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OCC EXHIBIT ____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Columbus Southern Power Company for Approval of an Electric Security Plan; an Amendment to its Corporate Separation Plan; and the Sale or Transfer of Certain Generating Assets.	)	Case No. 08-917-EL-SSO
In the Matter of the Application of Ohio Power Company for Approval of an Electric Security Plan; and an Amendment to its Corporate Separation Plan.	)	Case No. 08-918-EL-SSO

DIRECT TESTIMONY ON REMAND
of
MACK A. THOMPSON

ON BEHALF OF
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CERTIFICATE OF SERVICE

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME, ADDRESS AND POSITION.

A1. My name is Mack A. Thompson. My business address is 10 West Broad Street, Suite 1800, Columbus, Ohio 43215-3485. I am employed by the Office of the Ohio Consumers' Counsel ("OCC" or "Consumers' Counsel") as a Senior Energy Policy Analyst.

Q2. WOULD YOU PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE?

A2. I graduated from Rose-Hulman Institute of Technology in 1980 with a Bachelor of Science in Mechanical Engineering, graduating *cum laude*. In 1990 I was awarded a Masters in Business Administration from the University of Illinois -- Springfield.[1]

I joined Illinois Power Company in 1980 and held several positions of increasing responsibility including engineer, planning engineer, project engineer, manager of load forecasting and demand side management ("DSM"), and director of distributed computing. Over the years my responsibilities included modeling of generation system production costs, generation expansion planning, engineering and technical feasibility analysis of generation plant upgrades, mothballing, retirement and environmental compliance alternatives, strategic planning,

[1] At the time of my graduation the school was named Sangamon State University. Subsequently, it was renamed University of Illinois Springfield.

supervision of load forecasting, supervision of DSM analysis, and management of distributed computing operations. In 2000, I became an independent consultant and provided analytical, project management and strategic planning services to utility clients. In 2005, I joined the Michigan Electric Transmission Company ("METC"). As METC's Manager of Transmission Strategy and Policy I represented METC's interests in the Midwest Independent Transmission System Operator, Inc. ("MISO") stakeholder process. In 2006, I joined American Municipal Power ("AMP") as Vice President of Power Supply Services where I was responsible for power supply portfolio planning, wholesale power purchasing, the 24 hour dispatch center, evaluation of generation asset proposals, negotiation of power purchase agreements, and most energy market regulatory activities. I was responsible for the start up of AMP's North American Electric Reliability Corporation compliance program and I was a member of AMP's risk committee. In December 2010, I joined OCC as a Senior Energy Policy Analyst.

Q3. WHAT ARE YOUR RESPONSIBILITIES AS SENIOR ENERGY POLICY ANALYST?

A3. My duties include analysis of, comments and/or testimony related to electric generation and transmission filings at the state and federal levels, participation in the PJM Interconnection, LLC ("PJM") and MISO stakeholder processes, and related policy development and implementation.

Q4. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE A STATE REGULATORY COMMISSION OR THE FEDERAL ENERGY REGULATORY COMMISSION?

A4. Yes. In the 1990s I submitted testimony before the Illinois Commerce Commission on behalf of Illinois Power Company. In one instance I supported Illinois Power's load forecast in a rate case docket, and in another instance I supported Illinois Power's DSM analysis in an integrated resource planning hearing. In 2007, on behalf of AMP, I presented testimony at a Federal Energy Regulatory Commission technical conference on interconnection queuing practices, Docket AD08-2.

Q5. WHAT DOCUMENTS HAVE YOU REVIEWED IN THE PREPARATION OF YOUR TESTIMONY?

A5. I have reviewed the recent Ohio Supreme Court decision ("Remand Decision") that relates to appeals taken from Columbus Southern Power Company's and the Ohio Power Company's (collectively, "Companies" or "AEP Ohio") first electric security plan ("ESP") proceeding.[2] I have also reviewed the Public Utility Commission of Ohio's ("Commission" or "PUCO") entries directing AEP Ohio to file revised tariffs, and to make appropriate filings in the event that AEP Ohio intends to continue collecting the Provider of Last Resort ("POLR") charges and environmental carrying charges pursuant to the Court's remand.[3] I have reviewed

[2] *In re Application of Columbus S. Power Co.*, Slip Opinion No. 2011-Ohio-1788.

[3] PUCO Case Nos. 08-917-EL-SSO and 08-918-EL-SSO, Entry (May 4, 2011) and Entry (May 25, 2011).

relevant statutes related to POLR. I have reviewed AEP Ohio's May 20, 2011 Initial Merit Filing on Remand ("Merit Filing") with its attached exhibits and the Companies' testimonies filed on June 6, 2011, as well as responses to relevant discovery submitted to the Companies by OCC and other interveners in this remand case. I also reviewed transcripts of the deposition of Companies' witnesses in this remand phase. I have reviewed relevant discovery documents, transcripts, pre-filed testimony, and entries and orders from the Companies' first ESP cases (Case Nos. 08-917-EL-SSO, et al.) prior to the Remand. I have reviewed relevant discovery documents and pre-filed testimony in the Companies' second ESP case (Case Nos. 11-346-EL-SSO, et al.). I have also reviewed the following:

- The Pricing of Options and Corporate Liabilities, Fischer Black and Myron Scholes, Journal of Political Economy (1973). (This article provides the original documentation of what has come to be referred to as the "Black-Scholes model".)[4]
- The Pricing of Commodity Contracts, Fischer Black, Journal of Financial Economics (1976). (This article provides the original documentation of what has come to be referred to as the "Black model".)[5]
- Reliability Assurance Agreement Among Load Serving Entities in the PJM Region Effective Date 2/14/2011 ("RAA"), specifically

[4] Black, F., and Scholes M. (1973), "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy*, 81, no. 3, 637-654.

[5] Black, F. (1976), "The Pricing of Commodity Contracts", *Journal of Financial Economics* 3, 167-179.

Section 8.1 Fixed Resource Requirement Alternative, available on the PJM website at www.pjm.com. (The RAA defines the Companies' capacity obligations as members of PJM.)[6]

- Option pricing tools and information provided by the Chicago Board Options exchange on their website www.cboe.com. (These tools were used to evaluate the potential use of an alternative to the option pricing methodology presented by the Companies.)

II. PURPOSE OF TESTIMONY

Q6. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A6. The purpose of my testimony is to:

1) describe the true scope and cost of the Companies' provider of last resort ("POLR") obligation,

2) demonstrate that the Black model, which the Companies used to develop their proposed POLR charge, does not accurately estimate either the cost of the POLR obligation to the Companies or the value of the POLR obligation to the customer,

3) demonstrate that if the Black model's logic flaws were to be ignored and its results relied upon by the Commission, which I do not recommend, the Companies' numerical inputs to the model are

[6] See Attachment MAT-1, Companies' response to OCC INT 4-149 in Case No. 11-346-EL-SSO et al.

incorrect and greatly exaggerate the revenues that need to be collected from AEP Ohio customers through the POLR rider, and

4) respond to certain assertions about POLR made by Companies' witnesses Thomas, LaCasse, and Makhija.

III. RECOMMENDATIONS

Q7. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANIES' PROPOSED POLR RIDER?

A7. I recommend that the Commission reject the Companies' request in this remand proceeding to continue charging customers a POLR rider for the remainder of 2011, because any POLR costs to the Companies are already collected from customers through other Standard Service Offer ("SSO") rate mechanisms and have been since the beginning of the ESP period. In other words, the POLR charge should be zero going forward, the POLR revenues that have been collected since the beginning of the ESP period were unwarranted and should be adjusted,[7] and the POLR revenues being collected "subject to refund" should be completely returned to customers.

Q8. IF THE COMMISSION WERE TO APPROVE A POLR RIDER FOR THE REMAINDER OF 2011, WHO SHOULD RECEIVE THE REVENUE FROM THAT RIDER?

[7] See direct testimony of OCC witness Duann for a discussion of the appropriate adjustments.

A8. If the Commission approves a POLR rider then the revenues generated by the rider should be used to offset fuel adjustment clause ("FAC") rider charges to the Companies' customers. This is because it is SSO customers who already pay the entire cost of POLR via the FAC rider.

Q9. WHAT IS YOUR RECOMMENDATION REGARDING THE USE OF THE "UNCONSTRAINED OPTION MODEL"[8]?

A9. I recommend that the Commission reject the use of the unconstrained option (Black) model because the model does not accurately estimate the cost of POLR to the Companies or the value of POLR to customers. If the Commission were to accept the continued use of the Black model, which I do not recommend, it should order the Companies to make substantial corrections to the values that the Companies used as inputs to the model.

Q10. WHAT IS YOUR RECOMMENDATION REGARDING THE USE OF THE "CONSTRAINED OPTION MODEL"[9]?

A10. I recommend that the Commission reject the use of the constrained option model because it uses the same basic logic and has the same shortcomings as the unconstrained Black model. If the Commission were to accept the use of the constrained option, which I do not recommend, it should order the Companies to make substantial corrections to the values that the Companies used as inputs to

[8] Direct Testimony of Laura Thomas on Behalf of Columbus Southern Power Company and Ohio Power Company, page 12 (filed June 6, 2011).

