnesota state house of representative committees, January 15, 2002

20. "Interim Pricing Report on New York State's Independent System Operator", New York State Public Service Commission (NYSPSC), January 5, 2001

19. "The need for new capacity in Indiana and the IRP process", Indiana Utility Regulatory Commission, October 26, 2000

18. "Damage estimates for power curtailment for a Cogen power plant in Nevada", August 2000. CONFIDENTIAL

17. "Valuation of a power plant in Arizona", arbitration, July 2000. CONFIDENTIAL

16. Application of FirstEnergy Corporation for approval of an electric Transition Plan and for authorization to recover transition revenues, Stranded Cost and Market Value of a Fleet of Coal, Nuclear, and Other Plants, Before PUCO, Case No. 99-1212-EL-ETP, October 4, 1999 and April 2000.

15. "Issues Related to Acquisition of an Oil/Gas Steam Power plant in New York", September 1999 Affidavit to Hennepin County District Court, Minnesota

14. "Wholesale Power Prices, A Cost Plus All Requirements Contract and Damages", Cajun Bankruptcy, July 1999. Testimony to U.S. Bankruptcy Court.

13. "Power Prices." Testimony in confidential contract arbitration, July 1998.

12. "Horizontal Market Power in Generation." Testimony to New Jersey Board of Public Utilities, May 22, 1998.

11. "Basic Generation Services and Determining Market Prices." Testimony to the New Jersey Board of Public Utilities, May 12, 1998.

10. "Generation Reliability." Testimony to New Jersey Board of Public Utilities, May 4, 1998.

9. "Future Rate Paths and Financial Feasibility of Project Financing." Cajun Bankruptcy, Testimony to U.S. Bankruptcy Court, April 1998.

8. "Stranded Costs of PSE&G." Market Valuation of a Fleet of Coal, Nuclear, Gas, and Oil-Fired Power Plants, Testimony to New Jersey Board of Public Utilities, February 1998.

7. "Application of PECO Energy Company for Approval of its Restructuring Plan Under Section 2806 of the Public Utility Code." Market Value of Fleet of Nuclear, Coal, Gas, and Oil Power Plants, Rebuttal Testimony filed July 1997.

6. "Future Wholesale Electricity Prices, Fuel Markets, Coal Transportation and the Cajun Bankruptcy." Testimony to Louisiana Public Service Commission, December 1996.

5. "Curtailment of the Saguaro QF, Power Contracting and Southwest Power Markets." Testimony on a contract arbitration, Las Vegas, Nevada, June 1996.

4. "Future Rate Paths and the Cajun Bankruptcy." Testimony to the U.S. Bankruptcy Court, June 1997.

3. "Fuel Prices and Coal Transportation." Testimony to the U.S. Bankruptcy Court, June 1997.

2. "Demand for Gas Pipeline Capacity in Florida from Electric Utilities." Testimony to Florida Public Service Commission, May 1993.

1. "The Case for Fuel Flexibility in the Florida Electric Generation Industry." Testimony to the Florida Department of Environmental Regulation (DER), Hearings on Fuel Diversity and Environmental Protection, December 1992.

SELECTED SPEAKING ENGAGEMENTS

98. Rose, J.L., Fundamentals of Electricity Transmission, EUCI, Crystal City, Arlington, VA,
June 29-30, 2010.

97. Rose, J.L., Economics of PC Refurbishment, Improving the Efficiency of Coal-Fired Power Generation in the U.S., DOE-NETL, February 24, 2010.

96. Rose, J.L., Fundamentals of Electricity Transmission, EUCI, Orlando, FL, January 25-26, 2010.

95. Rose, J.L., CO_2 Control, "Cap & Trade", & Selected Energy Issues, Multi-Housing Laundry Association, October 26, 2009.

94. Rose, J.L., Financing for the Future – Can We Afford It?, 2009 Bonbright Conference, October 9, 2009.

93. Rose, J.L., EEI's Transmission and Market Design School, Washington, D.C., June 2009.

92. Rose, J.L., ICF's New York City Energy Forum - Market Recovery in Merchant Generation Assets, June 10, 2008.

91. Rose, J.L., Southeastern Electric Exchange – Integrated Resource Planning Task Force Meeting, Carbon Tax Outlook Discussion, February 21-22, 2008.

