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Exhibit No.:	
Issue(s):	Benefits of Continued Participation in MISO
Witness:	Ajay K. Arora
Sponsoring Party:	Union Electric Company
Type of Exhibit:	Direct Testimony
Case No.:	EO-2011-0128
Date Testimony Prepared:	July 29, 2011

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. EO-2011-0128

DIRECT TESTIMONY

OF

AJAY K. ARORA

ON

BEHALF OF

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI

St. Louis, Missouri
July, 2011

DIRECT TESTIMONY

OF

AJAY K. ARORA

CASE NO. EO-2011-0128

Q. Please state your name and business address.

A. My name is Ajay K. Arora. My business address is Ameren Services Company ("Ameren Services"), One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

Q. What is your position with Ameren Services and what are the responsibilities of your position?

A. I am the Director of Corporate Planning at Ameren Services. Ameren Services provides corporate, administrative and technical support for Ameren Corporation and its affiliates, including Union Electric Company d/b/a Ameren Missouri ("Company" or "Ameren Missouri"). In my current position I oversee the Quantitative Analysis, Asset and Trading Optimization, Integrated Resource Planning, Load Analysis, and Operations Analysis groups within the Corporate Planning function at Ameren Services.

Q. Please describe your educational background and employment experience.

A. I received my Bachelor of Science Degree in Chemical Engineering from the Panjab University (India) in May 1992. I received my Master of Business Administration degree from Tulane University in May 1998. I joined Ameren Energy in June, 1998 and initially held trading and structuring positions with Ameren Energy. From 2002 to 2004, I supervised the group that prices structured energy products for Ameren Energy Marketing Company's wholesale and retail customers. After joining Ameren Services, from 2004 to 2007 I was responsible for the analytical group supporting the transition necessary (including reviewing specific market design issues) once Ameren Missouri became a transmission owner in the Midwest Independent Transmission System Operator, Inc. ("MISO"). In 2007 I led the Ameren Missouri Regional Transmission Organization cost-benefit study that was the product of collaboration with several stakeholders, including the Commission's Staff, and filed with the Commission in Case No. EO-2008-0134, which was the last case in which Ameren Missouri's permission to participate in the MISO was extended. In 2007 I also assumed responsibility for the Quantitative Analysis, Integrated Resource Planning, Load Analysis, and Operations Analysis groups. In January 2008, as part of my current role as Director of Corporate Planning, I assumed the additional responsibility for the Asset and Trading Optimization group supporting Ameren Missouri's trading and asset optimization.

Q. What is the purpose of your direct testimony?

A. The purpose of my testimony is to present the results of an updated analysis of the costs and benefits to Ameren Missouri (and its customers) of participation in the MISO. More specifically, I discuss the analysis filed at the inception of this case on November 1, 2011, as updated to account for more recent information now available to us.

Q. Why was this cost benefit analysis performed?

A. As outlined in Ameren Missouri's "Verified Application to Extend Permission and Authority for Participation in Regional Transmission Organization" ("Application"), which was filed in this proceeding on November 1, 2010, the purpose of the analysis was to help determine whether Ameren Missouri's participation in the MISO continued to be in the best interest of the Company and our customers.

Q. What determination is supported by the results of the study?

A. The results of the updated study (attached as Schedule AA-1) indicate that Ameren Missouri's continued participation in the MISO has a three-year net present value benefit of approximately $105 million versus the next most beneficial alternative over the time period 2012-2014. These results demonstrate that it continues to be in the best interest of Ameren Missouri and its customers for Ameren Missouri to remain in the MISO through at least 2014.

Q. How does this study differ from the study used in Case No. EO-2008-0134?

A. Rather than completely rebuilding the modeling used by Charles River and Associates ("CRA") when the initial cost benefit analysis was done for that case, the Company has essentially updated the assumptions used in the original CRA analysis, but using data as of the current time period to examine the key remaining uncertainties respecting Ameren Missouri's continued participation in the MISO. Prior to filing the Application, the Company had a series of communications with the stakeholders regarding the analysis and its assumptions, and sought their input as contemplated by the Stipulation and Agreement that resolved Case No. EO-2008-0134.