[9] Direct Testimony of Laura Thomas on Behalf of Columbus Southern Power Company and Ohio Power Company, page 14 (filed June 6, 2011).

the model. The Commission should also order the Companies to fully disclose the calculations used in the model to PUCO Staff and intervenors prior to using the constrained model to set the POLR rate.

IV. A DESCRIPTION OF THE COMPANIES' POLR OBLIGATION AND THE TRUE COST OF MEETING THE OBLIGATION.

A. THE POLR OBLIGATION DEFINED.

Q11. PLEASE DESCRIBE THE COMPANIES' PROVIDER OF LAST RESORT OBLIGATION?

A11. The POLR obligation derives from state statutes. An electric distribution utility ("EDU") has an obligation to "provide consumers, on a comparable and nondiscriminatory basis within its certified territory, a standard service offer of all competitive retail electric services necessary to maintain essential electric generation service."[10] Another statute, provides that a competitive retail electric service ("CRES") supplier's failure to provide retail electric generation service to customers within an EDU's certified service territory results in the customers of that supplier "defaulting to the utility's standard service offer...until the customer chooses an alternative supplier."[11] Thus, I conclude that an EDU's POLR obligation is not statutorily linked to the rights of customers to switch to an

[10] Ohio Revised Code ("ORC") 4928.141(A).

[11] ORC 4928.14.

alternative generation supplier, but is linked to the need for the EDU to provide SSO service to customers returning from CRES service, regardless of the reason for the customers' return.

Q12. IN HER TESTIMONY, COMPANIES' WITNESS THOMAS CLAIMS THAT THE COMPANIES HAVE A POLR OBLIGATION BECAUSE ALL CUSTOMERS ARE FREE TO SWITCH TO RECEIVE GENERATION SERVICE FROM A CRES PROVIDER EITHER ON AN INDIVIDUAL BASIS OR AS PART OF GOVERNMENTAL AGGREGATION. DO YOU AGREE WITH HER CHARACTERIZATION OF THIS AS A POLR OBLIGATION?

A12. No. The POLR obligation is not tied, as stated in the testimony of Companies witness Thomas, to the ability of "customers . . . to switch to generation service to a CRES (Competitive Retail Electric Service) provider,"[12] The ability of customers to switch to another provider of generation service, and the business risk associated with that ability, is not unique to the Companies. Rather it is a migration risk that EDUs and CRES providers face as a result of competition. Instead, the POLR obligation is, as noted by the statute, tied to the ability of customers to return to the Companies' SSO generation service.

[12] Direct Testimony of Laura Thomas on Behalf of Columbus Southern Power Company and Ohio Power Company, page 3 (filed June 6, 2011).

Q13. HOW DOES YOUR DEFINITION OF POLR COMPARE TO THE COMMISSION'S DEFINITION OF POLR IN ITS ORIGINAL OPINION AND ORDER ISSUED IN THIS CASE?

A13. In its March 18, 2009 order in this case the Commission found that:

> ***"Therefore, based on the record before us, we conclude that the Companies' proposed ESP should be modified such that the POLR rider will be based on the cost to the Companies to be the POLR and carry the risks associated therewith, including the migration risk."***[13]

In this case the "migration risk" referred to by the Commission was the term used by Staff witness Cahaan to describe the risk that a customer could leave and take service from a CRES provider.[14] Notably, Staff Witness Cahaan concluded that the migration risk was not a POLR risk[15], which is the very same conclusion I have reached.

Q14. WHY SHOULD THE COMMISSION MAKE A DIFFERENT FINDING REGARDING MIGRATION RISK IN THIS REMAND CASE?

A14. As the text quoted above indicates, the Commission made a finding based on the record before it and the arguments presented by the parties. While precedent is

[13] Opinion and Order in Case Nos. 08-917-EL-SSO et al. dated March 18, 2009, page 40 (emphasis added).

[14] Opinion and Order in Case Nos. 08-917-EL-SSO et al. dated March 18, 2009, Page 39. "[T]he other risk is that the customers leave and take service from a CRES provider (migration risk) (Staff Ex. 10 at 6)."

[15] Case Nos. 08-917-EL-SSO et al., Tr. Vol. XIII at pages 55 and 56.

important, precedent should not preclude the Commission from fully considering the evidence and arguments presented in this remand case.

Q15. DO THE COMPANIES INCUR A POLR COST ASSOCIATED WITH A CUSTOMER'S RIGHT TO SWITCH TO A CRES PROVIDER?

A15. No. The Companies will not incur any POLR costs until the customer returns to SSO service. The Companies may incur lost revenue associated with the loss of a customer to a CRES supplier, but suppliers in all competitive industries face the risk of customers switching and the associated lost revenue. CRES suppliers face that risk, and yet no one would argue that CRES suppliers have a POLR obligation. The revenue lost due to switching is a consequence of operating in a competitive market; it is not a risk that is unique to a distribution company providing POLR service and therefore it is not a consequence of being required to provide POLR service.

Q16. IS THE COMPANIES' ALLEGED INABILITY TO HEDGE THEIR RISK VIA FORWARD SALES A MIGRATION RISK?

A16. No. That is a separate issue that requires a determination of the revenue the Companies could potentially receive from capacity and energy sales if they did not have the POLR obligation. It is not associated with the risk of customers switching to a CRES provider. I further explain this issue later in my testimony.

Q17. WHAT WOULD A PAYMENT THAT COMPENSATES THE COMPANIES FOR THE RISK OF REVENUE LOSS DUE TO CUSTOMER SWITCHING REPRESENT?

A17. Such a payment would essentially compensate the Companies for their risk of being non-competitive in the retail market and would advantage the Companies over their competitors. There is no reason for the Commission to favor one generation competitor in the market (in this case a distribution company) over another competitor.

B. THE COMPANIES WILL BE FULLY COMPENSATED FOR THEIR POLR COSTS UNDER THEIR SSO RATES EVEN WITHOUT THE POLR RIDER.

Q18. WHAT COSTS COULD THE COMPANIES INCUR AS A RESULT OF THE POLR OBLIGATION?

A18. Upon a customer's return from CRES service, the Companies could incur incremental capacity and energy costs due to the incremental increase in load associated with a returning customer; however, as I discuss below, the Companies will be fully compensated for these incremental costs under their SSO rate even without the POLR rider.

Q19. HOW DID YOU DETERMINE THAT THE COMPANIES ARE FULLY COMPENSATED FOR THEIR POLR COSTS THROUGH THE SSO RATE?

A19. A customer returning from CRES will pay the SSO generation rate. The potential negative impact associated with a returning customer arises because a customer could return at a time when the cost of producing/purchasing power is higher than that assumed when the SSO rate was developed.[16] The Companies may have a negative financial impact from being the POLR only if there is a cost of providing service to a returning customer that is not already recovered through the remainder of the SSO rate structure.

Q20. ARE INCREMENTAL CAPACITY COSTS ASSOCIATED WITH A RETURNING CUSTOMER FULLY RECOVERED VIA THE SSO RATE?

A20. Yes. The Companies' SSO rates fully compensate the Companies for their cost of capacity to serve a customer. In compliance with PJM Fixed Resource Requirement ("FRR") capacity obligations the installed capacity that will be used to supply customer load (including both shopping and non shopping load) must be identified approximately three years in advance.[17] This means that the capacity resources required during the ESP period were known at the time of the ESP filing and the Companies were well positioned to estimate their cost of capacity and incorporate that cost into their SSO rate. If the capacity costs associated with serving a customer were not being fully collected via the SSO rate, the Companies would have quite logically requested a higher SSO rate in order to obtain

[16] It should also be noted that a customer could return at a time when the cost of producing/purchasing power is lower than what was assumed when the ESP rate was developed. As I note later in my testimony customers make switching decisions for a variety of reasons.

[17] Reliability Assurance Agreement Among Load Serving Entities in the PJM Region Effective Date 2/14/2011 available on the PJM website at www.pjm.com.

adequate compensation. Since capacity costs are fully collected in the SSO rate, the capacity cost associated with a returning customer is fully collected. In addition, capacity costs are a component of the FAC rider so if there were unanticipated capacity costs associated with a returning customer those costs would be automatically collected via the FAC.[18] Thus, there is no need for a separate POLR rider to compensate the Companies for the capacity costs of a returning customer.

Q21. ARE INCREMENTAL ENERGY COSTS ASSOCIATED WITH A RETURNING CUSTOMER FULLY RECOVERED VIA THE SSO RATE?

A21. Yes. The potential for incremental energy cost could arise due to increases in the cost of fuel and purchased power relative to those costs assumed in the development of the SSO rate; however any increases in the cost of fuel or purchased power (including the capacity component of purchased power) would be collected through the FAC rider. Since fuel and purchased power costs are fully collected via the FAC rider, the energy costs associated with a returning customer are fully collected. Thus, there is no need for a separate POLR rider to compensate for the energy costs of a returning customer.