90. Rose, J.L., AESP, NEEC Conference, Rising Prices and Failing Infrastructure: A Bleak or Optimistic Future, Marlborough, MA, October 23, 2006.

89. Rose, J.L., Infocast Gas Storage Conference, "Estimating the Growth Potential for Gas-Fired Electric Generation," Houston, TX, March 22, 2006.

88. Rose, J.L., "Power Market Trends Impacting the Value of Power Assets," Infocast Conference, Powering Up for a New Era of Power Generation M&A, February 23, 2006.

87. Rose, J.L., "The Challenge Posed by Rising Fuel and Power Costs", Lehman Brothers, November 2, 2005.

86. Rose, J.L., "Modeling the Vulnerability of the Power Sector", EUCI – Securing the Nation's Energy Infrastructure, September 19, 2005

85. Rose, J.L., "Fuel Diversity in the Northeast, Energy Bar Association, Northeast Chapter Meeting, New York, NY, June 9, 2005.

84. Rose, J.L., "2005 Macquarie Utility Sector Conference", Macquarie Utility Sector Conference, Vail, CO, February 28, 2005.

83. Rose, J.L., "The Outlook for North American Natural Gas and Power Markets", The Institute for Energy Law, Program on Oil and Gas Law, Houston, TX, February 18, 2005.

82. Rose, J.L. "Assessing the Salability of Merchant Assets – What's on the Horizon?" Infocast – The Market for Power Assets, Phoenix, AZ, February 10, 2005.

81. Rose, J.L. "Market Based Approaches to Transmission – Longer-Term Role", National Group of Municipal Bond Investors, New York, NY, December 10, 2004.

80. Rose, J.L. "Supply & Demand Fundamentals – What is Short-Term Outlook and the Long-Term Demand? Platt's Power Marketing Conference, Houston, TX, October 11, 2004.

79. Rose, J.L. "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?, Infocast's Buying, Selling, and Investing in Energy Assets Conference, Houston, TX, June 24, 2004.

78. Rose, J. L. "After the Blackout – Questions That Every Regulator Should be Asking," NARUC Webinar Conference, Fairfax, VA, November 6, 2003.

77. Rose, J. L., "Supply and Demand in U.S. Wholesale Power Markets," Lehman Brothers Global Credit Conference, New York, NY, November 5, 2003.

76. Rose, J.L., "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?", Infocast's Opportunities in Energy Asset Acquisition, San Francisco, CA, October 9, 2003.

75. Rose, J.L., "Asset Valuation in Today's Market", Infocast's Project Finance Tutorial, New York, NY, October 8, 2003.

74. Rose, J.L., "Forensic Evaluation of Problem Projects", Infocast's Project Finance Workouts: Dealing With Distressed Energy Projects, September 17, 2003.

73. Rose, J.L., National Management Emergency Association, Seattle, WA,, September 8, 2003.

72. Rose, J.L., "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?", Infocast's Buying, Selling & Investing in Energy Assets, Chicago, IL, July 24, 2003.

71. Rose, J.L., CSFB Leveraged Finance Independent Power Producers and Utilities Conference, New York, NY, "Spark Spread Outlook", July 17, 2003.

70. Rose, J.L., Multi-Housing Laundry Association, Washington, D. C., "Trends in U.S. Energy and Economy", June 24, 2003.

69. Rose, J.L., "Power Markets: Prices, SMD, Transmission Access, and Trading", Bechtel Management Seminar, Frederick, MD, June 10, 2003.

68. Rose, J.L., Platt's Global Power Market Conference, New Orleans, LA, "The Outlook for Recovery," March 31, 2003.

67. Rose, J.L., "Electricity Transmission and Grid Security", Energy Security Conference, Crystal City, VA, March 25, 2003.

66. Rose, J.L., "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?, Infocast's Buying, Selling & Investing in Energy Assets, New York City, February 27, 2003.

65. Rose, J.L., Panel Discussion, "Forensic Evaluation of Problem Projects", Infocast Conference, NY, February 24, 2003.

64. Rose, J.L., PSEG Off-Site Meeting Panel Discussion, February 6, 2003 (April 13, 2003).

63. Rose, J.L., "The Merchant Power Market—Where Do We Go From Here?" Center for Business Intelligence's Financing U.S. Power Projects, November 18-19, 2002.

62. Rose, J.L., "Assessing U.S. Regional And The Potential for Additional Coal-Fired Generation in Each Region," Infocast's Building New Coal-Fired Generation Conference, October 8, 2002.