Q. How were the updated assumptions developed?

A. This varied by line item. Following is a description for each.

i) <u>Production Cost Savings and Generator Revenue Increases</u>: These two line items examine production costs (principally fuel and purchased power) and generator revenue increases from MISO participation related to off-system sales. These two line items were calculated utilizing Ameren Missouri's PROSYM production cost model, utilizing current projections for fuel costs, power prices, unit availability and unit cost and operating characteristics. Two separate PROSYM runs were made – one including the $5/MWh dispatch seams charge identified in the original CRA study (the operate as an Independent Coordinator of Transmission ("ICT") case) and one without that charge (the participate in the MISO case) – and then comparing the two results. The dispatch seams charges (sometimes referred to as a "hurdle rate") reflect impediments to trading that take place on a real-time basis, including wheeling charges and imperfect knowledge regarding flows outside of the control area. In the original CRA study, dispatch hurdles were set at applicable non-firm off-peak wheeling rates plus a dispatch friction rate. For Regional Transmission Organizations ("RTOs") with actively managed markets, such as the MISO, the frictional rate was set at zero for flows within the RTO, and for flows out of all other control areas the frictional rate was set at $5/MWh. We have used this $5 rate for our ICT case.

ii) Net Operating Reserve Savings: This line item was calculated by taking the total revenue received by Ameren Missouri from the MISO Ancillary Services Market for regulating, spinning and supplemental reserves from January 2009 – June 2011, less the charges paid to the MISO for Ancillary Services by Ameren Missouri for these same services to meet its load obligation, and then annualizing the resulting value.

iii) Marginal Loss Credit: This value was calculated by subtracting the estimated opportunity loss associated with physical transmission losses which Ameren Missouri would expect if it were not in the MISO from its budgeted expense for MISO financial losses. Because a MISO participant does not physically supply its transmission losses, it must pay the MISO for financial losses reflecting its share of the transmission losses in the MISO footprint. The opportunity cost was calculated by multiplying the forecasted load by a transmission loss rate assumption of 1.24% and then multiplying that product by the projected locational marginal price ("LMP") in the MISO's energy market for that year.

iv) Administrative Charge Savings: This value represents Ameren Missouri's current budgeted amount for its share of the administrative costs of operating the MISO. This amount is calculated assuming the scheduled exit from the MISO of the First Energy entities, Duke Ohio and Duke Kentucky, and also assuming the planned entry into the MISO of Entergy in 2014.

v) RSG and RNU Cost Savings: These values represent Ameren Missouri's current budgeted amounts for these charges. RSG, or Revenue Sufficiency Guarantee, is a mechanism that ensures generating unit owners whose units are committed and actually dispatched by the MISO for reliability reasons are guaranteed cost recovery of their three-part offer (start-up, no-load and incremental energy) if the unit owner does not receive sufficient revenue from the MISO market to cover the cost of selling its output at the applicable LMP. RNU, or Revenue Neutrality Uplift, is a revenue distribution mechanism for credits and charges that have no other method of distribution.

vi) One-Time Configuration: This amount represents the capital costs incurred in Ameren Missouri's first year of MISO participation. It is expected that a similar amount would have to be expended if Ameren Missouri were to cease its MISO participation requiring it to re-establish the ability to operate independently of the MISO.

vii) Transmission Cost Allocation: This amount represents the MISO charges to Ameren Missouri related to regional transmission projects built in the MISO footprint. For purposes of performing the analysis, we have utilized the average year-on-year change which has been allocated by the MISO to Ameren Missouri ($2.6 million for the period 2012 – 2016 as approved in Appendix A of the MISO Transmission Expansion Plan ("MTEP") as of the end of 2010), and assuming that one-half of the cost associated with approved projects is allocated in the first year following approval of the project, with the remainder allocated in the second year following approval of the project, which results in MISO charges to Ameren Missouri relating to regional transmission of $1.3 million in 2014.

We did not include any such charges for 2012 because amounts approved prior to Ameren Missouri's exit from the MISO would be recovered via an exit fee Ameren Missouri would have to pay to the MISO, and thus would not be avoidable if Ameren Missouri no longer participated in the MISO. We also did not include any charges for 2013 because charges associated with projects approved in 2013 would not start until 2014.

viii) Capacity Sales: This amount was calculated by multiplying the current annual capacity position (Ameren Missouri currently projects having excess capacity over the study period), as developed by Corporate Planning, by current estimates of forward capacity prices developed through consultation with brokers and other market participants. It has been assumed that if Ameren Missouri were not a member of the MISO the incremental cost of securing transmission service and other compliance requirements would render the sale of capacity uneconomic in the near term.

ix) FERC Charge Savings: This is the difference in annual FERC assessment charges that Ameren Missouri would incur if it were not in the MISO.

Q. Is the PROSYM model referred to above the same model used by Ameren Missouri for preparing its fuel budgets and for production cost modeling in various rate cases?

A. Yes it is. While we are using current projected data for this purpose, as opposed to historical test year data as we would for a rate case, the model "engine" is the same one which we utilize for these other purposes.