[18] See Direct Testimony of Philip J Nelson on Behalf of Columbus Southern Power Company and Ohio Power Company in Case No. 08-917-EL-UNC, filed July 31, 2008, for a complete description of the costs recovered via the FAC rider.

Q22. HOW DOES THE FAC RIDER IMPACT A SCENARIO IN WHICH MARKET PRICES RISE AND CUSTOMERS RETURN FROM CRES SERVICE?

A22. The FAC rider permits the Companies to pass changes in fuel and purchased power (including capacity) costs through to customers. In effect the Companies provide customers with a variable price that rises as market prices for fuel and purchased power rise. Under a rising market price scenario, customers who return to SSO rates pay prices which are adjusted upward (along with customers that never switched).

Q23. ARE YOU SAYING THERE IS NO ECONOMIC RISK ASSOCIATED WITH PROVIDING POLR SERVICE?

A23. There is an economic risk associated with POLR service (i.e., the incremental cost of serving a returning customer), but it is not the Companies that bear the risk. Instead the Companies' SSO customers bear the POLR risk because the increased costs associated with a returning customer are collected through the FAC.

Q24. DOES THE POLR CHARGE THAT CUSTOMERS ARE CURRENTLY PAYING ELIMINATE THE POLR RISK THAT CUSTOMERS ARE CURRENTLY BEARING OR COMPENSATE CUSTOMERS FOR THE RISK THAT THEY ARE BEARING?

A24. No. The POLR charge is revenue that flows to the Companies. POLR revenue does not flow to the customers. Also, there is no mechanism in place that would

eliminate the pass through of costs that may exceed those assumed in the SSO rate should a customer return from CRES service.

Q25. IS A POLR RIDER NECESSARY IF THE INCREMENTAL COST ASSOCIATED WITH THE RETURN OF A SWITCHING CUSTOMER IS ZERO?

A25. No. The Companies are not at risk of losing money due to the return of a customer. Therefore, there is no need for a POLR charge that would collect revenue from customers for the Companies over and above the rest of their SSO pricing structure.

V. THE BLACK MODEL

A. INTRODUCTION AND SUMMARY

Q26. HOW DID THE COMPANIES COMPUTE THEIR PROPOSED POLR CHARGE?

A26. The Companies originally used the Black option pricing methodology to compute POLR charges for the 2009-2011 ESP in this case. Companies' witness Thomas, in her direct testimony in this remand phase, subsequently introduced the results of a "constrained option model" which she claims incorporates the impact of tariff

based constraints on customer switching.[19] Ms. Thomas also sponsors this constrained option model in her direct testimony in 11-346-EL-SSO, et al.[20] In her testimony in that case she stated that: "Both models rely on the same conceptual framework and the same set of model variables. The only difference is the inclusion of the switching constraints."[21] Additionally, Ms. Thomas testifies that the POLR produced by the original unconstrained model is appropriate for the remainder of 2011. Accordingly, I have focused most of my discussion on the original "unconstrained" Black model recognizing that my observations regarding that model also apply to the Companies' constrained model.

Q27. FOR CLARITY PLEASE IDENTIFY WHICH MODEL WAS USED TO PRODUCE EACH SET OF POLR VALUES PRESENTED BY COMPANIES' WITNESSES BAKER AND THOMAS?

A27. The unconstrained Black model was used by AEP Ohio witness Baker to produce all of his POLR calculations and exhibits in the original ESP case. In her remand testimony, Ms. Thomas used the unconstrained model to produce Exhibit LJT-3 and the constrained model to produce Exhibit LJT-4.

Q28. WHAT IS THE BLACK MODEL?

[19] Thomas direct testimony page 14.

[20] Ms. Thomas confirmed during deposition in this remand proceeding that the constrained option methodology which she introduces in this case is the same constrained option methodology which she uses in the 11-346-EL-SSO, et al. case. See Deposition of Laura J. Thomas dated June 16, 2011, page 71, lines 10-13.

[21] See Thomas Direct Testimony in Case Nos. 11-346-EL-SSO, et al at page 18.

A28. As described by the Companies in response to an interrogatory: "The phrase 'Black Scholes model' is commonly used to refer to the pioneering option pricing theory and model developed by Robert C. Merton, Myron S. Scholes, and Fisher Black. The derivation of that model as it is applied to options on futures contracts are technically referred to as the 'Black model.'"[22] A stock option gives its holder the right to sell (put) or buy (call) a stock at a specified price at a specified point in the future.[23] There are five inputs to the Black model. The inputs to the model and the information that the Companies used for each input are listed below.[24]

- Stock price: In place of the stock price, the Companies used their proposed Competitive Benchmark Price (which was the Companies' estimate of future retail market price).
- Strike (or Exercise) Price: In place of the strike price, the Companies used a fixed value representing their SSO or ESP (retail) price.
- Stock Price Volatility: In place of stock price volatility, the Companies used their estimate of "the volatility of the futures contract for the term 2009-2011."

[22] Response to OCC INT-183 in Case 11-346-EL-SSO, et al.

[23] A "European" stock option must be exercised (or struck) at the end of the option term. An "American" stock option may be exercised at any time up to the end of the option term. During her June 16, 2011 deposition, Ms. Thomas confirmed that the Companies calculated the value of a European option. See page 67, lines 18-22 of Thomas deposition.

[24] See J. Craig Baker Direct Testimony filed July 31, 2008 at pages 31 and 32. See also Attachment MAT-2, AEP Ohio Responses to OCC INT 4-106 and 4-109. Ms. Thomas subsequently introduced updated values for market price and SSO price as part of her testimony in the remand phase of this case.

- Purchase and expiration dates (Term of the Options Contract): The Companies claim to have used the term of the ESP, calendar years 2009-2011. The implied term is therefore 36 months or 3 years.
- Interest rate: The Companies used a rate of 3.5% based on LIBOR.

Q29. WHAT IS YOUR CONCLUSION REGARDING THE USE OF THE BLACK MODELS, BOTH UNCONSTRAINED AND CONSTRAINED, TO COMPUTE POLR?

A29. The Companies' use of the Black model to compute POLR is fatally flawed because of numerous programming, logic, and input errors. I describe these errors in detail below. In summary these errors include:

- Both models completely ignore critical non-price considerations that influence the customer's decision to switch suppliers.
- The inputs to the Black model are not appropriate for determining either 1) the Companies' true cost of providing POLR service, 2) the value of the POLR option to the customer, or 3) the Companies' alleged costs related to shopping risk.
- The Companies made significant errors in their volatility and date assumptions which, if corrected, would reduce the Black derived estimate of POLR charges by at least 80 percent and possibly reduce it to zero.

B. THE BLACK MODEL IGNORES CRITICAL NON-PRICE FACTORS.

Q30. DOES THE BLACK MODEL ACCOUNT FOR RELEVANT NON-PRICE FACTORS RELATED TO CUSTOMER SWITCHING?

A30. No. The model assumes that the decision to switch is solely a function of the relationship between the SSO price and the competitive retail market price. Implicitly the model assumes that all customers (100 percent) will switch for as little as a penny difference in generation prices which is less than two-hundredths of a percent difference when one considers that retail generation prices exceed $50 per MWh. In reality a customer's decision to switch generation suppliers is much more complex. The model ignores non-price considerations such as: customer loyalty to the Companies' brand; the efforts of the Companies' Customer Services and Marketing Department to communicate directly with customers who are considering switching,[25] including proactive communications with customers;[26] the fact that CRES suppliers may not be targeting certain customers; the degree to which the customer is aware of his choices; the degree to which the customer understands or is confused by his choices; the customer's perception of risk and his degree of risk tolerance; and the effort associated with researching prices and executing a transaction. These are critical factors that

[25] See Attachment MAT-3, Response to OCC INT 2-48 in Case 11-346-EL-SSO, et al.

[26] See Attachment MAT-4, Response to OCC INT 2-49 in Case 11-346-EL-SSO, et al.

influence the probability a customer will switch suppliers, but they are completely unaccounted for in the Black model.

Q31. IS THERE EVIDENCE THAT THESE FACTORS ACTUALLY IMPACT THE DECISION TO SWITCH?

A31. Yes. The PUCO's quarterly survey of switch rates from EDUs to CRES suppliers indicates that only portions of the Companies' customer rate classes have switched suppliers.[27] If, as the Black model assumes, retail prices were the sole determinant of switching, then one would expect that all customers in a rate class would switch to a CRES supplier simultaneously. Since not all customers in a class have switched there must be non-price factors such as those noted above which are influencing the switch decision.

C. THE BLACK MODEL DOES NOT ACCURATELY ESTIMATE THE COMPANIES' TRUE COST OF PROVIDING POLR SERVICE.

Q32. DOES THE BLACK MODEL ACCURATELY ESTIMATE THE COST OF THE POLR OBLIGATION TO THE COMPANIES?

A32. No. The Black model does not quantify the true cost of the POLR obligation to the Companies. The true cost of POLR is the cost to provide incremental capacity and energy to a returning customer over and above the costs already recovered in

[27] See Attachment MAT-5 for a copy of the preliminary December 31, 2010 report.