61. Rose, J.L., "Predicting the Price of Power for Asset Valuation in the Merchant Power Financings, "Infocast's Product Structuring in the Real World Conference, September 25, 2002.

60. Rose, J.L., "PJM Price Outlook," Platt's Annual PJM Regional Conference, September 24, 2002.

59. Rose, J.L., "Why Investors Are Zeroing in on Upgrading Our Antiquated Power Grid Rather Than Exotic & Complicated Technologies," New York Venture Group's Investing in the Power Industry—Targeting The Newest Trends Conference, July 31, 2002.

58. Rose, J.L., Panel Participant in the Salomon Smith Barney Power and Energy Merchant Conference 2002, May 15, 2002.

57. Rose, J.L., "Locational Market Price (LMP) Forecasting in Plant Financing Decisions," Structured Finance Institute, April 8-9, 2002.

56. Rose, J.L., "PJM Transmission and Generation Forecast", Financial Times Energy Conference, November 6, 2001.

55. Rose, J.L., "U.S. Power Sector Trends", Credit Suisse First Boston's Power Generation Supply Chain Conference, Web Presented Conference, September 12, 2002.

54. Rose, J.L., "Dealing with Inter-Regional Power Transmission Issues", Infocast's Ohio Power Game Conference, September 6, 2001

53. Rose, J.L., "Where's the Next California", Credit Suisse First Boston's Global Project Finance Capital Markets Conference, New York NY, June 27 2001

52. Rose, J.L, "U.S. Energy Issues: What MLA Members Need to Know," Multi-housing Laundry Association, Boca Raton Florida, June 25, 2001

51. Rose, J.L., "How the California Meltdown Affects Power Development", Infocast's Power Development and Finance Conference 2001, Washington D.C., June 12, 2001

50. Rose, J.L., "Forecasting 2001 Electricity Prices" presentation and workshop, What to Expect in western Power Markets this Summer 2001 Conference, Denver, Colorado, May 2, 2001

49. Rose, J.L., "Power Crisis in the West" Generation Panel Presentation, San Diego, California, February 12, 2001

48. Rose, J.L., "An Analysis of the Causes leading to the Summer Price Spikes of 1999 & 2000" Conference Chair, Infocast Managing Summer Price Volatility, Houston, Texas, January 30, 2001.

47. Rose, J. L., "An Analysis of the Power Markets, summer 2000" Generation Panel Presentation, Financial Times Power Mart 2000 conference, Houston, Texas, October 18, 2000

46. Rose, J.L., "An Analysis of the Merchant Power Market, Summer 2000" presentation, Conference Chair, Merchant Power Finance Conference, Atlanta, Georgia, September 11 to 15, 2000

45. Rose, J.L., "Understanding Capacity Value and Pricing Firmness" presentation, Conference Chair, Merchant Plant Development and Finance Conference, Houston, Texas, March 30, 2000.

44. Rose, J.L., "Implementing NYPP's Congestion Pricing and Transmission Congestion Contract (TCC)", Infocast Congestion Pricing and Forecasting Conference, Washington D.C., November 19, 1999.

43. Rose, J.L., "Understanding Generation" Pre-Conference Workshop, Powermart, Houston, Texas, October 26-28, 1999.

42. Rose, J.L., "Understanding Capacity Value and Pricing Firmness" presentation, Conference Chair Merchant Plant Development and Finance Conference, Houston, Texas, September 29, 1999.

41. Rose, J.L., "Comparative Market Outlook for Merchant Assets" presentation, Merchant Power Conference, New York, New York, September 24, 1999.

40. Rose, J.L., "Transmission, Congestion, and Capacity Pricing" presentation, Transmission The Future of Electric Transmission Conference, Washington, DC, September 13, 1999.

39. Rose, J.L., "Effects of Market Power on Power Prices in Competitive Energy Markets" Keynote Address, The Impact of Market Power in Competitive Energy Markets Conference, Washington, DC, July 14, 1999.

38. Rose, J.L., "Peak Price Volatility in ECAR and the Midwest, Futures Contracts: Liquidity, Arbitrage Opportunity" presentation at ECAR Power Markets Conference, Columbus, Ohio, June 9, 1999.

37. Rose, J.L., "Transmission Solutions to Market Power" presentation, Do Companies in the Energy Industry Have Too Much Market Power? Conference, Washington, DC, May 24, 1999.