Q. The analysis included with the Application utilized data as of October 1, 2010 for the 3-year time period 2011 - 2013. How have you updated the analysis?

A. We have used current (July 2011) data to examine the costs and benefits of MISO participation for the 3-year time period of 2012 - 2014.

Q. Did this change the results of the analysis?

A. Yes. As noted above, it indicates a further increase in the already substantial benefit to the Company and its customers of Ameren Missouri's continued participation in the MISO over the level of benefit indicated by the study results provided with the initial filing in this docket. The study results presented with the initial filing (which examined the benefit of MISO participation for calendar years 2011 through 2013) reflected a three-year net present value benefit of approximately $70 million. The three-year net present value benefit for calendar years 2012 through 2014 reflected in the updated study is approximately $105 million. As another point of reference, the updated study also reflects more benefits than were estimated at the time of Case No. EO-2008-0314, which suggested a net present value benefit of approximately $17 million over the three-year period May 2009 through April 2012.

Q. Are there any items in particular that are driving the greater benefit indicated by the updated study versus the study results as of the time of the initial filing in this case?

A. Yes. There are two.

The first is that given that we are already more than half-way through 2011, the updated analysis studied the period of 2012-2014; that is, it replaced 2011 projected values with 2014 values. The power prices for 2014 are projected to be higher than those for 2011, thus the potential opportunity loss if Ameren Missouri did not continue its MISO participation associated with off-system sales is greater.

The second item is a reduction in the forecasted customer loads from the last analysis due mostly to load lost during the recent recession and the lingering effects of that recession, which are continuing to depress new housing and industrial production (and associated electricity consumption) in the Company's service territory. This assumption increases the availability of energy for sale into the MISO's energy markets as off-system sales. Participation in the MISO energy markets is critical to the Company's ability to maximize the off-system sales it can make, and absent MISO participation, the Company's off-system sales would be expected to be lower.

Q. You stated above that the study indicates a net present value benefit to customers from Ameren Missouri's continued participation in the MISO of approximately $105 million from 2012 to 2014. Can you provide more detail regarding the determination of this level of benefit?

A. Yes. The net present value benefit from 2012 to 2014 represents the net value of anticipated changes in production costs, off-system sales revenue, ancillary service revenues/charges, capacity sales and various avoided MISO charges (administrative fees, RSG/RNU, transmission cost allocation, etc.) expected to result if Ameren Missouri were to exit the MISO. These components are detailed in Schedule AA-1.

Q. Schedule AA-1 does not include any value for any MISO exit fees should Ameren Missouri discontinue its participation in the MISO. Why is this?

A. We currently do not have a solid estimate of what this value would be. However, estimates of exit fees applicable to the exit of First Energy from the MISO are purported to be in the range of $40-$45 million. We are certain that exiting would result in a charge and not a credit to Ameren Missouri. As a consequence, given that the cost-benefit analysis already demonstrates a significant benefit to the Company and customers from the Company's continued participation in the MISO, if we were to account for a possible exit fee, continued participation would become even more beneficial than the study results indicate.

Q. Do you have an opinion about the validity of the methodology used, and about the validity of assumptions and results of, the cost benefit study?

A. Yes, I do. The methodology and assumptions are reasonable and appropriate, and in fact in my opinion they lead to a conservatively estimated benefit of continued MISO participation. As noted, as we move through time, the benefits of participation are consistently increasing, both from the perspective of the various study results, but also if we examine actual results, particularly in terms of the robust off-system sales the Company is able to make. As the Commission knows, those off-system sales provide a very substantial offset against fuel and purchased power costs through the Company's fuel adjustment clause. These benefits are substantial even with the lower power prices we have seen post-the recession that started in late 2008.

Q. Why do you believe the results are conservative?

A. The result is conservative because there are several items that we did not quantify which would reasonably be expected to further increase the benefit beyond that calculated in the study. In addition to not accounting for the exit fee as discussed above, these include (a) the probable need to buy-out existing capacity sales contracts for 2012-2015 (or otherwise secure incremental firm transmission) if participation ended, (b) calculating the opportunity value of capacity using only the position at the time of system peak, rather than throughout the year, and (c) the cost of incremental transmission service that would be needed to serve Ameren

Missouri's tariffed load in the Missouri Bootheel once Entergy begins participation in the MISO if Ameren Missouri were to leave the MISO.

Q. Please explain the reason you believe that Ameren Missouri may have to buy-out its existing capacity sales contracts if it were to leave the MISO?