SSO rates. In order to make that quantification, the model would need to explicitly account for the manner in which capacity and energy costs are collected from customers in SSO rates, including the impact of the FAC rider. The Black model ignores these issues and instead relies solely on retail (SSO and market) price inputs which include multiple cost components that are irrelevant to the true cost of the POLR obligation.[28]

D. THE BLACK MODEL DOES NOT ACCURATELY ESTIMATE THE VALUE OF THE "POLR OPTION" TO THE CUSTOMER.

Q33. DOES THE BLACK MODEL ACCURATELY REFLECT THE VALUE OF THE POLR "OPTION" TO THE CUSTOMER?

A33. No. First of all, for POLR to have the option value implied by the Black model, the customer must be able to return at a fixed price as assumed by the model. This is obviously not the case in reality due to the variable nature of the FAC and other riders that impact the total SSO price. Second, as explained below, the model returns a nonsensical result with respect to the value to the customer.

Q34. WHY DO YOU CONSIDER THE RESULT NONSENSICAL WITH RESPECT TO THE VALUE OF THE POLR "OPTION" TO THE CUSTOMER?

A34. From a customer's viewpoint the value of returning to the SSO price actually decreases as the SSO price increases -- that is, the more the customer has to pay

[28] See J. Craig Baker Direct Testimony, July 31, 2008, page 13, for a list of the nine cost components which make up the Companies' estimate of competitive retail cost.

upon his return the less valuable the ability to return will be to the customer. However, under the Companies' Black model, if you were to increase the SSO price and hold all other inputs constant the model will tell you that the POLR charge should increase.

Q35. CAN YOU PROVIDE A NUMERICAL EXAMPLE OF THIS PROBLEM?

A35. Yes. If we were to calculate the value of a put option using the Companies' unconstrained Black model and the Companies' POLR input assumptions for Ohio Power residential customers, the value of a put option with a three year term, market price of $89.60/MWh and SSO price of $46.40/MWh, is $2.50/MWh assuming an interest rate of 3.5% and a volatility of 33.3%.[29] Raising the SSO price to $66.40/MWh would increase the calculated value of the put option (and thus the POLR charge) to $8.31/MWh. In other words, in this example increasing the SSO price (the price that a customer would return to) by $20/MWh would increase the POLR charge to the customer by $5.81/MWh. The model incorrectly concludes that the more the customer has to pay upon his return, the more valuable the ability to return will be to the customer. That is nonsensical and therefore the Black model does not accurately reflect the value of the POLR option to the customer.

[29] The Companies have reported the value as $2.53/MWh. The model provided by the Companies to OCC produces a value of $2.50/MWH for the same inputs.

Q36. IF IT COULD BE ACCURATELY CALCULATED, SHOULD THE COMPANIES BE AWARDED POLR REVENUE EQUAL TO THE VALUE OF THE POLR OPTION TO THE CUSTOMER?

A36. No. First, the Companies as monopoly providers of the POLR service should not be allowed to charge a value-based rate for that service, as OCC Witness Duann testifies. Second, any POLR costs are actually borne by SSO customers, not the Companies. If the Commission decides to base the POLR charge on perceived value to the customer, which OCC recommends against, then that value should flow to the parties bearing the POLR cost -- the SSO customers.

E. THE BLACK MODEL DOES NOT ACCURATELY ESTIMATE THE COMPANIES' ALLEGED SHOPPING RISK.

Q37. WHAT IS MIGRATION RISK AND SHOPPING RISK?

A37. As I discussed earlier, in this case migration risk was the term used by Staff witness Cahaan to describe the risk that a customer could leave and take service from a CRES. That term was subsequently used in the Commission's Opinion and Order. Companies' remand witness LaCasse uses the term "shopping risk" to describe the risk that customers will leave when market prices drop below SSO prices and return when market prices exceed SSO prices.

Q38. IS MIGRATION RISK A POLR RISK?

A38. No. As I discussed earlier, migration risk is a competitive business risk and is not related to the POLR obligation.

Q39. IS SHOPPING RISK A POLR RISK?

A39. As Ms. LaCasse has defined the term,[30] the portion of shopping risk related to the return of a customer to SSO service is POLR risk. The portion of shopping risk related to a customer leaving to take service from a CRES is, as I noted above, competitive business risk, and is not POLR related.

Q40. DOES THE BLACK MODEL ACCURATELY ESTIMATE THE SHOPPING RISK WHICH THE COMPANIES CLAIM IS PART OF THE COST ASSOCIATED WITH THE POLR OBLIGATION?

A40. No. Ms. LaCasse says that: "Absent its POLR obligations, an EDU that uses its own generation assets would be in a position to manage its generation output optimally on a forward basis. A significant aspect of optimally managing generation output is hedging the financial exposure to the spot market through forward sales."[31] In other words, if the Companies were relieved of their POLR obligation they could optimize their generation output by locking in long term non-jurisdictional capacity and energy sales, and avoid the risk of losing revenue if market prices drop. Put another way, shopping risk is the loss of the opportunity to hedge.

[30] LaCasse Direct Remand Testimony, page 5, line 14 to page 6, line 3.

[31] LaCasse Direct Remand Testimony, page 6.

If one were to accept the proposition that the lost hedge opportunity is a proper component of POLR cost, then one would have to determine whether the Companies could really lock in better deals absent the POLR obligation. This would require a comparison of the capacity and energy revenues derived from SSO retail sales versus the capacity and energy revenues that could potentially be derived from a non-jurisdictional ("off system") sale alternative.[32] The Black model does not perform that analysis.

Q41. HOW DO THE CAPACITY REVENUES FROM THOSE TWO SCENARIOS COMPARE?

A41. During the ESP period the ability to sell capacity is limited by FRR capacity obligations as defined in the PJM RAA.[33] Under FRR rules, designated capacity must be available to serve load in the zone, and therefore the ability to lock in a long term capacity sale at a superior price is not possible. Even if capacity sales outside of the zone were allowed, the PJM capacity prices in effect for the proposed ESP period would yield revenues far below those recovered via SSO rates. The Companies claim that their capacity costs (fully recovered via the SSO rate) are in excess of $300 per MW-day.[34] During the ESP term the PJM capacity

[32] Dr. Makhija also proposed the use of a "with POLR obligation" versus "without POLR obligation" comparison to define the cost impact of the POLR obligation. See Makhija direct remand testimony page 3.

[33] Reliability Assurance Agreement Among Load Serving Entities in the PJM Region Effective Date 2/14/2011 available on the PJM website at www.pjm.com.

[34] See page 4 of the Ohio Power Company's and Columbus Southern Power Company's Initial Comments in Case No. 10-2929-EL-UNC, filed January 7, 2011.

prices which would be applicable to a sale of this capacity never exceeded $174.29 per MW-day and dipped as low as $102.04 per MW-day.[35]

Q42. HOW DO THE ENERGY REVENUES FROM THOSE TWO SCENARIOS COMPARE?

A42. With respect to energy sales, the Companies' ability to sell off-system at prices superior to the revenues embedded in their SSO rates is subject to several considerations, including the amount of energy related revenue embedded in the SSO rate versus wholesale market prices at the beginning of the ESP period and any constraints or profit sharing implications associated with the AEP Pool agreement.

Q43. DOES THE BLACK MODEL CAPTURE THESE CONSIDERATIONS?

A43. No. The Black model is performing a calculation of expected lost revenues at the retail level. The model simply compares retail prices (SSO and estimated retail market benchmark) and fails to address the considerations that I have addressed above. Therefore, the Black model does not accurately estimate the lost hedge opportunity which the Companies claim is part of the shopping cost associated with the POLR obligation.

[35] See Attachment MAT-6.

F. THE COMPANIES MADE SIGNIFICANT ERRORS IN THEIR VOLATILITY AND DATE ASSUMPTIONS WHICH, IF CORRECTED, WOULD REDUCE THE BLACK DERIVED ESTIMATE OF POLR BY AT LEAST 80 PERCENT AND POSSIBLY REDUCE IT TO ZERO.

Q44. IF THE COMMISSION USES THE COMPANIES' MODELING FOR CALCULATING POLR CHARGES (REJECTING YOUR CONCLUSION THAT THE MODEL IS FATALLY FLAWED), HAVE THE COMPANIES USED THE CORRECT INPUT ASSUMPTIONS?

A44. No. The Companies made critical errors regarding the assumptions for volatility and purchase/expiration dates. Correction of the Companies' input errors would reduce the Black calculated POLR charge by at least 80 percent and possibly reduce it to zero. Please note that my discussion regarding the correction of these errors does not mean that I endorse the use of the Black model. In fact, I do not support the use of the unconstrained Black model or the Companies' "constrained option model" to calculate POLR charges.

Q45. WHAT IS THE VOLATILITY ERROR?