36. Rose, J.L., "Repowering Existing Power Plants and Its Impact on Market Prices" presentation, Exploiting the Full Energy Value-Chain Conference, Chicago, Illinois, May 17, 1999.

35. Rose, J.L., "Transmission and Retail Issues in the Electric Industry" Session Speaker, Gas Mart/Power 99 Conference, Dallas, Texas, May 10, 1999.

34. Rose, J.L., "Peak Price Volatility in the Rockies and Southwest" presentation at Repowering the Rockies and the Southwest Conference, Denver, Colorado, May 5, 1999.

33. Rose, J.L., "Understanding Generation" presentation and Program Chairman at Buying & Selling Power Assets: The Great Generation Sell-Off Conference, Houston, Texas, April 20, 1999.

32. Rose, J.L., "Buying Generation Assets in PJM" presentation at Mid-Atlantic Power Summit, Philadelphia, Pennsylvania, April 12, 1999.

31. Rose, J.L., "Evaluating Your Generation Options in Situations With Insufficient Transmission," presentation at Congestion Management conference, Washington, D.C., March 25, 1999.

30. Rose, J.L., "Will Capacity Prices Drive Future Power Prices?" presentation at Merchant Plant Development conference, Chicago, Illinois, March 23, 1999.

29. Rose, J.L., "Capacity Value – Pricing Firmness," presentation at Market Price Forecasting conference, Atlanta, Georgia, February 25, 1999

28. Rose, J.L., "Developing Reasonable Expectations About Financing New Merchant Plants That Have Less Competitive Advantage Than Current Projects," presentation at Project Finance International's Financing Power Projects in the USA conference, New York, New York, February 11, 1999.

27. Rose, J.L., "Transmission and Capacity Pricing and Constraints," presentation at Power Fair 99, Houston, Texas, February 4, 1999.

26. Rose, J.L., "Peak Price Volatility: Comparing ERCOT With Other Regions," presentation at Megawatt Daily's Trading Power in ERCOT conference, Houston, Texas, January 13, 1999.

25. Rose, J.L., "The Outlook for Midwest Power Markets," presentation to The Institute for Regulatory Policy Studies at Illinois State University, Springfield, Illinois, November 19, 1998.

24. Rose, J.L., "Developing Pricing Strategies for Generation Assets," presentation at Wholesale Power in the West conference, Las Vegas, Nevada, November 12, 1998.

23. Rose, J.L., "Understanding Electricity Generation and Deregulated Wholesale Power Prices," a full-day pre-conference workshop at Power Mart 98, Houston, Texas, October 26, 1998.

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22. Rose, J.L., "The Impact of Power Generation Upgrades, Merchant Plant Developments, New Transmission Projects and Upgrades on Power Prices," presentation at Profiting in the New York Power Market conference, New York, NY, October 22, 1998.

21. Rose, J.L., "Capacity Value – Pricing Firmness," presentation to Edison Electric Institute Economics Committee, Charlotte, NC, October 8, 1998.

20. Rose, J.L., "Locational Marginal Pricing and Futures Trading," presentation at Megawatt Daily's Electricity Regulation conference, Washington, D.C., October 7, 1998.

19. Rose, J.L., Chairman's opening speech and "The Move Toward a Decentralized Approach: How Will Nodal Pricing Impact Power Markets?" at Congestion Pricing and Tariffs conference, Washington, D.C., September 25, 1998.

18. Rose, J.L., "The Generation Market in MAPP/MAIN: An Overview," presentation at Megawatt Daily's MAIN/MAPP – The New Dynamics conference, Minneapolis, Minnesota, September 16, 1998.

17. Rose, J.L., "Capacity Value – Pricing Firmness," presentation at Market Price Forecasting conference, Baltimore, Maryland, August 24, 1998.

16. Rose, J.L., "ICF Kaiser's Wholesale Power Market Model," presentation at Market Price Forecasting conference, New York, New York, August 6, 1998.

15. Rose, J.L., Campbell, R., Kathan, David, "Valuing Assets and Companies in M&A Transactions," full-day workshop at Utility Mergers & Acquisitions conference, Washington, D.C., July 15, 1998.

14. Rose, J.L., "Must-Run Nuclear Generation's Impact on Price Forecasting and Operations," presentation at The Energy Institute's conference entitled "Buying and Selling Electricity in the Wholesale Power Market," Las Vegas, Nevada, June 25, 1998.