A. It is important to remember that what is actually sold in the MISO currently is a Planning Reserve Credit, or "PRC." If Ameren Missouri were to exit the MISO, the capacity available from the Company's generating units would no longer qualify for conversion to PRC's absent the purchase of firm transmission for delivery to the MISO market. Given the current prices for PRC's in the MISO market, it is reasonable to expect that it would be cheaper to buy-out the existing capacity sales contracts than to purchase this incremental firm transmission. In either case, Ameren Missouri would incur additional costs related to its existing sales of PRC's in 2012-2015. These additional costs have not been reflected in the cost-benefit study.

Q. If Ameren Missouri were to buy back this capacity wouldn't it be able to subsequently sell it to non-MISO entities?

A. Given the current prices for capacity in the near term, and the requirement that firm transmission be acquired on both Ameren Missouri's and the buyer's systems to enable such a transaction, I believe it would be extremely difficult for such replacement sales to be made at any appreciable value to Ameren Missouri and its customers.

Q. Please explain your point regarding the calculation of the opportunity value of capacity being made at the time of system peak.

A. For purposes of this calculation, we took the net capacity position at the time of system peak (July/August) and multiplied it by the annual price for capacity. We did not attempt to assign any value to the additional capacity that would be available for sale in the other 10 months of the year. While the price for these periods is significantly less than the average annual price, it would still increase the benefit if we were to calculate it.

Q. Please explain the issue with transmission service expense related to the Ameren Missouri Bootheel load.

A. This load is physically located in the Entergy balancing authority and dynamically metered back into the MISO. We currently are required to purchase transmission service on the Entergy system in order to serve this load. Upon Entergy's admission into the MISO, we would no longer incur this additional expense, as both Ameren Missouri and Entergy would be within the MISO. However, if Ameren Missouri were to leave the MISO, we would again be required to acquire incremental transmission to serve this load and bear the associated cost.

Q. Were there other items not included in this updated analysis?

A. Yes. As listed in the Application, there were various uncertainties which have not been and cannot practically be quantified in the analysis. Two of the uncertainties that were listed (certain proposed changes regarding revenue distribution to transmission owners, and the MISO's proposed recovery of regional transmission projects through its MTEP process) have been resolved. However, several of the listed uncertainties remain.

Q. What uncertainties remain?

A.

1. Continued efforts to redesign the RSG and RNU payments/process, which are still subject to further FERC and court rulings;
2. Issues surrounding the availability of transmission to make off-system sales in the MISO's markets or in other RTO markets;

3. Unknown revenues which may be received by Ameren Missouri for "through and out" transmission services;
4. The amount of a potential exit fee if Ameren Missouri were to end its MISO participation, and the potential that the fee may increase (the exit fee issue remains uncertain, particularly given the lack of resolution of the responsibility for and the amount of any exit fee applicable to First Energy or the Duke entities identified above arising from their announced withdrawals to the PJM RTO; the uncertainty is driven, in part, by unresolved issues relating to a withdrawing party's responsibilities for MTEP projects and creating infeasible Long Term Transmission Rights ("LTTRs"));
5. Whether (and when) the Southwest Power Pool ("SPP") will implement a Day 2 market and what the design of such a market would be (if implemented) (there remains material uncertainty on this issue, particularly given that potential implementation is now not slated to occur until 2014); and
6. Since the original application was filed, the FERC has issued a ruling which has increased the uncertainty of the level of regional transmission expansion plan cost which may or may not be avoidable if an entity leaves the MISO.[1]

Q. Uncertainty regarding Entergy's potential membership in an RTO had been noted in previous lists. Does this uncertainty remain?

A. It does. However, as noted earlier, Entergy has filed to join the Midwest ISO. While Entergy's membership is not certain, the formal process to join the MISO has begun. We

[1] See FERC Order 1000, "Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities," 18 CFR Part 35, FERC Docket No. RM10-23-000 (July 21, 2011).

have reflected this in our estimate of administrative cost savings and noted it in our discussion of the potential cost of transmission related to the load in the Missouri Bootheel.

Q. Are there any other considerations you would like to raise at this time regarding the study?

A. Yes.

First, I would note that this analysis has been done on a calendar year basis – consistent with the prior studies. However, the MISO operates on a planning year basis which runs from June 1 of a given year, through May 31 of the following year. Auction Revenue Rights ("ARRs") are allocated to market participants on this planning year basis, as are the associated Financial Transmission Rights ("FTRs"). Should Ameren Missouri seek to exit the MISO in the middle of the planning year, the underlying value of these ARRs and FTRs would be impacted, and would represent a disruption to market participants – including municipal utilities and cooperatives which hold such rights in the Ameren Missouri region – with currently unknown consequences. Accordingly, it would be appropriate to extend the Company's participation in the MISO to coincide with a MISO planning year, in this case to at least May 31, 2015.