A45. In the Black model, "volatility" refers to the extent a stock's price varies over time. The Companies calculated the volatility value they used in the Black model using the historic volatility of market quotes for forward energy prices.[36] The

[36] See J. Craig Baker direct testimony, filed July 31, 2008, page 14.

consequence is that the Companies computed the volatility of just one of the nine cost components that make up the Companies' forecasted market price (the simple swap component) and assumed that the volatility of this single component was a good proxy for the volatility of the total market price. There is no basis for assuming the volatility of just one component of the forecasted market benchmark price is a reasonable estimate for the volatility of all nine of the components which make up the total benchmark price. This is an error.

Q46. WHY IS IT UNREASONABLE TO ASSUME THAT THE VOLATILITY OF THE ENERGY COMPONENT (SIMPLE SWAP COMPONENT) IS A GOOD PROXY FOR THE OTHER COMPONENTS OF THE BENCHMARK PRICE?

A46. To illustrate my point, let's review some of the specific cost components that the Companies used to develop their estimate of the competitive benchmark price. The capacity component of the benchmark price is a fixed annual cost which is determined via a PJM administered capacity auction held well in advance of the delivery year. The administrative cost component was assumed to be a fixed value and there is no logical tie between administrative costs and the volatility of energy prices. These two components make up sixteen to twenty-one percent of the benchmark price by customer class.[37] The remaining components likely exhibit some degree of market volatility, but the Companies have presented no statistical evidence or explanation for why these components would exhibit the

[37] Attachment MAT-7 Components of Competitive Benchmark Price.

same volatility characteristics as the simple swap (energy) component. As a result, the volatility number that the Companies used in their Black model is overstated. This is important because the Black model is very sensitive to the volatility assumption.

Q47. WHAT SHOULD THE COMPANIES DO TO CORRECT THE VOLATILITY ERROR?

A47. The Companies should scale down the volatility input value to reflect the fact that the data that they used to develop that input value only applies to the simple swap component. Since the simple swap component of the benchmark price is approximately 67 percent of the total benchmark price the volatility input should be 22.3 percent, not 33.3 percent. Using a volatility of 22.3 percent in the Companies' unconstrained model would reduce the calculated POLR charge by approximately 73 percent.[38]

Q48. WHAT DATE ERRORS DID THE COMPANIES MAKE?

A48. The Companies made two date related errors. The first has to do with the length, or term, of the option. The second has to do with when customers could exercise the option which I refer to as the purchase/expiration date error.

Q49. WHAT IS THE TERM RELATED DATE ERROR?

[38] See Attachment MAT-8.

A49. It appears that the unconstrained option values computed by the Companies are based on a term of 41 months, not the length of the ESP (36 months) that the Companies claim. The July 30, 2008 date listed in the "Today" row of the Companies' workpapers is used along with the "Maturity" date of December 31, 2011 to compute the term of the option.

Q50. WHAT IS THE IMPACT OF THE TERM RELATED DATE ERROR?

A50. Using the Companies' Excel spreadsheet and replacing the July 30, 2008 value in the "Today" row with the start date of the ESP period (January 1, 2009) would reduce the calculated POLR costs by approximately 16 percent.[39]

Q51. WHAT IS THE PURCHASE/EXPIRATION DATE ERROR?

A51. The Companies have been charging customers for the cost of a purported 36 month European option every month of the 2009-2011 ESP period. This approach does not make sense because a European option can only be exercised at the end of the option term.[40] In effect, while customers actually have the right to return to SSO service at any time during the ESP period, the Companies are asking customers to pay for "return to SSO" rights which theoretically cannot be exercised during the term of this ESP.

[39] See Attachment MAT-8.

[40] An American option can be exercised at any point up to the expiration date of the option.

Q52. CAN YOU PROVIDE AN EXAMPLE OF THE PURCHASE/EXPIRATION DATE ERROR?

A52. Yes. As an example, the term of this ESP period is January 2009 through December 2011. If a customer were to pay for a European option based on a 36 month term in February 2009 he would have the right to exercise that option in January 2012. If that customer were to pay for a European option based on a 36 month term in June 2011 he would have the right to exercise that option in May 2014. As these examples illustrate, the exercise dates for the options that customers are paying for are well outside of the proposed ESP period and, therefore, there is a significant flaw with respect to the date assumptions.

Q53. WHY MUST THE EXERCISE DATES FALL WITHIN THE TERM OF THE PROPOSED ESP?

A53. To assume an exercise date that extends beyond the end of the proposed ESP period would imply an ESP price commitment that has not been made and estimates of market prices for which there is no supporting evidence. The Companies have not committed to a strike price (i.e., SSO price) beyond the end of the proposed ESP period nor have they estimated market prices beyond the end of the ESP period.

Q54. HAVE THE COMPANIES' WITNESSES BEEN ABLE TO EXPLAIN WHY IT WOULD BE CORRECT TO CHARGE CUSTOMERS MONTHLY FOR THE COST OF A 36 MONTH EUROPEAN OPTION?

A54. During her deposition in the remand proceeding, Ms. Thomas stated that she believed that using a European option to calculate POLR expenses and charging that value monthly for the duration of the ESP period was theoretically correct, however she could not explain what her belief was based on.[41] When asked about the Companies' use of the model Dr. Makhija said that he had not examined the Companies' implementation of the model but raised the possibility of using an American option.[42] When asked, Ms. LaCasse was not familiar with the terms "European put option" or "American option."[43] Likewise, Ms. Thomas could not explain an "American option."[44]

Q55. COULD THE COMPANIES HAVE USED AN AMERICAN OPTION CALCULATION TO CORRECT THE PURCHASE/EXPIRATION DATE ERROR?

A55. Yes. The Companies could have calculated the cost of an American option that would have given a customer the right to strike at any time during the ESP period and could have divided the cost of that option by 36, which is the number of months in the ESP period, in order to arrive at the appropriate monthly cost.

[41] Thomas remand deposition, page 71, lines 1-9.

[42] Makhija remand deposition, page 56, line 21 to page 57, line 4.

[43] LaCasse remand deposition, page 65, lines 12-24. It is worth noting that European and American options have existed since at least 1973 when Black and Scholes defined them in the publication which described their option pricing methodology.

[44] Thomas remand deposition, page 79, line 22 to page 80, line 2.

Q56. WHAT WOULD BE THE IMPACT ON THE CALCULATED POLR CHARGE IF THE COMPANIES HAD USED THE COST OF AN AMERICAN OPTION SPREAD OVER THE ESP PERIOD?

A56. The calculation of an American option requires the use of a binomial model. The Chicago Board Options Exchange ("CBOE") website provides a tool for calculating the value of both European and American options.[45] My use of the CBOE tool indicated that the cost of an American option would not be significantly greater than the cost of a European option. If that were true, then calculating the cost of an American option and spreading that cost over 36 months would significantly reduce the calculated POLR charge. However, I cannot independently verify the CBOE calculations and I offer them only as an example of the potential impact.

Q57. WHAT IS THE COMBINED IMPACT OF THE VOLATILITY AND DATE ERRORS ON THE BLACK BASED POLR CHARGE?

A57. Combining the correction of the term related date error with correction of the volatility error would reduce the Black calculated POLR charge by approximately 79 percent.[46] Correcting the purchase/expiration date error on top of that has the potential to drive the Black calculated POLR charge to zero.

[45] See www.cboe.com.

[46] See Attachment MAT-8.

Q58. WERE POLR CHARGES THAT WERE COLLECTED FROM CUSTOMERS PRIOR TO THE REMAND OF THIS CASE BASED ON THE UNCONSTRAINED BLACK MODEL, WHICH AS YOU HAVE DISCUSSED, CONTAINS SIGNIFICANT ERRORS?

A58. Yes. That model was the basis for the POLR charges that were collected from customers during ESP period and are the basis for the POLR charges that are being collected today.

Q59. DOES THE COMPANIES' "CONSTRAINED OPTION MODEL" RESOLVE THE PROBLEMS THAT YOU HAVE IDENTIFIED WITH THE BLACK MODEL?

A59. No. The constrained option model uses the same basic inputs and logic as the unconstrained Black model. As a result it does not account for non-price factors which influence customer switching decisions. It does not accurately estimate the value of the POLR option to the customer, the true cost of the POLR obligation to the Companies, or the Companies' alleged lost hedge opportunity cost. Additionally, Ms. Thomas used the same flawed volatility value in the constrained model that was used in the original unconstrained Black model sponsored by AEP Ohio witness Baker in the ESP case. The only error that the constrained model could potentially resolve is the date error; however, I am not convinced that the constrained model corrects the date error.

Q60. WHY ARE YOU NOT CONVINCED THAT THE CONSTRAINED OPTION MODEL RESOLVES THE DATE ERROR?

A60. Based on a description of the constrained model which Ms. Thomas provides in her remand deposition, it appears that the model computes the values of a series of European options with lengths varying from one month up to the full term of the ESP period and then averages the results.[47] If this is true, the model is effectively computing the equivalent of a European option with a term of half of the ESP period. In the last 18 months of the ESP the strike date will still fall outside of the ESP period. As a result, the constrained option model may solve half of the problem, but it doesn't solve the whole problem.