13. Rose, J.L., "The Generation Market in PJM," presentation at Megawatt Daily's PJM Power Markets conference, Philadelphia, Pennsylvania, June 17, 1998.

12. Rose, J.L., "Market Evaluation of Electric Generating Assets in the Northeast," presentation at McGraw-Hill's conference: Electric Asset Sales in the Northeast, Boston, Massachusetts, June 15, 1998.

11. Rose, J.L., "Overview of SERC Power," opening speech presented at Megawatt Daily's SERC Power Markets conference, Atlanta, Georgia, May 20, 1998.

10. Rose, J.L., "Future Price Forecasting," presentation at The Southeast Energy Buyers Summit, Atlanta, Georgia, May 7, 1998.

9. Rose, J.L., "Practical Risk Management in the Power Industry," presentation at Power Fair, Toronto, Canada, April 16, 1998.

8. Rose, J.L., "The Wholesale Power Market in ERCOT: Transmission Issues," presentation at Megawatt Daily's ERCOT Power Markets conference, Houston, Texas, April 1, 1998.

7. Rose, J.L., "New Generation Projects and Merchant Capacity Coming On-Line," presentation at Northeast Wholesale Power Market conference, New York, New York, March 18, 1998.

6. Rose, J.L., "Projecting Market Prices in a Deregulated Electricity Market," presentation at conference: Market Price Forecasting, San Francisco, California, March 9, 1998.

5. Rose, J.L., "Handling of Transmission Rights," presentation at conference: Congestion Pricing & Tariffs, Washington, D.C., January 23, 1998.

4. Rose, J.L., "Understanding Wholesale Markets and Power Marketing," presentation at The Power Marketing Association Annual Meeting, Washington, D.C., November 11, 1997.

3. Rose, J.L., "Determining the Electricity Forward Curve," presentation at seminar: Pricing, Hedging, Trading, and Risk Management of Electricity Derivatives, New York, New York, October 23, 1997.

2. Rose, J.L., "Market Price Forecasting In A Deregulated Market," presentation at conference: Market Price Forecasting, Washington, D.C., October 23, 1997,

1. Rose, J.L., "Credit Risk Versus Commodity Risk," presentation at conference: Developing & Financing Merchant Power Plants in the New U.S. Market, New York, New York, September 16, 1997.

SELECTED PUBLICATIONS

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Rose, J.L. and Surana, S. "Forecasting Recessions and Investment Strategies." World-Generation, June/July 2010, V.22, #3.

Rose, J.L., "Should Environmental Restrictions be Eased to Allow for the Construction of More Power Plants? The Costco Connection, April 2001.

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Rose, J.L., "Why the June Price Spike Was Not a Fluke," *The Electricity Journal*, November 1998.

Rose, J.L., S. Muthiah, and J. Spencer, "Will Wall Street Rescue the Competitive Wholesale Power Market?" *Project Finance International*, May 1998.

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Rose, J.L., D. Kathan, and J. Spencer "Electricity Deregulation in the New England States," *Energy Buyer*, Volume 1, Issue 10, June-July 1997.

Rose, J.L., S. Muthiah, and M. Fusco, "Financial Engineering in the Power Sector," *The Electricity Journal,* Jan/Feb 1997.

Rose, J.L, S. Muthiah, and M. Fusco, "Is Competition Lacking in Generation? (And Why it Should Not Matter)," *Public Utilities Fortnightly,* January 1, 1997.

Mann, C. and J.L. Rose, "Price Risk Management: Electric Power vs. Natural Gas," *Public Utilities Fortnightly,* February 1996.

Rose, J.L. and C. Mann, "Unbundling the Electric Capacity Price in a Deregulated Commodity Market," *Public Utilities Fortnightly,* December 1995.

Booth, William and J.L. Rose, "FERC's Hourly System Lambda Data as Interim Bulk Power Price Information," *Public Utilities Fortnightly,* May 1, 1995.

Rose, J.L. and M. Frevert, "Natural Gas: The Power Generation Fuel for the 1990s." Published by Enron.

EMPLOYMENT HISTORY

ICF Resources Incorporated	Managing Director	1999-Present
	Vice President	1996-1999
	Project Manager	1993-1996
	Senior Associate	1986-1993
	Associate	1982-1986

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