Additionally, I believe it would be appropriate for the Commission to consider transitioning from a process of frequent re-application relating to continued MISO participation to a process one where the permission to participate continues until such time as substantial evidence exists that continued participation would be detrimental to the utility and its customers. It is Ameren Missouri's opinion that the seven-plus years of participation in the MISO and the experience gained with the MISO's market have provided sufficient evidence to provide the Commission, the Staff and other stakeholders with a level of confidence in the continuation of benefits, absent a material change in market rules, at which time it may be appropriate for the

Commission to open a proceeding to investigate if our continued participation in the MISO continues to pose no detriment to the public interest.[2]

Q. Does this conclude your direct testimony?

A. Yes, it does.

[2] The Company will soon be filing a request for leave to amend its Application to request extension of permission to at least May 31, 2015, consistent with my recommendation.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Authority to Continue the Transfer of Functional Control of Its Transmission System to the Midwest Independent Transmission system Operator, Inc.	)))))	Case No. EO-2011-0128

AFFIDAVIT OF AJAY K. ARORA

STATE OF MISSOURI)
) **ss**
CITY OF ST. LOUIS)

Ajay K. Arora, being first duly sworn on his oath, states:

1. My name is Ajay K. Arora. I work in the City of St. Louis, Missouri, and I am employed by Ameren Services Company as Director of Corporate Planning.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Union Electric Company d/b/a Ameren Missouri consisting of 14 pages, and Schedule AA-1, all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

Ajay Kumar
Ajay K. Arora

Subscribed and sworn to before me this 29 day of July, 2011.

Amanda Tesdall
Notary Public

My commission expires:

Amanda Tesdall - Notary Public
Notary Seal, State of
Missouri - St. Louis County
Commission #07158967
My Commission Expires 7/29/2011

Annual Costs and Benefits of ITC Case Relative to Midwest ISO Case
(in millions of dollars, positive numbers are benefits)

			2012	2013	2014
		Ameren Missouri in ITC			
+	A	Production Cost Savings \1	$ 17.08	$ 18.47	$ 21.57
+	B	Generator Revenue Increases\2	$ (75.93)	$ (76.33)	$ (85.05)
+	C	Load Withdrawal Savings\3			
+	D	FTR Value Increases\4			
+	E	Net Operating Reserve Savings\5	$ (3.39)	$ (3.39)	$ (3.39)
+	F	Marginal Loss Credit Increases\6	$ 9.05	$ 9.56	$ 10.96
+	G	Net Wheeling Rev Increases			
=	H	Trade Benefits	$ (53.19)	$ (51.68)	$ (55.91)
+	I	Admin Charge Savings\7	$ 5.31	$ 5.60	$ 4.46
+	J	RSG and RNU Cost Savings	$ 7.74	$ 7.84	$ 7.12
+	K	1-Time Reconfiguration\8	$ (1.00)		
+	L	Transm Cost Allocation Savings\9	$ -		$ 1.30
+	M	Capacity Sales\10	$ (0.01)	$ (2.19)	$ (4.40)
+	N	Addtl Transm Reservations			
+	O	FERC Charge Savings\11	$ 1.50	$ 1.60	$ 1.60
=	P	Subtotal Other Charges	$ 13.54	$ 12.85	$ 10.08
	Q	**Total (Trade Benefits + Subtotal Other Charges)**	$ (39.65)	$ (38.83)	$ (45.82)
	R	Net Present Value	($105.41)		

Footnotes

1 Change in Generator Cost+Hurdle Rate Costs associated with OSS+ Change in Purchased Power Expense
2 Change in Off System Sales Revenue
3 Incorporated in first two values above
4 Prosym assumed no congestion between load and generation
5 Estimated ASM revenues net (based on TME 8/10)
6 Incremental cost of losses paid to MISO less Avg. LMP cost of supply transmission losses to native load
7 MISO Adm charges less ITC operating costs (estimated at $5 million/year) 2012 - FE Out 2013 - FE/Duke Out 2014-15 Entergy In
8 Year one capital expense.
9 Proxy of MISO net increase in MTEP allocations which may be avoidable if Ameren Missouri exits MISO. Based upon the avg. year-on-year change 2010 - 2016 and assuming the allocation would apply 1/2 in the year following approval and 1/2 in the 2nd year following approval
10 Estimate based on expected Ameren Missouri capacity position
11 Original estimate in CRA Study