VI. COMMENTS ON THE TESTIMONIES OF THE COMPANIES' POLR WITNESSES

Q61. ARE THERE ANY COMMENTS THAT YOU WISH TO MAKE REGARDING THE TESTIMONY OF THE COMPANIES' THREE POLR WITNESSES?

A61. Yes. First, I would like to observe that none of the three witnesses makes any attempt to identify tangible, independently verifiable, out of pocket expenses associated with the Companies' POLR obligation. In fact, Ms. Thomas stated in her deposition that she cannot determine POLR-related out of pocket costs on either a forward looking basis or a historical basis, nor does she believe anyone

[47] Thomas deposition, page 72, lines 2-12.

else in the Companies could do so.[48] Second, none of the three witnesses incorporated the impact of the FAC rider, FRR capacity obligations, or CRES capacity payments into their analysis. In fact, during deposition, Dr. LaCasse and Dr. Makhija professed almost no knowledge of those issues.[49]

Q62. DO YOU AGREE WITH DR. MAKHIJA'S ASSERTION THAT THE "VALUE OF THE [POLR] OPTIONS GIVEN TO THE CUSTOMERS EQUALS THE POLR COSTS TO THE UTILITY"[50]?

A62. No. Unless actual cash is changing hands, the cost to the provider and the value to the recipient are not necessarily equal. Any child who has received a pair of socks as a Christmas present can vouch for that. A "$5 off" dinner coupon is not worth the equivalent of $5 in cash to its recipient if the recipient has to spend $5 in gasoline to drive to the restaurant or if he doesn't like the restaurant's food. Multiple considerations influence value. For the segment of customers who have no intention (or no ability) to switch electric suppliers the POLR option is the equivalent of a $5 off coupon that will never be cut out of the newspaper.

[48] Thomas remand deposition, page 33 lines 4-16.

[49] LaCasse remand deposition, page 32, line 10 to page 33, line 12, and page 59, lines 20-23. Also see Makhija remand deposition, page 60, line 21 to page 61, line 14, and page 66, lines 12-24.

[50] Makhija Direct Remand Testimony filed June 6, 2011, page 3, lines 20-22.

VII. CONCLUSION

Q63. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANIES' PROPOSED POLR RIDER?

A63. I recommend that the Commission reject the Companies' request in this remand proceeding to continue charging customers a POLR rider for the remainder of 2011, because any POLR costs to the Companies are already recovered from customers through other SSO rate mechanisms and have been since the beginning of the ESP period. In other words, the POLR charge should be zero going forward, the POLR revenues that have been collected since the beginning of the ESP period were unwarranted and should be adjusted,[51] and the POLR revenues being collected "subject to refund" should be completely returned to customers.

Q64. IF THE COMMISSION WERE TO APPROVE A POLR RIDER FOR THE REMAINDER OF 2011, WHO SHOULD RECEIVE THE REVENUE FROM THAT RIDER?

A64. If the Commission approves a POLR rider then the revenues generated by the rider should be used to offset FAC rider charges to the Companies' customers. This is because SSO customers already pay the entire cost of POLR via the FAC rider.

[51] See direct testimony of OCC witness Duann for a discussion of the appropriate adjustments.

Q65. WHAT IS YOUR RECOMMENDATION REGARDING THE USE OF THE "UNCONSTRAINED OPTION MODEL"?

A65. I recommend that the Commission reject the use of the unconstrained Black model because the model does not accurately estimate the cost of POLR to the Companies or the value of POLR to customers. If the Commission were to accept the continued use of the Black model, which I do not recommend, the Commission should order the Companies to make substantial corrections to the values that the Companies used as inputs to the model.

Q66. WHAT IS YOUR RECOMMENDATION REGARDING THE USE OF THE "CONSTRAINED OPTION MODEL"?

A66. I recommend that the Commission reject the use of the constrained option model because it uses the same basic logic and has the same shortcomings as the unconstrained Black model. If the Commission were to accept the use of the constrained option, which I do not recommend, the Commission should order the Companies to make substantial corrections to the values that the Companies used as inputs to the model. The Commission should also order the Companies to fully disclose the calculations used in the model to PUCO Staff and intervenors prior to the constrained model's use to set the POLR rate.

Q67. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?

A67. Yes it does. However I reserve the right to incorporate new information that may subsequently become available.

COLUMBUS SOUTHERN POWER COMPANY'S
AND OHIO POWER COMPANY'S RESPONSE TO
THE OFFICE OF THE OHIO CONSUMERS' COUNSEL
DISCOVERY REQUEST
CASE NO. 11-346-EL-SSO AND 11-348-EL-SSO
FOURTH SET

INTERROGATORY

INT-149. On page 5, lines 13-15 of Mr. Roush's testimony, there is a reference to "AEP Ohio's obligations under the Fixed Resource Requirement." Please identify and explain what these obligations are; the basis of the obligations; and the ways that AEP Ohio fulfills these obligations

RESPONSE

The referenced obligations are pursuant to the PJM Interconnection, LLC Reliability Assurance Agreement which is available on PJM's website (www.pjm.com). As referenced on page 5 of Company witness Roush's testimony, AEP Ohio can meet part of its capacity obligations under the Fixed Resource Requirement alternative under the Reliability Assurance Agreement through the registration of customers taking interruptible service from the Company in PJM's Emergency Demand Response Program.

Prepared By: David M. Roush

AEP OHIO'S RESPONSE TO
THE OFFICE OF THE OHIO CONSUMER COUNSEL
INTERROGATORY REQUESTS
FOURTH SET
CASE NO. 08-917-EL-SSO & CASE NO. 08-918-EL-SSO

INTERROGATORY REQUEST NO. 4-106.

For the Black-Scholes analysis:

a. What were the expected volatility assumptions made and the basis of those assumptions?
b. What was the expected dividend yield and the basis of those assumptions?
c. What was the expected term of the option and the basis of that assumption?

RESPONSE:

a. In order to base the Company's calculations on accurate, comprehensive and verifiable data sources, published historical prices were used to calculate the required volatility parameter. To evaluate the volatility to be used for the 2009-2011 option term in the Black-Scholes model, historical market quotes for forward prices from 2002, 2003, 2004, 2005, 2006, and 2007 were obtained.

AEP-Dayton forward price quotes were not available in July prior to 2006. It was determined that the longer price history and the deep liquidity at PJM-West Hub provided appropriate price quotes for the pre July 2006 period.

b. The expected dividend yield was zero. The Black-Scholes model is useful for both dividend paying and non-dividend paying contracts. There is no corresponding cash flow in electricity contracts that would equate to a dividend.

c. The term of the calculated option was the three-year term covered by the Company's proposed ESP. The option term was selected in order to maintain an 'apples' to 'apples' comparison with the ESP term.

Prepared by: J. C. Baker

**AEP OHIO'S RESPONSE TO
THE OFFICE OF THE OHIO CONSUMER COUNSEL
INTERROGATORY REQUESTS
FOURTH SET
CASE NO. 08-917-EL-SSO & CASE NO. 08-918-EL-SSO**

INTERROGATORY REQUEST NO. 4-109.

What were the assumptions made in the Black-Scholes Model for:

a. the current price of the underlying stock?
b. the exercise price and the basis of the assumption?
c. the risk-free interest rate and the basis of the assumption?

RESPONSE:

a. The current price of the underlying stock is equivalent to the market price of electricity. Consistent with the context of the Company's ESP, the relevant price of power was the price of 'full-requirements' power for the calendar years 2009 through 2011 period, which in order to maintain consistency in our calculations, the market price of the calendar years 2009 through 2011 period power used in the Black-Scholes model was the same price as calculated by our competitive benchmark model presented on pages 7-13 of Witness Baker's direct testimony.

b. The exercise price used in the Black-Scholes model for all three years was the year one amount of the Company's proposed ESP filing in order to arrive at a conservative option price.

c. The risk-free interest rate was determined by taking the average of the LIBOR rate for the calendar years 2009 through 2011 period that was being priced. LIBOR was selected as an appropriate measure because of its wide financial use as a 'risk-free' proxy and because of the widely available nature of its quotes.

Prepared by: J. C. Baker

**COLUMBUS SOUTHERN POWER COMPANY'S
AND OHIO POWER COMPANY'S RESPONSE TO
THE OFFICE OF THE OHIO CONSUMERS' COUNSEL
DISCOVERY REQUEST
CASE NO. 11-346-EL-SSO AND 11-348-EL-SSO
SECOND SET**

INTERROGATORY

INT-048 Referring to the October 19, 2010 Third Quarter Earnings Analysts Conference of AEP, the following statement was transcribed and attributed to Mr Hamrock: "But one of the things that our team has done is our customers nearly always reach out to our team Many of my colleagues have talked about the relationships that we have And customers when presented with these options and these opportunities to switch always come and ask how should I evaluate this And we want them to do that in the most informed way possible "

a. Please identify the division or department within AEP Ohio that would be interacting with customers who seek information on how to evaluate the switching options Identify the management employees in that division or department;

b Please identify how AEP Ohio assures that the customers referenced above make an informed evaluation about switching;

c Identify what documents are provided to customers referenced above that are used to assist them in making informed evaluation of the options discussed; and,

d Is it AEP Ohio's experience that the process described by Mr. Hamrock has reduced the shopping risks that AEP Ohio faces? If so, does the Black Scholes model take into account the reduced risks associated with these activities? Please indicate specifically how this is accomplished, if at all, in the Black Scholes model

RESPONSE

a Customer Services and Marketing is the department that is typically involved with such customer contacts The management for the group consists of Karen Sloneker, Customer Services and Marketing Director, and Greg Earl, Customer Services and Marketing Manager

INT-48 (CONTINUED)

b. The Company can't assure that customers are making an informed decision because all the Company can really do is attempt to make sure they understand their current Standard Service Offer, and more specifically, their 'Price to Compare " The Company educates customers about what is included in the "Price to Compare" and ensure that the "Price to Compare" is accurate based on their current usage and billing history with AEP Ohio.

c The information provided varies and depends on the customer's specific questions. The Company provides information verbally, or direct customers to where they can find information, such as AEP Ohio's web site or the PUCO web site

d No, the Company has not evaluated the impact of the communication on customer switching The constrained option pricing model used to determine the cost of the Company's POLR obligation is not based on qualitative factors

Prepared By: Karen L. Sloneker/Laura J. Thomas

**COLUMBUS SOUTHERN POWER COMPANY'S
AND OHIO POWER COMPANY'S RESPONSE TO
THE OFFICE OF THE OHIO CONSUMERS' COUNSEL
DISCOVERY REQUEST
CASE NO. 11-346-EL-SSO AND 11-348-EL-SSO
SECOND SET**

INTERROGATORY

INT-49. Referring to the October 19, 2010 Third Quarter Earnings Analysts Conference of AEP, the following statement was transcribed and attributed to Mr. Hamrock: "And so we're proactively reaching out to customers, making sure that they are making informed decisions. We think that will help with switching that will be very rational in the near term It will allow us to position more competitively in the longer term with those customers."

a Are the "proactive" efforts in reaching out to customers different from the efforts described when customers come to AEP with questions about how to evaluate their switching options? If so, please describe the efforts AEP has made to reach out to customers as referenced by Mr. Hamrock;

b Please identify the division or department within AEP Ohio that would be proactively reaching out to customers Identify the management employees in that division or department;

c Please identify how AEP Ohio identifies or targets customers that it should be proactively reaching out to with regard to switching What customers in particular are targeted and why?;

d Identify what documents are provided to customers that AEP Ohio is proactively reaching out to as referenced above;

e Is it AEP Ohio's experience that the proactive efforts described by Mr Hamrock have reduced the shopping risks that AEP Ohio faces? If so, does the Black Scholes model take into account the reduced risks associated with these activities? Please indicate specifically how this is accomplished, if at all, in the Black Scholes model?;

INT-049 (CONTINUED)

f Has the Company identified whether the efforts described by Mr. Hamrock have helped with switching so that it is "rational" in the near term?; and,

g. Please define "rational" switching as described by Mr Hamrock.

RESPONSE

a. Like the communications that occur when a customer contacts the Company, the proactive communications as referenced by Mr. Hamrock involve providing information to the customers to make sure they are making informed decisions The referenced proactive communications were initiated with customers who take service on the Company's GS-2 and GS-3 tariff to make sure they understood our 2011 ESP fuel adjustment clause impacts.

b See OCC INT-048 part a

c AEP Ohio initiates such communications based on specific facts and circumstances presented For example, in the Fall of 2010, the Company initiated a single, mass proactive communication to CSP, nonresidential customers served under the GS-2 and GS-3 tariffs These customers were selected because they were in the category of customers who were receiving inaccurate information from CRES providers or their marketers

d For the example listed in OCC INT-049 part c., the attached letters "OCC INT-049 Attachment 1.pdf" and "OCC INT-049 Attachment 2.pdf" were sent to unmanaged, CSP customers served under the GS-2 and GS-3 tariffs.

e The Company does not know if the letter had any impact on the shopping risks or not, though the numbers of shopping customers have continued to climb The constrained option pricing model used to determine the cost of the Company's POLR obligation is not based on qualitative factors

f No, the Company has not evaluated the impact of the communication on customer switching

g. "Rational" switching was intended to mean customers made switching decisions based on accurate information relative to the available options

Prepared By: Karen L Sloneker/Laura J Thomas

AEP OHIO®
A unit of American Electric Power

Dear Columbus Southern Power customer,

You may have recently heard or received inaccurate information from a Competitive Retail Energy Supplier or their energy marketer related to a chance to save on your electric bill. Some customers have been advised that AEP Ohio's Columbus Southern Power has announced a 6% price increase effective January 2011. **Columbus Southern Power does not intend to have any increases which will impact the "Price to Compare" in January 2011.** Columbus Southern Power does plan to file a request for an environmental carrying cost rider in February, 2011 that would likely take effect in July, 2011 resulting in expected increases of less than one percent of the total bill on an annual basis for most customers. If approved, this would be a slight increase over the current "Price to Compare."

In addition, some information associated with longer term offers from marketers may imply that there will definitely be increases that impact the "Price to Compare" in 2012 and 2013. It is premature to make assumptions about whether Columbus Southern Power's rates for 2012 or 2013 will increase or decrease.

Please contact your customer service representative by calling 1-800-277-2177 for more precise information about Columbus Southern Power tariffs and your "Price to Compare."

Sincerely,

Karen L. Sloneker

Karen L. Sloneker
AEP Ohio
Director - Customer Service and Marketing

Dear Columbus Southern Power customer,

You may have recently heard or received inaccurate information from a Competitive Retail Energy Supplier or their energy marketer related to a chance to save on your electric bill. Some customers have been advised that AEP Ohio's Columbus Southern Power has announced a 6% price increase effective January 2011 **Columbus Southern Power does not intend to have any increases which will impact the "Price to Compare" in January 2011** Columbus Southern Power does plan to file a request for an environmental carrying cost rider in February, 2011 that would likely take effect in July, 2011 resulting in expected increases of less than one percent of the total bill on an annual basis for most customers. If approved, this would be a slight increase over the current "Price to Compare "

In addition, some information associated with longer term offers from marketers may imply that there will definitely be increases that impact the "Price to Compare" in 2012 and 2013. It is premature to make assumptions about whether Columbus Southern Power's rates for 2012 or 2013 will increase or decrease

Please contact me for more precise information about Columbus Southern Power tariffs and your "Price to Compare "

Sincerely,

Assigned CSE, CSAM or National Account Manager
AEP Ohio

Summary of Switch Rates from EDUs to CRES Providers in Terms of Sales
For the Month Ending December 31, 2010
(MWh)

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Cleveland Electric Illuminating Company	CEI	31-Dec	2010	137790	76393	248022	474617
CRES Providers	CEI	31-Dec	2010	355624	453132	217666	1042468
Total Sales	CEI	31-Dec	2010	493414	529525	465688	1517085
EDU Share	CEI	31-Dec	2010	27.93%	14.43%	53.26%	31.28%
Electric Choice Sales Switch Rates	**CEI**	**31-Dec**	**2010**	**72.07%**	**85.57%**	**46.74%**	**68.72%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Duke Energy Ohio	DUKE	31-Dec	2010	466902	149952	48433	677497
CRES Providers	DUKE	31-Dec	2010	160952	469367	337559	1012790
Total Sales	DUKE	31-Dec	2010	627854	619319	385992	1690287
EDU Share	DUKE	31-Dec	2010	74.36%	24.21%	12.55%	40.08%
Electric Choice Sales Switch Rates	**DUKE**	**31-Dec**	**2010**	**25.64%**	**75.79%**	**87.45%**	**59.92%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Columbus Southern Power Company	CSP	31-Dec	2010	616431	573843	360948	1555700
CRES Providers	CSP	31-Dec	2010	1	97595	19366	116962
Total Sales	CSP	31-Dec	2010	616432	671438	380314	1672662
EDU Share	CSP	31-Dec	2010	100.000%	85.465%	94.908%	93.007%
Electric Choice Sales Switch Rates	**CSP**	**31-Dec**	**2010**	**0.000%**	**14.535%**	**5.092%**	**6.993%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
The Dayton Power and Light Company	DPL	31-Dec	2010	331451	158847	51428	588724
CRES Providers	DPL	31-Dec	2010	65	136504	235502	448572
Total Sales	DPL	31-Dec	2010	331516	295351	286930	1037296
EDU Share	DPL	31-Dec	2010	99.98%	53.78%	17.92%	56.76%
Electric Choice Sales Switch Rates	**DPL**	**31-Dec**	**2010**	**0.02%**	**46.22%**	**82.08%**	**43.24%**

Source: PUCO, Division of Market Monitoring & Assessment.
Note1: Total sales includes residential, commercial, industrial and other sales.
Note2: The switch rate calculation is intended to present the broadest possible picture of the state of retail electric competition in Ohio. Appropriate calculations made for other purposes may be based on different data, and may yield different results.

***Preliminary Data - will update upon receipt of additional CRES data**

Summary of Switch Rates from EDUs to CRES Providers in Terms of Sales
For the Month Ending December 31, 2010
(MWh)

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Ohio Edison Company	OEC	31-Dec	2010	347736	119728	173749	653628
CRES Providers	OEC	31-Dec	2010	477048	495207	357812	1342375
Total Sales	OEC	31-Dec	2010	824784	614935	531561	1996003
EDU Share	OEC	31-Dec	2010	42.16%	19.47%	32.69%	32.75%
Electric Choice Sales Switch Rates	**OEC**	**31-Dec**	**2010**	**57.84%**	**80.53%**	**67.31%**	**67.25%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Ohio Power Company	OP	31-Dec	2010	628585	485696	1116821	2238888
CRES Providers	OP	31-Dec	2010	0	954	0	954
Total Sales	OP	31-Dec	2010	628585	486650	1116821	2239842
EDU Share	OP	31-Dec	2010	100.00%	99.80%	100.00%	99.96%
Electric Choice Sales Switch Rates	**OP**	**31-Dec**	**2010**	**0.00%**	**0.20%**	**0.00%**	**0.04%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Toledo Edison Company	TE	31-Dec	2010	102530	43700	115020	265504
CRES Providers	TE	31-Dec	2010	119121	203072	244991	569300
Total Sales	TE	31-Dec	2010	221651	246772	360011	834804
EDU Share	TE	31-Dec	2010	46.26%	17.71%	31.95%	31.80%
Electric Choice Sales Switch Rates	**TE**	**31-Dec**	**2010**	**53.74%**	**82.29%**	**68.05%**	**68.20%**

Source: PUCO, Division of Market Monitoring & Assessment.
Note1: Total sales includes residential, commercial, industrial and other sales.
Note2: The switch rate calculation is intended to present the broadest possible picture of the state of retail electric competition in Ohio. Appropriate calculations made for other purposes may be based on different data, and may yield different results.

***Preliminary Data - will update upon receipt of additional CRES data**

PJM Capacity Prices

Planning Year	RTO Capacity Price $/MW-Day
2008/2009	111.92
2009/2010	102.04
2010/2011	174.29
2011/2012	110.00

Source: 2014/2015 RPM Base Residual Auction Results PJM DOCS #645284

CSP Estimated Competitive Electric Retail Service Price for Calendar Year 2009-2011 Term			
Cost Components	CSP Residential	CSP Commercial	CSP Industrial
ATC Simple Swap	$57.84	$57.84	$57.84
Basis	$0.51	$0.51	$0.51
Load Shape and Following	$9.59	$5.33	$2.31
Retail Administration	$5.00	$5.00	$5.00
Ancillary Services	$1.19	$1.19	$1.19
Losses	$4.01	$2.53	$0.91
PJM Capacity Requirements	$15.78	$11.80	$7.86
ARR Credit	($2.73)	($2.05)	($1.40)
Transaction Risk Adder	$5.47	$4.93	$4.45
Class Total	$96.66	$87.08	$78.67
Class Weight	34%	40%	26%
CSP Total	**$88.15**		

CSP Percentage Contribution by Component			
CSP Residential	CSP Commercial	CSP Industrial	Weighted Average
60%	66%	74%	66%
1%	1%	1%	1%
10%	6%	3%	7%
5%	6%	6%	6%
1%	1%	2%	1%
4%	3%	1%	3%
16%	14%	10%	14%
-3%	-2%	-2%	-2%
6%	6%	6%	6%
100%	100%	100%	100%

OP Estimated Competitive Electric Retail Service Price for the Calendar Year 2009-2011 Term			
Cost Components	OP Residential	OP Commercial	OP Industrial
ATC Simple Swap	$57.84	$57.84	$57.84
Basis	$0.51	$0.51	$0.51
Load Shape and Following	$7.66	$6.06	$2.58
Retail Administration	$5.00	$5.00	$5.00
Ancillary Services	$1.19	$1.19	$1.19
Losses	$1.28	$4.46	$2.49
PJM Capacity Requirements	$13.47	$12.51	$8.15
ARR Credit	($2.42)	($2.16)	($1.41)
Transaction Risk Adder	$5.07	$5.13	$4.58
Class Total	$89.60	$90.54	$80.93
Class Weight	26%	22%	52%
OP Total	**$85.32**		

OP Percentage Contribution by Component			
OP Residential	OP Commercial	OP Industrial	Weighted Average
65%	64%	71%	68%
1%	1%	1%	1%
9%	7%	3%	5%
6%	6%	6%	6%
1%	1%	1%	1%
1%	5%	3%	3%
15%	14%	10%	12%
-3%	-2%	-2%	-2%
6%	6%	6%	6%
100%	100%	100%	100%

Source: AEP response to OEG interrogatory 3-5 : Attachment 3-5 (1)
Percentage contribution calculations performed by OCC

ATTACHMENT MAT-7

Inputs from Thomas Workpaper "E" and Excel POLR Formulas Provided By AEP

	CSP Com	CSP Ind	CSP Res	OP Com	OP Ind	OP Res
Today	7/30/2008	7/30/2008	7/30/2008	7/30/2008	7/30/2008	7/30/2008
Maturity	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011
Forward	87.08	78.67	96.66	90.54	80.93	89.80
Strike	80.21	44.76	55.58	48.00	38.81	46.40
Volatility	33.30%	33.30%	33.30%	33.30%	33.30%	33.30%
Interest-Rate	0.035	0.035	0.035	0.035	0.035	0.035
Premium	$ 6.52	$ 3.07	$ 3.92	$ 2.75	$ 1.69	$ 2.50

Inputs from Thomas Workpaper "E" and Excel POLR Formulas Provided By AEP With "Today" Value Changed to Start of ESP Period

	CSP Com	CSP Ind	CSP Res	OP Com	OP Ind	OP Res	
Today	1/1/2009	1/1/2009	1/1/2009	1/1/2009	1/1/2009	1/1/2009	
Maturity	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	
Forward	87.08	78.67	96.66	90.54	80.93	89.60	
Strike	80.21	44.76	55.58	48.00	38.81	46.40	
Volatility	33.30%	33.30%	33.30%	33.30%	33.30%	33.30%	
Interest-Rate	0.035	0.035	0.035	0.035	0.035	0.035	
Premium	$ 5.80	$ 2.61	$ 3.33	$ 2.28	$ 1.36	$ 2.06	
Impact of Change	$ 0.71	$ 0.47	$ 0.59	$ 0.47	$ 0.33	$ 0.44	
Precent Impact	11%	15%	15%	17%	20%	18%	16%

Inputs from Thomas Workpaper "E" and Excel POLR Formulas Provided By AEP With Volatility Values Scaled Down

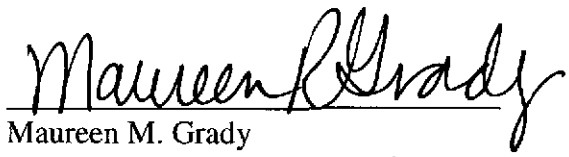
	CSP Com	CSP Ind	CSP Res	OP Com	OP Ind	OP Res	
Today	7/30/2008	7/30/2008	7/30/2008	7/30/2008	7/30/2008	7/30/2008	
Maturity	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	
Forward	87.08	78.67	96.66	90.54	80.93	89.60	
Strike	80.21	44.76	55.58	48.00	38.81	46.40	
Volatility	**22.31%**	**22.31%**	**22.31%**	**22.31%**	**22.31%**	**22.31%**	
Interest-Rate	0.035	0.035	0.035	0.035	0.035	0.035	
Premium	$ 2.66	$ 0.84	$ 1.10	$ 0.64	$ 0.30	$ 0.55	
Impact of Change	$ 3.86	$ 2.23	$ 2.82	$ 2.11	$ 1.39	$ 1.95	
Precent Impact	59%	73%	72%	77%	82%	78%	73%

Inputs from Thomas Workpaper "E" and Excel POLR Formulas Provided By AEP With "Today" Value Changed to Start of ESP Period and Volatility Values Scaled Down

	CSP Com	CSP Ind	CSP Res	OP Com	OP Ind	OP Res	
Today	1/1/2009	1/1/2009	1/1/2009	1/1/2009	1/1/2009	1/1/2009	
Maturity	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	12/31/2011	
Forward	87.08	78.67	96.66	90.54	80.93	89.60	
Strike	80.21	44.76	55.58	48.00	38.81	46.40	
Volatility	**22.31%**	**22.31%**	**22.31%**	**22.31%**	**22.31%**	**22.31%**	
Interest-Rate	0.035	0.035	0.035	0.035	0.035	0.035	
Premium	$ 2.26	$ 0.65	$ 0.86	$ 0.47	$ 0.21	$ 0.40	
Impact of Change	$ 4.26	$ 2.42	$ 3.06	$ 2.27	$ 1.48	$ 2.09	
Precent Impact	65%	79%	78%	83%	88%	84%	79%

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing Direct Testimony of Mack A. Thompson was served via electronic transmission to the persons listed below on this 30th day of June, 2011.



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